Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Town of Clintwood

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

___ **Project**

___ **Study**

NFIP/DCR Community Identification Number (CID) #510051-DCR1

If a state or federally recognized Indian tribe, Name of tribe Not Applicable

Name of Authorized Official: Danny Lambert, Mayor

Signature of Authorized Official: 04/05/2022
Date

Mailing Address (1): 248 Main Street

Mailing Address (2): Not Applicable

City: Clintwood **State:** VA **Zip:** 24228

Telephone Number: 276.926.8383 **Cell Phone Number:** 276.393.3009

Email Address: dmlambert4956@gmail.com

Contact Person (If different from authorized official): Judy Steele

Mailing Address (1): See Above

Mailing Address (2): See Above

City: See Above **State:** ____ **Zip:** ____

Telephone Number: See Above **Cell Phone Number:** Not Available

Email Address: jsteele townofclintwood@verison.net

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? ☒ Yes ☐ No

- Refer to Appendix III – MHI & Distressed Communities Documentation

Categories (select applicable project):

Project Grants (Check All that Apply) __Not Applicable__

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.

☐ Floodplain restoration.

☐ Construction of swales and settling ponds.

☐ Living shorelines and vegetated buffers.

☐ Structural floodwalls, levees, berms, flood gates, structural conveyances. Storm water system upgrades.

☐ Medium and large scale Low Impact Development (LID) in urban areas.

☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

☐ Dam restoration or removal.

☐ Stream bank restoration or stabilization.

☐ Restoration of floodplains to natural and beneficial function.

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply) __Not Applicable__

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards, and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the

Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard. Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☒ Resilience Plan Development

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

☒ Resource assessments, planning, strategies, and development.
- Policy management and/or development.
- Stakeholder engagement and strategies.

Location of Project (Include Maps): Refer to Appendix I – Vicinity Map

NFIP Community Identification Number (CID#):(See Appendix F) #510051-DCR1

Is Project Located in an NFIP Participating Community? ☐ Yes ☒ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☒ No

Flood Zone(s) (If Applicable): Not Applicable

Flood Insurance Rate Map Number(s) (If Applicable): Not Applicable

Total Cost of Project: $57,000

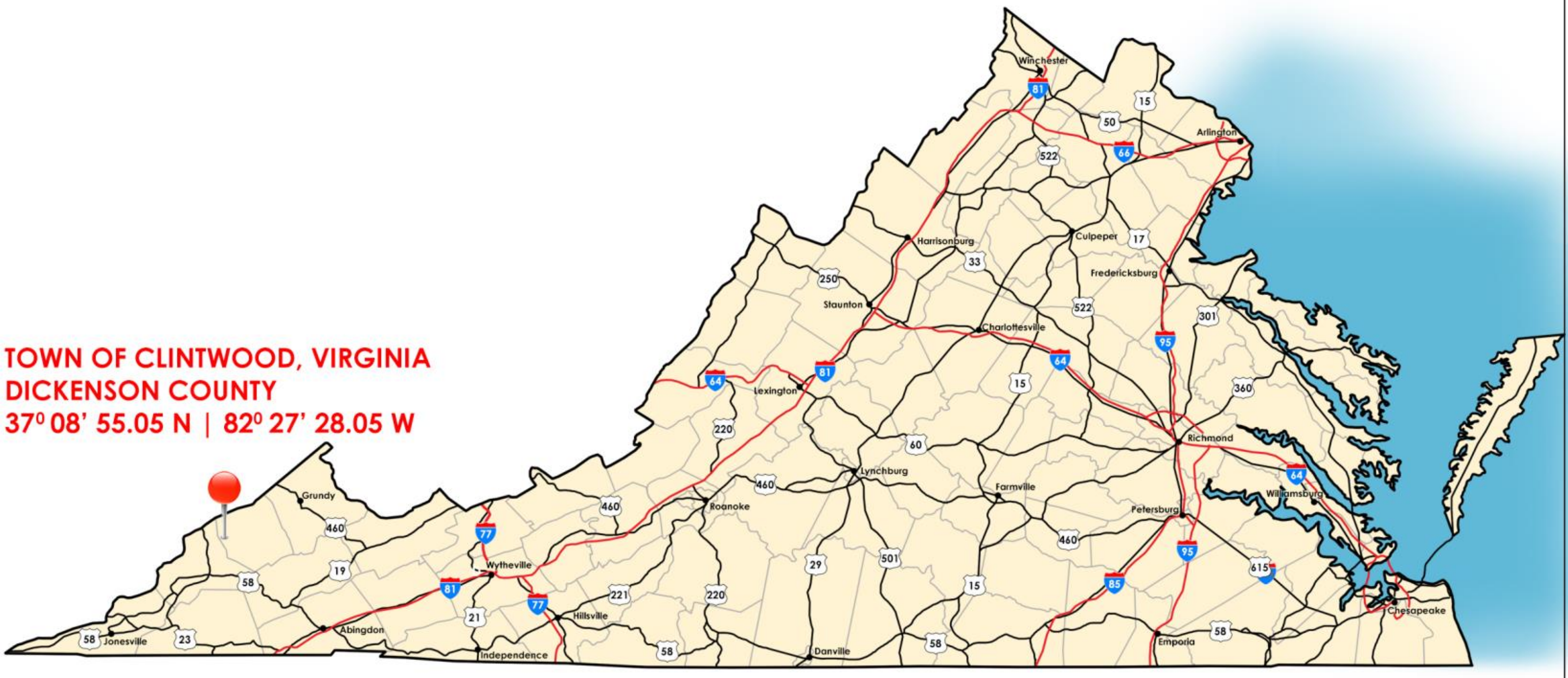
Total Amount Requested $51,300 (Low-income Geographic Areas – 10%)

Appendices:
- Appendix I – Vicinity Map
- Appendix II – Flood Prone Areas with Photos
- Appendix III – Vulnerability Index, MHI & Distressed Communities Documentation
- Appendix IV – Scope of Work Narrative
- Appendix V – Budget Narrative
- Appendix VI – Matching Funds Resolution
- Appendix VII – Dickenson County Flood Hazard Mitigation Plan
- Appendix VIII – Town of Clintwood Comprehensive Plan
- Appendix IX – VCDR Scoring Criteria: Eligibility and Capacity Building & Planning and VDCR CPFP Checklist

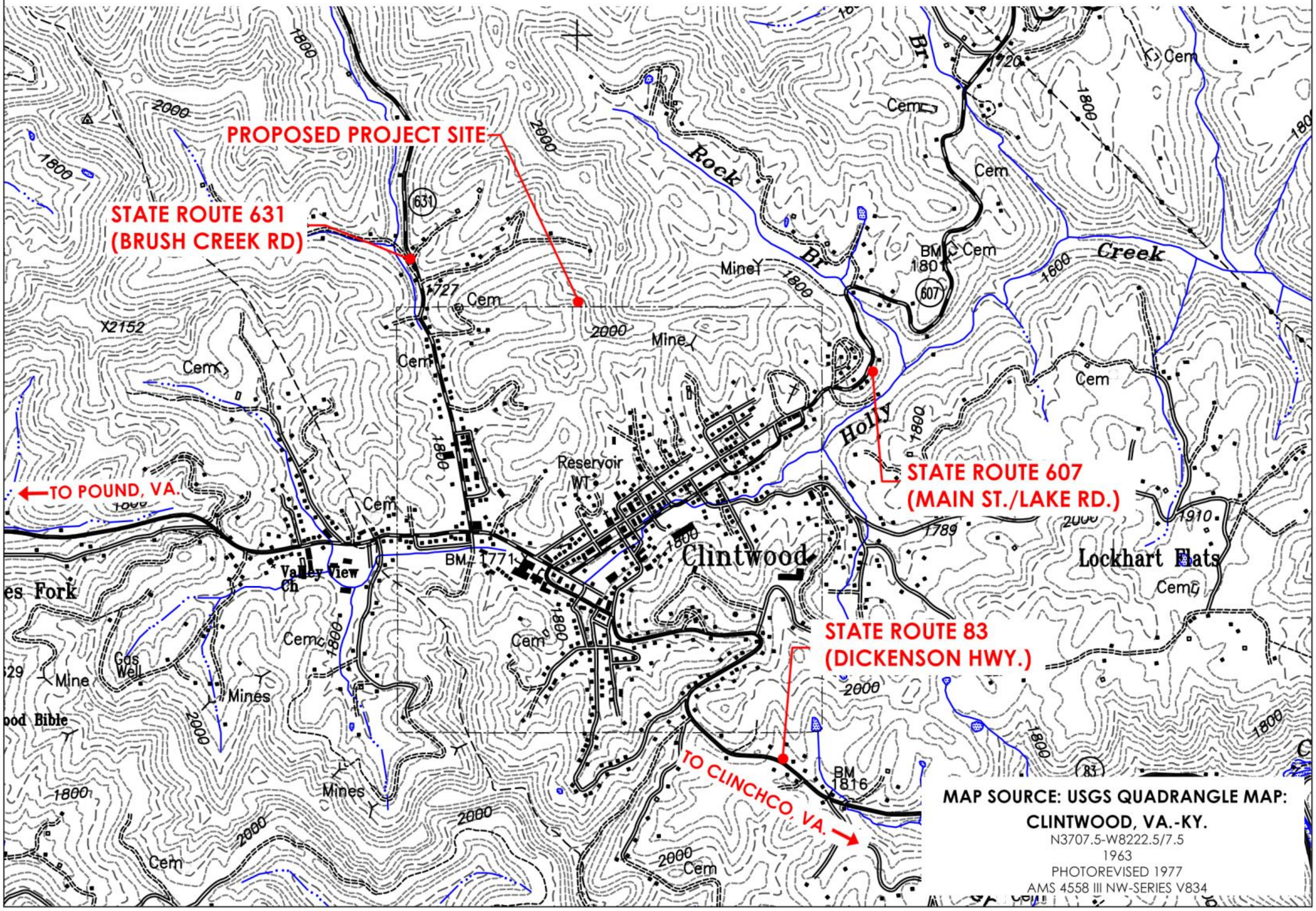
- Appendix X – Certified Floodplain Manager
- Appendix XI – Town Floodplain Ordinance

APPENDIX I: VICINITY & DRAINAGE AREA MAPS

TOWN OF CLINTWOOD, VIRGINIA
VIRGINIA COMMUNITY FLOOD PREPAREDNESS GRANT
APPLICATION - GENERAL VICINITY MAP



TOWN OF CLINTWOOD, VIRGINIA
DICKENSON COUNTY
37° 08’ 55.05 N | 82° 27’ 28.05 W



PROPOSED PROJECT SITE

STATE ROUTE 631
(BRUSH CREEK RD)

STATE ROUTE 607
(MAIN ST./LAKE RD.)

TO POUND, VA.

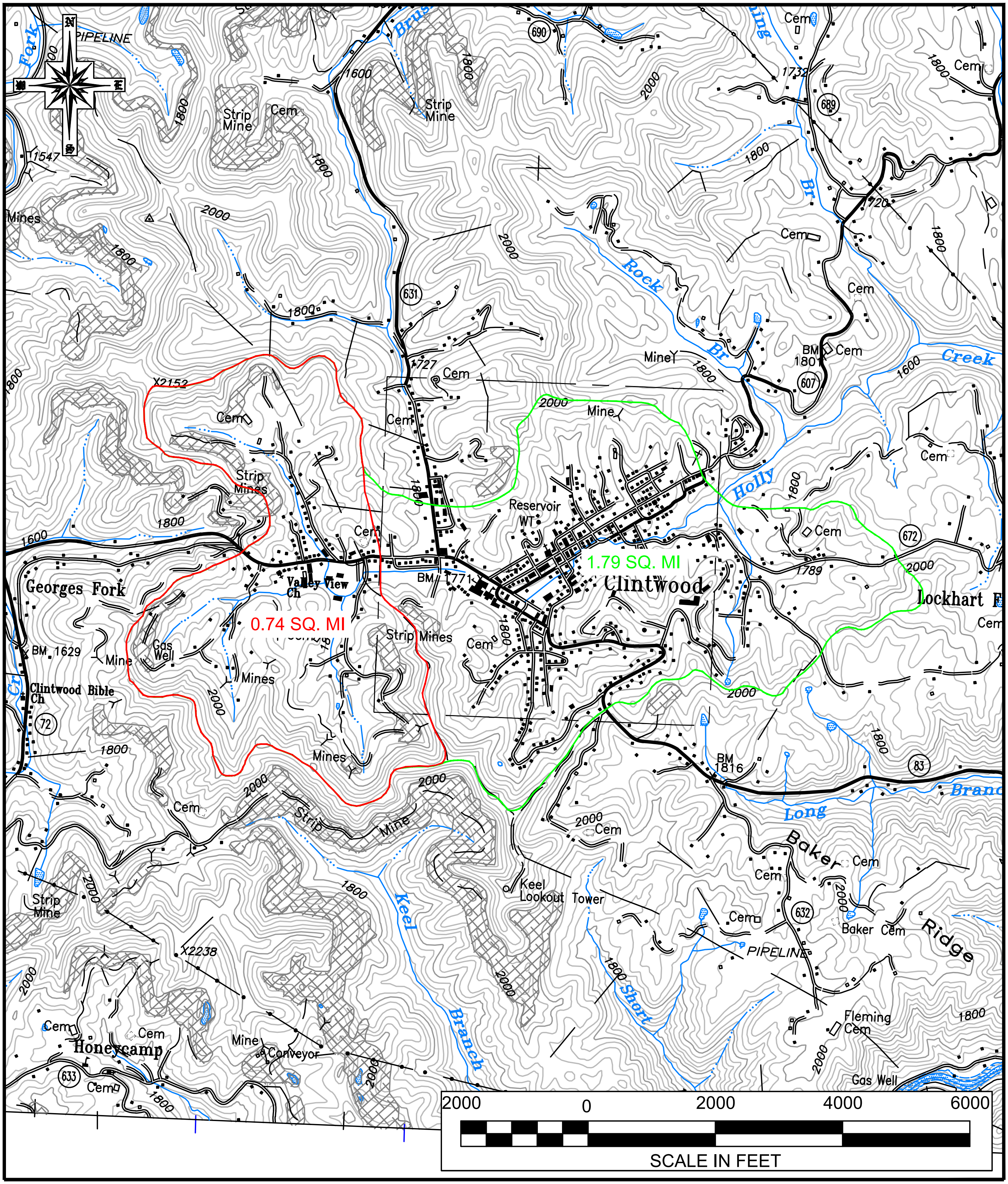
STATE ROUTE 83
(DICKENSON HWY.)

TO CLINCHCO, VA.

MAP SOURCE: USGS QUADRANGLE MAP:

CLINTWOOD, VA.-KY.

N3707.5-W8222.5/7.5
1963
PHOTOREVISED 1977
AMS 4558 III NW-SERIES V834



the LANE GROUP

engineering
architecture
environmental

316 EAST FIFTH STREET SOUTH | BIG STONE GAP, VA. 24219
Phone: 276.523.3771 | www.thelanegroupinc.com
ABINGDON | BIG STONE GAP | GALAX

TOWN OF CLINTWOOD
HOLLY CREEK DRAINAGE AREA
CLINTWOOD, VIRGINIA

Drawn By: PBM
Checked By: JTC
Date: 03/29/2022

PAGE
DA.1

APPENDIX II: FLOOD PRONE AREAS WITH PHOTOS


WEDNESDAY

June 16, 2004
Volume 22, Number 24

75 cents

The Dickenson Star

The Cumberland Times

Clintwood,
Virginia

USPS 684-35

Voice
Virginia's Bab

TIMOTHY REDDON
900 W MAIN ST
CLINTWOOD VA 24228-2129

Photos by Paula Davis

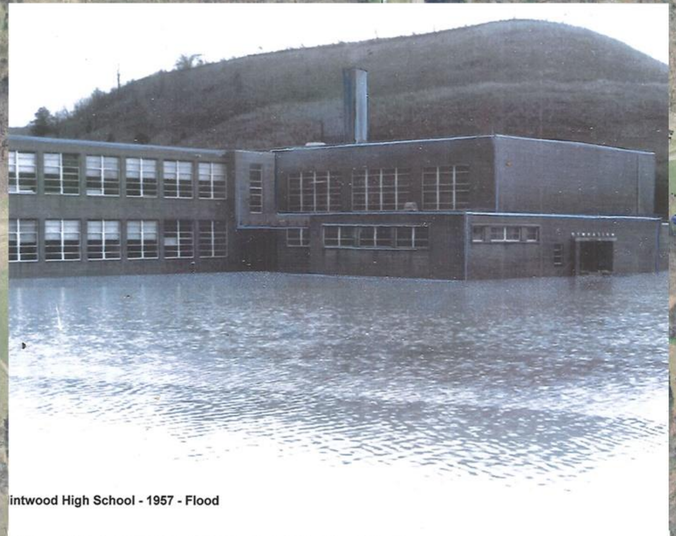
Some streets in Clintwood were flooded Saturday afternoon, including Chase Street above, after drain systems and ditches were unable to accommodate the heavy rain that fell during a severe thunderstorm.

Saturday storm causes flash

'It hit so hard, and in such a short amount of time, that the drains and creeks just couldn't accommodate it.'

June
2004

#1 - BANK ON CHASE STREET (2004)



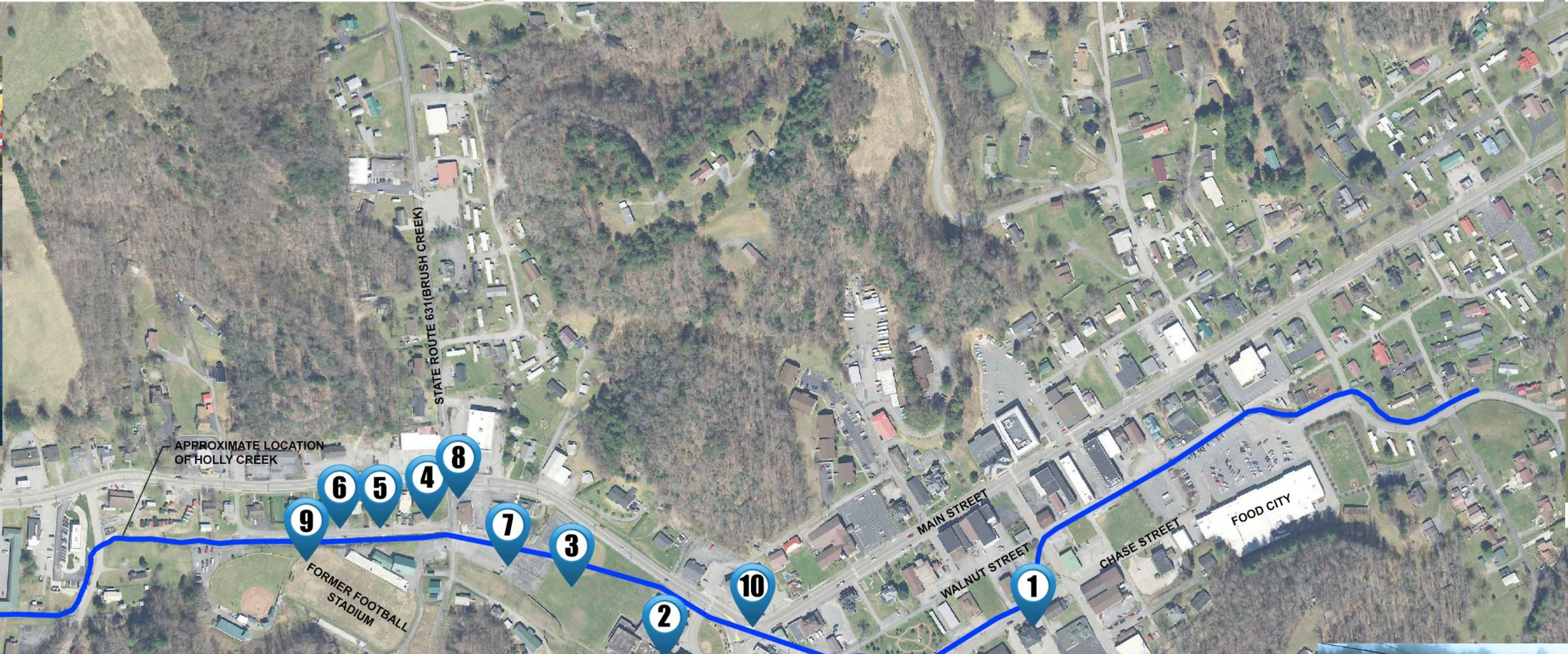
#2 - CLINTWOOD HIGH SCHOOL (1957)

#4 - WAVE DRIVE (2001)

#5 - WAVE DRIVE (2009)

#6 - WAVE DRIVE (2009)

#10 - INTERSECTION OF MAIN ST./STATE ROUTE 83 (2013)



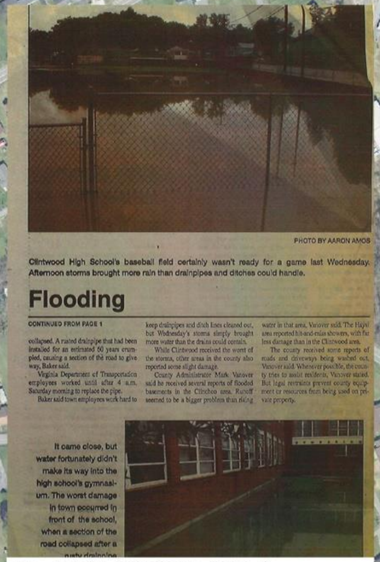


PHOTO BY AARON AMOS

Clintwood High School's baseball field certainly wasn't ready for a game last Wednesday. Afternoon storms brought more rain than drainpipes and ditches could handle.

Flooding

CONTINUED FROM PAGE 1

collapsed. A rusted drainpipe that had been installed for an estimated 60 years crumpled, causing a section of the road to give way, Baker said.

Virginia Department of Transportation employees worked until after 4 a.m. Saturday morning to replace the pipe.

Baker said town employees work hard to keep drainpipes and ditch lines cleaned out, but Wednesday's storms simply brought more water than the drains could contain.

While Clintwood received the worst of the storms, other areas in the county also reported some slight damage.

County Administrator Mark Vanover said he received several reports of flooded basements in the Clinchco area. Runoff seemed to be a bigger problem than rising water in that area, Vanover said. The Haysi area reported hit-and-miss showers, with far less damage than in the Clintwood area.

The county received some reports of roads and driveways being washed out, Vanover said. Whenever possible, the county tries to assist residents, Vanover stated. But legal restraints prevent county equipment or resources from being used on private property.

It came close, but water fortunately didn't make its way into the high school's gymnasium. The worst damage in town occurred in front of the school, when a section of the road collapsed after a

#3 - HIGH SCHOOL (2004)

#7 - BASEBALL FIELD LOOKING TO WAVE DRIVE (2011)


June 12, 2004

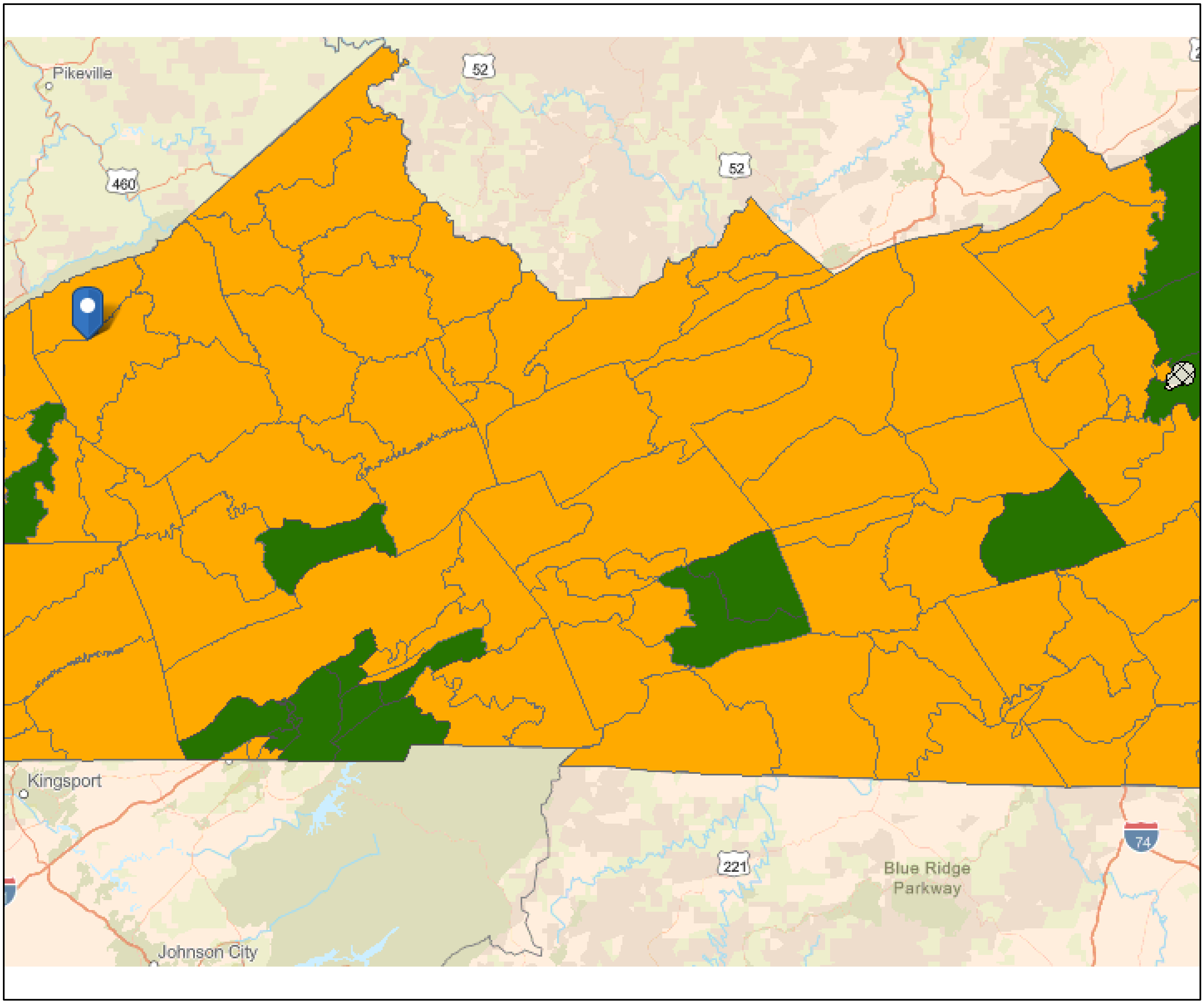
June 12, 2004
flood-Green Wave Drive
Clintwood, VA

#8 - RALPH CUMMINS AVENUE (2004)

#9 - WAVE DRIVE (YEAR UNKNOWN)

APPENDIX III: VULNERABILITY INDEX, MHI & DISTRESSED COMMUNITIES DOCUMENTATION

Clintwood-VA Vulnerability Index 22Mar25



March 25, 2022

Social Vulnerability Classification

🟥 High Social Vulnerability

🟧 Moderate Social Vulnerability

🟩 Not Socially Vulnerable

▨ Not included in the analysis

Social Vulnerability Index Score

🟨 Very Low Social Vulnerability

🟧 Low Social Vulnerability

🟧 Moderate Social Vulnerability

🟫 High Social Vulnerability

🟥 Very High Social Vulnerability

▨ Not inlcuded in the analysis

1:1,155,581

0 5 10 20 mi

0 5 10 20 km

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPT VA

INCOME IN THE PAST 12 MONTHS (IN 2020 INFLATION-ADJUSTED DOLLARS)

Note: This is a modified view of the original table produced by the U.S. Census Bureau. This download or printed version may have missing information from the original table.

	Clintwood town, Virginia
	Households
Label	Estimate
Total	603
Less than $10,000	12.6%
$10,000 to $14,999	5.1%
$15,000 to $24,999	20.7%
$25,000 to $34,999	9.3%
$35,000 to $49,999	24.9%
$50,000 to $74,999	16.7%
$75,000 to $99,999	1.7%
$100,000 to $149,999	2.5%
$150,000 to $199,999	3.8%
$200,000 or more	2.7%
Median income (dollars)	35,450
Mean income (dollars)	45,920
PERCENT ALLOCATED	

INCOME IN THE PAST 12 MONTHS (IN 2020 INFLATION-ADJUSTED DOLLARS)

United States Census Bureau

Note: This is a modified view of the original table produced by the U.S. Census Bureau. This download or printed version may have missing information from the original table.

	Dickenson County, Virginia
	Households
Label	**Estimate**
Total	5,727
Less than $10,000	13.8%
$10,000 to $14,999	11.5%
$15,000 to $24,999	18.6%
$25,000 to $34,999	11.4%
$35,000 to $49,999	13.7%
$50,000 to $74,999	11.9%
$75,000 to $99,999	9.2%
$100,000 to $149,999	7.1%
$150,000 to $199,999	1.3%
$200,000 or more	1.4%
Median income (dollars)	30,116
Mean income (dollars)	54,966
PERCENT ALLOCATED	

County Economic Status and Number of Distressed Areas in Appalachian Virginia, Fiscal Year 2022

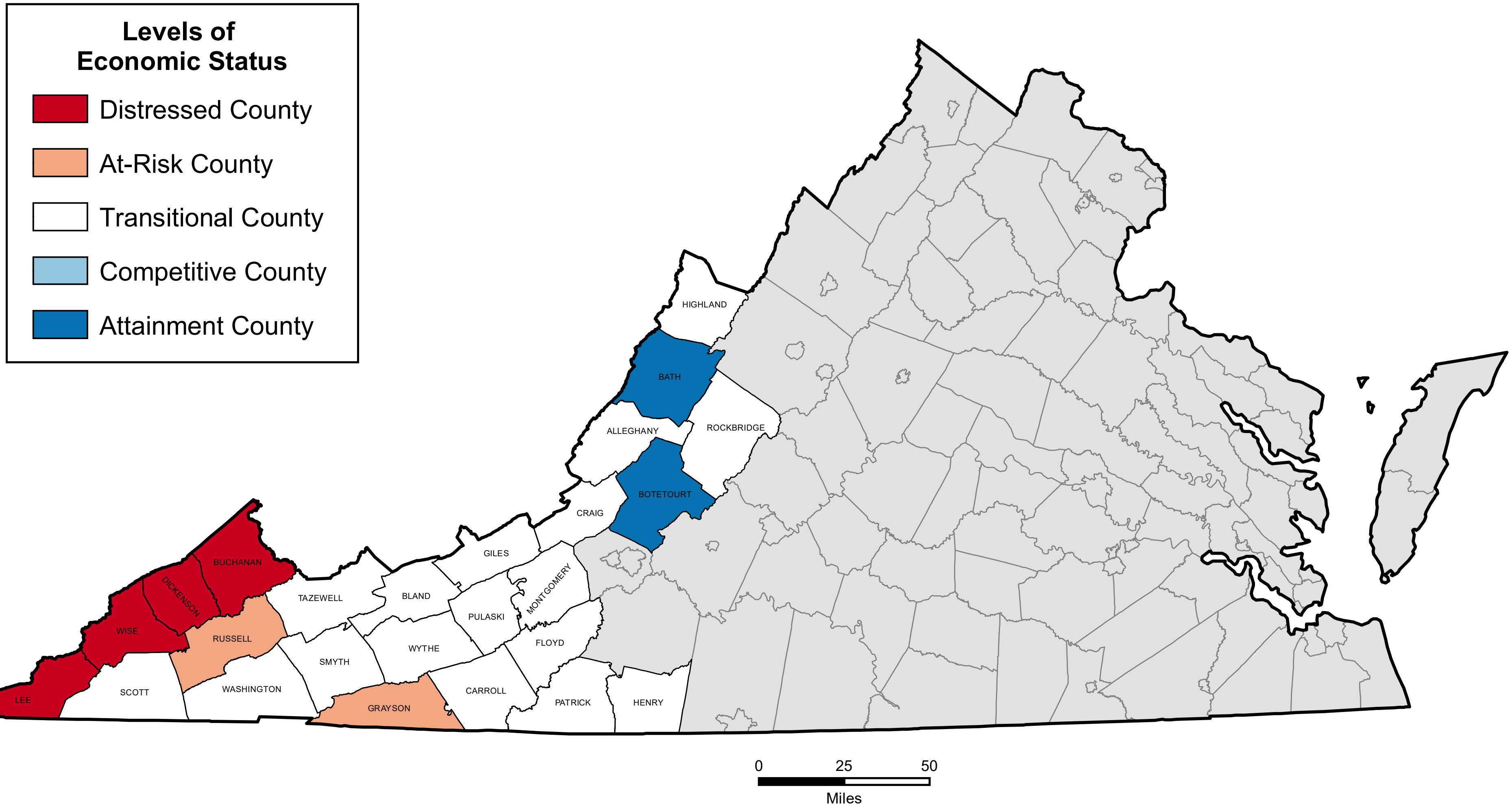
*Counties in **Bold** Contain Distressed Areas*

County	*Economic Status*	*Number of Distressed Areas*
Alleghany (+ Covington city)	**Transitional**	**2**
Bath	Attainment	
Bland	Transitional	
Botetourt	Attainment	
Buchanan	Distressed	
Carroll (+ Galax city)	**Transitional**	**2**
Craig	Transitional	
Dickenson	Distressed	
Floyd	Transitional	
Giles	Transitional	
Grayson	**At-Risk**	**2**
Henry (+ Martinsville city)	**Transitional**	**8**
Highland	Transitional	
Lee	Distressed	
Montgomery (+ Radford city)	Transitional	
Patrick	Transitional	
Pulaski	Transitional	
Rockbridge (+ Buena Vista city + Lexington city)	**Transitional**	**1**
Russell	**At-Risk**	**4**
Scott	Transitional	
Smyth	**Transitional**	**2**
Tazewell	**Transitional**	**3**
Washington (+ Bristol city)	**Transitional**	**3**
Wise (+ Norton city)	Distressed	
Wythe	Transitional	

Distressed Areas in Appalachian Virginia, Fiscal Year 2022

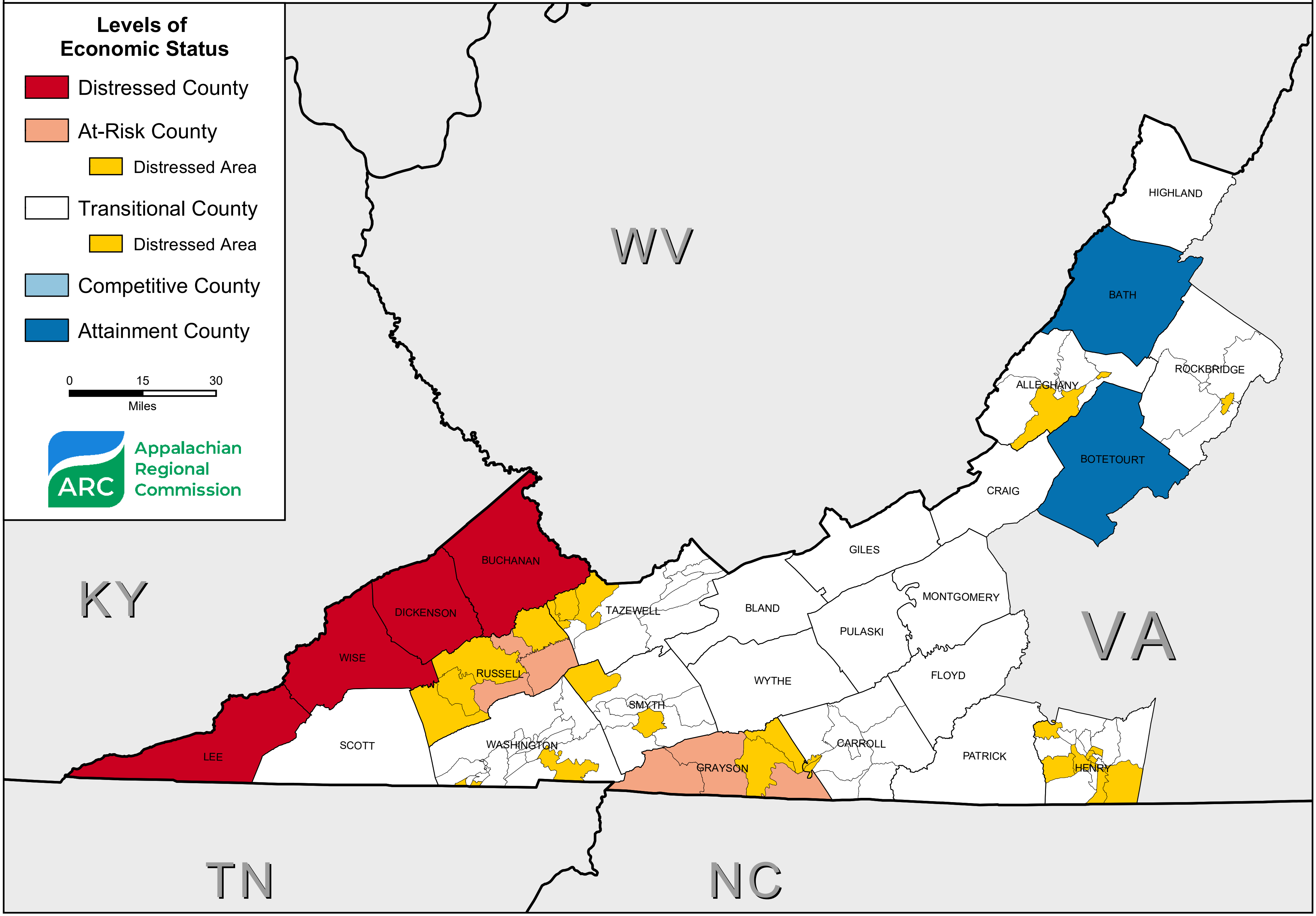
County	*Census Tract ID Number*
Alleghany (+ Covington city)	701
Alleghany (+ Covington city)	802.02
Carroll (+ Galax city)	701.01
Carroll (+ Galax city)	701.02
Grayson	601.01
Grayson	602.01
Henry (+ Martinsville city)	105
Henry (+ Martinsville city)	106.02
Henry (+ Martinsville city)	108
Henry (+ Martinsville city)	109
Henry (+ Martinsville city)	112
Henry (+ Martinsville city)	1
Henry (+ Martinsville city)	2
Henry (+ Martinsville city)	4
Rockbridge (+ Buena Vista city + Lexington city)	9306
Russell	301
Russell	302
Russell	303
Russell	306
Smyth	302
Smyth	306
Tazewell	204
Tazewell	205
Tazewell	209
Washington (+ Bristol city)	109
Washington (+ Bristol city)	201
Washington (+ Bristol city)	203

County Economic Status in Appalachian Virginia, Fiscal Year 2022



Appalachian
Regional
Commission

County Economic Status and Distressed Areas in Appalachian Virginia, Fiscal Year 2022



APPENDIX IV: SCOPE OF WORK NARRATIVE

Appendix IV – Scope of Work Narrative
Planning & Capacity Building

Capacity Building – Resiliency Plan

The Town of Clintwood is located in the western part of Dickenson County, with a population of 1,438 (Dickenson County – 14,318). It is the County seat and the largest of the three (3) towns in Dickenson County. Access if provided via US Route 23 and US Route 83; refer to Appendix I – Vicinity & Drainage Area Maps. US Route 83 is the only cross-county thoroughfare providing access to the more rural areas of the County, the Town of Haysi, and Buchanan County, the location of jobs for many who live in Dickenson County.

The Town does not participate in the National Flood Insurance Program (NFIP). However, the Virginia Department of Conservation and Recreation (VDCR) has assigned it CID #510051-DCR1. Clintwood does not have a Resiliency Plan (Plan) at this time. Dickenson County has submitted its Resiliency Plan to VDCR and is awaiting approval. Clintwood will use the County Plan as a basis for developing its own. Chris Rakes, County Building Inspector, will serve as the Locally Certified Floodplain Manager for the Town's Plan. A copy of his certification is provided in Appendix X – Certified Floodplain Manager.

Holly Creek is the only conveyance through Town. Due to the small drainage area of the creek (refer to Appendix I – Vicinity & Drainage Area Maps and Appendix V – Budget Narrative) and localized impact, the Town Plan will be less formalized than that of a larger community with numerous streams and rivers. The Town will provide the financial, technical assistance, and maintenance of the conveyance systems with current staff and equipment, as it has in the past. Additional training, staff, and other resources are not envisioned. Should additional, funding beyond the CFPF, be necessary, the Town will work with other state and federal agencies who fund similar projects with grant funds, as it is not in a position to incur additional debt for non-revenue generating projects.

The Resiliency Plan will further identify and provide planning and support, to mitigate the risks of Holly Creek's local flooding impacts. Public Meetings will be held to educate local stakeholders and solicit input prior to submission to VDCR. Services will generally consist of:

- Conduct a kick-off meeting with Town and County officials to review the County Plan and determine which elements are applicable to the Town; establish goals, objectives, roles, and responsibilities; and establish a timeline for completion.
- Compile available plans, reports, and other documents germane to generating the Plan.
- Develop a draft Plan for review by Town Council and input from Dickenson County.
- Conduct a Public Meeting soliciting input from local stakeholders.
- Submit the Plan to VDCR for review and approval.

The Town has solicited and procured professional engineering services of The Lane Group, Inc. (Lane) via a Master Services Agreement (Task Order-based) in compliance with the Virginia Procurement Act. Lane, in conjunction with Mr. Rakes, will provide expert consulting and advise relative to generating the Plan. Preparation of the Plan will also allow the Town to generate a Preliminary Engineering Report (PER) as a part of its Planning effort to remedy the localize flooding the Town is experiencing.

Planning – Preliminary Engineering Report

The PER will model and analyze the hydrology and hydraulics (H&H) of the existing drainage system to existing determine conveyance capacity. The H&H model will then be adjusted, sizing culverts and stream channels, to convey the 25-year event, the VDOT standard event for Minor Rural Arterial and Major Rural Collector (US Route 83). An opinion of probable cost for the design and construction will be generated from preliminary design plans for the improved drainage system. In addition to the technical aspects of the services, the PER will also address environmental concerns and compliance with the National Environmental Policy Act (NEPA); basis of design; permitting and construction issues; and other project elements necessary to fully analyze the project, its costs, and its impact to the community. The PER will be the basis of a future Project Application seeking CFPF funds. Services will generally consist of:

- Compile available mapping and conduct a field reconnaissance.
- Conduct field survey relative to conveyance system structure sizes and flow line elevations.
- Generate a hydrologic and hydraulic model of the system and proposed systems, sizing culverts and stream channels, to convey the 25-year event, the VDOT standard event for Minor Rural Arterial and Major Rural Collector (US Route 83).
- Develop conceptual plans.
- Contact state and federal agencies relative to NEPA compliance and generate an Environmental Assessment.
- Contact state and federal agencies, and private utilities relative to permit compliance.
- Generate an opinion of probable cost.
- Publish the PER.
- Meet with Town Council to review the PER and secure approval.
- Submit and secure VDCR approval.

APPENDIX V: BUDGET NARRATIVE

Appendix V – Budget Narrative
Planning & Capacity Building

Project Information

Dickenson County is situated in the Cumberland Plateau Physiographic Province, comprised of sandstones, shales, and numerous surface and deep mine coal seams. This Province is characterized by deeply incised narrow valleys and steep, high ridges leading to rapid runoff and flooding peaks ("flash flooding"), with limited long-term inundation. The Town itself is located at the headwaters of Holly Creek. Holly Creek has a small drainage area of approximately 0.74 square miles where it enters to the west of the Town, increasing to 1.79 square miles to the east, where it exits, a possible reason it does not participate in the NFIP. Refer to Appendix I – Vicinity & Drainage Area Maps.

Flooding of downtown Clintwood has been problematic since the 1950's. With the advent of coal strip mining in the 1970's, the problem was further exacerbated. More recently, storms have been more intense and localized; climate change is suspected.

The recurrent and repetitive flooding problems is due to an inadequate stormwater drainage system conveying Holly Creek through the Town. As stormwater flows through Town, there are a number of constrictions where the downstream culverts are actually smaller than those upstream. The restricted flow creates backwater that floods the downtown, sometimes closing US Route 83. When the backwater exceeds the available storage capacity of the upstream areas, additional overflow flooding occurs in other areas. This has resulted in property damage and loss on a continuing basis. Residential and commercial areas are impacted. They include doctor's offices, pharmacies, banks, auto dealerships, restaurants, and other businesses along the path. The creation of new in-town businesses is further hampered due to flooding concerns.

The purpose of this Application is to generate a Resiliency Plan for the Town and PER, analyzing the storm drainage system, generating a preliminary design for the mitigation improvements, and projecting design and construction costs for a future CFPF Project Application.

Funding

Per Adapt Virginia, the Social Vulnerability Index is "Moderate." The Median Household Income (MHI) for the Town of Clintwood and Dickenson County is $45,920 and $30,116, respectively. The MHI for the Commonwealth is $76,398. As such, the Town and County are 60% and 39% of the state MHI, respectively, well below the 80% threshold used to determine a low-income geographic area. In addition, the Appalachian Regional Commission lists Dickenson County and the Town of Clintwood as "Distressed." Refer to Appendix III – Vulnerability Index, MHI & Distressed Communities for the documentation.

Based on the foregoing, the Town of Clintwood qualifies for 90% CFPF grant funding with a 10% local match. Refer to Appendix VI – Matching Funds Resolution & County Support Letter whereby the Town will commit funds to meet the 10% match.

Budget & Schedule

The following provides the costs, Town of Clintwood matching funds requirement, and the CPFP funds requested from VDCR.

Task	Total Cost	Town Match	CPFP Funding	Schedule
Resiliency Plan	$ 18,500	$ 1,850	$ 16,650	6 months
Preliminary Engineering Report	$ 38,500	$ 3,850	$ 34,650	6 months
Total	**$ 57,000**	**$ 5,700**	**$ 51,300**	**6 months**

APPENDIX VI: MATCHING FUNDS RESOLUTION & COUNTY SUPPORT LETTER

This Instrument Prepared By:
Greg Baker Attorneys at Law, PLLC
P.O. Box 338
Clintwood, Virginia 24228

RESOLUTION

This Resolution is made effective as of this 5 day of April, 2022, by the Clintwood Town Council the governing body of the Town of Clintwood, hereinafter referred to as the "**Town**".

RECITALS

WHEREAS, the Town desires to apply to the Virginia Department of Conservation and Recreation for a Virginia Community Flood Preparedness Fund grant;

WHEREAS, the Virginia Community Flood Preparedness Fund grant application requires a grant matching requirement of 10% from the Town;

WHEREAS, the Town desires to resolve the following:

RESOLUTION

NOW THEREFORE, be resolved that the Clintwood Town Council the governing body of the Town of Clintwood hereby agrees to apply for a Virginia Community Flood Preparedness Fund grant and further agrees it has identified and will make available the 10% matching funds, with authorization pending Virginia Department of Conservation and Recreation approval of the Virginia Community Flood Preparedness Fund grant funds to the Town.

IT SHALL BE FURTHER RESOLVED that the Clintwood Town Council authorizes the Mayor of the Town, Danny Lambert to complete any documentation required or necessary to finalize the grant application.

THE TOWN OF CLINTWOOD, VIRGINIA, BY ITS DULY ELECTED TOWN COUNCIL, THE GOVERNING BODY OF THE TOWN OF CLINTWOOD HEREBY RECORDS ITS VOTE ON THE ABOVE RESOLUTION AS FOLLOWS:

Danny Lambert, Mayor: Non-Voting

Ronald Kendrick: Aye

Talbert Bolling: Aye

Doris Rife: Aye

James Childress: Aye

Shelly Mullins: Aye

ADOPTED THIS 5 **day of April, 2022.**

Danny Lambert, Mayor: Danny Lambert

Judy Steele: Judy Steele

ATTEST: TOWN CLERK

DICKENSON COUNTY BOARD OF SUPERVISORS

Board of Supervisors
PEGGY KISER, CHAIRWOMAN
Ervinton District

JOSH EVANS, VICE-CHAIRMAN
Willis District

RON PETERS
Sandlick District

RHONDA SLUSS
Clintwood District

SHELBIE WILLIS
Kenady District

County Administrator
LARRY BARTON

County Attorney
WILLIAM J. STURGILL

Of Counsel/Economic Development Advisor to the Board
CLARENCE E. "BUD" PHILLIPS

P.O. Box 1098, Clintwood, VA 24228
Telephone: (276) 926-1676
Fax: (276) 916-1649

818 Happy Valley Drive, Clintwood, VA

March 6, 2022

Mayor Danny Lambert
Town of Clintwood
248 Main Street
Clintwood, Virginia 24228

Re: Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Application

Dear Mayor Lambert:

The Dickenson County Board of Supervisors is fully supportive of the Town's submission to the Virginia Department of Conservation and Recreation (VDCR) Virginia Community Flood Preparedness Fund (CFPF) grant application. As some of the County offices are located in downtown Clintwood, we are well aware of the flooding problems the Town has faced over the past few decades. Preparation of a Resiliency Plan and Preliminary Engineering Report will allow the Town to address this issue and add to the safety of residents not only in the Town, but also in the County, where access to other towns and rural communities is affected when US Route 83 in the downtown is affected by high water and flooding.

The Town has recently submitted its Resiliency Plan to VDCR for approval. The use of our approved Plan may facilitate the Plan to be developed by the Town. The County is committed to working with the Town on this initiative.

Should you have additional questions or needs the County can address, please contact us at your earliest convenience.

Sincerely,

Larry Barton, County Administrator

Chris Rakes, County Building Official and Certified Floodplain Manager

APPENDIX VII: DICKENSON COUNTY FLOOD HAZARD MITIGATION PLAN

Cumberland Plateau Planning Commission

Hazard Mitigation Plan

August 20, 2013

DICKENSON COUNTY BOARD OF SUPERVISORS

Board of Supervisors

DAVID YATES, CHAIRMAN
ERVINTON DISTRICT

DELANO SYKES, VICE-CHAIRMAN
SANDLICK DISTRICT

DONNIE W. RIFE
CLINTWOOD DISTRICT

SHELBIE WILLIS
KENADY DISTRICT

GARY HALL
WILLIS DISTRICT

County Administrator
G. DAVID MOORE, JR.

P.O. Box 1098
Clintwood, Virginia 24228
Telephone: 276/926-1676
Fax: 276/926-1649
david.moore@bos.dcwin.org

RESOLUTION

WHEREAS, the Disaster Mitigation Act of 2000, as amended, required that local governments develop and adopt natural hazard mitigation plans in order to receive Hazard Mitigation Grant Program (HMGP) project grants and certain other forms of non-emergency disaster assistance; and

WHEREAS, a Mitigation Advisory Committee ("MAC") comprised of representatives from all jurisdictions within the Cumberland Plateau Planning District was convened in order to study Dickenson County's risks from and vulnerabilities to natural hazards, and to make recommendations on mitigating the effects of such hazards on Dickenson County; and

WHEREAS, the efforts of the MAC members in consultation with members of the public, private and non-profit sectors, have resulted in the development of a Hazard Mitigation Plan Update for the Cumberland Plateau Planning District communities including Dickenson County.

NOW THEREFORE, BE IT RESOLVED by the Dickenson County Board of Supervisors that the Cumberland Plateau Planning District Commission Hazard Mitigation Plan dated August 20, 2013 is hereby approved and adopted for Dickenson County. A copy of the plan is attached to this resolution by reference.

ADOPTED this 20th day of August, 2013.

David C. Yates
David Yates, Chairman

ATTEST:
Teresa Lyall
Teresa Lyall, Clerk

A Region Connected

Cumberland Plateau Planning District

July 30, 2013

Dickenson County Board of Supervisors
David Moore, County Administrator
P.O. Box 1098
Clintwood, VA 24228

AUG - 1 2013

Dear Mr. Moore:

RE: Hazard Mitigation Plan Update Adoption

This is to inform you that the Cumberland Plateau Hazard Mitigation Update Plan has been approved by FEMA and can now be adopted by each of the localities in the Cumberland Plateau Planning District Commission area. Enclosed are all of the changes and updates to the original Hazard Mitigation Plan, pages should correspond to the original and can be removed and replaced where needed. Also enclosed is a Resolution that again must be adopted and approved by each locality in the Cumberland Plateau Planning District. This adoption must take place as soon as possible by each locality. The Update Plan must be adopted by September 20, 2013 and signed resolution mailed back to us in order for full and final approval from FEMA. If you have any questions please let me know. Thank you so much for your time and efforts during this process.

Sincerely,

M. Shane Farmer

M. Shane Farmer
Planner CPPDC

www.cppdc.org · www.cumberlandbroadband.com

P. O. Box 548 · Phone (276) 889-1778 · Fax (276) 889-5732 · Lebanon, Virginia 24266

Serving Buchanan, Dickenson, Russell, and Tazewell Counties

Cumberland Plateau Planning District Commission

Hazard Mitigation Plan Update

May, 2013

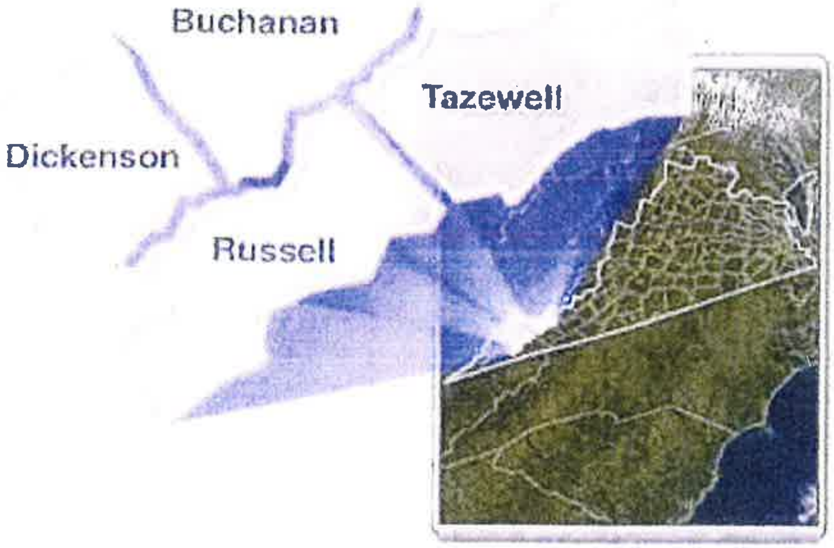


Table I-1 summarizes the results of this analysis, which is explained more fully in Section V of this plan.

Table I-1 — Hazard Identification Results

Hazard Type	Hazard Level
Flooding	High
Severe Winter Storms	Medium-High
Wildfire	Medium-High
Landslides	Medium-High
Severe Thunderstorms/Hail Storms	Medium
Severe Wind	Medium-High
Earthquake	Medium
Dam/Levee Failure	Medium
Drought	Medium
Tornado	Low
Extreme Heat	Low
Karst	Low

The Mitigation Strategy

During the presentation of findings for the Hazard Identification and Risk Assessment workshop, the Mitigation Advisory Committee (MAC) was asked to provide comments and suggestions on actions and policies, which could lessen the area's vulnerability to the identified hazards. The MAC supported the following preliminary comments below:

- Top priorities for the area were public safety, public education, and reduction of potential economic impacts of disasters.
- Alternatives should consider the impacts on the Cumberland Plateau Planning District as a whole.
- Alternatives must not conflict with other local government programs.
- Outreach and other efforts should be attempted to repetitive loss properties, including those designated by FEMA.
- Past experiences from disasters should be built upon.
- The success of past mitigation projects should be considered in developing alternatives.

The following overarching goal and six specific goals were developed by the MAC to guide the area's future hazard mitigation activities.

OVERARCHING COMMUNITY GOAL:

"To develop and maintain disaster resistant communities that are less vulnerable to the economic and physical devastation associated with natural hazard events."

SECTION III. PLANNING PROCESS

In 2003, the counties of Buchanan, Dickenson, Russell and Tazewell, Virginia, as members of the Cumberland Plateau Planning District, (referred to hereinafter as the Planning District) collaborated with the Virginia Department of Emergency Management to undertake a multi-jurisdictional natural hazards planning initiative. To facilitate the planning process, a Mitigation Advisory Committee (MAC) was established to 1) provide leadership and guidance for the planning initiative, and 2) develop a beginning set of goals to guide the development of a natural hazards mitigation plan. Currently this document is an update to that original plan with the addition of hazards that have effected the Planning District from 2005-partial 2011.

These goals were based on the principles of hazard awareness and disaster prevention. These goals included:

- Ensure that the Planning District has sustainable communities and businesses resistant to the human and economic costs of disasters;
- Maintain and enhance the economic stability, public health, and safety to the communities of the area;
- Ensure that the Planning District's cultural richness and environmental quality are not jeopardized by the occurrence of a disaster; and
- Recognize the potential impact of natural or manmade hazards on public and private buildings and facilities, and the utility and transportation systems that serve them.

Beginning in March 2011, the MAC held regular meetings and commenced work to identify and update the area's natural hazards. They coordinated and consulted with other entities and stakeholders to identify and delineate natural and manmade hazards within the four local jurisdictions and to assess the risks and vulnerability of public and private buildings, facilities, utilities, communications, transportation systems, and other vulnerable infrastructure. New FEMA Digital Flood Insurance Rate Maps were incorporated into the plan update. Neighboring counties adjacent to the planning district were contacted by the MAC as the planning process began. However, no response was received.

In addition, the MAC initially contacted all incorporated towns within the Planning District to solicit interest and input concerning participation in the development of a multi-jurisdiction hazard mitigation plan. Representatives from the towns participated in committee meetings throughout the process to again solicit their input for the inclusion of mitigation actions from each community into the mitigation strategy portion of the plan and to request adoption of the plan upon completion, as well. The communities' responses are incorporated into the final plan. Table III-1 provides more information on the individual MAC meetings.

Table III-1 — Mitigation Planning Workgroup Meetings

CUMBERLAND PLATEAU PLANNING DISTRICT
COMMISSION Steering Committee Participation

Meeting Dates	Meeting Purpose
4/20/11	Kick-off Meeting
7/11/2011	HMA Meeting
5/2012	Presentation of HIRA Findings
7/2012	Mitigation Strategy Development Meeting
8/2012	Second Mitigation Strategy Development Meeting
11/2012	Public Meeting

In September 2010, Cumberland Plateau Planning District Commission (Planning District) to update the multi-hazard mitigation plan including a Hazard Identification and Risk Assessment (HIRA) and mitigation strategies. The Planning District worked with the stakeholders throughout the Planning District localities updating the past Hazard Mitigation plan to ensure that potential stakeholders participated in the process and would have opportunities for input in the draft and final phases of the plan update.

The Mitigation Advisory Committee and Mitigation Management Team

A Mitigation Advisory Committee (MAC) and Mitigation Management Team (MMT) comprised of public representatives, private citizens, businesses, and organizations worked with the Planning District and provided input on each section of the plan, including hazards addressed, mitigation actions, and prioritization. Efforts to involve county departments and community organizations that might have a role in the implementation of the mitigation actions or policies included invitations to attend meetings and serve on the MAC, e-mails of minutes and updates, strategy development workshops, and outreach through local government meetings and public libraries, plus opportunities for input and comment on all draft deliverables.

The Planning District would like to thank and acknowledge the following persons who served on the MAC, MMT and their representative departments and organizations throughout the plan update process:

Table III-2 — Cumberland Plateau Planning District Commission Mitigation Advisory Committee Members	
Robert Craig Horn	Buchanan County Board of Supervisors, Administrator
Dave Moore	Dickenson County Board of Supervisors, Administrator
Rufus Hood	Russell County Board of Supervisors, Administrator
Jim Spencer	Tazewell County Board of Supervisors, Administrator
Tim Potter	Town of Grundy IDA, Director
James McGlothlin	Town of Cedar Bluff, Town Manager
Tim Taylor	Town of Richlands, Town Manager
Dr. Sue Cantrell	Cumberland Plateau Health District, Director
Keith Viers	Cumberland Plateau Regional Housing Authority, Director
Darrell Cantrell	Buchanan County PSA, Director
Ron Phillips	Dickenson County PSA, Director
Jerry Woods	Russell County PSA, Chairman
Dahmon Ball	Tazewell County PSA, Director
Andy Jones	Russell County Medical Center
Conrad Hill	VDOT
Steve Dye	Russell County Sheriff's Department
Richard Thacker	Dickenson County Emergency Services
Dr. Mark Estep	Southwest Virginia Community College
Todd Burns	AEP
Patty Tauscher	American Red Cross
Jess Powers	Russell County, Emergency & Hazardous Material Coordinator
Matt Slemp	Dickenson County, 911 Coordinator
Dave White	Tazewell County, Emergency & Hazardous Material Coordinator
Ricky Bailey	Buchanan County, 911 Coordinator
Mike Watson	Town of Bluefield, Manager
Harry Ferguson	Russell County Assessor
Barbara Fuller	Southwest Virginia CC
David White	Tazewell County Emergency Services
Rick Chitwood	T & L
Henry Stinson	Russell County Highway & Safety Commission
Jess Powers	Russell County Emergency & Hazardous Material Coordinator
James Baker	T & L
Matt Anderson	Tazewell County, Planner/Engineer
Shane Farmer	Cumberland Plateau PDC

Cumberland Plateau Planning District Commission
Hazard Mitigation Plan Update

Table III-2 — Cumberland Plateau Planning District Commission Mitigation Advisory Committee Members

Doug Rose	Dickenson County Schools
Jerry Ward	Buchanan County Asst. Emergency Coordinator
Darrell Johnson	Castlewood Water & Sewage Authority
James R. Sutherland	Town of Clinchco, Mayor
C. H. Wallace	Town of Honaker, Mayor
Mike Duty	Town of Lebanon, Town Manager
Larry Yates	Town of Haysi, Mayor
David Sutherland	Town of Cleveland, Mayor
Johnathan Gibson	Town of Pocahontas, Mayor
Todd Day	Town of Tazewell, Town Manager
Mickey Rhea	Russell County Building Official
Roger Sword	Russell County Planning Commission
Toby Edwards	Cumberland Plateau Regional Waste Authority, Director
Dr. Brenda Lawson	Tazewell County Schools
Gary Jackson	Tazewell County Building Official
Dr. Brenda Hess	Russell County Schools, Superintendent
Tom Childress	Tazewell County Planning Commission, Chairman
Brian Hieatt	Tazewell County Sheriff's Department
Ray Foster	Buchanan County Sheriff's Department
Don Layne	Buchanan County Planning Commission, Chairman
Larry Ashby	Buchanan County Schools, Superintendent
Carl Turner	Dickenson County Building Official
Allen Compton	Dickenson County Planning Commission, Chairman
Bob Hammons	Dickenson County Sheriff's Department
David Darden	Clinch Valley Medical Center, CEO
Joan Jamison	Buchanan General Hospital, CEO
Angela Beavers	Cumberland Plateau PDC
Donald Baker	Town of Clintwood, Mayor

Cumberland Plateau Planning District Commission
Hazard Mitigation Plan Update

Table III-3 — Cumberland Plateau Planning District Commission Hazardous Mitigation Management Team

Richard Thacker	Dickenson County Emergency Services
Bo Bise	Russell County, 911 Coordinator
Matt Slemp	Dickenson County, 911 Coordinator
Derrick Ruble	Tazewell County, 911 Coordinator
Ricky Bailey	Buchanan County, 911 Coordinator
David White	Tazewell County Emergency Services
Jess Powers	Russell County Emergency & Hazardous Material Coordinator
Shane Farmer	Cumberland Plateau PDC
Jerry Ward	Buchanan County Asst. Emergency Coordinator
Angela Beavers	Cumberland Plateau PDC

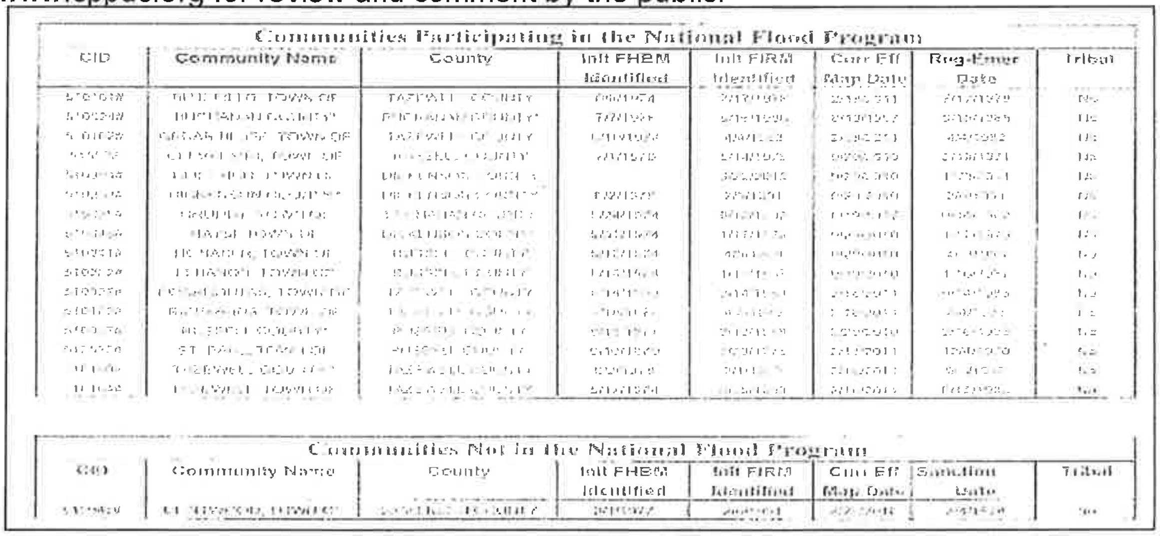
Public Participation and Citizen Input

Several opportunities were provided to the public for input and participation throughout the planning process. Drafts of the Hazard Identification and Risk Assessment and Mitigation Strategies were made available via the project team website. The planning process was discussed on a regular basis at the Cumberland Plateau Planning District Commission board meetings, which includes representation of all counties and towns in the planning district. Additionally, the plan was discussed at Board of Supervisor meetings in the participating counties.

Other PDC's such as Mt. Rogers and Lenowisco were contacted and sought out for advice as they were working on updating the Hazard Mitigation plans for their localities.

In October, a copy of the Draft Hazard Mitigation Plan was made available in the County Administrators office in Buchanan, Dickenson, Russell, and Tazewell counties, and each of the town halls. Copies of the announcements notifying the public of the availability of the draft plan for review is included in Appendix D.

In addition, an open public meeting was held in November 2012 at 11:00 a.m. at the Southwest Virginia Community College in Richlands to provide an overview to the public of the planning process and the results of the hazard identification and mitigation strategy. The meeting date was advertized in the local papers. Also, draft copies of the complete plan are also available on the Cumberland Plateau PDC website at www.cppdc.org for review and comment by the public.



Communities Participating in the National Flood Program

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal

Communities Not in the National Flood Program

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Sanction Date	Tribal

Adoption

Participating jurisdictions must formally adopt the hazard mitigation plan in order for it to be approved by the State of Virginia and the Federal Emergency Management Agency. This plan was adopted by the Counties of Buchanan, Dickenson, Russell and Tazewell and the towns of Grundy, Clinchco, Haysi, Cleveland, Honaker, Lebanon, Bluefield, Cedar Bluff, Pocahontas, Richlands and Tazewell. The town of Clintwood did not participate in the flood program. Copies of the adoption language for each community is included in Appendix E.

Appendix A: Hazard Identification Worksheet

Hazard Type	Probability	Impacts			Total Score	Hazard Level
		Affected Area	Primary Impact	Secondary Impacts		
SEVERE WINTER STORM	6	3.2	1.4	1.5	37	Medium-High
DROUGHT	4	3.2	0.7	1	20	Medium
EARTHQUAKE	4	3.2	1.4	1	22	Medium
WILDFIRE	8	2.4	2.1	0.5	40	Medium-High
FLOOD	8	2.4	2.1	2	52	High
EXTREME HEAT	2	3.2	0.7	0.5	9	Low
LANDSLIDES	8	1.6	2.1	1	38	Medium-High
SEVERE THNDERSTORM / HAIL STORM	8	1.6	0.7	0.5	22	Medium
DAM/LEVEE FAILURE	2	1.6	2.8	2	13	Medium
TORNADO	2	1.6	2.1	1	9	Low
SEVERE WIND	6	3.2	1.4	1.5	37	Medium-High
KARST	2	0.8	0.7	0.5		Low

Total Score = Probability x Impact, where:
Probability = (Probability Score x Importance)
Impact = (Affected Area + Primary Impact + Secondary Impacts), where:
Affected Area = Affected Area Score x Importance Primary
Impact = Primary Impact Score x Importance Secondary
Impacts = Secondary Impacts Score x Importance

Hazard Level Total Score	(Range)	Hazard Level	Distribution
0.0	12.0	Low	2
12.1	28.0	Medium	4
28.1	48.0	Medium-High	3
48.1	64.0	High	1

The probability of each hazard is determined by assigning a level, from 1 to 4, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact and secondary impact levels of each hazard. These levels are then multiplied by an importance factor to obtain a score for each category. The probability score is multiplied by the sum of the three impact categories to determine the total score for the hazard. Based on this total score, the hazards will be separated into four categories based on the hazard level they pose to the planning area: high, medium-high, medium, low.

Probability Importance 2.0

Based on average annual frequency of occurrence estimated from historical data

Level	Average Annual Frequency	Score
1	Unlikely (less than 1 % occurrence)	2
2	Possible (between 1% and 10% occurrence)	4
3	Likely (between 10% and 100% occurrence)	6
4	Highly likely (near 100% occurrence)	8

Affected Area Importance 0.8

Based on size of geographical area of community affected by hazard

Level	Affected Area	Score
1	Isolated - limited to one building/facility	0.8
2	Small - limited to a handful of buildings/facilities	1.6
3	Medium - affecting a portion of an area	2.4
4	Large - affecting a widespread area	3.2

Primary Impact Importance 0.7

Based on percentage of damage to typical facility in community

Level	Impact	Score
1	Negligible - less than 10% damage	0.7
2	Limited - between 10% and 25% damage	1.4
3	Critical - between 25% and 50% damage	2.1
4	Catastrophic - more than 50% damage	2.8

Secondary Impacts Importance 0.5

Based on estimated secondary impacts to community at large

Level	Impact	Score
1	Negligible - no loss of function, downtime, and/or evacuatio	0.5
2	Limited - minimal loss of function, downtime, and/or evacua	1
3	Moderate - some loss of function, downtime, and/or evacua	1.5
4	High - major loss of function, downtime, and/or evacuations	2

NOTE:
Total Score values assume a margin of error of + 10 percent. 0.5

Section 2 - Hazard Identification

The FEMA guidelines emphasize using "available data" for this plan, especially for the Hazard Identification and Risk Assessment (HIRA). As mentioned earlier, this Appendix was developed by the Virginia Tech Center for Geospatial Information Technology, under a subcontract with Anderson and Associates of Blacksburg, Virginia. Besides the data provided by the Town of Bluefield, the following organizations all provided data used for this HIRA:Anderson and Associates, Inc.

- Bluefield Daily Telegraph
- Cumberland Plateau Planning District Commission (Virginia)
- Dewberry
- Federal Emergency Management Agency
- Marshall Miller and Associates
- Region I Planning and Development Council (West Virginia)
- Tazewell County, Virginia
- Tuck Engineering
- US Census Bureau
- US Geological Survey
- Virginia Department of Conservation and Recreation
- Virginia Department of Emergency Management
- Virginia Department of Transportation
- Virginia Geographic Information network
- Virginia Tech Center for Geospatial Information Technology
- Willis Engineering

Types of Hazards

While nearly all disasters are possible for any given area in the United States, the most likely hazards that could potentially affect the communities in the Cumberland Plateau Planning District generally include:

- Flooding
- Severe Winter Storms
- Wildfires
- Landslides
- Dam Failures
- Drought
- Earthquake
- Severe Wind
- Severe Thunderstorms
- Tornadoes
- Extreme Heat
- Karst

Types of Hazards

While nearly all disasters are possible for any given area in the United States, the most likely hazards (based on local official knowledge and professional judgment) that could potentially affect the communities in the Cumberland Plateau Planning District generally include:

- Dam Failures
- Drought
- Earthquake
- Flooding
- Landslides
- Karst Topography
- Severe Thunderstorms
- Severe Wind
- Severe Winter Storms
- Tornadoes
- Wildfires
- Extreme Heat

Depending on the severity, location, and timing of the specific events, each of these hazards could have devastating effects on homes, business, agricultural lands, infrastructure and ultimately citizens.

In order to gain a full understanding of the hazards, an extensive search of historic hazard data was completed. This data collection effort utilized meetings with local community officials, existing reports and studies, state and national data sets, and other sources. A comprehensive list of sources utilized for this plan can be found at the conclusion of this document.

Unfortunately, extensive local historical data is not currently available for many of the potential hazards. In some cases, the precise number of events that have affected the Planning District and the subsequent level of impact to the local communities are not known. In these cases, state and regional hazard information was collected and referenced whenever possible.

Probability of Hazards

The historical data collected includes accounts of all the hazard types listed above. However, some hazards have occurred much more frequently than others with a wide range of impacts. By analyzing the historical frequency of each hazard, along with the associated impacts, the hazards that pose the most significant risks to the Cumberland Plateau Planning District can be identified. This analysis will allow the local communities to focus the Mitigation Strategy of those hazards that are most likely to cause significant impacts.

Prioritizing the potential hazards that can threaten the Planning District will be based on two separate factors:

- the probability that a potential hazard will affect the community, and
- the potential impacts on the community in the event such a hazard occurs.

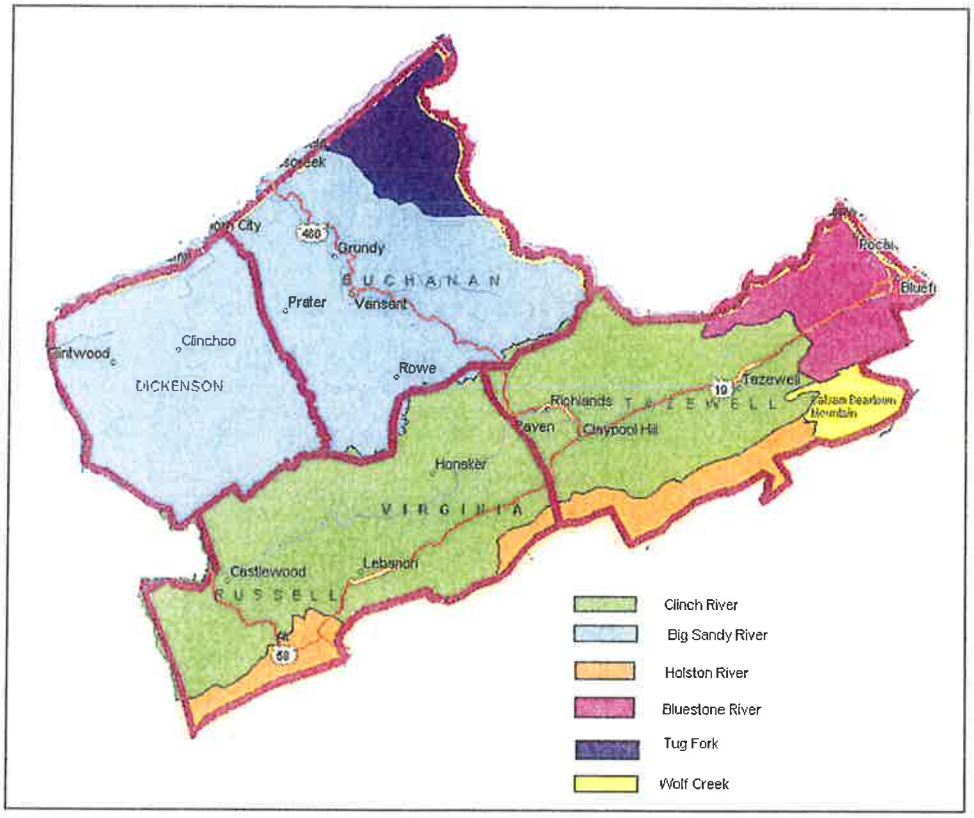


Figure V-1 — Cumberland Plateau Watersheds

Hazard History

The following sections include a description of the known flood history by major watershed. Because a majority of the flood history and flood data available for the area is organized by watershed (as opposed to by county), the discussion of flood characteristics for the CPPD also have been organized by watershed.

A list of repetitive loss properties in the Planning District are as follows in the chart below:

Community	Total # of Repetitive Loss Properties	# Residential	# Commercial
Bluefield	12	5	7
Buchanan County	6	5	1
Buchanan Town	6	2	4
Dickenson County	2		2
Tazewell County	15	13	2
Tazewell Town	2		8
Grundy Town	10	2	1
Richlands Town	11	10	1
Pocahontas Town	1		1
Haysi Town	1		1

Planning District varies from area to area. Specific building types will be discussed in the specific flood area descriptions below.

Structures at Risk

In order to assess the Planning District's potential vulnerability to flooding, specific data regarding structures located in the floodplain was collected as a part of this analysis. Structures potentially in the floodplain were identified by comparing the floodplain areas from the FEMA FIRMs with each County's existing building data. Specific data on these structures was collected during a 'windshield survey' and included the structures' occupancy type, building material type, number of stories, area, value per square foot, total value, and flooding source. Using the type, occupancy, and use of these structures, estimated building values were developed. For the purpose of this analysis, comparable buildings with the same uses, approximate age and general conditions were identified in the Planning District. Tax appraisal values for these buildings (minus land value) and R. S. Means Square Foot Costs were used to develop a square foot value for each building type, which was applied to the properties located in the flood plain to estimate a structure value. Typical per square foot costs for building construction were considered in analyzing the relative accuracy numbers developed for this analysis and some adjustments were made for certain properties in the field based on visual analysis (e.g., decreases in value for blighted or damaged buildings).

Data including the location of existing structures in all four counties located within the Planning District is available in a GIS format, however, detailed data regarding the structures is limited. A vast majority of the existing structures are classified as an unidentified building type. Additional data does vary from county to county but, in general, the location of existing hospitals, police stations, schools, fire stations, and government buildings are known. Therefore using the digital flood data described above, a count of the number of structures located within the floodplain was generated and total value at risk approximated.

From the data collected, a total of 6,045 structures were located in the floodplain, with an estimated total value of over $290 million dollars. This number is based on estimated values for each of the building types described above. Because the structure type for many of the structures is listed as unknown, the cost of the average residential structure was utilized.

Tables V-5 through V-8 include a summary of the number, value, and predominant use of the structures located in the floodplain of all FEMA recognized flood sources. A more detailed discussion of the vulnerability of each flood source follows these tables.

Table V-5: Structures at Risk by Flooding Source
Buchanan County

Flood Source	Number of Structures	Total Value
Big Sandy River	3,219	$150,964,600
Tug Fork	989	$55,051,000

Table V-6: Structures at Risk by Flooding Source

Flood Source	Number of Structures	Total Value
Big Sandy River	322	$12,979,400

Table V-7: Structures at Risk by Flooding Source
Russell County

Flood Source	Number of Structures	Total Value
Clinch River	691	$31,190,250

Table V-8: Structures at Risk by Flooding Source
Tazewell County

Flood Source	Number of Structures	Total Value
County-wide	824	$40,533,400

The vast majority of structures located in the floodplain of the Cumberland Plateau planning area are residential. The most common type of structure in the flood plain is single-family homes or mobile homes. Mobile homes tend to be more vulnerable than other residential types due to their poor structural stability and flood-prone construction materials as well as the reduced means these residents have to protect themselves from potential flood damage.

Critical Facilities

The impacts of floodwaters on critical facilities, such as police and fire stations, hospitals, and water or wastewater treatment facilities, can greatly increase the overall effect of a flood event on a community. Some of these facilities in the Planning District are located in areas with a high risk to flooding. As stated previously, the location of some of these types of structures are known throughout the Planning Area. Using this data, a list of these facilities located in the floodplain has been generated, and is included in Table V-9. It should be noted that these facilities have been determined to be in the floodplain using a planning level analysis, and should be used only as a planning tool. In order to accurately determine if a structure is actually located in the floodplain, site-specific information must be available.

Table V-9 — Known Critical Facilities in the Floodplain

Jurisdiction	Type	Facility
Buchanan County	Fire and Rescue	Knox Creek Volunteer Fire
	Fire and Rescue	Grundy Volunteer Fire
	Fire and Rescue	Quality Care Ambulance Service
	Fire and Rescue	Dismal River Volunteer Rescue
	Fire and Rescue	Council Volunteer Fire
	Government Building	Buchanan County Courthouse
	School	Hurley Combined School
	School	Vansant Elementary School
	Hospital	Buchanan General Hospital
Dickenson County	Fire and Rescue	McClure River Volunteer Fire
Russell County	Government Building	Lebanon Town Hall
	School	Cleveland Elementary School
	Treatment Plant	Central Shop STP
	Treatment Plant	Cleveland STP
	Treatment Plant	Honaker STP
Tazewell County	Police	Richlands Police
	School	Raven Elementary School
	Fire and Rescue	Rescue 9
	Fire and Rescue	Rescue 10

Special needs populations are those that require additional attention during a flood event, are not as able to protect themselves prior to an event, or are not able to understand potential risks. These can include non-English populations, elderly populations, or those in a lower socioeconomic group. Special needs populations in the Planning District area are primarily lower income and elderly individuals, living in a flood-prone area, without the resources to take actions to protect themselves.

Future Land Use Trends

Due to existing development and very steep topography outside of the river valleys, developable land in the Planning District is scarce. For that reason, one of the dominant development trends in the area is redevelopment. Older, lower value structures are being destroyed and replaced by newer construction with significantly higher dollar values. This is especially true with older mobile homes that are being replaced by new pre-fabricated modular homes. Many of these structures are located in the floodplain, where this redevelopment trend is increasing the value of structures at risk to damages due to flooding in the Planning District.

A complete list of events from 2005-2011 can be found at the end of this document.

Winter Storms

Severe winter storms and blizzards are extra-tropical cyclones that originate as mid-latitude depressions (FEMA, 1997). Snowstorms, blizzards, and ice storms are the most common examples. These storms can bring heavy snowfall, high winds, ice, and extreme cold with them. Historically, winter storms in southwestern Virginia have produced significant snowfall, sleet, and freezing rain.

Recent Snowstorm History

Between January 20 and 22, 1985, an arctic cold front swept across the state, ushering in extreme cold and high winds. Wind chill temperatures plunged well below zero. Winds knocked out power compounding the effects of the cold. Pipes froze and burst. Fresh snowfall of 4 inches helped temperatures across the entire state fall below zero. New records were set at several locations in the state.

During the winter of 1993-1994, Virginia was struck by a series of ice storms. Although ice storms are not an uncommon event in the valleys and foothills of the Appalachian Mountains, and the region had been overdue for an ice storm, it was unprecedented to have several occur in succession.

The most significant winter storm to affect the Cumberland Plateau Planning District was the "Super Storm of March '93", also known as "The Storm of the Century". Occurring between March 12 and 15, 1993, this storm affected 26 states throughout the central and eastern portions of the United States. The storm resulted in a Federal disaster declaration. Throughout the region, the snowfall amounts ranged from 12 inches to over 48 inches depending on elevation. Extreme southwest Virginia saw 30 to 42 inches of snow from the storm (the most snow in more than 25 years). Some roofs collapsed under the weight of the snow. Winds produced blizzard conditions over portions of the west with snow drifts up to 12 feet. Interstates were shut down. Shelters were opened for nearly 4,000 stranded travelers, and those that left were without heat and electricity. Virginia called out its National Guard to help with emergency transports and critical snow removal.

During the February 10 and 11, 1994 ice storm, some areas of southern Virginia received a devastating 3 inches of ice, causing tremendous tree damage and power outages for up to a week. The "Blizzard of '96" or the "Great Furlough Storm" began late on Saturday, January 6. As much as 30 to 36 inches of snow fell over the western mountains.

On December 18, 2009 the area was hit by a heavy snowstorm that moved out of the eastern Gulf of Mexico. The heavy snow event was declared a state of emergency by Governor Kain. Multiple homes were damaged and electricity was out for many days. In some locations the snow was above 2 feet.

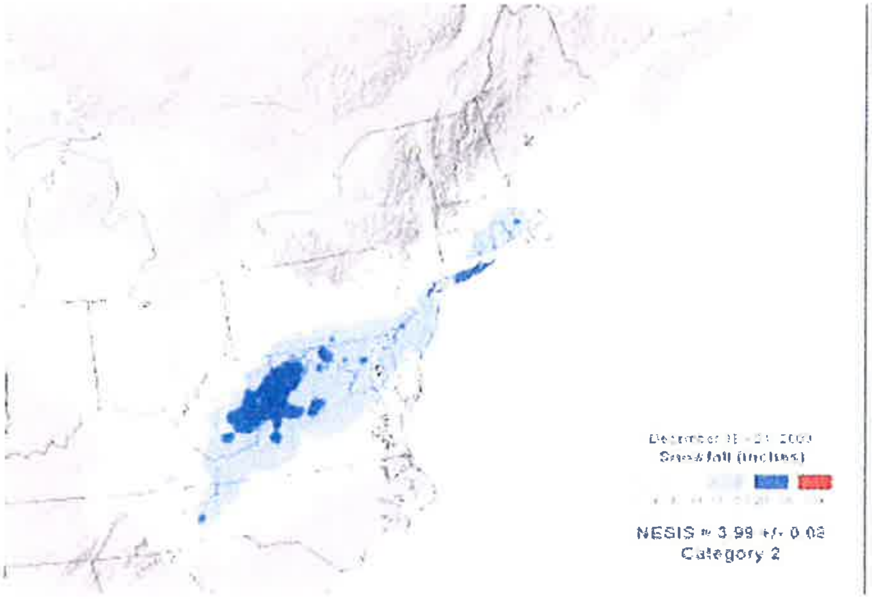


Figure V-6 — Snowfall Totals from 2009 Blizzard

Table V-10 includes ranges of snowfall for select historic events in Southwest Virginia. This table is not inclusive of all historic snowfall events.

Table V-10 — Historic Snow Fall Amounts

Date	Amount
February 12 -March 10, 1960	65 inches
December 10 - 12, 1960	4 - 13 inches
January 20 - 22, 1985	4 inches
March 13-14, 1993	30 - 42 inches
January 6-13, 1996	30 - 36 inches
January 27-28, 1998	12 - 24 inches
December 18-21 , 2009	10-20 inches

Hazard Profile

Although the Commonwealth of Virginia is not generally associated with severe winter storms, the mountainous area in the southwestern portion of the state regularly experiences several snow storms each year. These storms can produce between 4 and 12 inches of snow from each event. Total average annual snowfall within the Planning District varies from county to county. Buchanan County has an average annual snowfall of 23" per year, Dickenson County is 15" per year, Russell County 21" per year, and Tazewell County 40" per year as illustrated in Figure V-7. However, as Table V-10 illustrates, storms producing higher snowfall amounts are possible.

Utility infrastructure also can be adversely affected by winter storms. Heavy snow and ice can cause power lines to snap, leaving citizens without power and, in some cases, heat for hours or even days. Likewise, telephone lines can also snap, disabling communication within portions of a community. Frozen water pipes can rupture in people's homes, and water and sewer mains can also freeze and leak or rupture if not properly maintained. These ruptures can lead to flooding and property damage.

People's health can also be adversely affected by severe winter weather. People who lose heat in their homes and do not seek alternate shelter, people who get stuck in snowdrifts while driving, or people working and playing outdoors can suffer from hypothermia and frostbite. Since winter weather hazards generally affect the entire Planning District and vary in intensity and form, it is not possible to quantify primary effects or specific damages.

Secondary effects

Secondary effects of winter storms are broad. Treacherous driving conditions can result in automobile accidents in which passengers may be injured and property damages may occur. Deliveries of heating fuel can be delayed by impassible roads. Impassable roads also can result in schools being closed because buses are not able to access their routes and bring children to school. The costs of salting and sanding roads and of snow removal can be staggering to communities both large and small. The costs to repair roads after spring thaws also can be significant.

After a significant snowfall, the resulting thaw that occurs when the temperature rises above freezing can cause flooding in some areas. As noted in the flood portion of this document, January through March are the months with the highest occurrences of flooding. The rainy season coincides with snowfall and subsequent melting. Because of the mountainous terrain in this area, flood events tend to occur rapidly and with little warning.

The local economy can also suffer if businesses close due to inclement winter weather. The impact could be significant in a larger event. In addition, disabled transportation systems may mean that shipments of goods and services are delayed, which may result in decreased inventory for retailers and increased inventory for industrial and commercial suppliers.

A complete list of events from 2005-2011 can be found at the end of this document.

Wildfire

"A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures" (FEMA 386-2, 2001) and may originate from a variety of ignition sources. The risk of wildfires, though not as high as it is in the western U.S., is a genuine concern for the Commonwealth of Virginia. Each year, about 1,600 wildfires consume a total of 8,000 to 10,000 acres of forest and grassland in the Commonwealth. During the fall drought of 2001, Virginia lost more than 13,000 acres to wildfires (Virginia Department of Forestry website) level of High, Medium, or Low. The results are shown on the map prepared by VDOF, *"Cumberland Plateau, Virginia Fire Risk Zones",* included at the end of this section. As indicated on the map, only a small area within Russell and Tazewell Counties has a low fire risk zone. The Cumberland Plateau Planning District is mostly a high risk area. This high risk is most likely due to the topography (steep slopes) and the inaccessibility of the area, particularly in Buchanan and Dickenson Counties.

Vulnerability Analysis

As stated in the section above, according the VDOF Wildfire Risk Assessment large portions of the Cumberland Plateau Planning District are at high risk for wildfire occurrence. Although these high risk areas tend to be located in the more rural and mountainous portions of the planning district, higher density areas have also been classified as having a high risk. Because these high risk areas are so vast, many of the residents of the planning area live or work in or near a high risk area. Therefore, the most significant threat to the Cumberland Plateau Planning District is that to human life and safety. Many residents in the area live within the urban-wildlife interface and are at the greatest risk from potential wildfires. A commonly found scenario in the Cumberland Plateau Planning District is the 'stacking' of structures up a ridge with one-way access and flammable fuels in between the structures. These circumstances can greatly increase the risk of loss from wildfire and is hazardous to firefighters trying to protect the structures.

Structures at Risk

As stated in the previous section, large portions of the Cumberland Plateau Planning District have been designated as having a high risk to wildfires as determined by VDOF. In an attempt to quantify the potential vulnerability in the areas, the approximate number structures located in these areas have been estimated. As mentioned in earlier sections of this report, the counties included in the CPPDC have a comprehensive GIS system which includes an inventory of building locations and building type. With this data available, and because the VDOF Risk Assessment is also readily available in GIS format, determining the number of structures located in each Risk Wildfire zone was relatively simple. Table V-12 below includes the results of this analysis.

Table V-12 — Structures in Wildfire Risk

Jurisdiction	High Risk	Medium Risk Zone	Low Risk Zone	Percent Structures in High Risk Zone
Buchanan	22,903	660	484	95%
Dickenson	16,999	1,575	45	91%
Tazewell	27,268	13,113	865	66%
Russell	19,556	14,888	317	56%

A complete list of events from 2005-2011 can be found at the end of this document.

Hazard Areas

Because of the physical characteristics of the area, virtually the entire Cumberland Plateau Planning District is located in an area that has a high risk to the effects of landslides. As stated previously, due to the many factors that contribute to when and where a landslide will occur, it is extremely difficult to indicate precise locations that are at a greater risk of being affected by a landslide than other areas. However, one of the best indicators of where a landslide may occur is the locations of past landslide activity. These areas have demonstrated susceptibility to landslide occurrence, making additional landslides at these locations likely.

Historic landslide problem areas are indicated in the landslide location maps included at the end of this section. As noted previously, these maps do not depict all areas within the planning district where historic landslides have occurred, or where they may be a problem in the future. Historically, detailed records have not been maintained by local or county governments, therefore the data required to identify all known high landslide risk areas located within the planning district is not available.

Vulnerability Assessment

Because the conditions that cause a landslide are extremely site specific, the impacts of an individual landslide can vary greatly. Landslides can damage or potentially destroy anything in the path of the slide including homes, businesses, roads, and utilities. Landslide debris can also partially or fully block rivers, in which case the potential for significant flooding exists. The precise impacts of a landslide will depend on the specific characteristics of the slide, as well as the level of development in the slide area.

Due to the extreme steep slopes throughout the Cumberland Plateau Planning District, virtually all of the development in the area is at high risk to the effects of landslides. The vulnerability of specific structures and assets can only be determined by a detailed investigation of the site characteristics, primarily the proximity to at-risk slopes. A majority of the more densely developed areas of the planning district are located in areas with more gradual slopes. Therefore, the risk of widespread damages due to landslides in the densely developed areas is limited. However, a majority of the unincorporated areas throughout the planning district have extremely steep slopes. The potential for landslide damage to structures in these areas could be high.

Based on past occurrences, the most vulnerable assets located within the Cumberland Plateau Planning District are its roadways. Many of the roads in the area traverse steep slopes increasing the vulnerability to damage. The damage to a roadway affected by a landslide can vary from partial blockage to total destruction. In addition to the damage to the road itself, more significant economic and safety impacts may be felt by the community due the loss of function of the roadway. Many of the roadways throughout the planning district provide the only direct access from one community to another, or potentially the only access certain remote areas. This reduction in access can increase the response time of emergency vehicles, creating a potentially serious threat to public safety in these areas.

A complete list of events from 2005-2011 can be found at the end of this document.

Due to the mountainous terrain, tornado occurrences in the area have been rare, although they are possible. Table V-14 includes historical tornado occurrences in the counties within the Planning District.

Table V-14 — Tornadoes from 1950-2011

County	# of Tornadoes
Buchanan	1
Dickenson	2
Russell	6
Tazewell	2

Wind Zones

The Planning District is not classified as an area with a higher than average base wind speed nationally. According to the Virginia Uniform Statewide Building Code (BOCA, 1996), the minimum design wind speed for the Planning District area is 70 mph.

High wind events, primarily severe thunderstorms, have occurred in every portion of the Planning District. There are no proven indicators to predict specifically where high winds may occur, and these events can be expansive enough to affect the entire area. Although localized geography, such as mountain ranges and gorges, can contribute to potential damages caused by these events, no specific locations within the Planning District have been identified due to these conditions. Therefore, the entire Planning District is considered to have an equal risk of being impacted by a high wind event.

Building Type	Building Damage	Contents Damage	Building Damage	Contents Damage
Manufactured	25%	40%	50%	100%
Light Engineered	5%	2.5%	15%	15%
Non-Engineered Wood	7.5%	5%	20%	20%
Non-Engineered Masonry	5%	2.5%	15%	15%
Fully Engineered	2.5%	2.5%	5%	15%

A complete list of events from 2005-2011 can be found at the end of this document.

Earthquakes

The earth surface is composed of a series of tectonic plates, which are constantly moving and shifting against one another. The movement of these plates causes stress to develop along plate boundaries, and along fault lines. When the stress along one of these boundaries or fault lines exceeds the strength of the adjacent rock and earth, a slip or fracture occurs, releasing the built up energy as waves. Energy waves travel through the earth's crust up to the ground surface, causing the shaking that is associated with an earthquake.

Earthquakes in the United States occur most frequently along the West Coast, due to the close proximity to the North American plate boundary. Earthquakes can also occur along the East Coast of the United States, but the mechanisms causing these earthquakes are as not well understood, as these earthquakes occur within the plate rather than at plate boundaries (USGS, 2003).

The Commonwealth of Virginia is subject to earthquakes occurring in two primary areas of seismic activity. The Eastern Tennessee Seismic Zone extends from Charleston, South Carolina through western North Carolina and eastern Tennessee into central Virginia. The New Madrid Seismic Zone is located in southern Missouri. Both zones have the potential to affect the Cumberland Plateau Planning District. Although these faults have not produced a significant earthquake in recent years, both have a history and the potential to produce severely damaging earthquakes in the future.

Primary and Secondary Impacts

As listed in Table V-161, the primary impact of an earthquake can range from toppled chimneys and broken windows, to crack walls and roadways, to complete collapse of structures and bridges. Depending on the magnitude and location of the earthquake, the overall effects on the community can range from minimal to catastrophic. In larger events, loss of life and injuries can be extensive and the cost of damages can be massive. As stated previously, although historically moderate earthquakes have affected the Planning District, the potential for a higher magnitude earthquake does exist, due mainly to the proximity of the two key seismic zones.

In some cases, the secondary impacts from an earthquake can be as damaging and disruptive to a community and its citizens. The most significant potential secondary effect of an earthquake to the Planning District is the potential for landslides. Ground shaking during an earthquake can cause previously weakened steep slopes to fail, as well as otherwise stable slopes. The specific impacts of landslides are discussed further in other sections of this plan.

In addition to landslides other secondary effects can include disruption of critical services such as water, electrical, and telephone services. Damage to police stations, fire stations, and other emergency service facilities can weaken a community's ability to respond in the crucial hours and days following an event.

A complete list of events from 2005-2011 can be found at the end of this document.

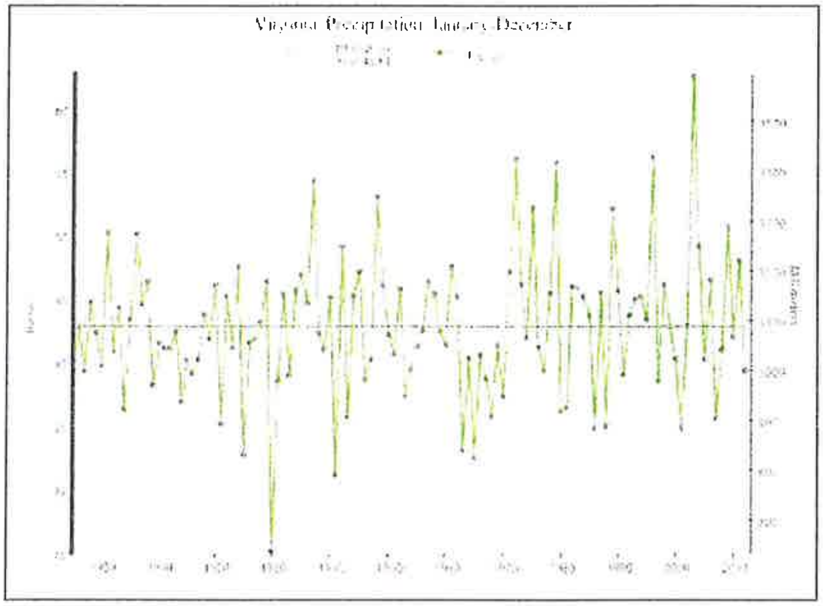
Drought

"Drought is a condition of moisture deficit sufficient to have an adverse effect on vegetation, animals, and man over a sizeable area" (USGS, 2000). Three significant types of drought can affect the Cumberland Plateau Planning District, which are meteorological, agricultural, or hydrologic drought. Meteorological drought is simply a departure from a normal precipitation amount, and is reliant on no other factors. Agricultural drought describes a soil moisture deficiency to the extent it effects the needs of plant life, primarily crops. Hydrologic drought is defined in terms of shortfall of water levels of lakes and reservoirs, and stream flow in rivers, streams, and soils (Multi Hazard Risk Assessment, 2000). Drought is a natural part of most climatic areas, but the severity of droughts differs based on duration, geographic extent, and intensity.

Hazard History

There have been a number of significant droughts recorded in Virginia since 1900. The most recent drought extended over a period of one year, from 2007 to 2008. This period saw rainfall levels well below normal and caused many communities throughout the region to institute water restrictions.

Although meteorologists have attempted to predict long term changes and trends in weather patterns, the onset of a significant drought cannot be predicted. Extended periods of dry weather have occurred many times from over the past 100 years.



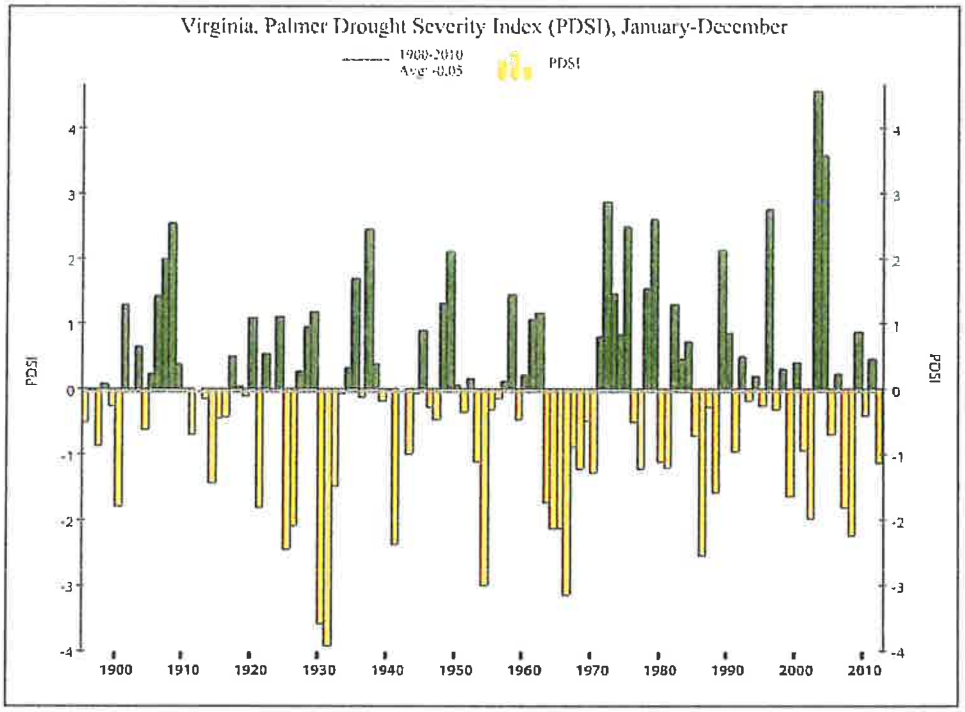
V-12 — Virginia Statewide Precipitation, January 1900-2010

Hazard Profile

Just as there are multiple types of drought, there are multiple methods to indicate when a drought is occurring, as well as the severity of the drought. The multiple indices are based on a variety of data including precipitation amounts, stream flows, soil moisture, snow pack, as well as other water storage data. Commonly, the drought indices used depends on the type of drought being measured. It is important to note that not all types of drought must be occurring simultaneously. In some cases an area can be affected by one form of drought, while levels measuring another form of drought are normal.

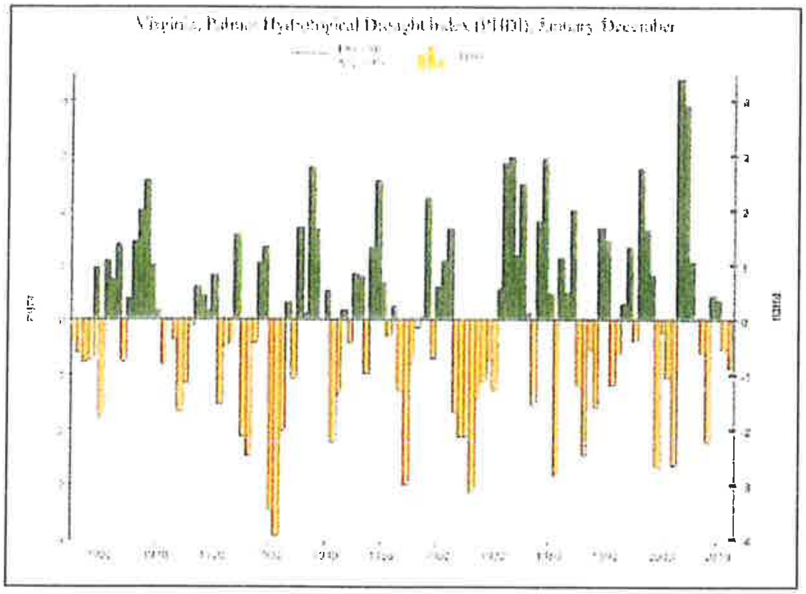
The most commonly used drought indicator is the Palmer Drought Index. This index was developed in the 1960s by the National Oceanic and Atmospheric Administration, and uses temperature and rainfall data to determine dryness. Negative numbers indicate drought, while positive numbers indicate surplus rainfall. Minus two is considered a moderate drought, minus three is severe drought, and minus four is extreme drought. Likewise, positive two is considered a moderate rainfall, positive three a severe rainfall, and positive four, an extreme rainfall. In addition to the Palmer Index, the Standard Precipitation Index (SPI) and the Crop Moisture Index (CMI) also are used to measure drought. The SPI relates the deficit in precipitation compared to normal levels to varying degrees of time. Because the duration of lower than average precipitation levels has varying effects on stream flows, water storage levels, and soil moisture content, the SPI attempts to measure drought based on the long term deficit in precipitation. The CMI measures short term moisture conditions across predominate crop producing regions. It is based on the temperature and precipitation levels for a given week as well as the CMI value for the previous week (http://www.drought.unl.edu/whatis/indices.htm).

The Virginia State Climatology Office uses the Palmer Drought Severity Index (PDSI) to measure long-term moisture status. A reading of -3.0 is considered to be a "severe drought.".Shown below is the PDSI history for Virginia from 1900 through December 1, 2010. .



Virginia State Climatology Office

Figure V-13 —Virginia Palmer Drought Severity Index



V-14 — Virginia Statewide Palmer Hydrological Drought Index, January 1900 - December 2010

Vulnerability Analysis

If a significant drought event were to occur, it could bring extensive economic, social, and environmental impacts to the Planning District. Commonly one of the most significant economic effects to a community is the agricultural impacts. Other economic effects could be felt by businesses that rely on adequate water levels for their day to day business such as carwashes and laundromats.

Drought also can create conditions that promote the occurrence of other natural hazards such as wildfires and wind erosion. The likelihood of flash flooding is increased if a period of severe drought is followed by a period of extreme precipitation. Low-flow conditions also decrease the quantity and pressure of water available to firefighters to fight fires, while the dry conditions increase the likelihood fires will occur.

Environmental drought impacts include those on both human and animal habitats and hydrologic units. During periods of drought, the amount of available water decreases in lakes, streams, aquifers, soil, wetlands, springs, and other surface and subsurface water sources. This decrease in water availability can affect water quality such as salinity, bacteria, turbidity, and temperature increase and pH changes. Changes in any of these levels can have a significant effect on the aquatic habitat of a numerous plants and animals found throughout the Planning District. Low water flow can result in decreased sewage flows and subsequent increases in contaminants in the water supply. Decrease in the availability of water also decreases drinking water supply and the food supply as food sources become scarcer. This disruption can work its way up the food chain within a habitat. Loss of biodiversity and increases in mortality can lead to increases in disease and endangered species.

A complete list of events from 2005-2011 can be found at the end of this document.

(3) the objective(s) it is intended to help achieve,
(4) some general background information,
(5) the priority level for its implementation (high, moderate, or low),
(6) potential funding sources, if applicable,

When formulating a Mitigation Action Plan, a wide range of activities should be considered to help achieve the goals of communities and lessen the vulnerability of the participating jurisdictions to the effects of natural hazards. In general, all of these activities fall into one of the following broad categories of mitigation techniques. Tables VII-8 and VII-9 shows which jurisdictions have chosen to participate in the proposed actions. Appendix C includes the range of alternatives that were considered in by the Mitigation Advisory Committee.

ACTION #1

Obtain official recognition of the Mitigation Advisory Committee by the Planning District's communities in order to help institutionalize and develop an ongoing mitigation program.

Category: Public Information & Awareness
Hazard: All
Goal(s) Addressed: 4
Background: After the passage of the Disaster Mitigation Act of 2000 (DMA2K), local governments are required to develop and to adopt all hazards mitigation plans to be eligible for certain types of future disaster assistance including funds for mitigation activities. Nationwide, many communities have formed committees, councils or citizen groups to assist in developing and implementing plans. In the case of multi-jurisdictional plans, "mitigation advisory committees" are often formed and are comprised of local officials and residents from the participating jurisdictions. One way to assure the effectiveness of such committees is to bestow official status to them. An officially recognized Mitigation Action Committee will aid each community by sharing the workload on regionally beneficial actions and present a unified voice in dealing with state and FEMA officials. **Priority:** High **Funding Sources: N/A Responsibility Assigned to: MAC and PDC Target Completion Date:** In progress. August, 2013.

ACTION #2

Target FEMA's Repetitive Loss Properties, and other known repetitively flooded properties, throughout the Planning District for potential mitigation projects.

Category: Property Protection

Hazard: Flood
Goal(s) Addressed: 1, 3
Background: Currently, over 40,000 of the four million properties insured under the National Flood Insurance Program have been identified by FEMA as repetitive loss properties. The known repetitive loss properties are those that have sustained flood damage and received flood insurance claim payments on multiple occasions. Repetitive loss properties, though they represent a minority of the active policies, represent the majority of claims made to the National Flood Insurance Program. In addition to these properties, there are also a number of properties throughout the planning district that are repetitively flooded yet the property owners do not carry flood insurance, so therefore would not appear on FEMA's repetitive loss properties list. Efforts should be made to identify these properties and determine the most effective mitigation approach (e.g., acquisition, relocation, elevation). **Priority:** High
Funding Sources: FEMA's Pre-Disaster Mitigation (PDM) program, Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) program
Responsibility Assigned to: Mitigation Advisory Committee and Planning District Commission **Target Completion Date:** In progress. Some localities are aware of repetitive loss properties. Lack of Funding

ACTION #3

Undertake educational outreach activities by developing and distributing brochures and education materials for FEMA's Repetitive Loss Properties with specific mitigation measures emphasizing acquisition, relocation and elevation.

Category: Public Education and Awareness
Hazard: Flood **Goal(s) Addressed: 3**
Background: The Planning District has several repetitive loss properties which have been identified by FEMA. Although an acquisition program for flood-prone properties has been undertaken in the state previously, local citizens are reluctant to relocate from an area where they have strong family and community ties. Citizens should be educated about the flood loss cycle associated with flood-prone areas and encouraged to work with local government officials to develop mutually agreeable strategies to address repetitive losses in the Planning District.
Priority: High
Funding Sources: FEMA, VDEM
Responsibility Assigned to: MAC, PDC and local emergency management agencies
Target Completion Date: In progress. Educational materials will be made available to the public on websites.

ACTION #4

Publicize the Virginia Department of Forestry's *Money for Mitigation Program.* Utilize existing wildfire maps to prioritize project areas in the Planning District.

SECTION VII. MITIGATION STRATEGY

The Mitigation Advisory Committee discussed the results of the hazard identification and risk assessment, review mitigation goals and objectives based on the priority areas and hazard types, discuss community strengths and weaknesses, and begin developing the mitigation strategy.

This section of the Hazard Mitigation Plan describes the most challenging part of any such planning effort - the development of a mitigation strategy. It is a process of:

1. Setting mitigation goals,
2. Considering mitigation alternatives,
3. Developing objectives and implementation approaches, and
4. Deriving a mitigation action plan.

Essentially these four elements comprise this mitigation strategy.

Setting Mitigation Goals

The hazard mitigation planning process followed by the MAC is a typical problem-solving methodology:

- Describe the problem (Hazard Identification),
- Estimate the impacts the problem could cause (Vulnerability Assessment),
- Assess what safeguards already exist that could/should lessen those impacts (Capability Assessment), and
- Using this information, determine if you should do something (Determine Acceptable Risk), and if so, what that something should be (Develop an Action Plan).

When a community decides that certain risks are unacceptable and that certain mitigation actions may be achievable, the development of *goals* and *actions* takes place. Goals and actions help to describe what should occur, using increasingly more narrow descriptors. Initially, broad-based goals are developed, which are long-term and general statements. Goals are accomplished by implementing actions, which are very detailed and achievable in a finite time period.

The MAC reviewed goals for this plan that were set by the original Hazard Mitigation Plan. General goals remained primarily the same as the initial tone and direction for the overall plan as well. Goals were revisited to confirm that the updated data collection process supported them. Lastly, actions were developed as a logical extension of the plan's objectives. Most of these actions are dynamic and can change. These actions have been utilized to develop a Mitigation Action Plan for the Planning District.

Hazard: Flood
Goal(s) Addressed: 1, 3
Background: Currently, over 40,000 of the four million properties insured under the National Flood Insurance Program have been identified by FEMA as repetitive loss properties. The known repetitive loss properties are those that have sustained flood damage and received flood insurance claim payments on multiple occasions. Repetitive loss properties, though they represent a minority of the active policies, represent the majority of claims made to the National Flood Insurance Program. In addition to these properties, there are also a number of properties throughout the planning district that are repetitively flooded yet the property owners do not carry flood insurance, so therefore would not appear on FEMA's repetitive loss properties list. Efforts should be made to identify these properties and determine the most effective mitigation approach (e.g., acquisition, relocation, elevation). **Priority:** High
Funding Sources: FEMA's Pre-Disaster Mitigation (PDM) program, Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) program
Responsibility Assigned to: Mitigation Advisory Committee and Planning District Commission **Target Completion Date:** In progress. Some localities are aware of repetitive loss properties. Lack of Funding

ACTION #3

Undertake educational outreach activities by developing and distributing brochures and education materials for FEMA's Repetitive Loss Properties with specific mitigation measures emphasizing acquisition, relocation and elevation.

Category: Public Education and Awareness
Hazard: Flood **Goal(s) Addressed: 3**
Background: The Planning District has several repetitive loss properties which have been identified by FEMA. Although an acquisition program for flood-prone properties has been undertaken in the state previously, local citizens are reluctant to relocate from an area where they have strong family and community ties. Citizens should be educated about the flood loss cycle associated with flood-prone areas and encouraged to work with local government officials to develop mutually agreeable strategies to address repetitive losses in the Planning District.
Priority: High
Funding Sources: FEMA, VDEM
Responsibility Assigned to: MAC, PDC and local emergency management agencies
Target Completion Date: In progress. Educational materials will be made available to the public on websites.

ACTION #4

Publicize the Virginia Department of Forestry's *Money for Mitigation Program.* Utilize existing wildfire maps to prioritize project areas in the Planning District.

Assist local residents, in priority areas, to reduce wildfire hazards through the use of funding from the *Money for Mitigation Program*.

Category: Public Education and Awareness
Hazard: Fire **Goal(s) Addressed: 1**
Background: Financial assistance to reduce fire hazards has been established at the Virginia Department of Forestry. The program provides a 50% cost share funds to reduce wildfire fuels, particularly in wildland-urban interface areas. Citizen's groups and homeowner's associations are eligible applicants. A program description including eligibility criteria can be accessed at the agency's website www.vdof.org.
Priority: High
Funding Sources: Virginia Department of Forestry
Responsibility Assigned to: MAC, PDC and local emergency management agencies.
Target Completion Date: In progress. Will publicize on website.

ACTION #5

Develop a comprehensive compilation of landslide activity in the Planning District to be used as a planning tool for future infrastructure projects.

Category: Prevention
Hazard: Landslide
Goal(s) Addressed: 2
Background: Landslide activity is prevalent in the mountainous regions of the Planning District. Most often, roadways are impacted by landslide events. The Virginia Department of Transportation and local government road and bridge departments usually respond to events on an as-needed basis. A compilation of landslide activity, both past and present, can assist decision-makers as a planning tool when determining where to cite new and upgraded infrastructure.
Priority: High
Funding Sources: VDOT and local public works departments/agencies
Responsibility Assigned to: MAC, PDC and local public works departments/agencies
Target Completion Date: Not started. Have been unable to obtain this information from localities.

ACTION #6

Evaluate the Planning District's community flood plain ordinances and enforcement procedures that may be outdated for possible upgrades.

Category: Prevention
Hazard: Flood **Goal(s)
Addressed: 3**
Background: Each county and community in the planning district has adopted and enforces the NFIP floodplain management regulations. By utilizing the working

relationship established by the formalization of the Mitigation Action Committee communities can share information on the state of current regulations as well as enforcement procedures. By sharing this information communities can learn from one another on ways to best implement, monitor, and enforce NFIP regulations and over all floodplain management. **Priority:** Moderate **Funding Sources: N/A**
Responsibility Assigned to: Planning District communities' floodplain managers
Target Completion Date: In progress. Will be completed by 2015.

ACTION #7

Initiate discussion concerning which individuals shall be designated as the Floodplain Manager in each of the four Planning District's jurisdictions. MAC and PDC will make recommendations to the appropriate decision-makers in each jurisdiction.

Category: Prevention
Hazard: All
Goal(s) Addressed: 3
Background: Over nineteen thousand communities participate in the National Flood Insurance Program (NFIP) and have adopted floodplain ordinances that specify the designation of a local floodplain official or administrator. In many cases, the local floodplain administrator is either 1) an individual with little or no experience about flooding and the NFIP, or 2) an individual with many responsibilities. Buchanan, Dickenson, Russell and Tazewell Counties have adopted floodplain ordinances and designated a local floodplain administrator. A review of these individual's responsibilities, not just floodplain administration, can assist local decision-makers in the effective allocation of personnel resources and funding.
Priority: Moderate
Funding Sources: N/A
Responsibility Assigned to: MAC,PDC and local government decision-makers including county commissions.
Target Completion Date: In progress. To be completed by August, 2013.

ACTION #8

Initiate discussions with public utility companies about incorporating mitigation as infrastructure is laid, maintained, or repaired. Invite utilities to make a presentation to the MAC to begin dialogue.

Category: Prevention
Hazard: All
Goal(s) Addressed: 2

Background: Mitigation initiatives that protect utility infrastructure can most often be installed at the beginning of a project for much less money than if installed as a retrofitting project after the fact. Many utility companies have the financial capacity and desire to protect their facilities from the impacts of natural hazards but are often unaware of the risk until an event occurs. Local governments can serve to educate the companies about the risk of natural hazards and provide technical guidance and references about hazard proofing their facilities.
Priority: High
Funding Sources: FEMA; VDEM, VDC
Responsibility Assigned to: MAC, PDC, local public works departments/agencies, emergency management agencies and area Chambers of Commerce
Target Completion Date: Not started. Low priority of localities.

ACTION #9

Develop and distribute a brochure targeting the Planning District jurisdiction's community staff, which details mitigation principles and options.

Category: Public Information and Awareness
Hazard: All
Goal(s) Addressed: 4, 6
Background: Local governmental staff should be educated about the benefits of natural hazard mitigation and encouraged to incorporate the principles into the decision-making processes related to their jobs. Information on potential mitigation measures, as well as potential funding sources and partnering opportunities, should be shared with all appropriate local staff. **Priority:** Moderate
Funding Sources: FEMA, NWS, VDEM, VDC
Responsibility Assigned to: MAC, PDC and local emergency management agencies.
Target Completion Date: In progress. Website link will be given to local government through PDC website.

ACTION #10

Develop "hazard information centers" on the Planning District's community's websites and in public libraries where individuals can find hazard and mitigation information.

Category: Public Information and Awareness
Hazard: All
Goal(s) Addressed: 6
Background: As the Internet continues to become "the information super highway", more local governments around the country are using it as a primary means of official communication with community residents through the development and administration of websites. Today, many residents pay their water and power bills online, register to vote and even obtain driver's licenses over the Internet. Use of local government

websites to educate community residents about natural hazards and mitigation opportunities is growing nationwide.
Priority: Moderate
Funding Sources: Local government annual budgets for information technology
Responsibility Assigned to: Planning District community's local government communications departments/offices, the MAC and PDC.
Target Completion Date: In progress. The four counties will be asked to incorporate info on their websites.

ACTION #11

Investigate the benefits of submitting Community Rating System Applications for non-participating jurisdictions.

Category: Prevention
Hazard: All
Goal(s) Addressed: 3
Background: Communities that regulate development in floodplains are able participate in the National Flood Insurance Program (NFIP). In return, the NFIP makes federally-backed flood insurance policies available for properties in the community. The Community Rating System (CRS) was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. There are ten CRS classes: Class 1 requires the most credit points and gives the largest premium reduction (45%); class 10 receives no premium reduction. Each class, starting with Class 9, receives at least a 5% premium reduction. MAC members should be educated on the benefits of participation of CRS, so that each community may potentially submit a CRS application.
Priority: Medium
Funding Sources: Local government department budgets
Responsibility Assigned to: MAC, PDC, local government planning departments work with the State NFIP Coordinator at the VDC
Target Completion Date: Not started, Lack of funding.

ACTION #12

Investigate all critical facilities to evaluate their resistance to wind, fire, landslide and flood hazards. This study will examine all critical facilities within the Planning District communities and make recommendations as to ways in which the facilities can be strengthened or hardened.

Category: Public Information and Awareness
Hazard: All
Goal(s) Addressed: 2
Background: The ability to recover quickly after a disaster rests, in part, on the community's ability to maintain critical functions during response and recovery. Efforts should be undertaken to ensure that community critical facilities (e.g., fire departments, hospitals, schools) can withstand the impact of various hazards. Local facilities

management offices/agencies and local emergency management agencies will work with the MAC and PDC to undertake a future study with recommendations for improvements. In order to finance this initiative, the MAC and PDC will submit a Pre-Disaster Mitigation (PDM) program grant application to the Virginia Department of Emergency Management.
Priority: Moderate
Funding Sources: FEMA, VDEM
Responsibility Assigned to: MAC, PDC, local facilities management agencies and local emergency management agencies
Target Completion Date: Not started. Lack of funding.

ACTION #13

Support Public Works initiatives to improve stormwater infrastructure throughout the area.

Category: Structural Projects
Hazard: Flood
Goal(s) Addressed: 2, 4
Background: Many times, local stormwater channels are not identified on FEMA Flood Insurance Rates Maps (FIRMs). Consequently, stormwater hazards are often overlooked as natural hazards although they can cause significant problems during times of high water. Many jurisdictions do not regulate stormwater runoff, thereby, increasing flood damage potential during an event.
Priority: Medium
Funding Sources: EPA, USACE, FEMA
Responsibility Assigned to: MAC, PDC and local public works departments
Target Completion Date: In progress. Low priority.

ACTION #14

"Verify the geographic location of all NFIP repetitive losses, and make inquiries as to whether the properties have been mitigated, and if so, by what means."

Category: Prevention
Hazard: Flood
Goal(s): 2
Background: By keeping track of NFIP repetitive losses we can eliminate or reduce damage to properties that are caught in the flood-repair-flood-repair cycle and sustain actions that reduce vulnerability and risk from hazards, or reduce the severity of the effects of hazards on people and property.
Priority: Medium
Funding Sources: Local
Responsibility Assigned to: PDC\MAC
Target Completion Date: In progress. Will be completed in 2014.

Table VII-8 — Mitigation Action Item Participation by County

Action Item	Buchanan County	Dickenson County	Russell County	Tazewell County
1	X	X	X	X
2	X	X	X	X
3	X	X	X	X
4	X	X	X	X
5	X	X	X	X
6	X	X	X	X
7	X	X	X	X
8	X	X	X	X
9	X	X	X	X
10	X	X	X	X
11	X	X	X	X
12	X	X	X	X
13	X	X	X	X

Action Item	Town of Bluefield	Town of Cedar Bluff	Town of Cleveland	Town of Clinchco	Town of Grundy	Town of Haysi	Town of Honaker	Town of Lebanon	Town of Pocahontas	Town of Richlands	Town of Tazewell
1	X	X	X	X	X	X	X	X	X	X	X
2	X		X		X	X		X		X	X
3	X									X	X
4	X									X	X
5											
6											
7											
8											
9	X	X	X	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X	X	X	X
11											
12	X										
13	X					X	X			X	X

* Contingent upon funding

SECTION VI. CAPABILITY ASSESSMENT

Introduction

This portion of the Plan assesses the Cumberland Plateau Planning District's current capacity to mitigate the effects of the natural hazards identified in Section V of the plan. This assessment includes a comprehensive examination of the following local government capabilities:

1. *Staff and Organizational Capability*
2. *Technical Capability*
3. *Fiscal Capability*
4. *Policy and Program Capability*
5. *Legal Authority*
6. *Political Willpower*

The purpose of conducting the capabilities assessment is to identify potential hazard mitigation opportunities available to the Cumberland Plateau Planning District's local governments including the Counties of Buchanan, Dickenson, Russell and Tazewell. Careful analysis should detect any existing gaps, shortfalls, or weaknesses within existing governmental activities that could exacerbate a community's vulnerability. The assessment also will highlight the positive measures already in place or being done at the County level, which should continue to be supported and enhanced, if possible, through future mitigation efforts.

The capabilities assessment serves as the foundation for designing an effective hazard mitigation strategy. It not only helps establish the goals and objectives for the Planning District to pursue under this Plan, but assures that those goals and objectives are realistically achievable under given local conditions.

This section of the plan is divided into four parts, each of which is a brief profile of the capabilities of the participating jurisdictions. The following table summarizes the plans and ordinances of each jurisdiction that can support hazard mitigation goals and strategies.

Table VI-1 — Capability Matrix - Plans and Ordinances

Plan or Ordinance	Buchanan County	Dickenson County	Russell County	Tazewell County
Building Code	X	X	X	X
Capital Improvements Plan or Program				
Comprehensive Land Use Plan	X	X	X	X
Emergency Operations Plan	X	X	X	
Floodplain		X	X	X

Management Ordinance				
Floodplain Management Plan				
Land Use Regulation				
Local Hazard Mitigation Plan				
Open Space Plan				
Stormwater Management Plan				
Stormwater Ordinance				
Subdivision Ordinance	X	X	X	X
Watershed Protection Plan				
Zoning Ordinance				

Buchanan County

1. Staff and Organizational Capability

Buchanan County has limited staff and organizational capability to implement hazard mitigation strategies. Buchanan County is governed by a seven-member Board of Supervisors. The members represent the seven districts into which the county is divided. There is also a County Administrator. The Board bears the responsibility of serving the people and improving the quality of life in the County. The business of the County is conducted through the department and board system. There are eight (8) county departments and twenty-nine (29) boards and commissions.

Those professional staff departments and boards are as follows:

- Board Of Election Commissioners
- Legal Department
- Fire Department
- Sheriff's Department
- Public Works Department
- Board Of Building Code Appeals
- Black Diamond R C & D Council
- Coal Haul Road And Gas Improvements Adv. Committee
- Cumberland Mountain Community Service Board
- Cumberland Plateau Planning District
- Cumberland Plateau Regional Waste Management Authority
- Disability Service Board
- Emergency Services
- Finance Committee
- Buchanan General Hospital Board
- Industrial Development Authority
- Insurance Committee
- John Flannagan Water Authority
- Parks And Recreation Board
- Personnel Committee
- Planning Commission
- Buchanan County Public Library
- Public Service Authority
- Buchanan County Public School
- Social Services Advisory Board

management operations. Buchanan County does currently have GIS capability to further hazard mitigation goals.

2.C. Internet Access

Buchanan County does provide some of its critical employees with high-speed broadband Internet service. Internet access provides an enormous opportunity for local officials to keep abreast of the latest information relative to their work and makes receiving government services more affordable and convenient. Information technology also offers increased economic opportunities, higher living standards, more individual choices, and wider and more meaningful participation in government and public life. Simply put, information technology can make distance - a major factor for County officials and residents - far less important than it used to be. It is believed that Internet access will help further the community's hazard mitigation awareness programs, but should be supplemented with more traditional (and less technical) means as well.

3. Fiscal Capability

Buchanan County has limited fiscal capability to implement hazard mitigation strategies. For Fiscal Year 2012, the County has a public safety budget of $47,609,000. The County receives most of its revenues through State and Local sales tax and other local services and through restricted intergovernmental contributions (federal and state pass through dollars). Considering the current budget deficits at both the State and local government level, in Virginia, combined with the apparent increased reliance on local accountability by the Federal government, this is a significant and growing concern for Buchanan County.

4. Policy and Program Capability

This part of the capabilities assessment includes the identification and evaluation of existing plans, policies, practices, programs, or activities that either increase or decrease the community's vulnerability to natural hazards. Positive activities, which decrease hazard vulnerability, should be sustained and enhanced if possible. Negative activities, which increase hazard vulnerability, should be targeted for reconsideration and be thoroughly addressed within Mitigation Strategy for Buchanan County.

4.A. Recent Hazard Mitigation Efforts

Buchanan County received emergency funding from the VA Department of Housing in 2002 for major flooding in the Hurley community.

Buchanan County has received these same funds from 2002 to current. In all approximately 100 houses have been removed and replaced or rehabilitated that were damaged during the flooding of 2002. Homes were either moved or built up out of the flood plain in the Hurley area. In all $2,275,000.00 has been received during the Hurley Flood Recovery Projects.

The County has a person responsible for Information Technology (IT) which can enhance local government operations and the community's ability to develop and maintain a state-of-the art hazard mitigation program.

2.B. Geographic Information Systems (GIS)

GIS systems can best be described as a set of tools (hardware, software and people) used to collect, manage, analyze and display spatially-referenced data. Many local governments are now incorporating GIS systems into their existing planning and management operations. Dickenson County has existing GIS capability to further hazard mitigation goals.

2.C. Internet Access

Dickenson County provides its employees with high speed broadband Internet service. Internet access provides an enormous opportunity for local officials to keep abreast of the latest information relative to their work and makes receiving government services more affordable and convenient. Information technology also offers increased economic opportunities, higher living standards, more individual choices, and wider and more meaningful participation in government and public life. Simply put, information technology can make distance - a major factor for County officials and residents - far less important than it used to be. It is believed that Internet access will help further the community's hazard mitigation awareness programs, but should be supplemented with more traditional and less technical means as well.

3. Fiscal Capability

Dickenson County has limited fiscal capability to implement hazard mitigation strategies. For Fiscal Year 2012, the County has a public safety budget of $3,647,242.00. The county receives most of its revenues through state and local sales tax and other local services and through restricted intergovernmental contributions (federal and state pass through dollars). Considering the current budget deficits at both the state and local government level, in Virginia, combined with the apparent increased reliance on local accountability by the federal government, this is a significant and growing concern for Dickenson County.

4.A. Recent Hazard Mitigation Efforts

Dickenson County is currently participating in a U.S. Corps of Engineers project to evaluate all structures in the flood plain zone. The school consolidation project is receiving funds through this agreement. Ervinton High, Clinchco Elementary, Sandlick Elementary and some buildings at Haysi High will be demolished and new facilities constructed outside of the floodplain. Between 200 and 300 homes/business are identified as being eligible also.

4.B. Community Rating System Activities

Communities that regulate development in floodplains are able participate in the National Flood Insurance Program (NFIP). In return, the NFIP makes federally-backed flood insurance policies available for properties in the community. The Community Rating System (CRS) was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. There are ten CRS classes: class 1 requires the most credit points and gives the largest premium reduction; class 10 receives no premium reduction.

Dickenson County does not participate in the Community Rating System.

4.C. Emergency Operations Plan

Dickenson County has developed and adopted a Comprehensive Emergency Management Plan, which predetermines actions to be taken by government agencies and private organizations in response to an emergency or disaster event. For the most part, the Plan describes the County's capabilities to respond to emergencies and establishes the responsibilities and procedures for responding effectively to the actual occurrence of a disaster. The Plan does not specifically address hazard mitigation, but it does identify the specific operations to be undertaken by the County to protect lives and property immediately before, during and immediately following an emergency. There are no foreseeable conflicts between this Hazard Mitigation Plan and Dickenson County's Comprehensive Emergency Management Plan, primarily because they are each focused on two separate phases of emergency management (mitigation vs. preparedness and response). The Plan does identify the Board of Supervisors as having lead role in the long-term reconstruction phase following a disaster - which presents a unique window of opportunity for implementing hazard mitigation strategies. However, none are specified within the Emergency Management Plan.

4.D. Floodplain Management Plan

Dickenson County does not currently have a separate floodplain management plan for purposes of the National Flood Insurance Program's Community Rating System (CRS). This plan is intended to fulfill the CRS planning requirement should the City decide to enter the CRS.

The County has a person responsible for Information Technology (IT) which can enhance local government operations and the community's ability to develop and maintain a state-of-the art hazard mitigation program.

2.B. Geographic Information Systems (GIS)

GIS systems can best be described as a set of tools (hardware, software and people) used to collect, manage, analyze and display spatially-referenced data. Many local governments are now incorporating GIS systems into their existing planning and management operations. Dickenson County has existing GIS capability to further hazard mitigation goals.

2.C. Internet Access

Dickenson County provides its employees with high speed broadband Internet service. Internet access provides an enormous opportunity for local officials to keep abreast of the latest information relative to their work and makes receiving government services more affordable and convenient. Information technology also offers increased economic opportunities, higher living standards, more individual choices, and wider and more meaningful participation in government and public life. Simply put, information technology can make distance - a major factor for County officials and residents - far less important than it used to be. It is believed that Internet access will help further the community's hazard mitigation awareness programs, but should be supplemented with more traditional and less technical means as well.

3. Fiscal Capability

Dickenson County has limited fiscal capability to implement hazard mitigation strategies. For Fiscal Year 2012, the County has a public safety budget of $3,647,242.00. The county receives most of its revenues through state and local sales tax and other local services and through restricted intergovernmental contributions (federal and state pass through dollars). Considering the current budget deficits at both the state and local government level, in Virginia, combined with the apparent increased reliance on local accountability by the federal government, this is a significant and growing concern for Dickenson County.

4. Policy and Program Capability

This part of the capabilities assessment includes the identification and evaluation of existing plans, policies, practices, programs, or activities that either increase or decrease the community's vulnerability to natural hazards. Positive activities, which decrease hazard vulnerability, should be sustained and enhanced if possible. Negative activities, which increase hazard vulnerability, should be targeted for reconsideration and be thoroughly addressed within Mitigation Strategy for Dickenson County.

4.A. Recent Hazard Mitigation Efforts

Dickenson County is currently participating in a U.S. Corps of Engineers project to evaluate all structures in the flood plain zone and implement a flood warning system.

4.B. Community Rating System Activities

Communities that regulate development in floodplains are able participate in the National Flood Insurance Program (NFIP). In return, the NFIP makes federally-backed flood insurance policies available for properties in the community. The Community Rating System (CRS) was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. There are ten CRS classes: class 1 requires the most credit points and gives the largest premium reduction; class 10 receives no premium reduction.

Dickenson County does not participate in the Community Rating System.

4.C. Emergency Operations Plan

Dickenson County has developed and adopted a Comprehensive Emergency Management Plan, which predetermines actions to be taken by government agencies and private organizations in response to an emergency or disaster event. For the most part, the Plan describes the County's capabilities to respond to emergencies and establishes the responsibilities and procedures for responding effectively to the actual occurrence of a disaster. The Plan does not specifically address hazard mitigation, but it does identify the specific operations to be undertaken by the County to protect lives and property immediately before, during and immediately following an emergency. There are no foreseeable conflicts between this Hazard Mitigation Plan and Dickenson County's Comprehensive Emergency Management Plan, primarily because they are each focused on two separate phases of emergency management (mitigation vs. preparedness and response). The Plan does identify the Board of Supervisors as having lead role in the long-term reconstruction phase following a disaster - which presents a unique window of opportunity for implementing hazard mitigation strategies. However, none are specified within the Emergency Management Plan.

4.D. Floodplain Management Plan

Dickenson County does not currently have a separate floodplain management plan for purposes of the National Flood Insurance Program's Community Rating System

(CRS). This plan is intended to fulfill the CRS planning requirement should the City decide to enter the CRS.

4.E. Stormwater Management Plan

Dickenson County does not currently have an adopted stormwater management plan, but does apply stormwater management provisions through their subdivision regulations. Lands subject to flooding, irregular drainage conditions, excessive erosion and other reasons unsuitable for residential use shall not be platted for residential use unless the hazards can be and are corrected. For major subdivisions, a stormwater drainage plan must be prepared and necessary stormwater drainage improvements must be completed before final plat approval.

4.F. Comprehensive Plan

Dickenson County developed and adopted a Comprehensive Plan in 2008. The plan provides the future vision for the community regarding growth and development. Hazard mitigation planning is not specifically addressed in the plan.

4.G. Ordinances

Dickenson County has adopted several ordinances that are relevant to hazard mitigation. The following table provides an inventory of these ordinances.

Table VI-2 — Dickenson County Ordinances Related to Hazard Mitigation

Title(s)	Adoption Date(s)	Description/Purpose(s)	Mitigation Effectiveness
Flood Damage Prevention and Control Ordinance	1/23/91	The Flood Damage Prevention Ordinance is designed to minimize public and private losses due to flood conditions in specific areas. It requires a development permit be submitted to the County prior to any construction or substantial improvement activities. Permits will only be approved if they meet the provisions of the ordinance, which include development standards that will minimize the potential for flood losses. Standards are established for construction materials, equipment, methods, practices and uses. Most importantly, establishes the requirements for elevation and floodproofing (non-residential) to base flood elevation. The Ordinance requires the minimum standards of the National Flood Insurance Program (NFIP). The	HIGH

3. Fiscal Capability

Russell County has limited fiscal capability to implement hazard mitigation strategies. For Fiscal Year 2012, the County has a public safety budget of $4,463,848.00. The county receives most of its revenues through state and local sales tax and other local services and through restricted intergovernmental contributions (federal and state pass through dollars). Considering the current budget deficits at both the state and local government level, in Virginia, combined with the apparent increased reliance on local accountability by the federal government, this is a significant and growing concern for Russell County.

4. Policy and Program Capability

This part of the capabilities assessment includes the identification and evaluation of existing plans, policies, practices, programs, or activities that either increase or decrease the community's vulnerability to natural hazards. Positive activities, which decrease hazard vulnerability, should be sustained and enhanced if possible. Negative activities, which increase hazard vulnerability, should be targeted for reconsideration and be thoroughly addressed within the Mitigation Strategy for Russell County.

4.A. Recent Hazard Mitigation Efforts

In the past 5 years, Russell County Emergency Management has only completed one mitigation project in Maple Gap. The project replace a failed drained pipe at the lower end of Maple Gap, which caused flooding during heavy rainfall events when the excess water was not allowed to flow through the drain pipe and back up into nearby homes.

4.B. Community Rating System Activities

Communities that regulate development in floodplains are able participate in the National Flood Insurance Program (NFIP). In return, the NFIP makes federally-backed flood insurance policies available for properties in the community. The Community Rating System (CRS) was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. There are ten CRS classes: class 1 requires the most credit points and gives the largest premium reduction; class 10 receives no premium reduction.

Russell County does not participate in the Community Rating System.

4.C Emergency Operations Plan

Tazewell County has limited technical capability to implement hazard mitigation strategies.

2.A. Technical Expertise

The County does have a full-time planner on staff to administer the community's hazard mitigation programs. The County Engineer provides expertise in the area of water resources and associated technical work. The County does have an inspections office which enforces a building code.

The County has a person responsible for Information Technology (IT), which can enhance local government operations and the community's ability to develop and maintain a state-of-the art hazard mitigation program.

2.B. Geographic Information Systems (GIS)

GIS systems can best be described as a set of tools (hardware, software and people) used to collect, manage, analyze and display spatially-referenced data. Many local governments are now incorporating GIS systems into their existing planning and management operations. Tazewell County has GIS capability and a person responsible for maintaining/implementing the GIS to further hazard mitigation goals.

2.C. Internet Access

Tazewell County does provide most of its employees with high speed broadband Internet service. Internet access provides an enormous opportunity for local officials to keep abreast of the latest information relative to their work and makes receiving government services more affordable and convenient. Information technology also offers increased economic opportunities, higher living standards, more individual choices, and wider and more meaningful participation in government and public life. Simply put, information technology can make distance - a major factor for County officials and residents - far less important than it used to be. It is believed that Internet access will help further the community's hazard mitigation awareness programs, but should be supplemented with more traditional (and less technical) means as well.

3. Fiscal Capability

Tazewell County has limited fiscal capability to implement hazard mitigation strategies. For Fiscal Year 2012, the County has a public safety budget of $85,347,000.. The county receives most of its revenues through state and local sales tax and other local services and through restricted intergovernmental contributions (federal and state pass through dollars). Considering the current budget deficits at both the state and local government level, in Virginia, combined with the apparent increased reliance on local accountability by the federal government, this is a significant and growing concern for Tazewell County.

		by emergency vehicles for fires or severe weather events.	
Tazewell County State of Emergency Ordinance	Unknown	The purpose of this ordinance is to authorize the proclamation of a State of Emergency and the imposition of prohibitions and restrictions during a State of Emergency. Establishes the authority and procedures for the Board of Supervisors to proclaim a State of Emergency, and to impose the following restrictions as described in the ordinance: curfew; evacuation; possession/transportation/transfer of intoxicating liquors, dangerous weapons and substances; access to areas; movements of people in public places; operation of businesses and other places; and other activities or conditions the control of which may be reasonably necessary to maintain order and protect lives or property during the State of Emergency. The ordinance does not incorporate any long-term mitigation actions, such as temporary moratoria on the reconstruction of structures damaged or destroyed by a disaster event.	LOW
Erosion And Sediment Control		The purpose is to conserve the land, water, air and other natural resources of Tazewell County. It establishes requirements for the control of erosion and sedimentation, and establishes procedures whereby these requirements shall be administered and enforced.	MODERATE

4.H. Open Space Plans

Tazewell County does not currently have a separate Open Space Plan.

4.I. Watershed Protection Plan

Tazewell County does not currently have a separate Watershed Protection Plan. However, the Upper Tennessee River Watershed Strategic Plan dated 2000 contains information for the Clinch, Holston and Powell Rivers.

5. Legal Authority

Local governments in Virginia have a wide range of tools available to them for implementing mitigation programs, policies and actions. A hazard mitigation program can utilize any or all of the four broad types of government powers granted by the State of Virginia, which are (a) regulation; (b) acquisition; (c) taxation; and (d) spending. The scope of this local authority is subject to constraints, however, as all of Virginia's political subdivisions must not act without proper delegation from the state. All power is vested in the state and can only be exercised by local governments to the extent it is delegated. Thus, this portion of the capabilities assessment will summarize Virginia's enabling legislation which grants the four types of government powers listed above within the context of available hazard mitigation tools and techniques.

SECTION VIII — PLAN MAINTENANCE PROCEDURES

The long-term success of the Cumberland Plateau Planning District's mitigation plan depends in large part on routine monitoring, evaluating, and updating of the plan so that it will remain a valid tool for the communities to use. The first step in ensuring that the plan's activities will be implemented is to obtain official recognition of the Mitigation Advisory Committee (MAC) as proposed in Mitigation Action#1 and assign the responsibility to the MAC.

Plan Adoption, Implementation and Maintenance

Formal Plan Adoption

Fifteen local governments in southwestern Virginia have participated in this planning process and formally adopted this plan by resolution of their governing Board. Those local governments are the counties of Buchanan, Dickenson, Russell and Tazewell and the towns of towns of Grundy, Clinchco, Haysi, Cleveland, Honaker, Lebanon, Bluefield, Cedar Bluff, Pocahontas, Richlands and Tazewell. The plan was completed under the auspices of the Cumberland Plateau Planning District.

The adoption process necessitated that the MAC 1) place the plan review and adoption on the appropriate meeting agendas in each jurisdiction, 2) produce and provide copies in official meeting packets, 3) facilitate the actual adoption, 4) collect the adoption resolutions, and 5) incorporate the adopted resolutions into the final Hazard Mitigation Plan.

The Cumberland Plateau Planning District appreciates the willingness that both Virginia Department of Emergency Management and FEMA Region III demonstrated by reviewing this plan concurrently and providing comments for revision *prior* to the adoption process. Not having done so would clearly have added more months to the adoption process.

Implementation

Upon adoption, the plan faces the biggest test: *implementation.* Implementation implies two concepts: action and priority.

While this plan puts forth many worthwhile and "High" priority recommendations, there may be competition among the participating communities in the Cumberland Plateau Planning District for limited mitigation funds. The decision of which action to undertake first will be the primary issue that the district's communities face. Fortunately, there are two factors that will help make that decision workable. First, there are high priority items for each participating community, so each can pursue an action independently. Therefore, the Plan's specific recommendations will begin to be addressed. Second, funding is always an important and critical issue. Therefore whenever possible, the Planning District communities will pursue low or no-cost recommendations.

An example of a low-cost, high-priority recommendation would be to pursue the education efforts necessary for elected officials and the general public as they relate to participation in the National Flood Insurance Program (NFIP). In other cases, some communities need to strengthen their commitment to the NFIP by amending local floodplain ordinances.

Another example would be to pursue the regional goal of increasing education opportunities for the Planning District communities' employees, MAC representatives, and public officials regarding natural hazard mitigation, floodplain management, floodplain regulations, and enforcement. These initial efforts will lead to long-standing changes in vulnerability and can be initiated at very little cost, while promoting public education through their relative "visibility" in the community.

Another important implementation approach that is highly effective, but low-cost, is to take steps to incorporate the recommendations, and equally important, the underlying principles of this Hazard Mitigation Plan into other community plans and mechanisms, such as:

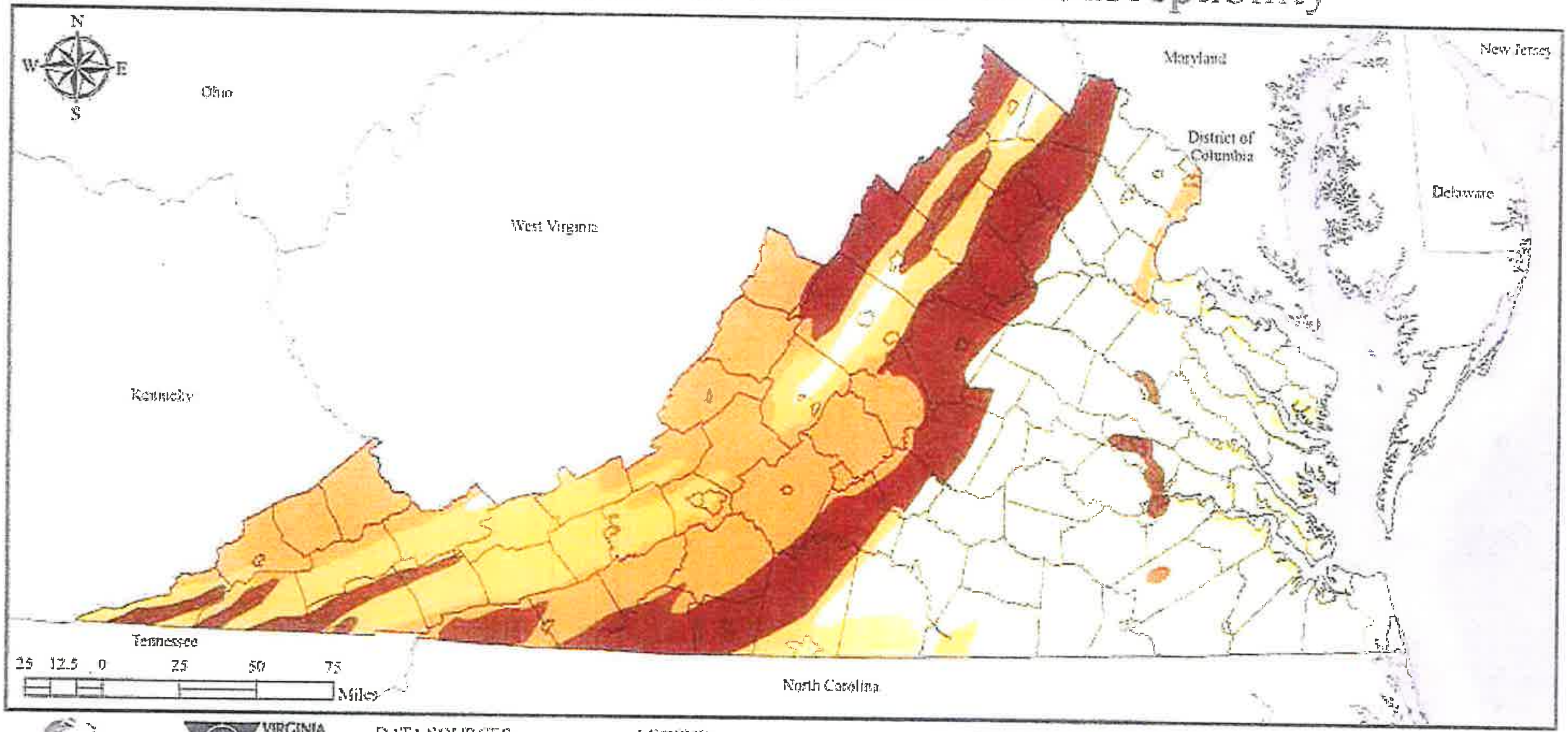
- Comprehensive Planning
- Capital Improvement Budgeting
- Economic Development Goals and Incentives

Mitigation is most successful when it is incorporated within the day-to-day functions and priorities of government and development. This integration is accomplished by a constant effort to network and to identify and highlight the multi-objective, "win-win" benefits to each program, the communities and their constituents. Just as importantly, the mitigation plan and its recommendations should be presented as a *"framework for mitigation"* in all future planning efforts undertaken by the district's communities such as the development or revision of local comprehensive plans. This effort is achieved through the often tedious actions of monitoring agendas, attending meetings, sending memos, and promoting safe, sustainable communities.

Since 2005 Russell County has incorporated the 2005 mitigation recommendations into their Comprehensive Development Plan. Buchanan, Dickenson, Russell and Tazewell Counties have incorporated it into their Local Emergency Operations Plans. The PDC will continue to stress the need to integrate with other local community plans.

Simultaneous to these efforts, it will be important to constantly monitor funding opportunities that can be utilized to implement some of the higher cost recommended actions. This will include creating and maintaining a repository of ideas on how any required local match or participation requirement can be met. Then, when funding does become available, the Cumberland Plateau Planning District communities will be in a position to take advantage of an opportunity. Funding opportunities that can be monitored include special pre- and post-disaster funds, special district budgeted funds, state or federal ear-marked funds, and grant programs, including those that can serve or support multi-objective applications.

Figure 3.12-1: Landslide Incidence and Susceptibility



VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT

DATA SOURCES:

USGS NLHP
VGIN Jurisdictional Boundaries
ESRI State Boundaries

PROJECTION: *VA Lambert Conformal Conic North American Datum 1983*

DISCLAIMER: [illegible] of available hazard data is intended to be used at national or regional scales. The purpose of the data sets are to give general indication of areas that may be susceptible to hazards. In order to identify potential risk to the Commonwealth available data has been used beyond the original intent.

LEGEND:

Landslide Categories

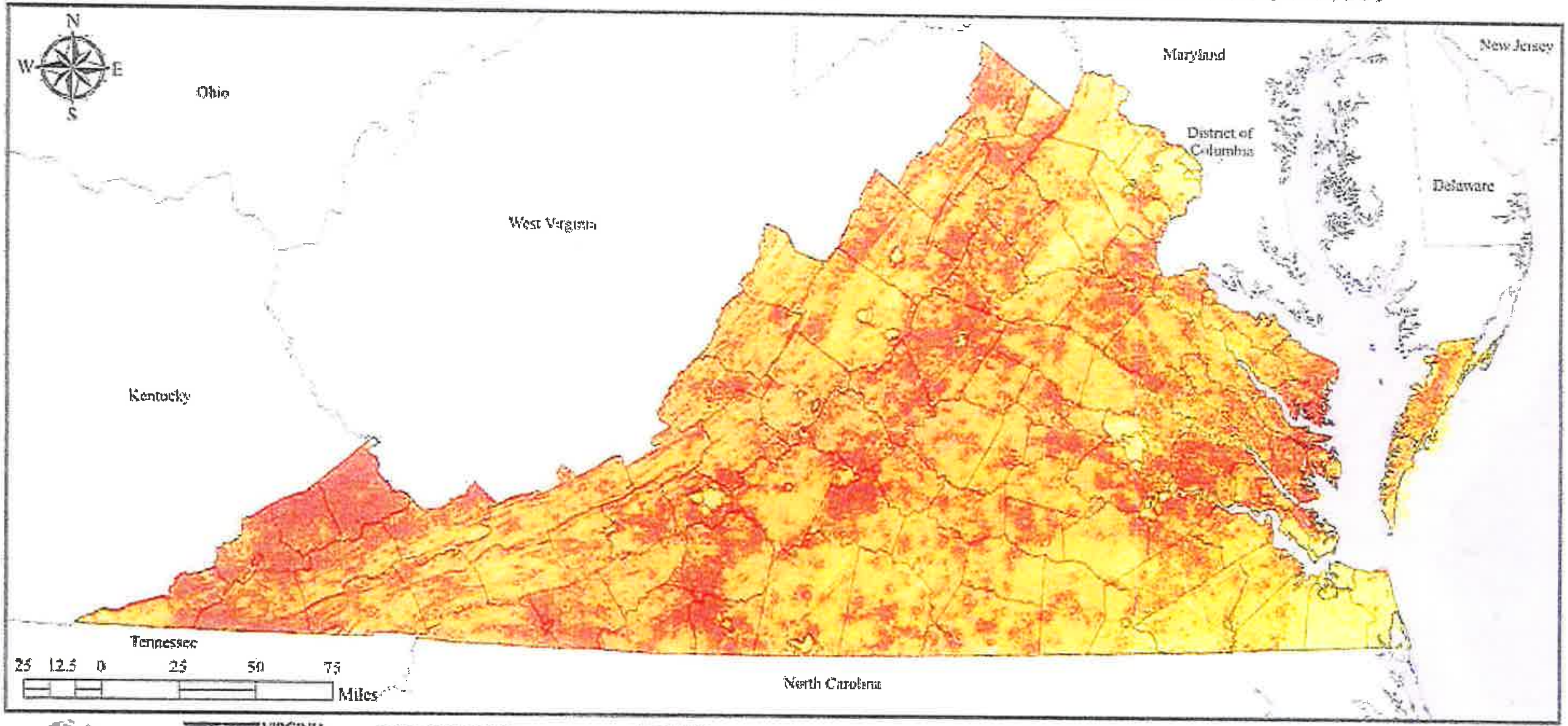
🟥	High Susceptibility & Moderate Incidence
▨	High Susceptibility & Low Incidence
🟧	High Incidence
🟨	Moderate Susceptibility & Low Incidence
🟨	Moderate Incidence
	Low Incidence

HAZARD IDENTIFICATION:

The Landslide Incidence and Susceptibility map layer shows areas of landslides and areas susceptible to future landsliding. Areas where large numbers of landslides have occurred and areas which are susceptible to landsliding have been delineated in this layer.

Landslides are defined to include most types of gravitational mass movement such as rockfalls, debris flows, and the failure of engineered soil materials.

Figure 3.11-1: VDOF Statewide Wildfire Risk Assessment



VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT

DATA SOURCES:

VDOF Wildfire Risk Assessment
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

Wildfire Risk
- 🟩 None (Water)
- ⬜ Low
- 🟨 Moderate
- 🟥 High

PROJECTION: *VA Lambert Conformal Conic North American Datum 1983*

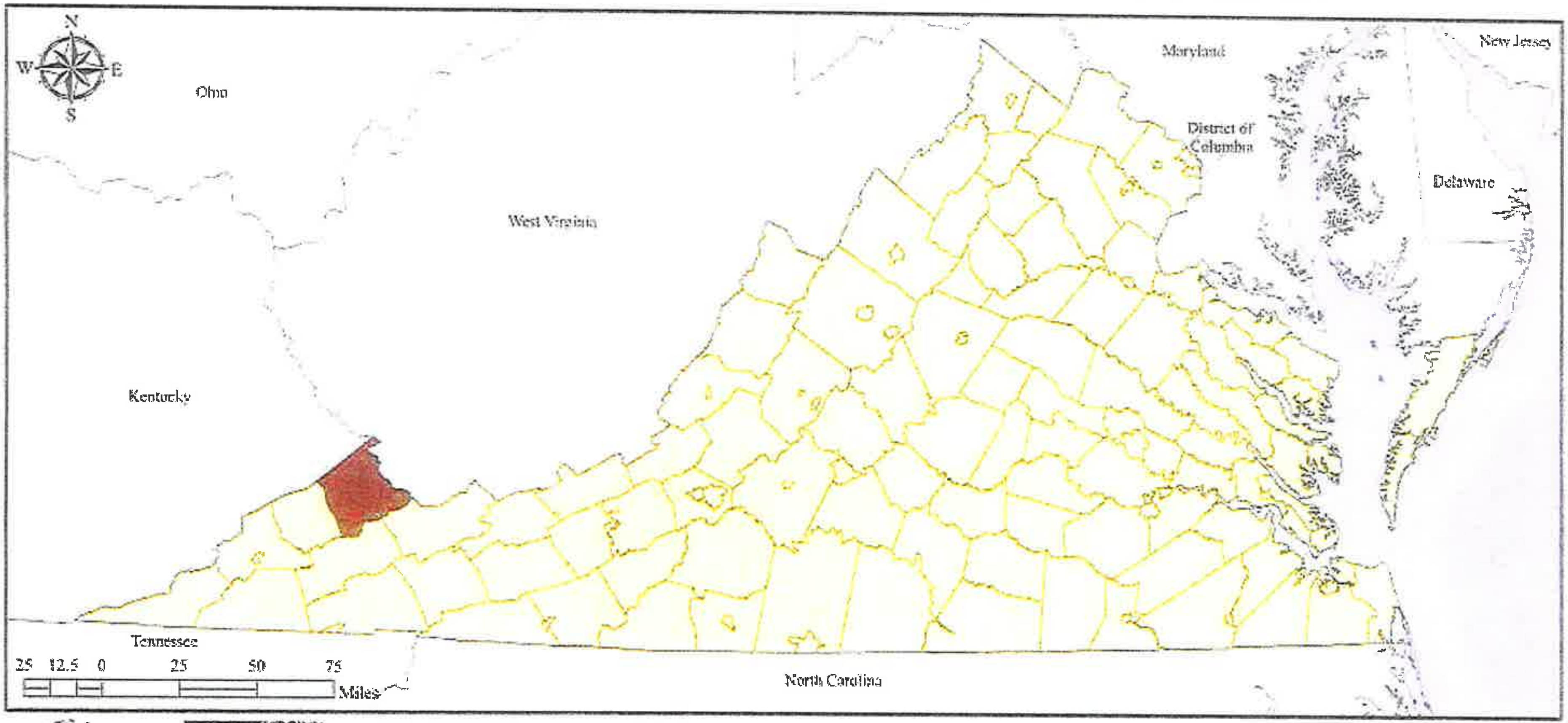
DISCLAIMER: Mapping of available hazard data is intended to be used at national or regional scale. The purpose of the data sets are to give general indication of areas that may be susceptible to hazards. In order to identify potential risk to the Commonwealth available data has been used beyond the original intent

HAZARD IDENTIFICATION:

Wildfire Risk Assessment model has been developed by the Virginia Department of Forestry. This model aims to identify areas which are more favorable to wildfire occurrence and wildfire advancement.

Model inputs included historical fire incidents, land cover (fuels surrogate), topographic characteristics, population density, and distance to roads.

Figure 3.3-8: Landslide Federal Declared Disasters



VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT

PROJECTION: *VA Lambert Conformal Conic*
North American Datum 1983

DISCLAIMER: Majority of available hazard data is intended to be used at national or regional scales. The purpose of the data sets are to give general indication of areas that may be susceptible to hazards. In order to identify potential risk in the Commonwealth available data has been used beyond the original intent

DATA SOURCES:

FEMA & VDEM Declared Disasters
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

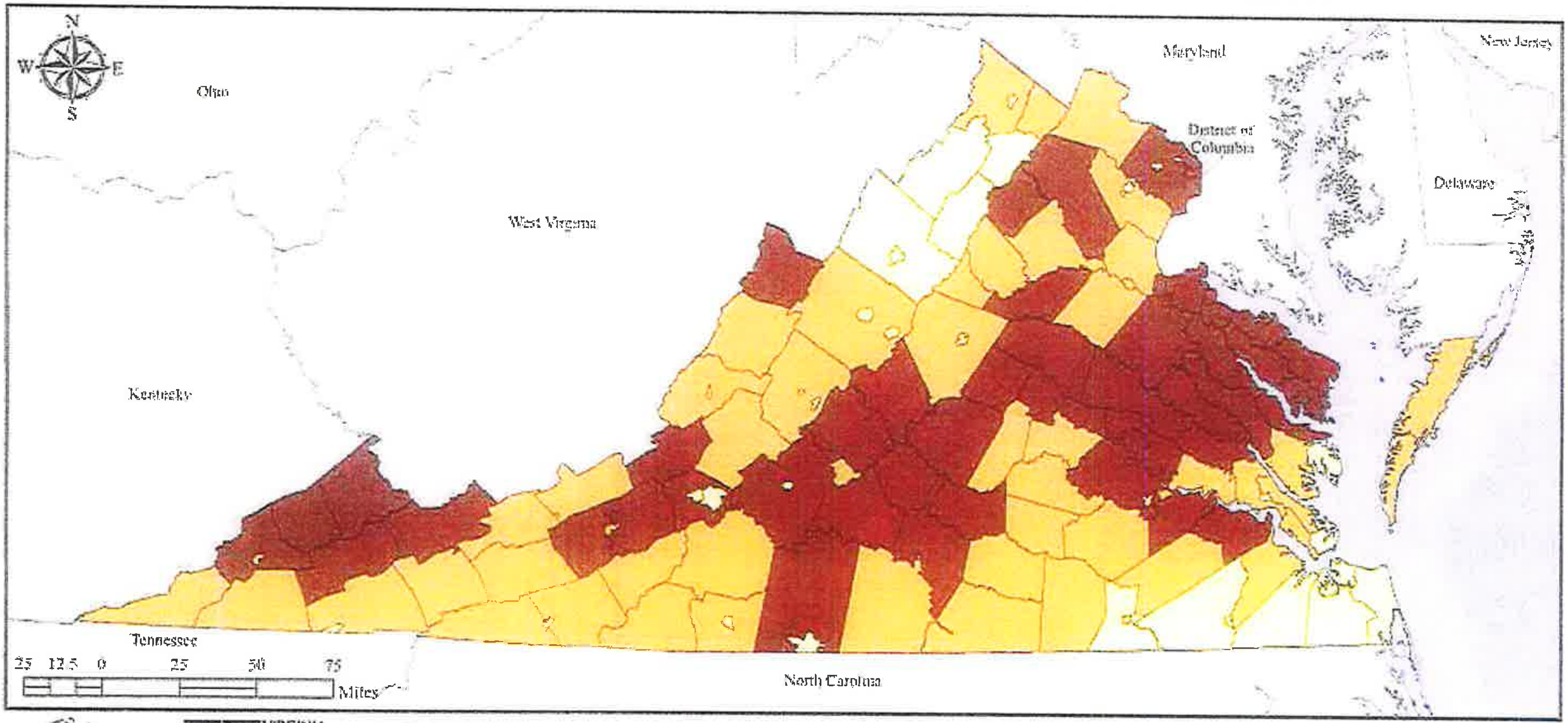
Number of Declared Disasters (1964-2008)
☐ No Disaster Declaration
🟥 1

DATA IDENTIFICATION:

A declared federal disaster is any disaster in which Federal funding was allocated to a jurisdiction in the wake of a disaster incident. The sources and types of funding are not taken into account for this map.

The period of record for this map spans 1964 - 2008. Occurrences include total number of landslide related disaster declarations.

Figure 3.3-6: Winter Storm Federal Declared Disasters



VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT

DATA SOURCES:

FEMA & VDEM Declared Disasters
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

Number of Declared Disasters (1964-2008)

- ☐ 1 - 3
- 🟨 4
- 🟥 5 - 6

DATA IDENTIFICATION:

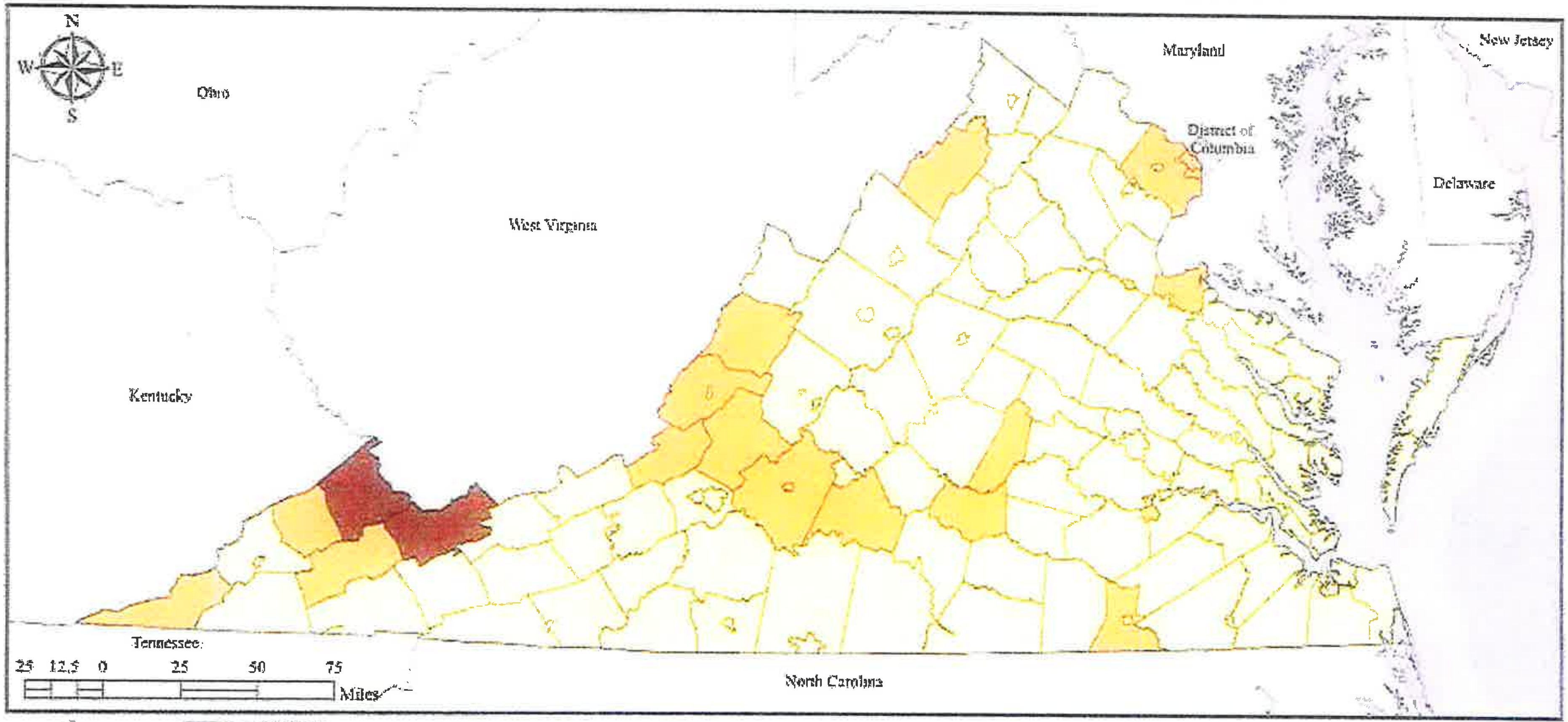
A declared federal disaster is any disaster in which Federal funding was allocated to a jurisdiction in the wake of a disaster incident. The sources and types of funding are not taken into account for this map.

The period of record for this map spans 1964 - 2008. Occurrences include total number of winter storm related disaster declarations.

PROJECTION: *VA Lambert Conformal Conic North American Datum 1983*

DISCLAIMER: [illegible]

Figure 3.3-5: Tornado Federal Declared Disasters



VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT

DATA SOURCES:

FEMA & VDEM Declared Disasters
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

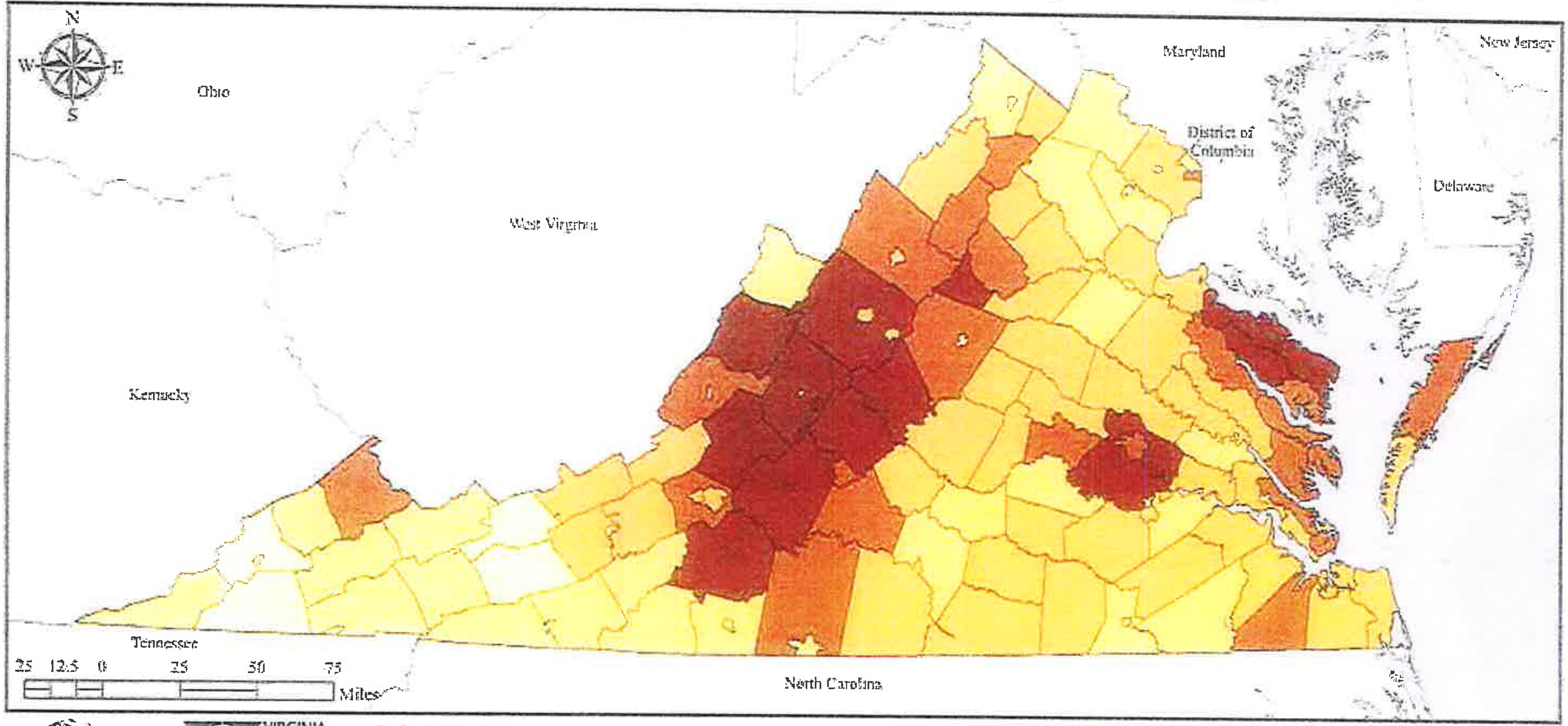
Number of Declared Disasters (1964-2008)
- ☐ No Declared Disasters
- 🟨 1
- 🟥 2

PROJECTION: *VA Lambert Conformal Conic*
North American Datum 1983

DATA IDENTIFICATION:

A declared federal disaster is any disaster in which Federal funding was allocated to a jurisdiction in the wake of a disaster incident. The sources and types of funding are not taken into account for this map.
The period of record for this map spans 1964 - 2008. Occurrences include tornado related declarations by jurisdiction. This includes all counties that recieved aid for a disaster that had tornado in its description hurricanes, tropical storms, and severe storms.

Figure 3.3-4: Non-Rotational Wind Federal Declared Disasters



VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT

DATA SOURCES:

FEMA & VDEM Declared Disasters
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

Number of Declared Disasters (1964-2008)

- 0 - 1
- 2 - 3
- 4 - 5
- 6
- 7 - 8

PROJECTION: *VA Lambert Conformal Conic*
North American Datum 1983

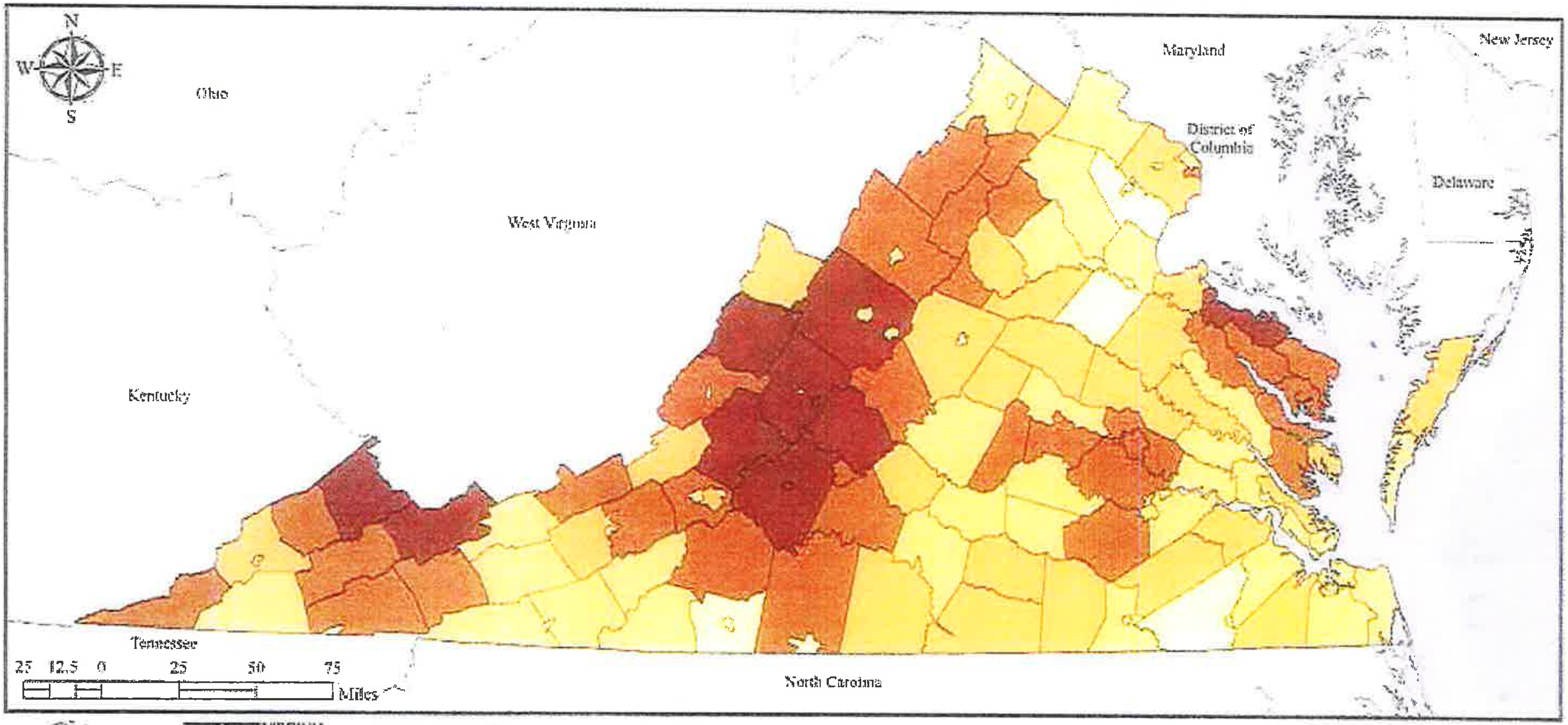
DISCLAIMER: Majority of available hazard data is intended to be used at national or regional scales. The purpose of the data sets are to give general indication of areas that may be susceptible to hazards. In order to identify potential risk in the Commonwealth available data has been used beyond the original intent.

DATA IDENTIFICATION:

A declared federal disaster is any disaster in which Federal funding was allocated to a jurisdiction in the wake of a disaster incident. The sources and types of funding are not taken into account for this map.

The period of record for this map spans 1964 - 2008. Occurrences include non-rotational wind related events by jurisdiction. This could include wind events such as hurricanes, tropical storms, and severe storms.

Figure 3.3-3: Flood Federal Declared Disasters



PROJECTION: *VI Lambert Conformal Conic*
North American Datum 1983

DATA SOURCES:

FEMA & VDEM Declared Disasters
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

Number of Declared Disasters (1964-2008)

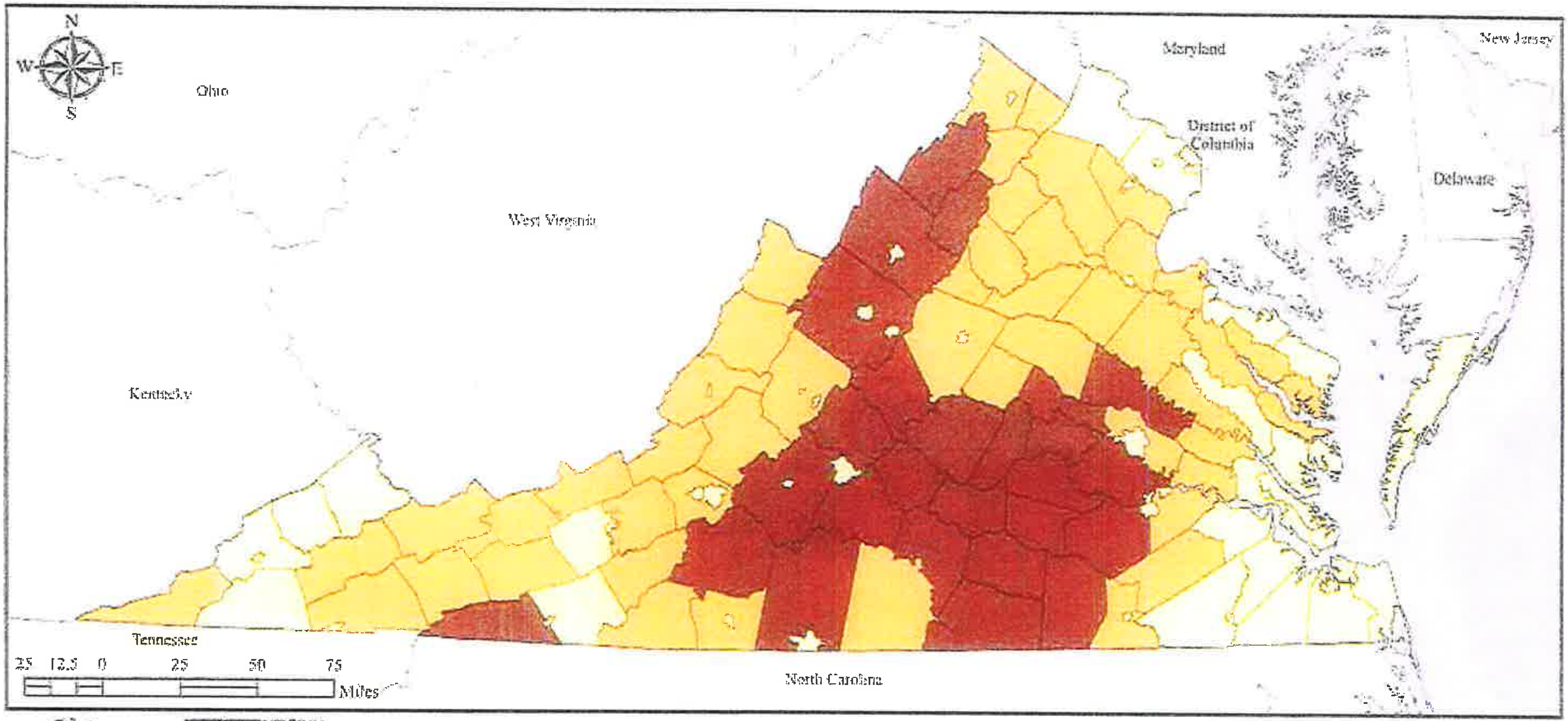
- ☐ 0 - 2
- ☐ 3 - 4
- ☐ 5
- ▨ 6 - 7
- ■ 8 - 11

DATA IDENTIFICATION:

A declared federal disaster is any disaster in which Federal funding was allocated to a jurisdiction in the wake of a disaster incident. The sources and types of funding are not taken into account for this map.

The period of record for this map spans 1964 through 2008. Total occurrences, by jurisdiction, include flood related events, such hurricanes, snowmelt, and thunderstorms.

Figure 3.3-2: Drought Federal Declared Disasters



VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT

DATA SOURCES:

FEMA & VDEM Declared Disasters
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

Number of Declared Disasters (1964-2008)

- 🟨 No Declared Disasters
- 🟧 1
- 🟥 2

DATA IDENTIFICATION:

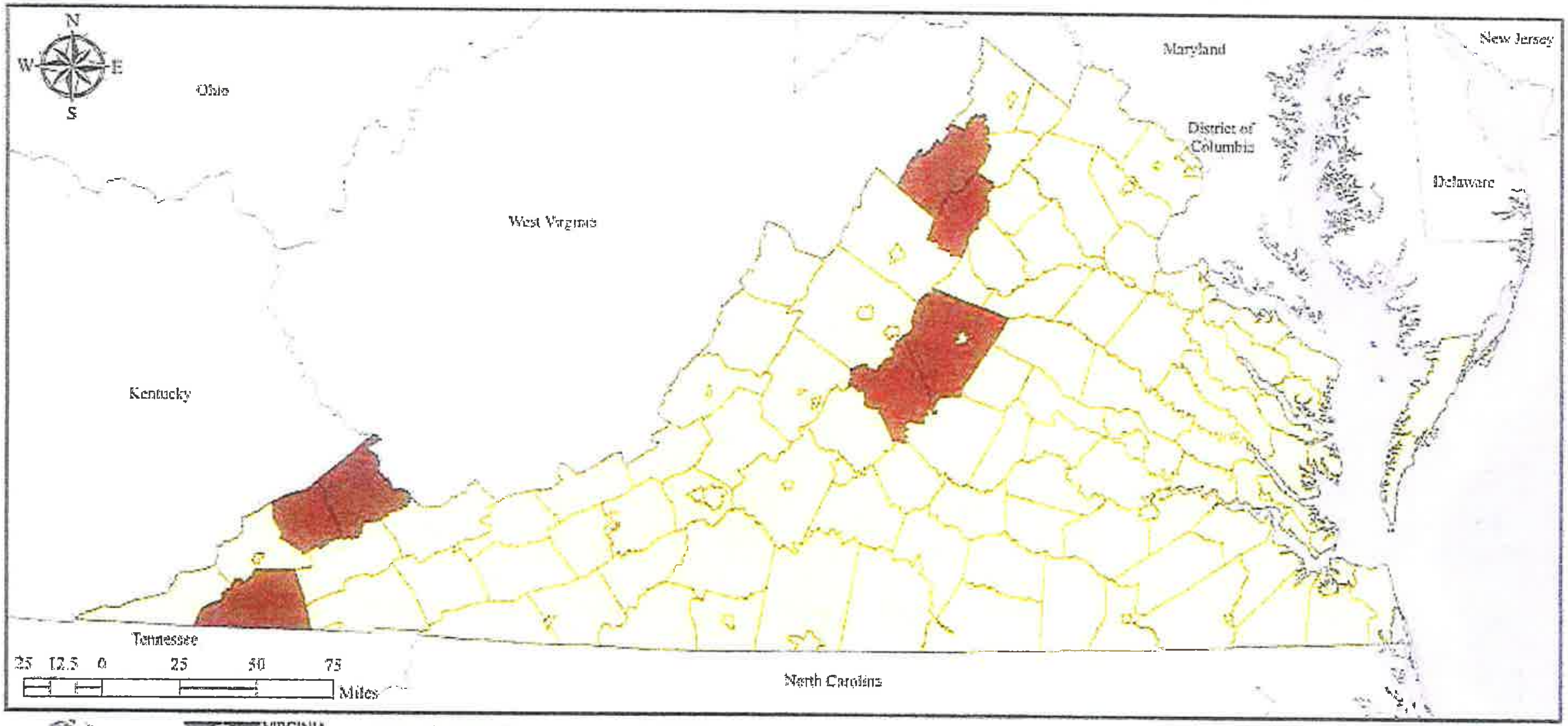
A declared federal disaster is any disaster in which Federal funding was allocated to a jurisdiction in the wake of a disaster incident. The sources and types of funding are not taken into account for this map.

The period of record for this map spans 1964 through 2008. Occurrences include total number of drought related disaster declarations by jurisdiction.

PROJECTION: *VA Lambert Conformal Conic North American Datum 1983*

DISCLAIMER: Absence of available hazard data or [illegible] to be used at national or regional scale. The purpose of the data sets are to give general indication of areas that may be susceptible to hazards. In order to identify potential risk in the Commonwealth available data has been used beyond the original intent.

Figure 3.3-7: Wildfire Federal Declared Disasters



VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT

DATA SOURCES:

FEMA & VDEM Declared Disasters
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

Number of Declared Disasters (1964-2008)

☐ No Disaster Declaration
🟥 1

DATA IDENTIFICATION:

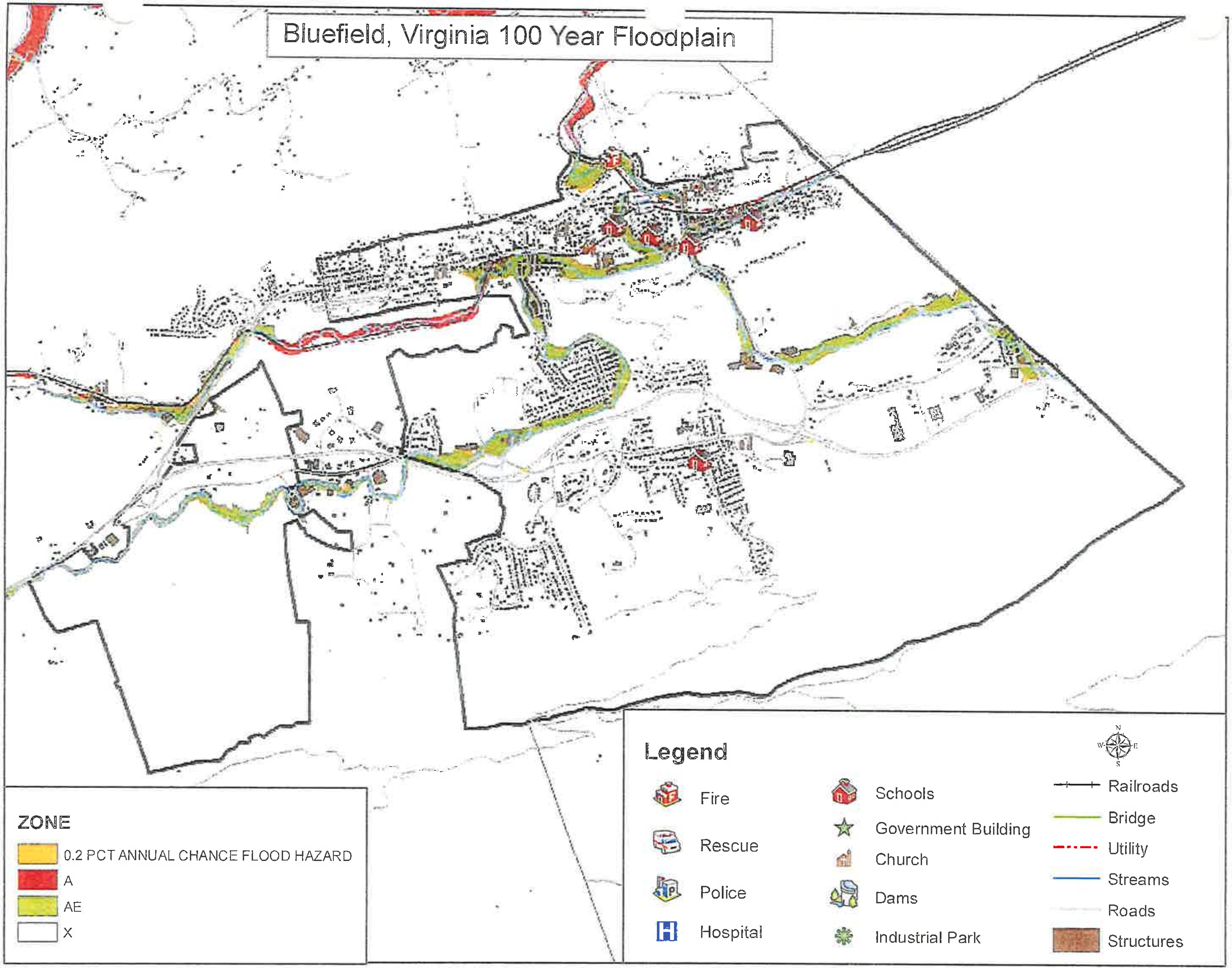
A declared federal disaster is any disaster in which Federal funding was allocated to a jurisdiction in the wake of a disaster incident. The sources and types of funding are not taken into account for this map.

The period of record for this map spans 1964 - 2008. Occurrences include total number of wildfire related disaster declarations.

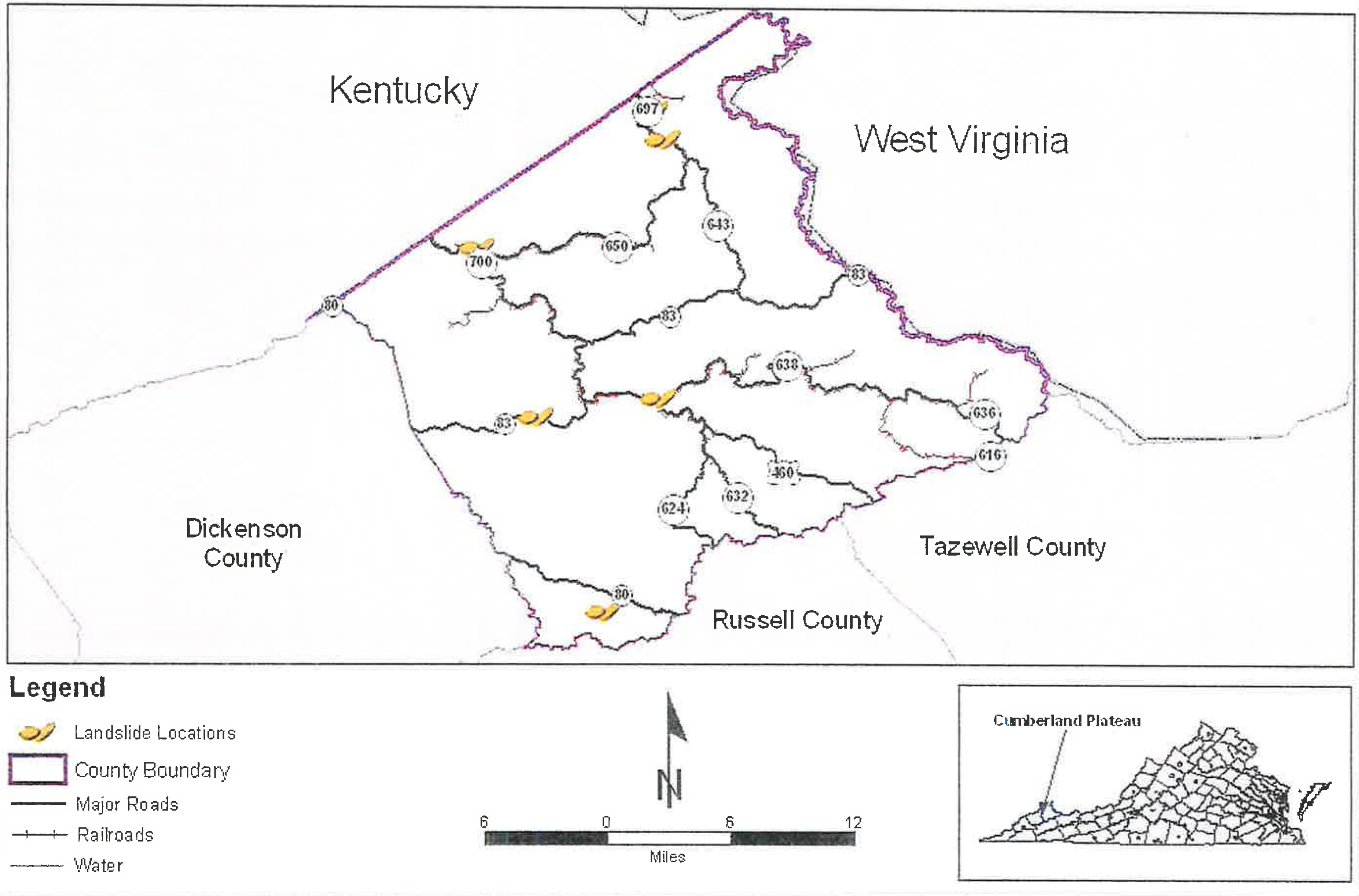
PROJECTION: *VA Lambert Conformal Conic North American Datum 1983*

DISCLAIMER: Majority of available hazard data is intended to be used at national or regional scales. The purpose of the data sets are to give general indication of areas that may be susceptible to hazards. In order to identify potential risk in the Commonwealth available data has been used beyond the original intent.

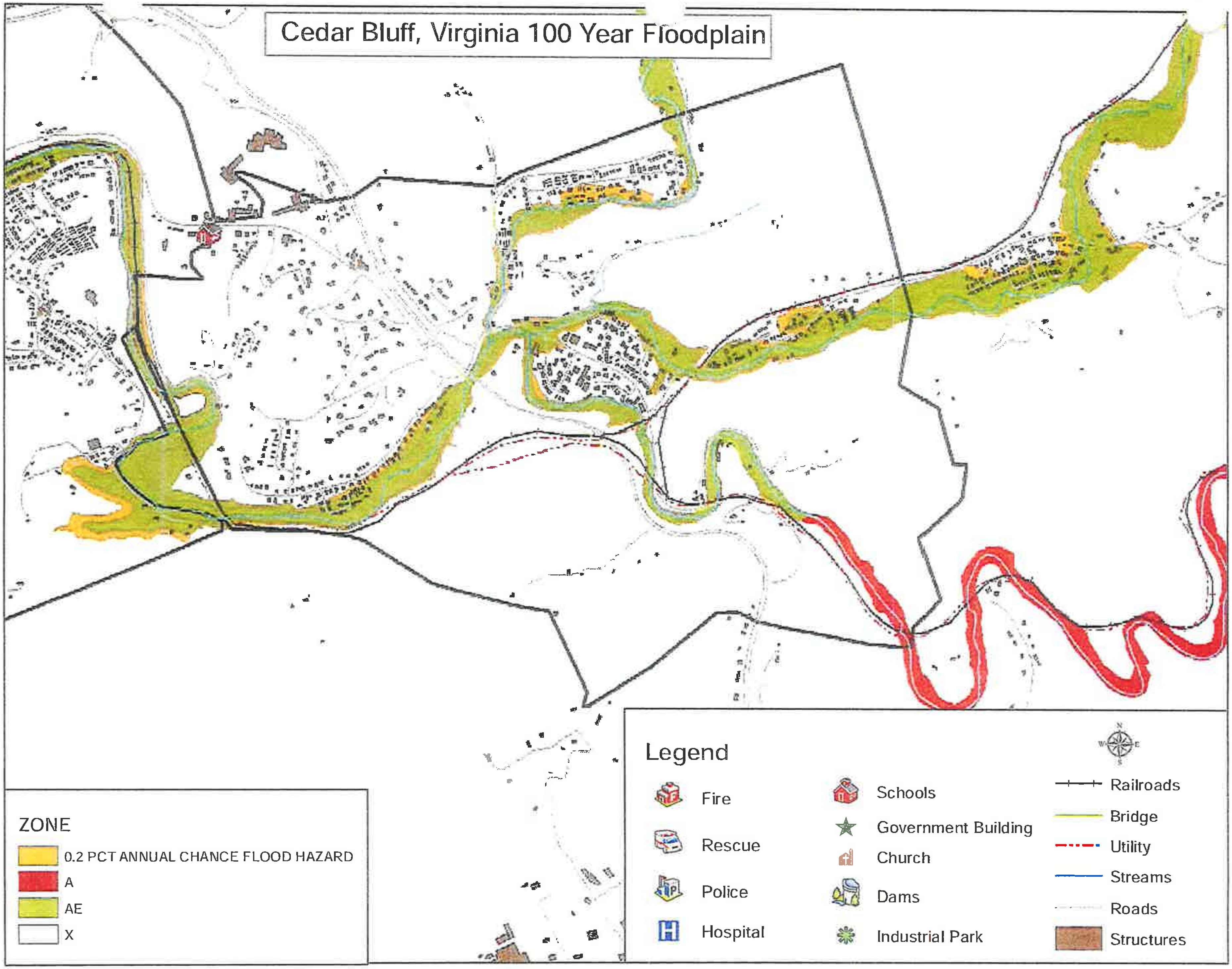
Bluefield, Virginia 100 Year Floodplain



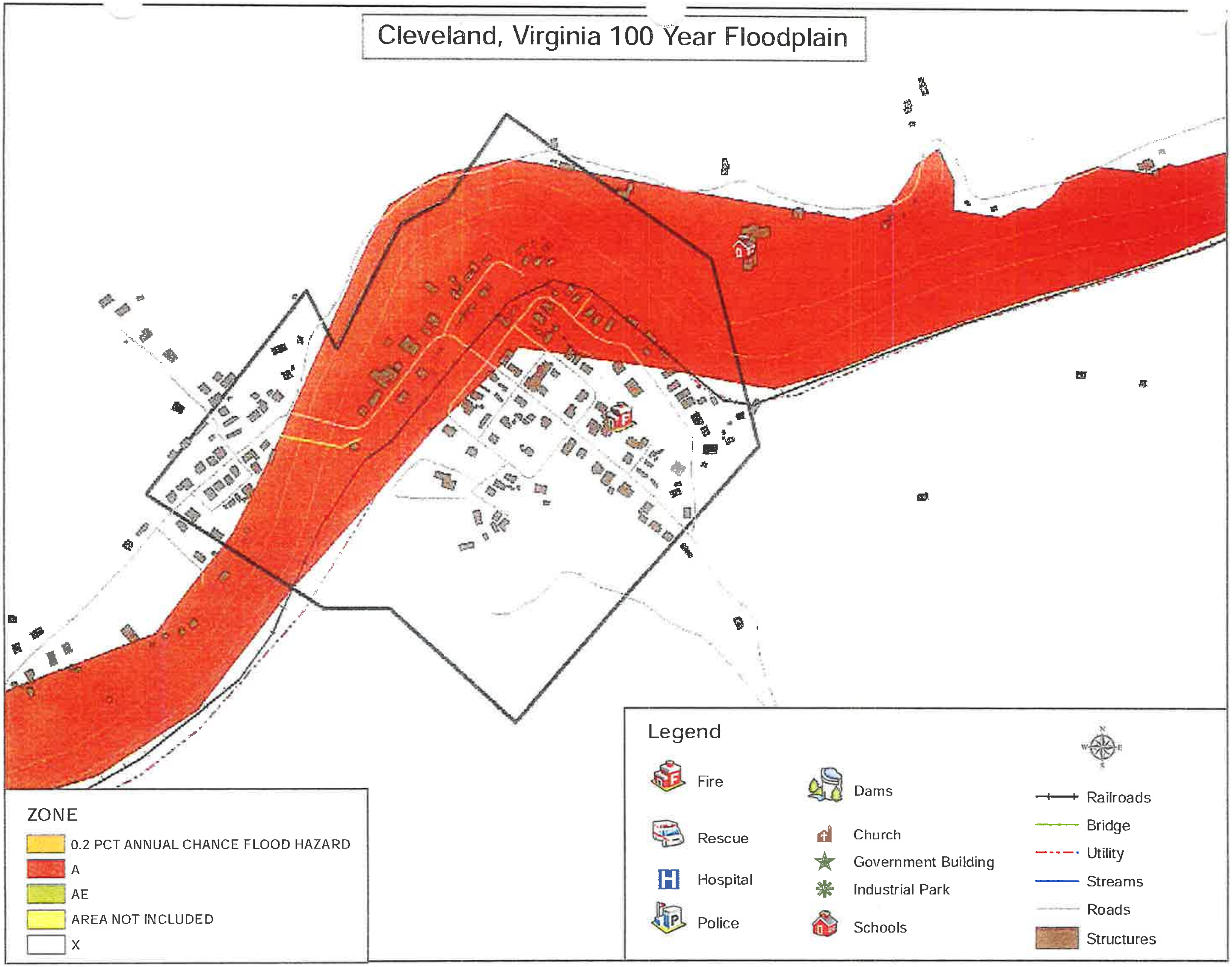
Buchanan County, Virginia Landslide Locations



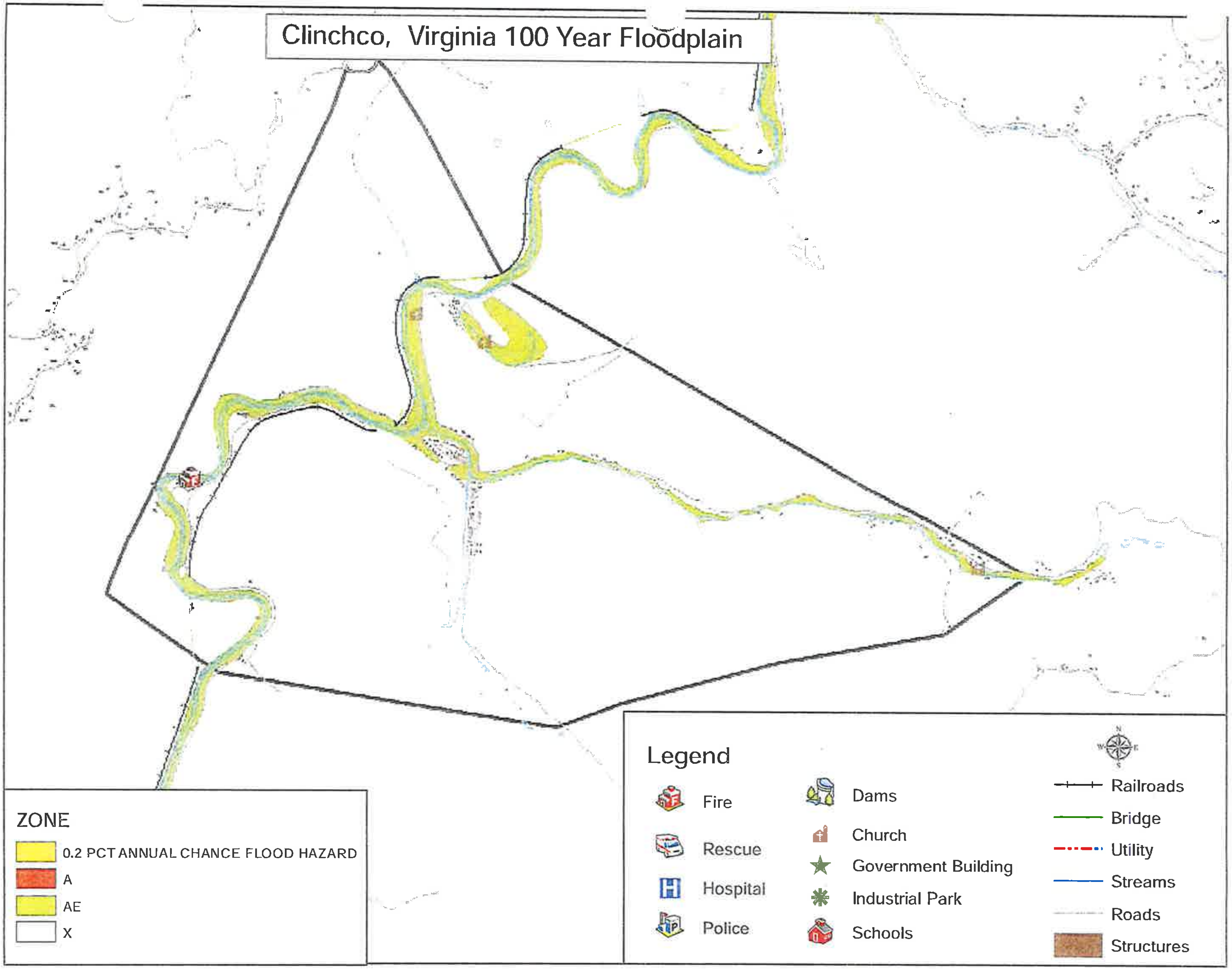
Cedar Bluff, Virginia 100 Year Floodplain



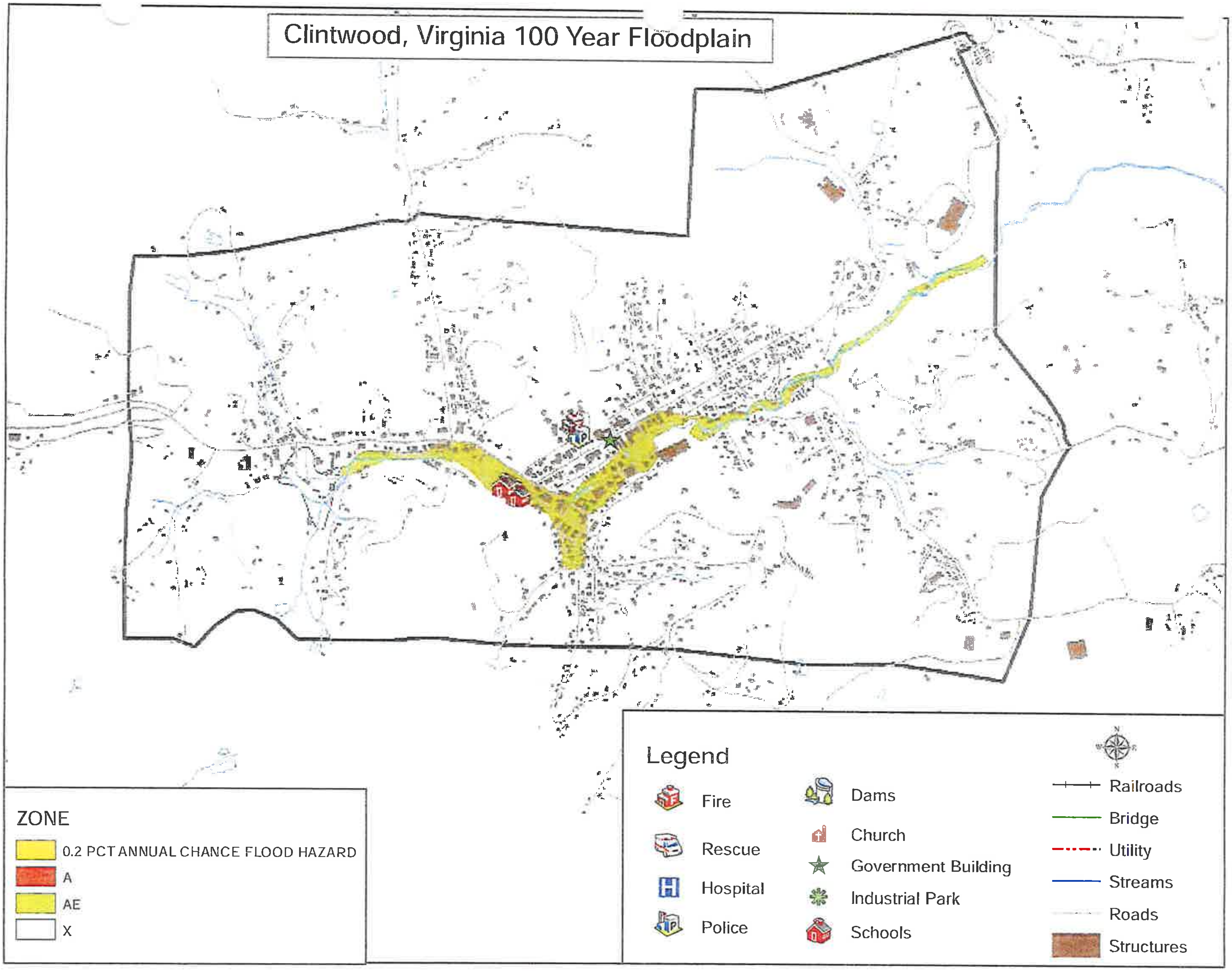
Cleveland, Virginia 100 Year Floodplain

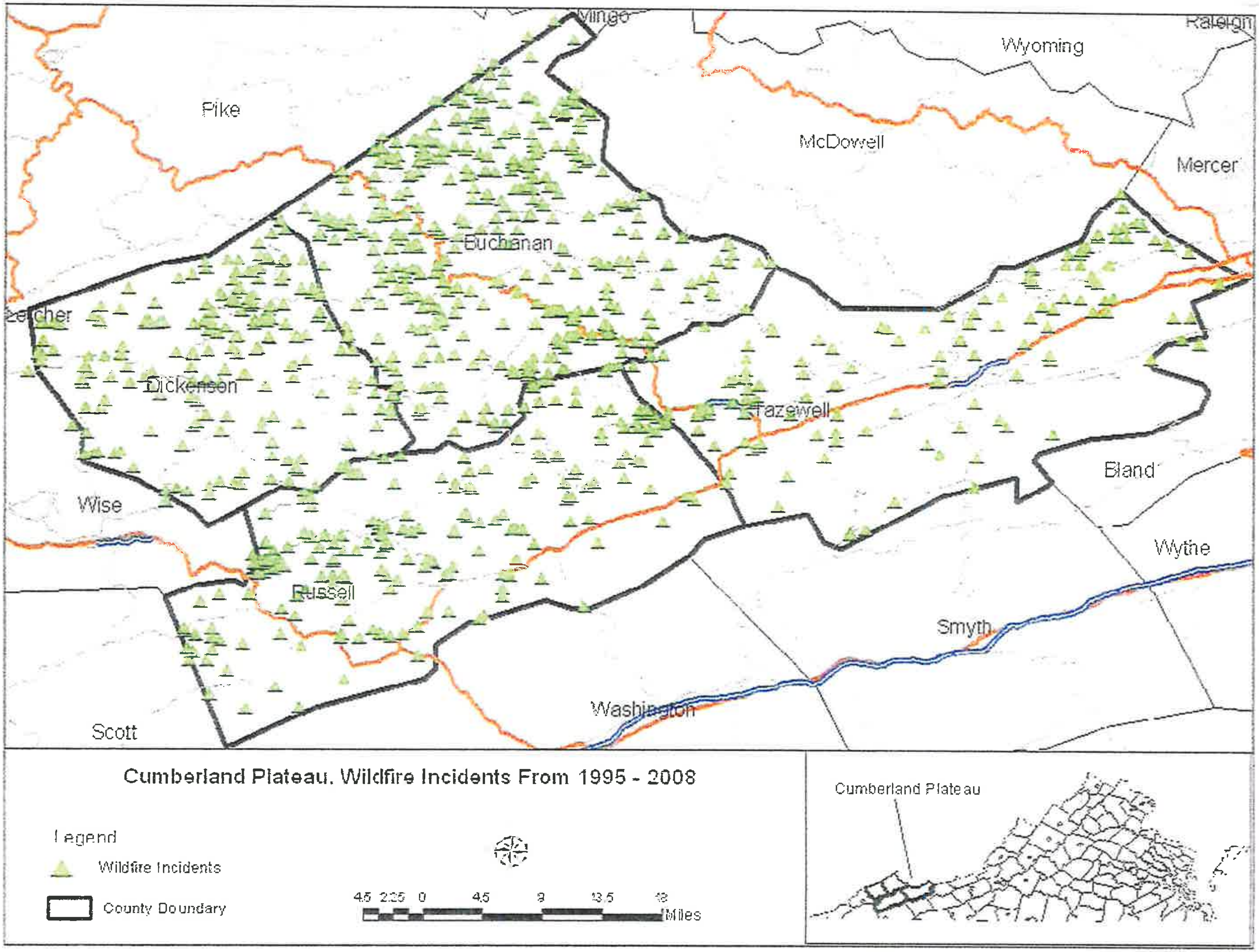


Clinchco, Virginia 100 Year Floodplain



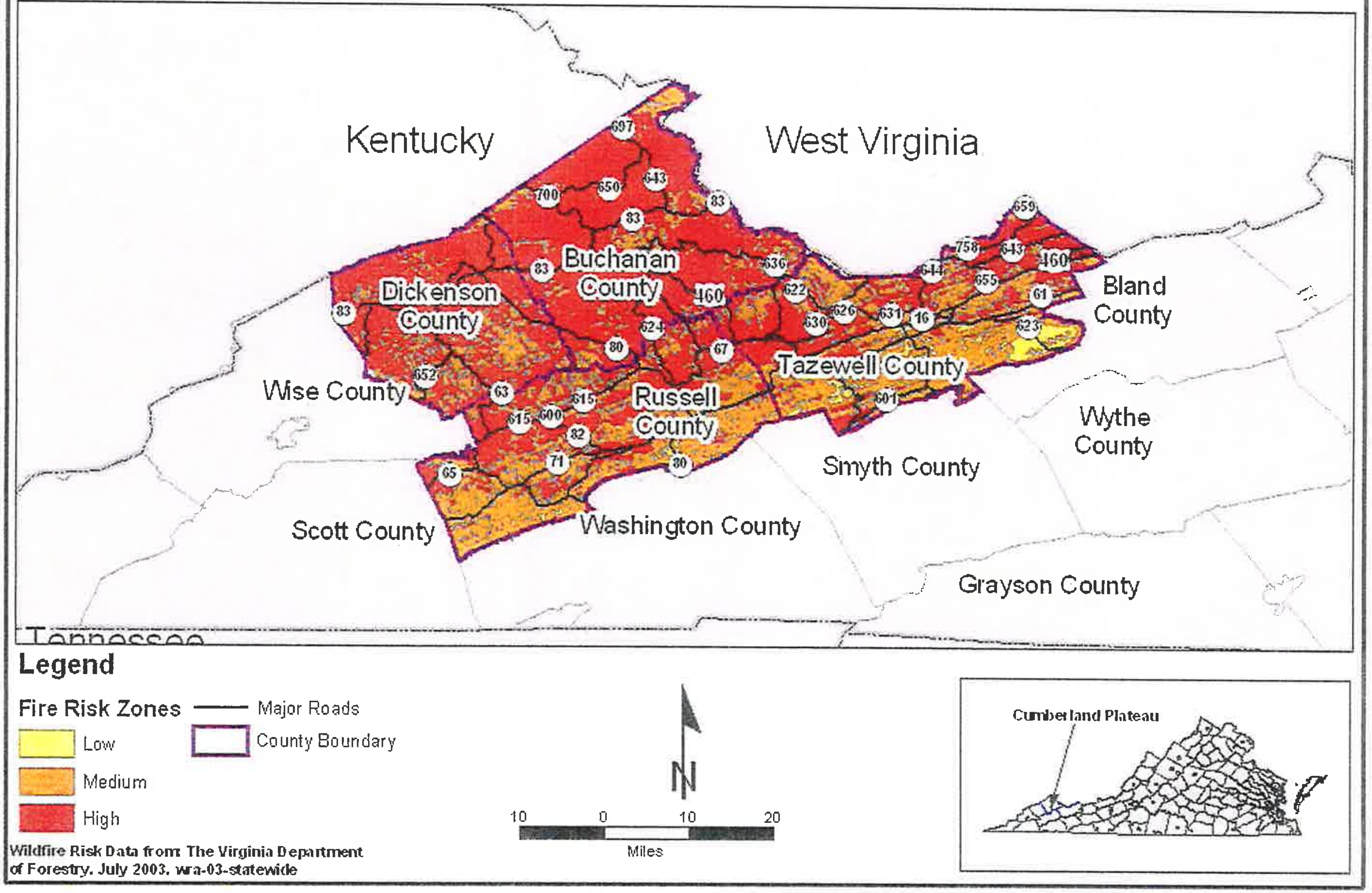
Clintwood, Virginia 100 Year Floodplain





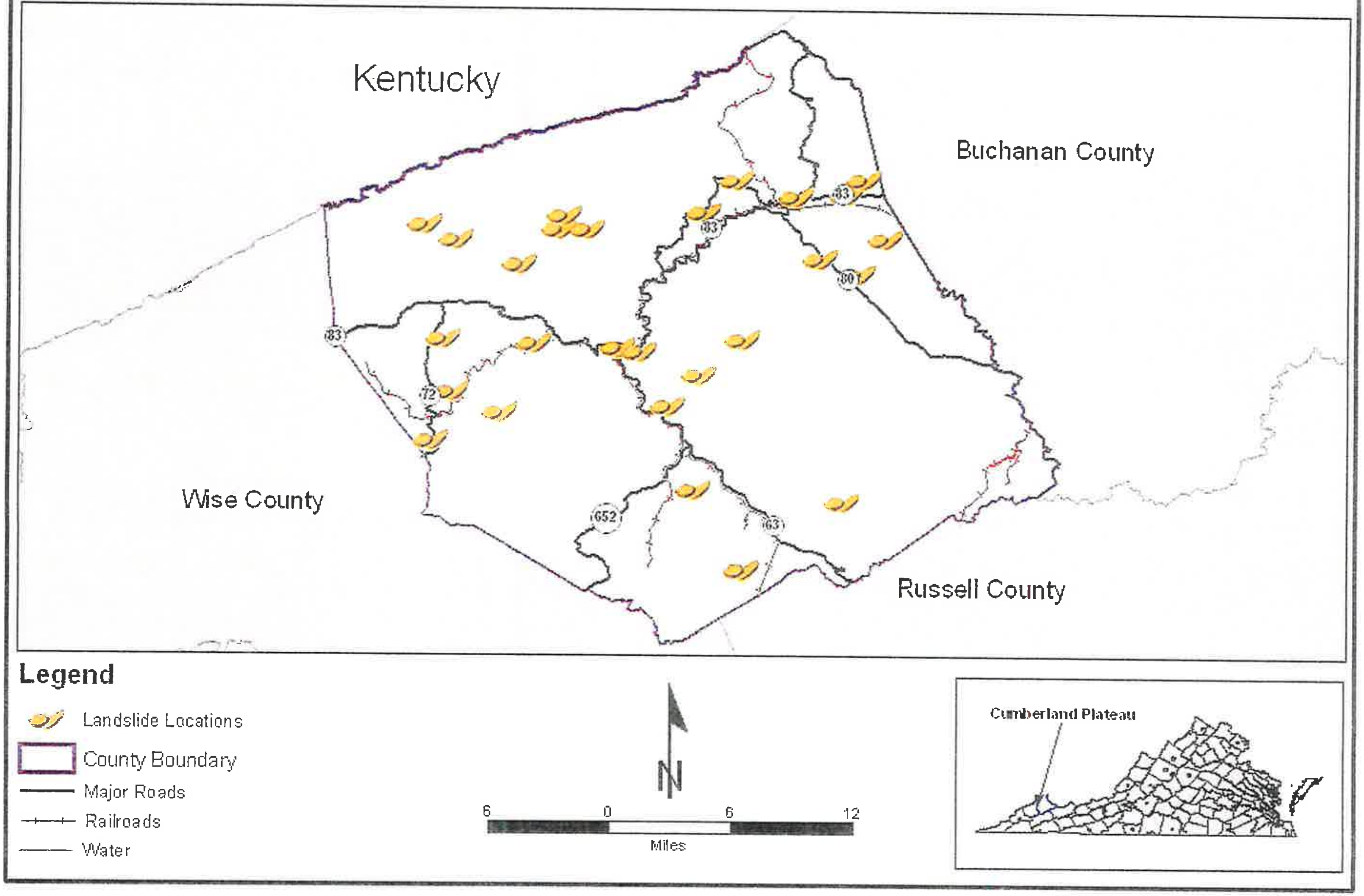
Cumberland Plateau. Wildfire Incidents From 1995 - 2008

Cumberland Plateau, Virginia Fire Risk Zones

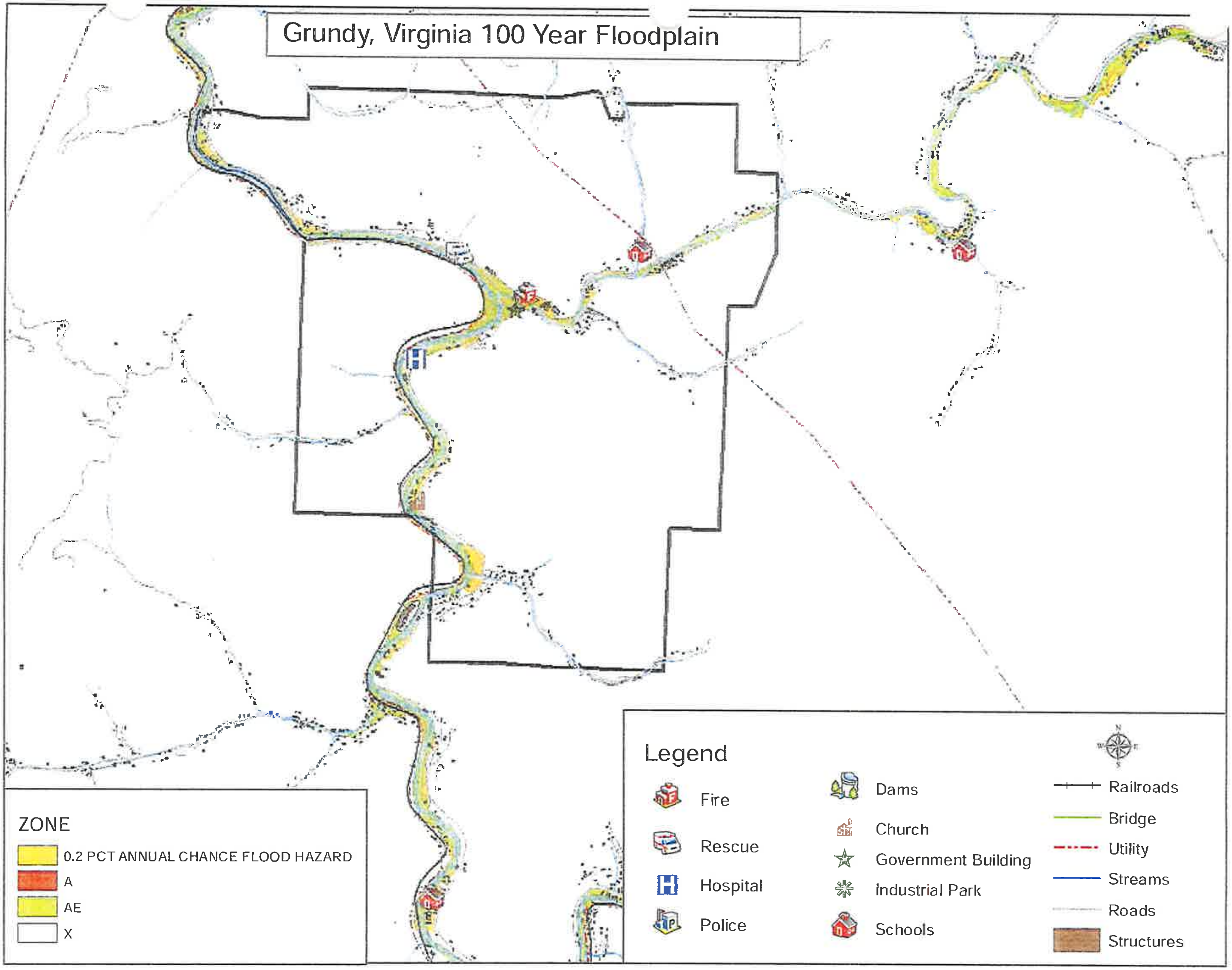


Wildfire Risk Data from The Virginia Department of Forestry. July 2003. wra-03-statewide

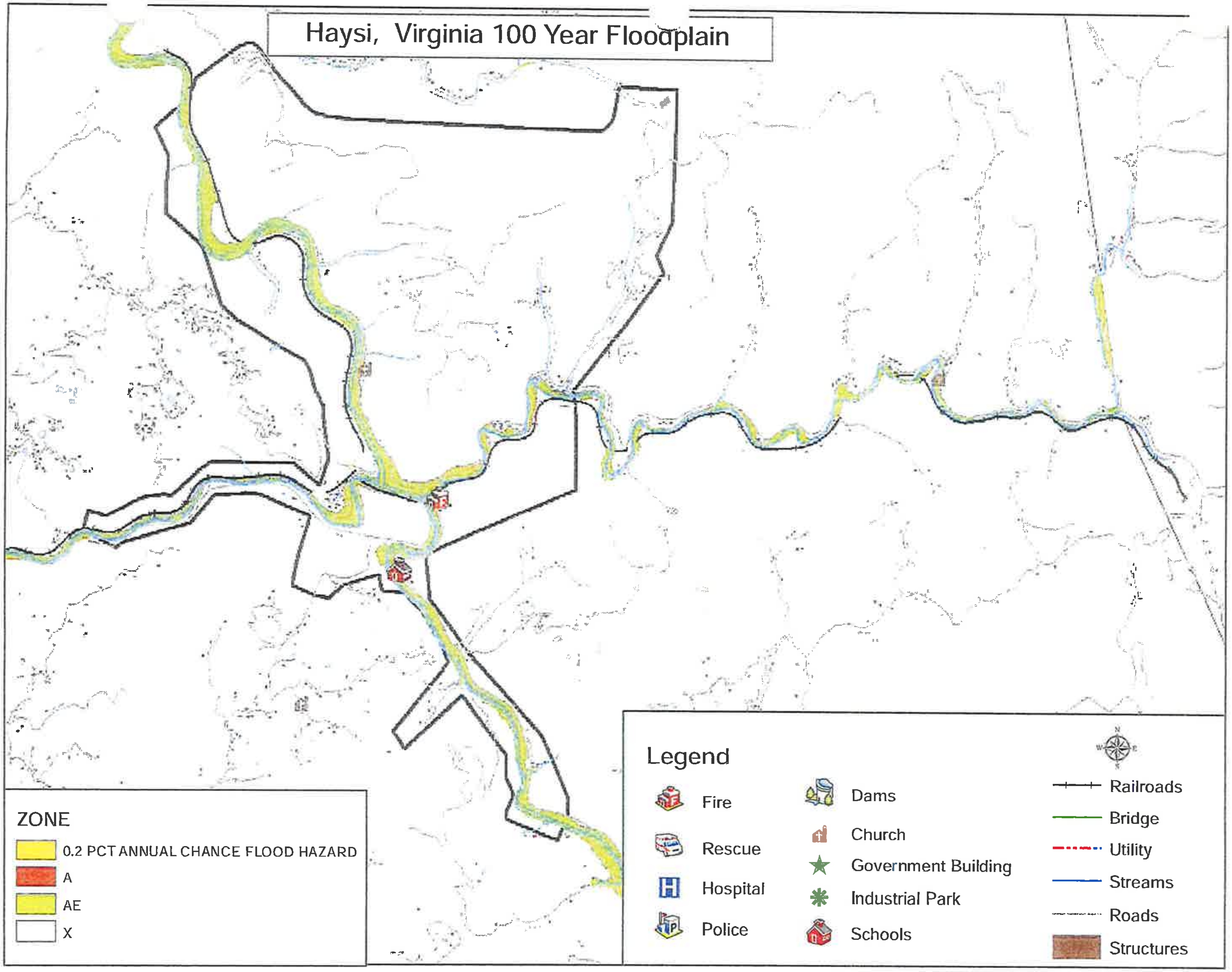
Dickenson County, Virginia Landslide Locations



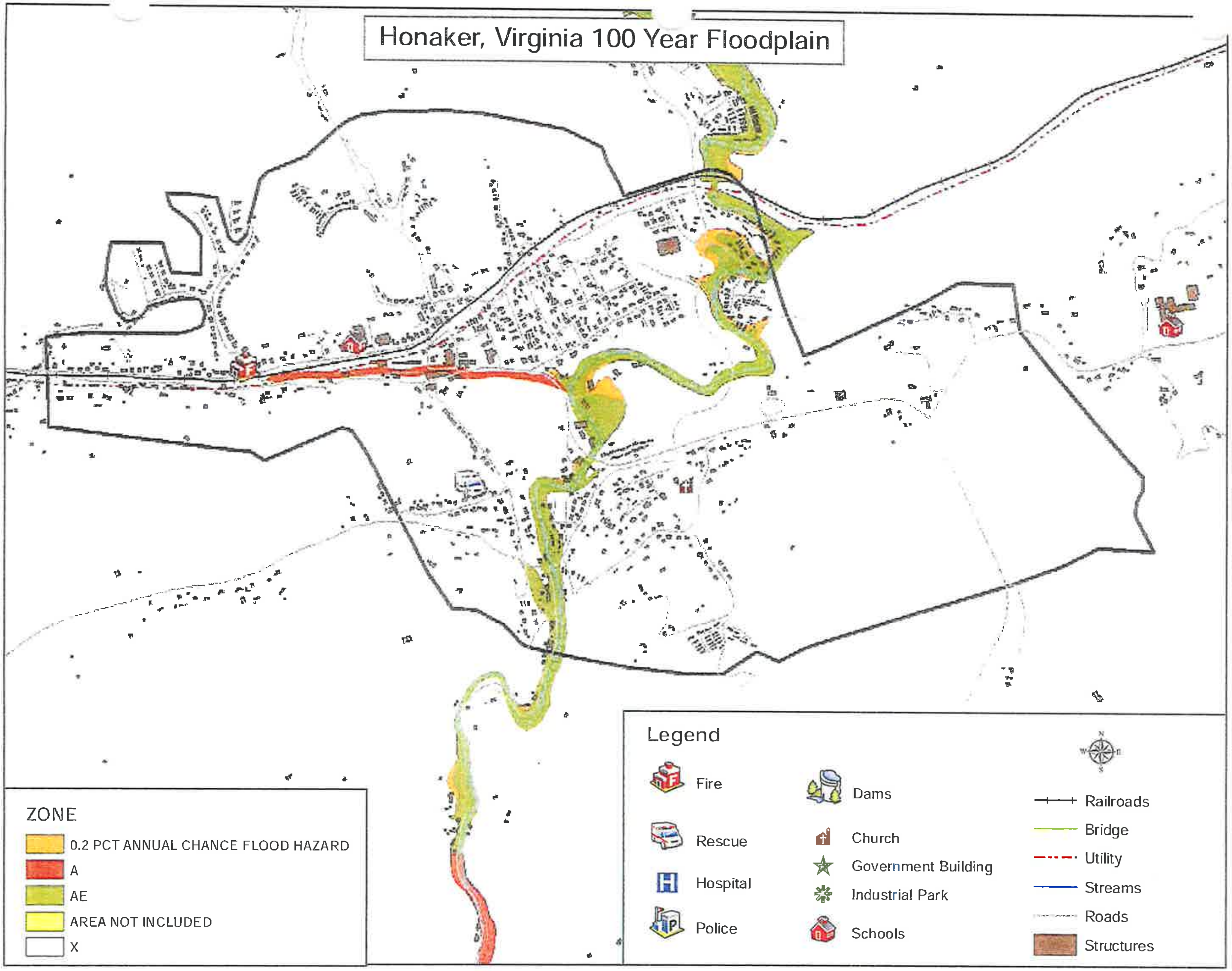
Grundy, Virginia 100 Year Floodplain



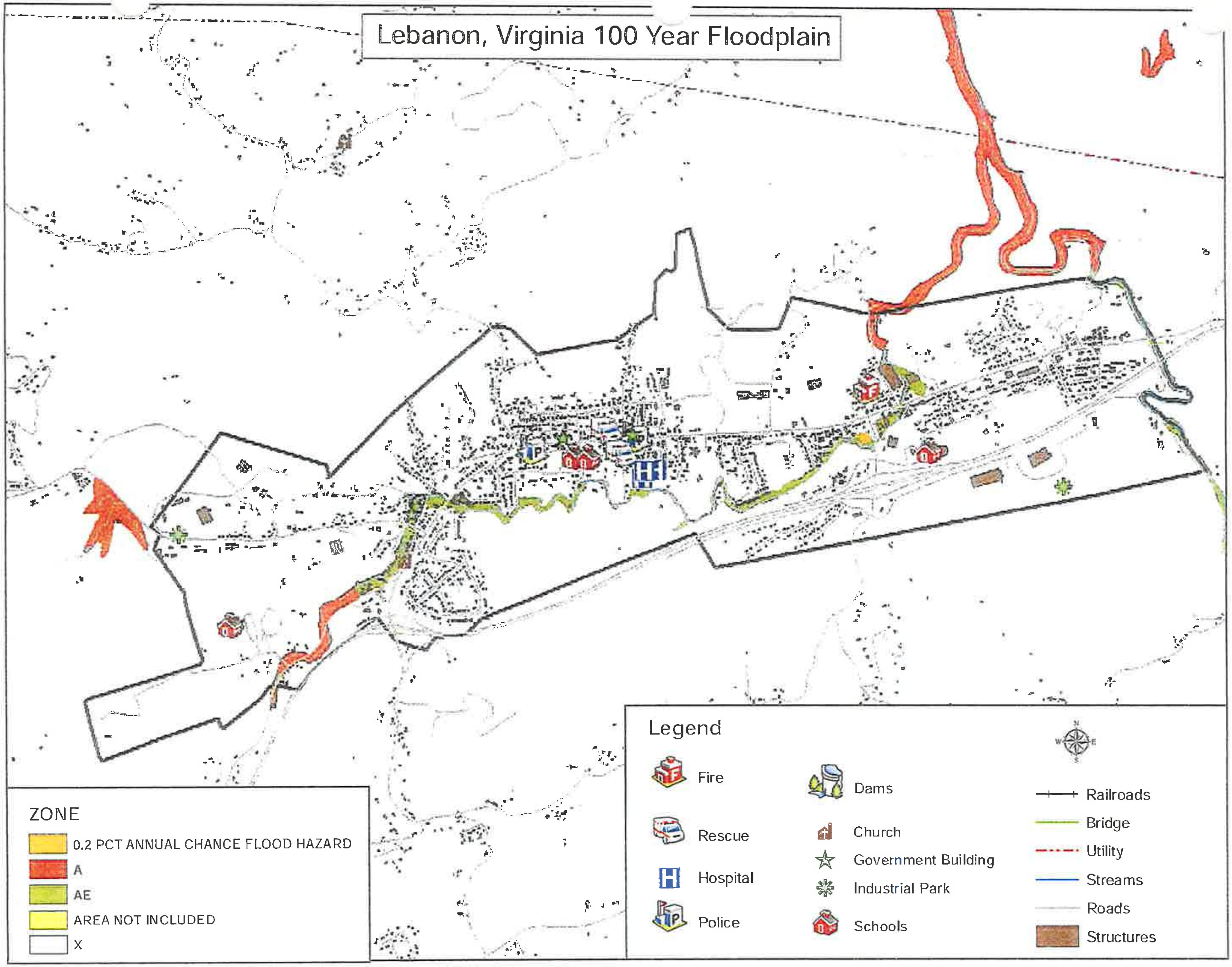
Haysi, Virginia 100 Year Floodplain



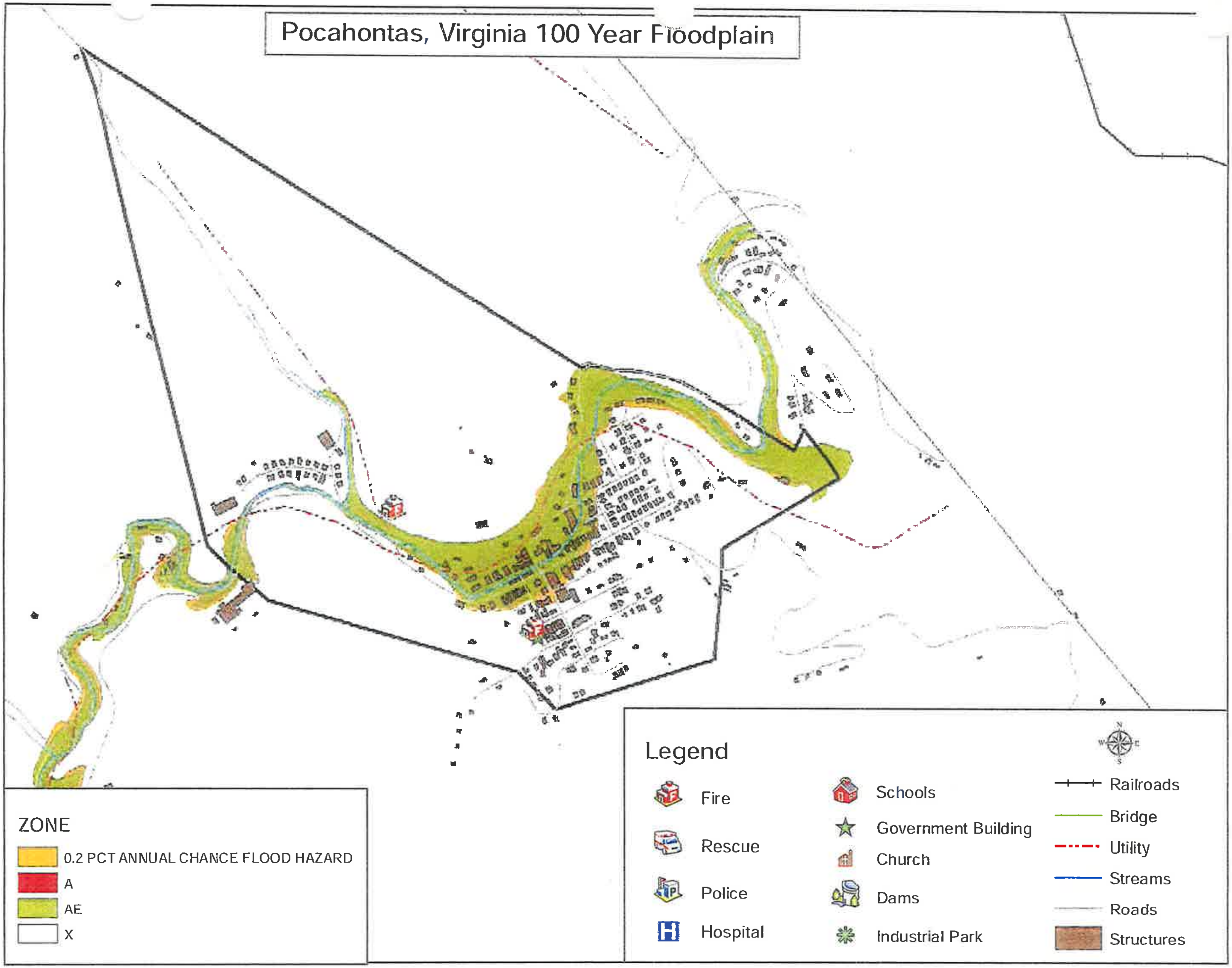
Honaker, Virginia 100 Year Floodplain



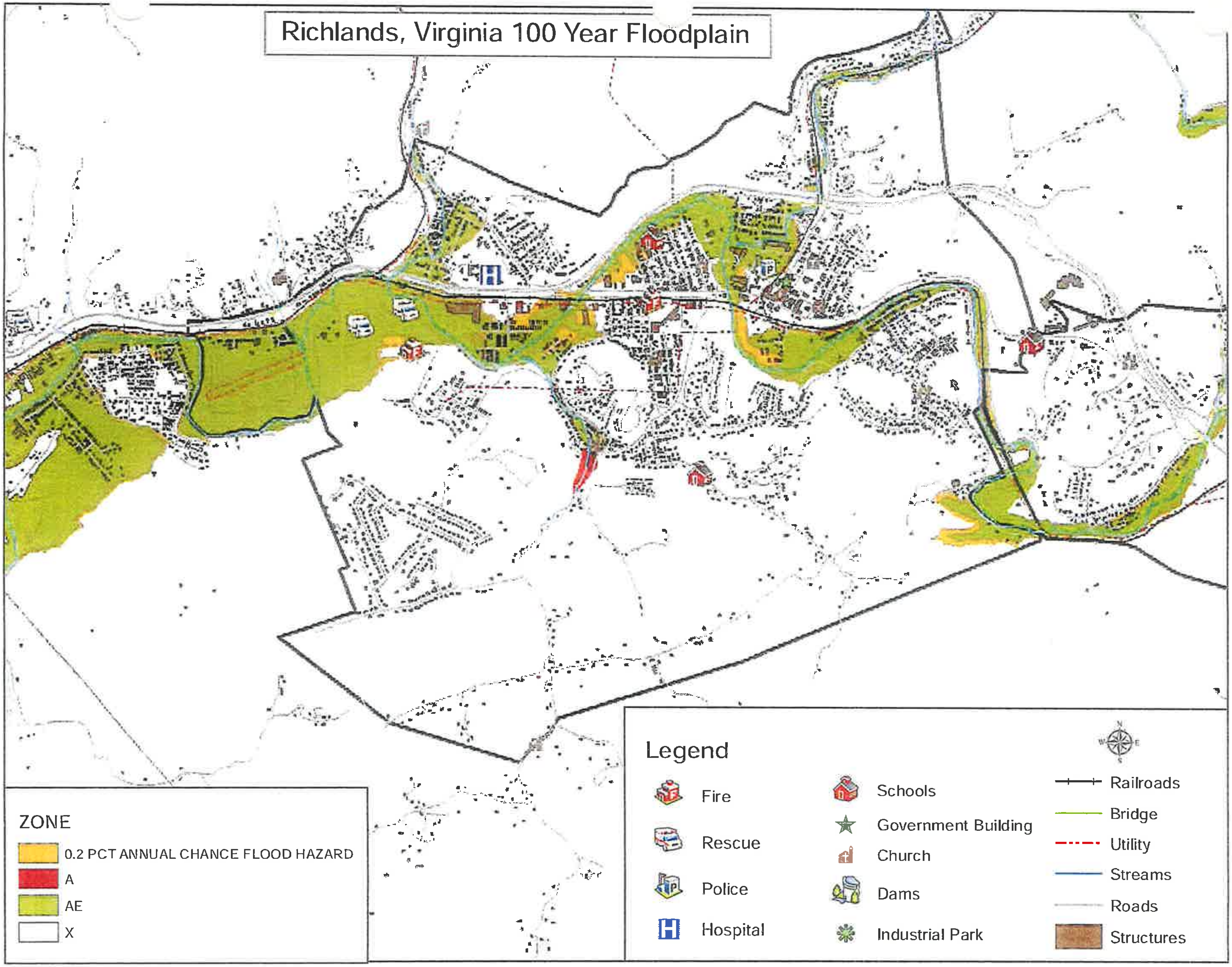
Lebanon, Virginia 100 Year Floodplain



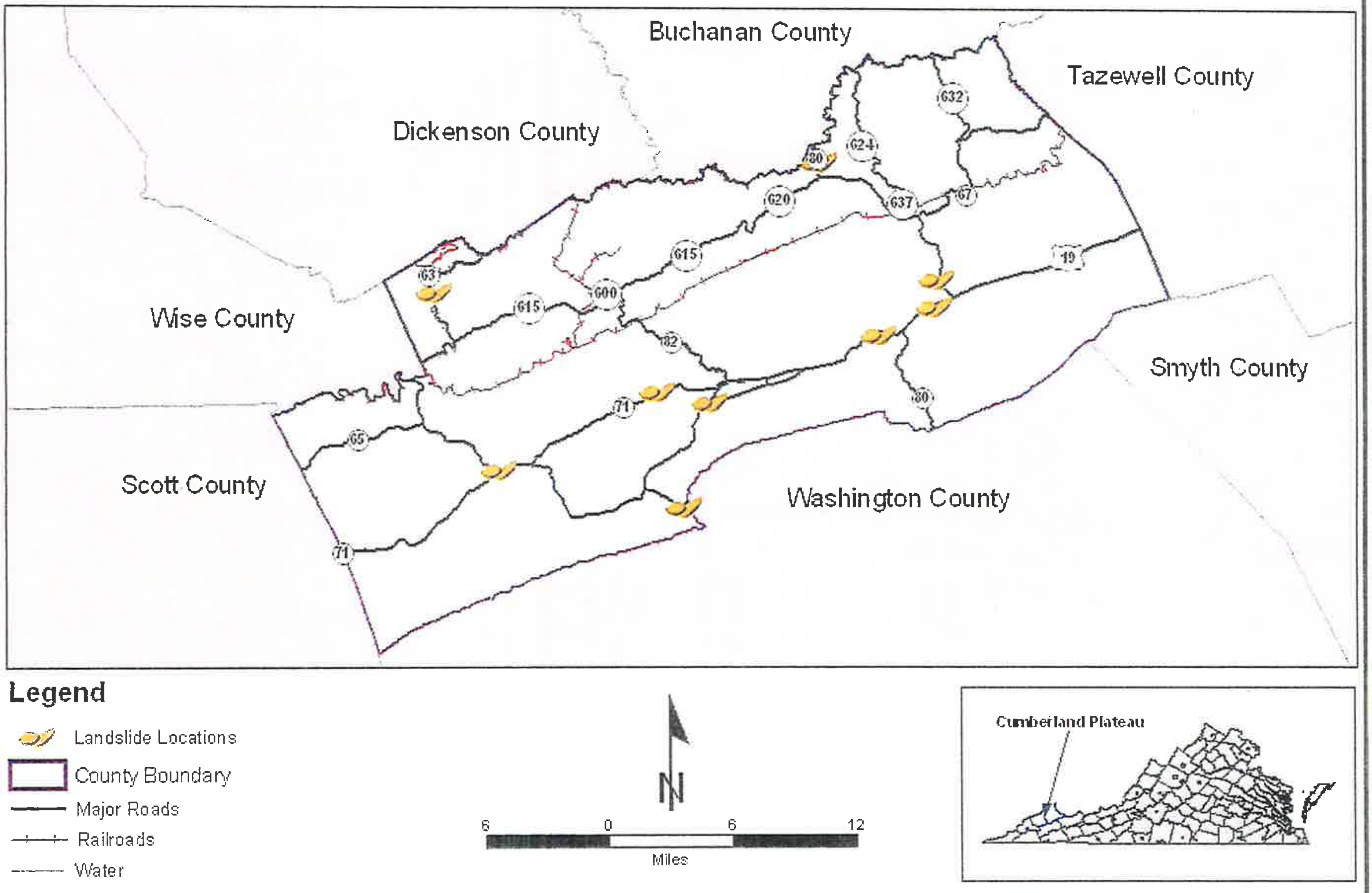
Pocahontas, Virginia 100 Year Floodplain



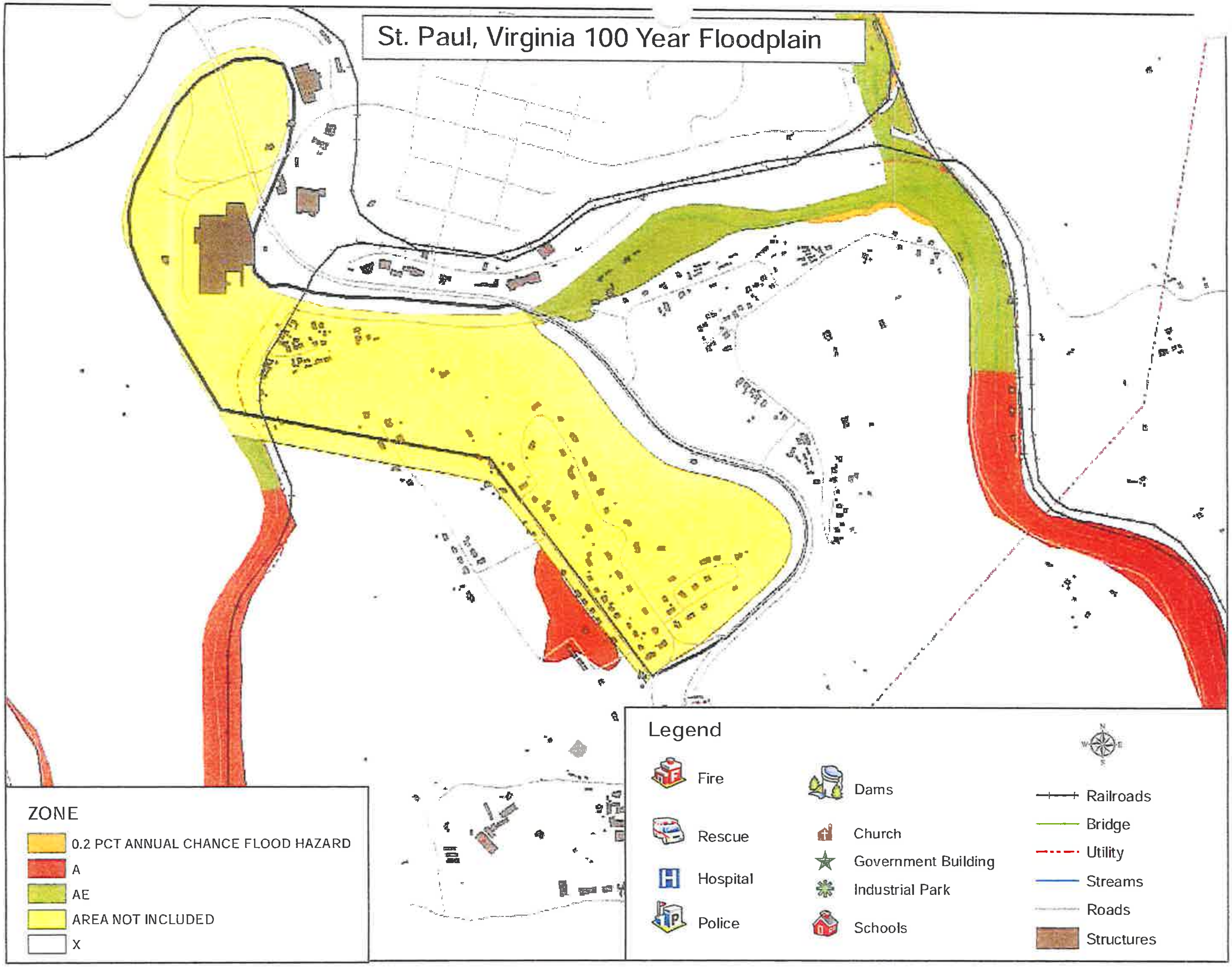
Richlands, Virginia 100 Year Floodplain



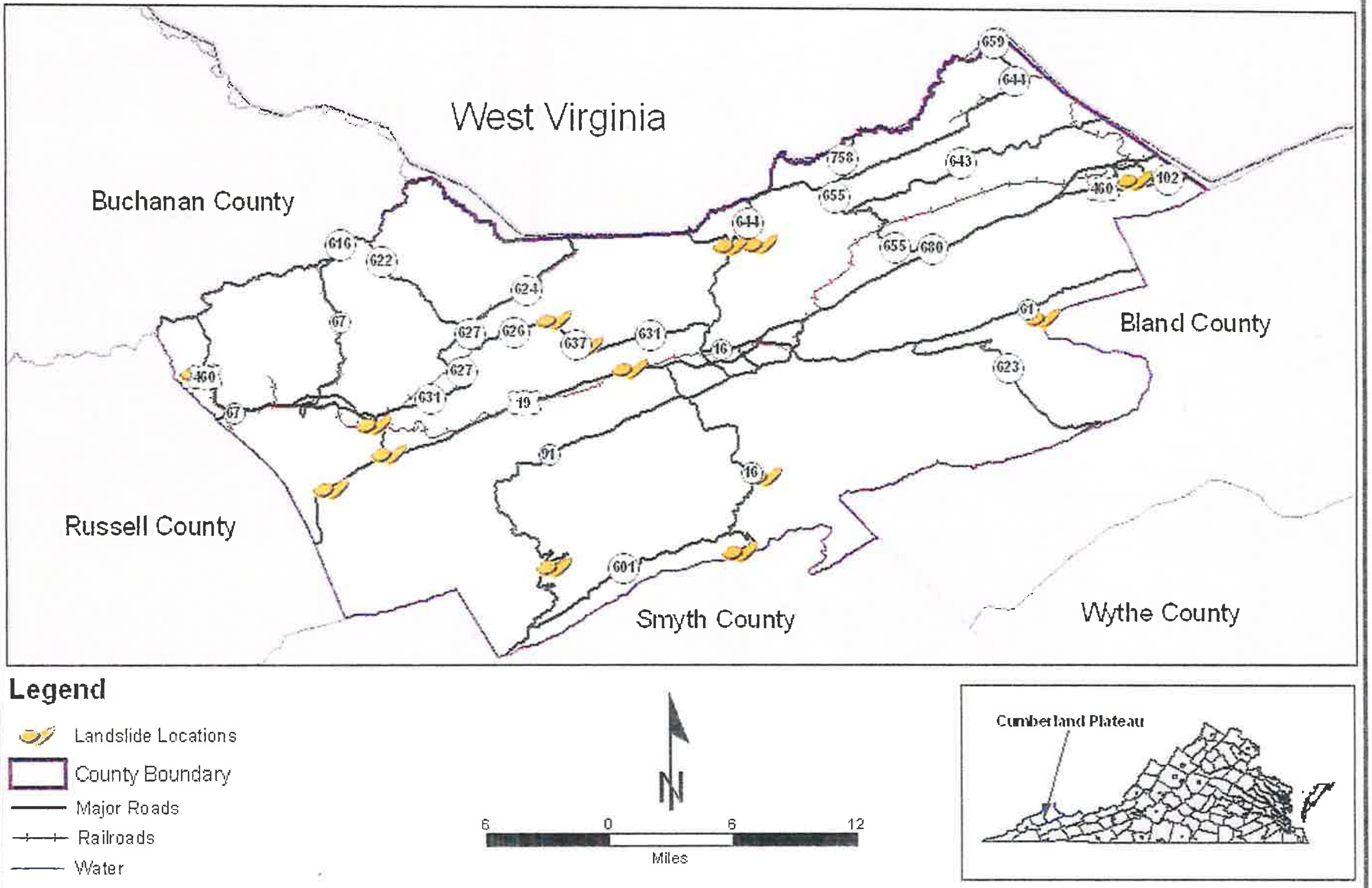
Russell County, Virginia Landslide Locations



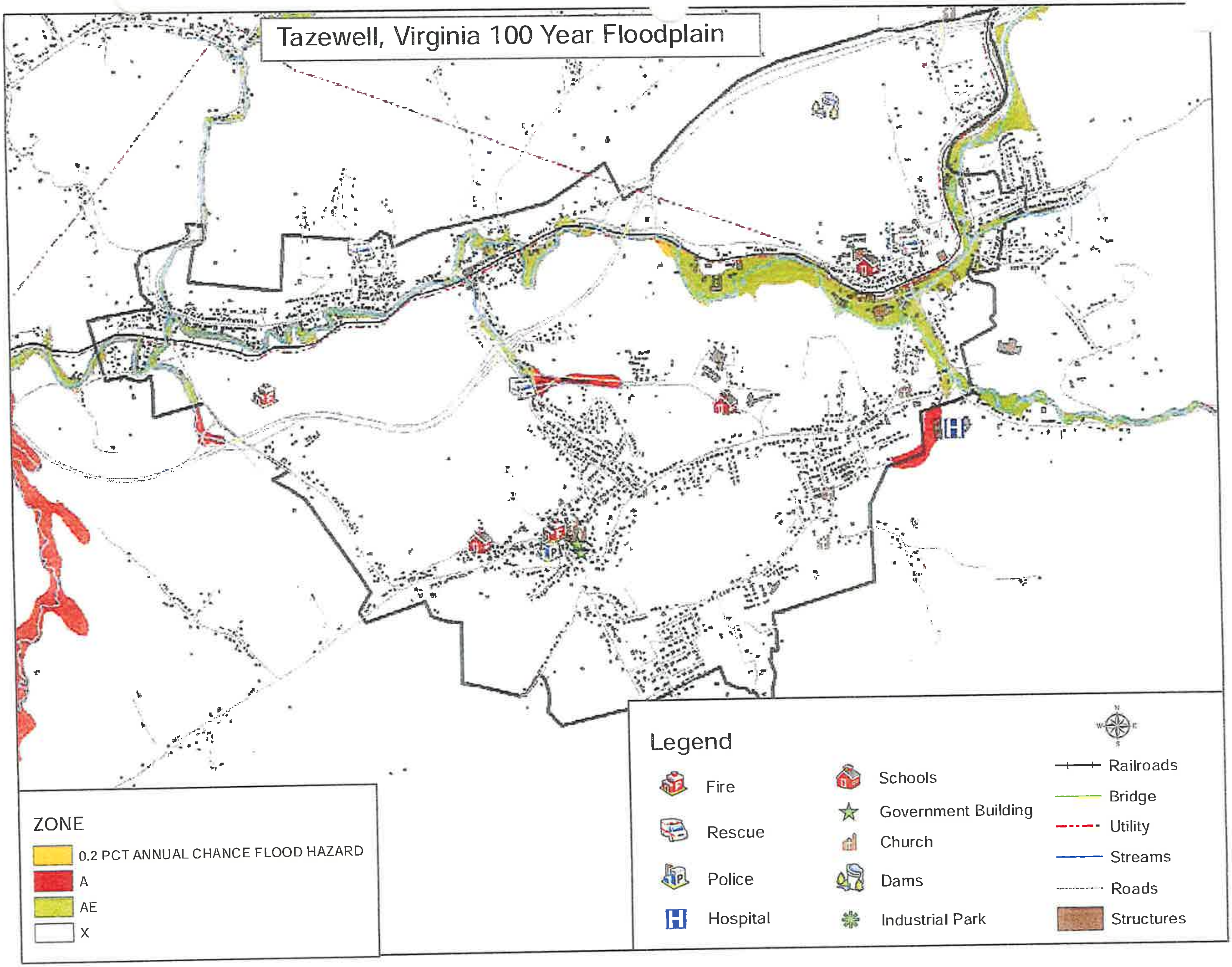
St. Paul, Virginia 100 Year Floodplain



Tazewell County, Virginia Landslide Locations



Tazewell, Virginia 100 Year Floodplain



NEWS RELEASE

Cumberland Plateau Draft Hazard Mitigation Update Plan Available on Website

The Cumberland Plateau Planning District Commission, in cooperation with local counties and towns, has been working to complete a Regional Mitigation Plan Update for the District. The entire update plan is now available for review and comments on the Planning District's website at www.cppdc.com. Hard copies are available at each County Administrator's office and each Town Hall in the District.

Completion and adoption of the Plan is required by the Virginia Department of Emergency Management (VDEM) and the Federal Emergency Management Agency (FEMA) in order for localities to be eligible for certain pre-disaster mitigation funds.

For more information, contact Shane Farmer at 276-889-1778.

This add was printed in the Richlands News Press, The VA Mounaineer, The Dickenson Star, and the Lebanon News Press.

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PUBLIC MEETING

Cumberland Plateau Regional Hazard Mitigation Update Plan

A public meeting on the Cumberland Plateau Regional Hazard Mitigation Update Plan will be held on Thursday, November 15, 2012 at 10:00 a.m. at Southwest Virginia Community College in Richlands, Room C-126 at the Community Center. The public will be able to ask questions or request additions to the Update Plan at this hearing. An electronic copy is now available on the Cumberland Plateau Planning District Commission website at www.cppdc.com.

Copies also are available for public view at the Planning District Commission's office at 224 Clydesway Drive, Lebanon, Virginia, and the PDC counties of Buchanan, Dickenson, Russell, and Tazewell Boards of Supervisors Offices, as well as the Towns located in these counties.

APPENDIX VIII: TOWN OF CLINTWOOD COMPREHENSIVE PLAN

CLINTWOOD
VIRGINIA

The Planning Document

Background
Analysis
Goals & Objectives
The Comprehensive Plan

COMPREHENSIVE PLANNING DOCUMENT
CLINTWOOD, VIRGINIA

BACKGROUND ANALYSIS
GOALS AND OBJECTIVES
THE COMPREHENSIVE PLAN

Prepared for
Town Planning Commission
and
Town Council
by
Balzer and Associates
Consulting Planners

With
Revisions Prepared by
Weldon Cooper Center for Public Service
University of Virginia
Southwest Virginia Office
and
Cumberland Plateau Planning District Commission
1998-1999

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Chapter 1 - Environmental Characteristics

Chapter 2 - Existing Land Use

Chapter 3 - Community Facilities

Chapter 4 - Thoroughfare System

Chapter 5 - Utilities

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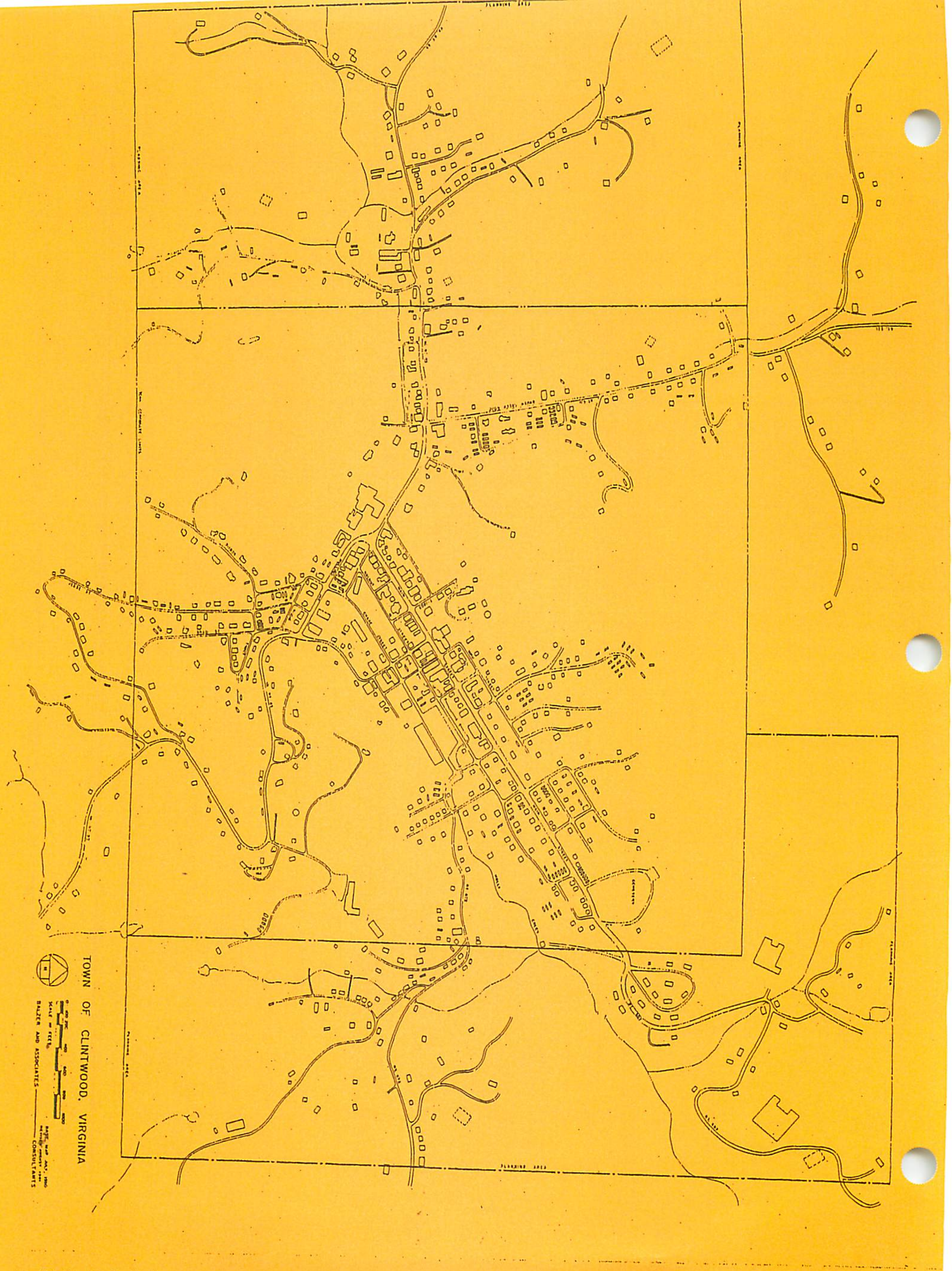

TOWN OF CLINTWOOD, VIRGINIA
0 100 200 400 600 800 1000
SCALE IN FEET
BALZER AND ASSOCIATES —— CONSULTANTS
PLANNING AREA

INTRODUCTION

INTRODUCTION

On June 3, 1980, the Town of Clintwood, Virginia contracted with Balzer and Associates, Inc. of Salem, Virginia to prepare a comprehensive community development plan. The planning area was defined as the land within the corporate limits of the Town as well as land located in Dickenson County but adjoining and vitally affecting the development of the Town. Much of this peripheral planning area was annexed by the Town of Clintwood in 1986. The Town has worked with the Weldon Cooper Center for Public Service and the Cumberland Plateau Planning District Commission in 1998-1999 to review the Comprehensive Plan and update certain portions according to Title 15.2-2230 of the Code of Virginia, 1950, amended.

It was agreed that the Clintwood, Virginia Planning Document would be composed of five essential components. They are as follows:

Part I - Inventory and Analysis examines the environmental characteristics, existing land use, building conditions, community facilities, thoroughfares, utilities, economic base, population and financial resources of the Town and the peripheral planning areas.

Part 2 - Goals and Objectives provides the direction and framework for public and private decision-making relative to the physical development of the Town. The goals and objectives address the areas of environment, housing, land use, transportation, economic development and public services and facilities.

Part 3 - Comprehensive Community Development Plan supplies policies that may be used by the Town Council to determine the future physical development of the community and a physical design which will allow the policies to be realized. The plan focuses on land use, transportation and community facilities.

Part 4 - Community Development Programming prioritizes Clintwood's community development needs and evaluates the Town's eligibility for and ability to obtain future grants.

Part 5 - Maps depicting existing land use, building conditions, slope and drainage, existing water system, existing sewer system, community facilities, future land use, and future land use of the Clintwood Courthouse-Commercial Center are on display in the Town Hall Building. The future land use map is also contained within this document.

PART I
INVENTORY AND ANALYSIS

CHAPTER I
ENVIRONMENTAL CHARACTERISTICS

ENVIRONMENTAL CHARACTERISTICS

The consultants completed an urban suitability study which analyzed the natural environmental characteristics of the Town of Clintwood and its eastern and western peripheral planning areas. The study identified those areas that are the most intrinsically suited for future development. The identification process was premised upon the concept of carrying capacity; i.e., that there are limits to the extent of growth certain geographic areas of the study area can absorb without endangering the public health or safety or damaging the natural environment. The following studies examine the ability of the land as defined by physiography, soils, geological formations, climate, and vegetation, to withstand and support the impacts of residential, commercial and industrial development, as well as recreational utilization and mineral extraction. The findings of these studies will be the basis for the future land use, major thoroughfare, and conmunity facilities plans presented later.

PHYSIOGRAPHY

The topography within Clintwood is extremely variable ranging from an elevation of about 1,750 feet along Holly Creek to a high point of 3,050 feet directly southwest of the central business district. Many areas of the Town, and primarily sections of the Central Business District, are within the 100 year flood plain of Holly Creek. Steep slopes surround many of the developed areas posing unique development problems and opportunities. There is one primary drainage basin which encompasses the Town and both planning areas.

Slope

A slope analysis of uncommitted or undeveloped land was conducted utilizing the following four gradient classifications:

- Flood Plain - slope conditions are not favorable for residential
- Range A - slope conditions range from 0 - 10 percent and present few if any limitations to development.
- Range B - slope conditions range from 10 - 20 percent and present moderate limitations to development.
- Range C - slope conditions exceed 20 percent and present major limitations to development

These slope indicators represent the steepness of an area. For example, a 10% slope means that the elevation of the land increases 10 feet for every 100 feet of surface distance. Areas with slopes greater than 20 percent offer special development problems and opportunities. Steep slopes are more susceptible to erosion, encourage runoff and are generally unsuited for most commercial and industrial development. The provision of transportation and utility services also becomes more difficult. However, with proper design and consideration of other development determinants such as soil and climate, steep-slope areas may be utilized as unique residential environments emphasizing such positive aspects as architectural design, neighborhood design, solar access and natural vistas. Generally, the type and intensity of steep-slope development is directly proportional to the cost of the improvements required to insure the functional ism of the building as well as the public health, safety and welfare.

Functional, economical, and safe steep-slope development is dependent upon the effective administration of the building code and the building permit system. The site plan review procedures included in the permit application process should consider not only the data and standards contained within this document, but also the specific environmental characteristics of the site. It is more important that the building permit be evaluated by a trained building inspector. Larger developments should be reviewed by a site plan review committee which could consist of the building official and members of the planning commission.

Flood Hazard Areas

A dominant feature in Clintwood is the existence of the Holly Creek flood plain. This flood hazard area is indicated on the Slope and Drainage Map on display in the Town Hall. However, for specific information pertaining to property in the Town, the flood hazard boundary maps on file in the Town Clerk's office should be referenced. These maps, prepared by the United States Department of Housing and Urban Development, Federal Insurance Administration in 1977 and 1978 indicate the official boundaries of the "Special Flood Hazard Area" (100 year flood plain) in Clintwood and the peripheral planning areas.

The 100 year flood is a flood that, on the average, is likely to occur once every 100 years. A 100 year flood has a I percent chance of occurring each year, although the flood may actually occur in any year. The flood fringe is that area immediately adjacent to the 100 year flood plain that is within the realm of the 500 year flood.

The Town has no regulations pertaining to current or future development in the flood hazard areas. The Consultants recommend that the Town manage all land located in flood plains by way of flood plain regulations. These regulations may be included either within the building permit application process or within the provisions of the zoning ordinance or building code.

Slope Characteristics of Undeveloped Land: Town of Cintwood

Approximately 57 percent, or 367 acres, of Clintwood's total area of 640 acres is undeveloped or uncommitted. The following table indicates quantities of vacant land by slope category.

SLOPE CHARACTERISTICS OF UNDEVELOPED OR UNCOMMITTED LAND 1

TOWN OF CLINTWOOD

SLOPE CATEGORY2		TOTAL ACREAGE
FLOOD PLAIN		4.6
0-10%		83.8
10-20%		175.6
OVER 20%		102.9
	TOTAL	366.9 ACRES

Source: Balzer and Associates

1 It is extremely important to understand that undeveloped or uncommitted land is not synonymous with land suitable for development. Development suitability will be determined not only by the natural environmental characteristics discussed in this section but also by ownership and value.

2 Slope characteristics were determined from United States Geological Survey Topographical Maps. In some locations, actual slope characteristics may vary slightly from those mapped because of strip mining activities or erosion.

Approximately 29 percent of all undeveloped or uncommitted land in Clintwood is either situated in flood hazard areas or in areas with slopes greater than 20 percent. In contrast, two hundred and fifty nine acres or 71 percent of all undeveloped or uncommitted land is topographically adequate for development. Although some of this acreage occurs as small and isolated parcels much of this land is adjacent to roads, water and sewer facilities. In general, the future cost of developing these sites for residential and commercial purposes would be reasonable. Industrial development is also possible, although large expanses of level or nearly level land (0-5 percent) required for manufacturing is not as prevalent as land with slopes in the range of 5 to 20 percent.

Slope Characteristics of Undeveloped Land: Peripheral Planning Areas

Approximately 86 percent, or 565 of the 660 acres which constitute Clintwood's peripheral planning area are undeveloped or uncommitted. The following tables list quantities of vacant land by slope category for both the western and eastern peripheral planning areas.

SLOPE CHARACTERISTICS OF UNDEVELOPED OR UNCOMMITTED LAND

WESTERN PERIPHERAL PLANNING AREA

SLOPE CATEGORY	TOTAL ACREAGE
FLOOD PLAIN	8.6
0-10%	77.9
10-20%	142.8
OVER 20%	38.3
TOTAL	267.6 acres

Source: Balzer and Associates

SLOPE CHARACTERISTICS OF UNDEVELOPED OR UNCOMMITTED LAND

EASTERN PERIPHERAL PLANNING AREA

SLOPE CATEGORY		TOTAL ACREAGE
FLOOD PLAIN		11.8
0-10%		108.2
10-20%		143.7
OVER 20%		34.0
	TOTAL	297.7 acres

Source: Balzer and Associates

Only 16 percent of all undeveloped or uncommitted land in the peripheral planning areas is either situated in flood hazard areas or in areas with slopes greater than 20 percent. Four hundred and seventy three acres or 84 percent of all undeveloped or uncommitted land is topographically adequate for development. It is especially significant to note that in the eastern peripheral planning area, 108 acres or 36 percent of the total amount of undeveloped or uncommitted land in this area is characterized by slopes which range between 0 and 10 percent. Most of this land occurs in large expanses and is located adjacent to existing roadways.

The future land use element will identify those undeveloped or uncommitted sections that could be developed economically and in accordance with sound land use planning standards.

Drainage Areas:

Drainage areas are significant for two primary reasons: infrastructure planning, primarily sanitary sewers, and storm drainage management.

The drainage or ridge lines for the Town of Clintwood are identified on the Slope and Drainage Map on display in the Town Hall. The Town and most of the area within the peripheral planning areas drain into the Holly Creek drainage basin. Only a very small area in the eastern peripheral planning area drains into the Cranesnest River Basin. Both Holly Creek and the Cranesnest River are part of the Big Sandy River system. Most of the tributaries of Holly Creek contain running water throughout the year, although none of the streams has very large flows. Sandy soils and steep stream gradients act to reduce flooding but make swollen streams very dangerous.

Infrastructure Planning:

Drainage basin and sub-basin delineation is the first and perhaps the most important step in determining the appropriate size of the sanitary sewer service area. Excess capacity of the sewage system may result in excessive cost responsibilities for the users and may allow for unplanned growth which may burden the community in terms of added service requirements.

Sanitary sewer systems are often the least expensive and the most practical when they can be designed as self-cleaning gravity flow systems. Therefore, the most economical means of providing sanitary sewer service is to remain with the natural drainage basins of the community.

While gravity flow is very important, sewer service is not required to serve an entire drainage basin. The identification of Clintwood's drainage basins and sanitary sewer service areas is very important for encouraging or discouraging future growth within the Town and the peripheral planning areas.

Storm Drainage Management:

As rain falls to the earth's surface, it continues to move. Some of it may be quickly evaporated, some of it may be absorbed into the ground to be used by vegetation and for other purposes. The remainder, called runoff, moves by gravity through a system of natural channels into collecting creeks, rivers, and larger water bodies at low elevations eventually terminating in the oceans. The pattern of the drainage network is determined by the topography (influencing the rate of flow) and the geologic make-up of the area through which each drainage path flows (some geologic materials are more resistant than others to erosion caused by the movement of water).

When development of a community takes place, the natural drainage system is affected. As improvements are placed upon the ground, the amount of precipitation which can be absorbed is reduced and that quantity of water is added to the volume of water which must be accommodated by the drainage system. Within urbanized areas, it is often necessary to construct storm drainage facilities that substitute for natural surface drainage. The storm drainage system consists of a drainage surface, open gutters and ditches, and possibly a series of underground pipes connected by manholes and fed by inlets. The system does not need to be continuous but may terminate into streams, lakes, or gullies wherever flooding or pollution will not be increased.

Because underground storm sewers are very expensive, the drainage basins and sub-basins indicated on the map should be studied carefully by a qualified engineer before any major capital expenditures for storm drainage facilities are made by the Town.

SOILS AND GEOLOGY:

The Town of Clintwood and its peripheral planning areas are characterized by terrain that ranges from hilly to mountainous. Flat lands, even a few acres in extent, are rare. Very steep, although not precipitous valley slopes are common. The entire area is thoroughly dissected by streams. Principle water sources are generally only a few miles apart and are usually separated by ridges 500 to 1,000 feet high. Valleys are V-shaped (deep and narrow) and have little or no flat bottom lands. Alluvium (water deposited clay, silt, sand, gravel or other rock) along streams may be up to 20 feet deep and consists of fine materials or very large boulders in varying proportions. Ridges are steep sided, winding and very irregular in outline, with many side spurs. Most of the few small, flat areas in the region are on divides, but by far the greater part of the ridge tops are very narrow. These steep, narrow ridges are usually capped by sandstone or conglomerate. Flat ridges are generally capped by sandy shale, shale or highly weathered sandstone.

Thick coal is found southwest of Clintwood. The Clintwood coal seam, by far the most predominant seam in the area, is found on the hillsides surrounding the Town and the peripheral planning areas. No coal formations are found within the corporate limits of the Town. A representative geological cross-section of the area surrounding the Town contains the following formations: Clintwood Coal, Eagle Coal, Blair Coal, Lyon Coal, Glamorgan-Dorchester Coal, Gladeville Sandstone, Hagy Coal, Splash Dam Coal, Upper Banner Coal, and Lower Banner Coal. Of these, only the Clintwood coal seam located north of the Town and 20 to 100 feet below the surface, can be mined. The other seams can not be mined because of the presence of shale partings, their lack of thickness, and their occurring depth. With the exception of the Clintwood seam, it is likely that the other formations are still intact.

It is fortunate that only limited strip and deep mining has taken place in the immediate vicinity of the Town and the peripheral planning areas.

Strip mining is utilized to remove thin seams of coal that are near the earth's surface. Ultimately, once the overburden has been removed and the coal has been extracted, the fill (debris) is pushed off the side of the mining bench. The discarded fill has very poor load bearing capacities because of its placement on steep slopes and the improper densification of its component materials which range from large pieces of rock to small stones. As a result of those characteristics, the fill is very likely to either settle or slide further down the embankment. Development of any strip mine bench should be undertaken only after a thorough examination of the site by a qualified engineering geologist or soils engineer.

The primary development problem caused by deep mining operations is subsidence. Subsidence is surface and subsurface movements of the earth that are related to active and abandoned underground mining activities. The development of a subsidence trough is generally a slow, progressive occurrence. Vertical subsidence resulting from mining operation is a function of the coal seam thickness and the method of support remaining within the extraction area. Support is generally provided by way of rooms and pillars. Once the mine is abandoned, however, there is no guarantee that the pillars will remain intact. Additional unrecorded mining activities may render the pillars too weak to provide adequate support for surface development. It is virtually impossible to accurately document the existence or extent of remaining pillars in abandoned mining operations.

Horizontal surface movements are also likely to occur during subsidence. As the trough develops, earth from the sides is pulled horizontally into the depression. Therefore, subsidence is very detrimental to development located not only within but also adjacent to the trough.

In both the Town and peripheral planning area soil is limited and scarce.

Major fills will probably be "rock-fill" or mostly rock-fill. In general, slope stability is a problem. Caution should be used in all cut and fill operations. Fill heights should not exceed 15 feet and cut heights should not exceed 20 feet.

The most common soils as designated by the unified soil classification system are SM (silty sand) SC (sandy clay) ML (low plasticity silt) and CL (low plasticity clay). Of these, the latter two types are the most prevalent. The anticipated California Bearing Ratio is 8 to 12 percent. Resultant pavement thickness required in housing developments or light commercial areas would be 9 to 12 inches.

CLIMATE:

Precipitation, wind, and temperature are important for the future planning of such diverse elements as airports, large parking lots and reservoirs.

Clintwood has mild winters and warm summers. Temperatures range between 32° F and 40° F during the winter months and between 67° F and 71° F during the summer months. Extreme temperatures seldom occur but freezing spells do occur during the winter months. It is not uncommon for the temperature to occasionally reach 90° F or higher during the summer. The frost-free season usually lasts from early May to late September.

With total precipitation between 45 and 50 inches annually, Clintwood is within one of the wettest regions of the United States. Because of the surrounding mountainous terrain, a wide variation in amounts of precipitation may occur. Precipitation is distributed evenly throughout the year with 51 percent occurring during the growing season. Approximately 10 drought days, or one-half of the total drought days, occur during the growing season. During the summer, hard showers or thunderstorms from the west and northwest and slow steady rains from the east and the northeast are typical. Although severe snow storms do occur, snowfall is generally not a significant part of the total annual precipitation.

VEGETATION

In Clintwood, where precipitation is abundant and the terrain is rugged, the effects of vegetation, including foliage, root composition, and density are crucial for controlling surface runoff and erosion.

One of the primary functions of vegetation is to limit surface runoff. Surface runoff occurs only when the intensity of a rainfall exceeds the infiltration capacity of the soil. Vegetation protects the soil by decreasing the intensity, forcing the rain to pass through protective filters provided by both trees and grasses.

Erosion, the actual destruction of the soil, is a function of both slope and surface runoff. Surface runoff by itself is not damaging but when combined with the gravitational component of slope the increased water velocity causes a greater amount of soil movement. Slopes covered by rooted trees, grasses and abundant leaf litter are not as vulnerable to erosion as are bare slopes.

Pine, oak, hickory, beech and birch are the dominant species found in the Clintwood area. Pines and other scrub growth are found where soil and/or wind conditions are not as favorable for growth. The oaks and hickories predominate the lower levels while the birch and beech trees are generally found at higher elevations.

There are also many other types of low growing shrubs and ground covers including dogwood, rhododendron, mountain laurel, wild azalea, redbud, mountain spurge, arbutus, St. John's wort, and trailing wolfbane which serve to stabilize and protect the soils in Clintwood and the neighboring areas.

CHAPTER 2
EXISTING LAND USE

EXISTING LAND USE AND BUILDING CONDITIONS

The Town occupies one square mile of area in the northwest quadrant of Dickenson County. In addition to the Town, the Consultants examined the existing land use and building conditions within 2 peripheral planning areas adjacent to the eastern and western corporate limits. These areas comprise 355 acres (.55 sq. miles) and 305 acres (.48 miles) respectively.

The Town has not been divided into neighborhoods. The data is presented for the Town, the western peripheral planning area and the eastern peripheral planning area.

In July of 1980 and March of 1981 the Consultants, in conjunction with the Town of Clintwood, conducted a survey of the u-se of lands in Clintwood and the peripheral planning areas as well as an examination of the condition of all principle structures. The results and subsequent revisions are presented on the Existing Land Use Map and the Building Conditions Map on display in the Town Hall Building. (Also see Appendix B.)

It should be noted that the principle land use is depicted on the map in all instances of mixed use except where residential/non-residential mixed use occurs, and in those cases the non-residential use is depicted. The acreage of land use shown in the following tables is based upon the Existing Land Use Map.

The condition of each principle structure was defined in accordance with the following criteria:

* Condition A - Indicates buildings in sound condition in need of normal routine maintenance only.

* Condition B - Indicates buildings with deficiencies in need of corrective measures significantly beyond those associated with routine maintenance.

* Condition C - Indicates buildings with deficiencies to an extent that is considered impractical to repair.

EXISTING LAND USE, BUILDING AND HOUSING CONDITIONS - WESTERN PERIPHERAL PLANNING AREA

EXISTING LAND USE

	ACRES	% OF AREA
Single Family	25.0	8.2
Two-Family	-	-
Multi-Family	-	-
Mobile Home	1.8	.6
Retail and Service Commercial	3.2	1.0
General Commercial	2.1	.7
Office & Institutional	.7	.2
Light Industrial	-	-
Heavy Industrial	-	-
Parks and Open Space	.5	.2
Vacant	250.0	82.0
Railroad Right-of-Way	-	-
Street Right-of-Way	21.7	7.1
TOTAL	305	100.0

BUILDING CONDITIONS

	A	B	C	TOTAL
Single Family	55	4	2	61
Two-Family	-	-	-	-
Multi-Family	-	-	-	0
Mobile Home	11	-	-	11
Retail & Service Commercial	7	-	-	7
General Commercial	7	-	-	7
Office & Institutional	3	-	-	3
Light Industrial	-	-	-	0
Heavy Industrial	-	-	-	0
TOTAL	83	4	2	89

NOTE: The categories of conditions A, B and C used above and below are defined on page 11.

HOUSING ANALYSIS

	OCCUPIED HOUSING UNITS				VACANT HOUSING UNITS				TOTAL HOUSING UNITS			
	A	B	C	TOTAL	A	B	C	TOTAL	A	B	C	TOTAL
Single Family	50	2	-	52	5	2	2	9	55	4	2	61
Two-Family	-	-	-	0	-	-	-	0	-	-	-	0
Multi-Family	-	-	-	0	-	-	-	0	-	-	-	0
Mobile Home	11	-	-	11	-	-	-	0	11	-	-	11
Mixed-Use Apartment	-	-	-	0	-	-	-	0	-	-	-	0
TOTAL	61	2	0	63	5	2	2	9	66	4	2	72

Source: Land Use and Building Conditions:
Field survey conducted by Town of Clintwood and Balzer and Associates July, 1980 and March, 1981.

Housing Data:
Survey conducted by Town of Clintwood - July, 1980 and March, 1981.

EXISTING LAND USE, BUILDING AND HOUSING CONDITIONS - TOWN OF CLINTWOOD

EXISTING LAND USE

	ACRES	% OF TOWN
Single Family	113.7	17.8
Two-Family	.9	.1
Multi-Family	-	-
Mobile Home	26.5	4.1
Retail and Service Commercial	10.1	1.6
General Commercial	5.2	.9
Office & Institutional	23.1	3.6
Light Industrial	4.7	.7
Heavy Industrial	.1	.01
Parks and Open Space	3.7	.5
Vacant	409.7	64.0
Railroad Right-of-Way	-	-
Street Right-of-Way	41.8	6.5
TOTAL	640	100%

BUILDING CONDITIONS

	A	B	C	TOTAL
Single Family	206	106	12	324
Two-Family	6	-	-	6
Multi-Family	-	-	-	0
Mobile Home	158	2	1	161
Retail & Service Commercial	43	3	-	46
General Commercial	15	5	1	21
Office & Institutional	52	4	-	56
Light Industrial	4	-	-	4
Heavy Industrial	1	-	-	1
TOTAL	485	120	14	619

NOTE: The categories of conditions A, B and C used above and below are defined on page 11.

HOUSING ANALYSIS

	OCCUPIED HOUSING UNITS				VACANT HOUSING UNITS				TOTAL HOUSING UNITS			
	A	B	C	TOTAL	A	B	C	TOTAL	A	B	C	TOTAL
Single Family	201	93	6	300	5	13	6	24	206	106	12	324
Two-Family	6	-	-	6	-	-	-	0	6	-	-	6
Multi-Family	-	-	-	0	-	-	-	0	-	-	-	0
Mobile Home	145	2	1	148	13	-	-	13	158	2	1	161
Mixed-Use Apartment	38	3	-	41	5	1	-	6	43	4	-	47
TOTAL	390	99	6	495	23	14	6	43	413	112	13	538

Source: Land Use and Building Conditions:
Field survey conducted by Town of Clintwood and Balzer and Associates July, 1980 and March, 1981.

Housing Data:
Survey conducted by Town of Clintwood - July, 1980 and March, 1981.

STING LAND USE, BUILDING AND HOUSING CONDITIONS - EASTERN PERIPHERAL PLANNING AREA

EXISTING LAND USE

	ACRES	% OF AREA
Single Family	29.4	8.3
Two-Family	-	-
Multi-Family	-	-
Mobile Home	1.2	.33
Retail and Service Commercial	4.5	1.3
General Commercial	-	-
Office & Institutional	11.6	3.3
Light Industrial	-	-
Heavy Industrial	-	-
Parks and Open Space	2.2	.61
Vacant	288.1	81.1
Railroad Right-of-Way	-	-
Street Right-of-Way	18.0	5.0
TOTAL	355	100.0

BUILDING CONDITIONS

	A	B	C	TOTAL
Single Family	63	5	3	71
Two-Family	-	-	-	0
Multi-Family	-	-	-	0
Mobile Home	7	-	-	7
Retail & Service Commercial	4	2	-	6
General Commercial	-	-	-	0
Office & Institutional	2	-	-	2
Light Industrial	-	-	-	0
Heavy Industrial	-	-	-	0
TOTAL	76	7	3	86

NOTE: The categories of conditions A, B and C used above and below are defined on page 11.

HOUSING ANALYSIS

	OCCUPIED HOUSING UNITS				VACANT HOUSING UNITS				TOTAL HOUSING UNITS			
	A	B	C	TOTAL	A	B	C	TOTAL	A	B	C	TOTAL
Single Family	61	5	-	66	2	-	3	5	63	5	3	71
Two-Family	-	-	-	0	-	-	-	0	-	-	-	0
Multi-Family	-	-	-	0	-	-	-	0	-	-	-	0
Mobile Home	7	-	-	7	-	-	-	0	7	-	-	7
Mixed-Use Apartment	-	-	-	0	-	-	-	0	-	-	-	0
TOTAL	68	5	0	73	2	0	3	5	70	5	3	78

Source: Land Use and Building Conditions:
Field survey conducted by Town of Clintwood and Balzer and Associates July, 1980 and March, 1981.

Housing Data:
Survey conducted by Town of Clintwood - July, 1980 and March, 1981.

PAST LAND USE TRENDS

In the preparation of the future land use, community facilities and major thoroughfare plans it is necessary to assess past development trends in order to determine future land use requirements. The following table describes the trends which have occurred Clintwood and the peripheral planning areas, 1977-1981.

NEW CONSTRUCTION BUILDING PERMITS ISSUED
TOWN OF CLINTWOOD AND PERIPHERAL PLANNING AREAS - 1977-1981[1]

BUILDING TYPE	TOWN OF CLINTWOOD	PERIPHERAL PLANNING AREAS	TOTAL
Single Family[2]	36	12	48
Mobile Home	30	5	35
Other Residential	0	0	0
Commercial & Trade	2	4	6
Office and Institutional	1	1	2
Industrial	0	0	0
TOTAL	69	22	91

January 1 - June 30, 1981

[2] Number of single family and mobile home units estimated using Dickenson County building permit data and where appropriate, aerial photographs.

Sources: Tayloe Murphy Institute
Building Inspector, Town of Clintwood
Balzer and Associates, Inc.

The greatest amount of development activity has occurred within the residential sector. Eighty-three building permits were issued for the construction of new single family and mobile home dwelling units within the Town of Clintwood and the peripheral planning areas. In addition, permits were issued for the construction of 8 new commercial, trade, office and institutional facilities.

ACREAGE UTILIZED FOR NEW CONSTRUCTION SINCE 1977
CLINTWOOD, VIRGINIA

LAND USE	# OF NEW UNITS	ACREAGE PER UNIT	TOTAL ACREAGE
Single Family	36	.35	12.60
Mobile Home	30	.16	4.80
Commercial & Trade	2	.22	.44
Office & Institutional	1	.41	.41
			18.25

Source: Balzer and Associates

ACREAGE UTILIZED FOR NEW CONSTRUCTION SINCE 1977
PERIPHERAL PLANNNING AREA

LAND USE	# OF NEW UNITS	ACREAGE PER UNIT	TOTAL ACREAGE
Single Family	12	.41	4.92
Mobile Home	5	.16	.80
Commercial & Trade	4	.57	2.28
Office & Institutional	1	3.0	3.0
			11.0

Source: Balzer and Associates

Eighteen acres of vacant land in the Town of Clintwood were converted to active use between January 1977 and July 1981. The corresponding amount of newly developed land in the peripheral planning areas for the same time period was 11 acres. Based on this past combined rate of 6.5 acres per annum, an additional 124 acres of undeveloped or uncommitted land will be required for development within the Town and the peripheral planning area by the year 2000. Of this amount, 78 acres will be needed in the Town, 46 acres will be required in the planning areas. This projected need is dependent upon the continuation of the current per annum population growth rate and the availability of land economically and environmentally suitable for development. (For further discussion of future land use requirements please see page 94)

LOW- AND MODERATE-INCOME HOUSING

The Small Cities Community Development Block Grant Program (CDBG) was established to assist small cities and communities like Clintwood that have high concentrations of impoverished citizens and substandard housing by expanding low- and moderate-income housing opportunities and meeting community development needs. The Community Development Program is especially significant in smaller cities and towns where budgetary allotments tend to be residual after important operating, maintenance, health, and social service responsibilities are met.

The nature of the CDBG program necessitates the establishment of "target areas" for the purpose of upgrading the total physical environment. There are no more large scale urban renewal or slum clearance programs that completely eliminate all urban problems. Instead, the CDBG program tends to be incremental, demanding an incremental approach to community problem solving. With CDBG annual funding, which in any one year is small in comparison with the total amount needed, effective planning requires a realistic long-term plan for orderly assistance to neighborhoods and "target areas."

To facilitate the provision of this assistance, the Consultants identified all housing occupied by low- and moderate income persons. Low- and moderate-income persons were defined as those whose annual income was less than $12,004 per year, which was 80 percent of the Statewide non-metro median income, as defined by the United States Department of Housing and Urban Development in October, 1980. The results are as follows:

LOW- AND MODERATE-INCOME HOUSING - CLINTWOOD AREA

TOTALS	TOWN	PERIPHERAL PLANNING AREA	TOTAL
HOUSEHOLDS	501	136	637
ELDERLY HEAD	145	40	185
FEMALE HEAD	164	25	189
HANDICAPPED HEAD	24	29	53
L/M HOUSEHOLDS	226	69	295
PERCENT OF ALL HOUSEHOLDS	45.1%	50.7%	46.3%
L/M PERSONS	531	170	701
L/M ELDERLY HEAD	101	35	136
L/M FEMALE HEAD	117	20	137
L/M HANDICAPPED HEAD	19	23	42
L/M UNITS SOUND	79	58	137
L/M UNITS NOT SOUND	54	5	59
L/M MOBILE HOMES	93	6	99
L/M HOMES OWNED	157	58	215
L/M HOMES RENTED	69	11	80

Source: Survey conducted by Town of Clintwood
Balzer and Associates

CHAPTER 3
COMMUNITY FACILITIES

COMMUNITY FACILITIES

The quality of community facilities is the best indication of the quality of life in any community. Facilities for education, recreation, administration and police and fire protection are essential components of a viable community.

As centers of common use, community facilities provide for basic needs and serve as centers and symbols of community life. Good community facilities enhance residential values as well as add to the corporate image, thereby attracting more industries and strengthening the tax base on which community facilities are created and maintained.

A survey of the existing community facilities in Clintwood was undertaken by the Consultants in the Fall of 1980 to ascertain the size, location, type, capacity and physical condition of each facility. An evaluation of each facility was accomplished by comparing the facility system with tested community planning principles and standards of space (current distribution, growth potential, area requirements) and location (convenience, performance and security).

The facility systems included in this study are:

1. Education including public schools and the community library.

2. Governmental Services including police protection, emergency services and administrative

facilities.

3. Recreation including neighborhood parks, athletic playfields and playgrounds.

PUBLIC SCHOOLS

Pupils residing in the Town of Clintwood and the peripheral planning areas are served by the Clintwood High School (grades 8-12) and the Clintwood Elementary School (grades K-7). Each of these facilities is owned and administered by the Dickenson County School Board. The 1976 and 1981 enrollments and enrollment capacity for each school are presented on the next page:

CLASSROOM CAPACITY AND ENROLLMENTS BY SCHOOL

	ENROLLMENT		ENROLLMENT CAPACITY	VACANT SPACES	
	1976	1981		1976	-1980
Clintwood H.S.	714	680	520	0	0
Clintwood E.S.	614	717	700	86	0
TOTAL	1,328	1,397			

Source: Dickenson County School Board

Preliminary Draft, Dickenson County Comprehensive Plan

Constructed in 1954, the Clintwood High School is situated on a 36 acre site immediately adjacent to Primary Route 83 within the corporate limits of Clintwood. A football stadium and track facility are also located on the site. The location of the high school promotes convenient ingress and egress for both school buses and passenger cars. Safe pedestrian access from the nearby housing areas is aided by the availability of sidewalks along most of the major roadways and the virtual lack of traffic on many of the local residential streets.

The Clintwood Elementary School was completed in 1977 and is located on a 21 acre site adjacent to Route 607 approximately three-quarters of a mile east of the Town's corporate limits. The facility is situated within the eastern peripheral planning area. Because of the school's relatively remote location, most of student enrollment uses bus transportation. The distance from the Town's residential areas and the lack of safe pedestrian access have acted to discourage effective useage of the school site as a community recreation area.

School sites of adequate size are imperative to the development of the community. The increasing use of one story buildings, the expanded utilization of school facilities for adult education programs and community recreation areas, and the requirements for off-street parking facilities are creating demands for school sites of increasing size. The standards of the State Board of Education pertaining to size and location are as follows:

1. The minimum size for usable school sites shall be as follows:

a. Elementary schools - 5 acres, plus I acre for each 100 pupils to be enrolled.
b. High School - 30 acres, plus I acre for each 100 pupils to be enrolled.

2. Safe drinking water and sewage disposal at a safe distance from the source of the water supply shall be provided on all school sites.

3. The location of the building on the site shall provide for future expansion.

4. The site shall be accessible to state or county highways with careful consideration being given to safe exit and entrance.

5. The site shall slope enough for drainage but not be too steep for use as a playground.

6. The site shall be away from objectionable noises, odors and other hazards that would produce an unpleasant environment.

Each of the two school sites is of an adequate size, however much of the area behind the high school is too steep to allow for an economical expansion of the building.

The most significant issue, however, is the intensity of use of each school building. The number of users should be the major determinant of facility size. In a clear application of sound business principles, supply, or classroom capacity should respond to demand. In response to such principles, it is incumbent upon public decision makers to invest in those facilities which are designed to most nearly satisfy current and anticipated future needs.

All of the County schools serving Clintwood's students are over-crowded. Although serious, this problem is beyond the scope of this document. As a part of the Dickenson County School System, it is the responsibility of the Dickenson County Board of Supervisors and members of the School Board to address the issues of current and potential overcrowding or under-utilization of all school facilities in the system. A partial examination of only those facilities used by Clintwood's pupils may result in an investment by the County for a building designed for a level of anticipated use that is significantly greater than subsequent need. This type of policy can lead to unnecessarily high tax bills for Town and County residents. Under-estimating future demands can also have serious consequences although less critical in effect. It is always possible to add facilities if subsequent realized need exceeds projected needs; it is not so easy to dispose of a large surplus school capacity.

LIBRARY FACILITIES

The Lonesome Pine Regional Library System, with a new branch facility located in Clintwood, provides services to Dickenson County and the residents of Clintwood. In addition to the regular services, elderly and handicapped persons residing in the Town and the County may participate in a books by mail program. The four-county regional system has a total collection of 266,500 volumes. Of these, 53,000 volumes are located in the Clintwood-Dickenson County branch and two smaller facilities located in Haysi and Clinchco. In 1980 - 81, the total circulation of these 3 branches was 107,195 volumes.

The American Library Association, Subcommittee on Standards for Small Libraries recommends that a library system servicing an area such as Dickenson County should have at least 2 volumes per capita with a maximum of 175,000 volumes. The Dickenson County portion of the Lonesome Pine Regional System far exceeds this standard. In addition, the ALA recommends that a branch facility, such as the one serving the Town of Clintwood and the surrounding hinterland should contain at least 25,000 volumes. The Clintwood-Dickenson county branch surpasses this goal.

Clintwood is very well served by the current regional system. An additional facility should not be needed within the Town before the year 2000.

ADDITIONAL EDUCATIONAL FACILITIES:

The Dickenson County vocational and Technical School, located in Clinchco provides instruction to those county students who desire additional training in a craft or trade. Classes are available for both high school students and adults. Clintwood High School offers an industrial cooperative program which allows a student to work part-time and to study part-time.

Three colleges are located in the region and serve the residents of Clintwood and Dickenson

County. Clinch Valley College, a part of the University of Virginia, is located in the Town of Wise. Mountain Empire Community College is situated southeast of Big Stone Gap and Southwest Virginia Community College is located in the Town of Richlands.

Clinch Valley College is a four year state supported institution that offers Bachelor of Arts and Bachelor of Science degrees as well as two year terminal and transfer programs. Mountain Empire Community College and Southwest Virginia Community College are also state supported and offer Associate of arts, Associate of Science, and Associate of Applied Science degrees as well as certificates in number of programs.

POLICE PROTECTION:

The Town of Clintwood Police Department is supervised by a chief of police and consists of 2 officers. The department operates an average patrol of 16 hours per day with emphasis on security and enforcement. The Clintwood Police Department exceeds the acceptable standard of 1.5 officers per 1,000 persons. As the Town's population grows, this ratio should be matched or exceeded.

The Police Department headquarters is located in the rear of the Town Hall. Currently, the portion of the building devoted to the department has a separate entrance so that the public may visit other Town departments without passing through the police area. This situation is architectural 1y and administratively desirable and should be maintained.

Clintwood does not maintain a jail or a 24-hour lock up facility. Currently the Town uses the Dickenson County correction and detention facility located in Clintwood and operated by the County Sheriff's Department.

EMERGENCY SERVICES

The Town of Clintwood Fire Department is controlled by the Town under the terms contained within the Town Charter. The fire station is centrally located in the Town but has storage accommodation for only 3 pieces of equipment. Currently, the Town owns 2 750 gallons per minute pumper trucks, 1 older 500 gallons per minute pumper truck, a tank truck and a utility vehicle. The equipment is operated by 27 on-call volunteer firefighters.

The Clintwood Fire Department serves approximately 10,000 persons who reside in the western one-third of Dickenson County. The peripheral planning areas are within this service area. The independent fire departments of Haysi and McClure River are responsible for the remaining two-thirds of Dickenson County.

Clintwood's fire department exceeds the National Board of Fire Underwriters recommendations of 1.6 to 2.4 personnel per 1,000 population. The entire Town of Clintwood can be reached in less than ten minutes travel time, the period considered to be the maximum in order to avoid major losses of property. Not all of the service area can be reached within ten minutes, however.

The Town of Clintwood is served by a unit of the volunteer Dickenson County Rescue Squad. The Clintwood Fire Department and Rescue Squad are independent organizations, but work closely with each other and other emergency service agencies.

The Clintwood-Dickenson County area is served by four hospitals. Three are located in Norton, 30 miles southwest of Clintwood. The other is situated in Grundy, 24 miles east of the Town. The southern portion of the County is also served by the Lebanon General Hospital located in Russell County.

The Dickenson Health Clinic has its office in Clintwood. The clinic is staffed by 4 general practitioners. Emergency room care is available 7 days a week until II P.M.

ADMINISTRATIVE FACILITIES

The Town of Clintwood administrative offices (Town Clerk, Accounting Clerk and Building Inspector) are located in the Town Hall Building situated on Main Street in the central business district. The Dickenson County administrative offices are also located on Main Street in the Dickenson County Courthouse. The Dickenson County School Board offices are located on Route T-1003 near the Town water storage tank.

PARKS AND RECREATION

Clintwood residents have access to a variety of parks and recreation facilities. Within the Town are the high school athletic fields and tennis courts situated on a 2.7 acre site immediately adjacent to Clintwood High School. A football stadium and track facility constitute an additional 5.0 acres. A 2 acre playground and play field area is located behind the Clintwood Elementary School. There are no neighborhood parks in the Town or the peripheral planning areas.

In addition to these community facilities, 2 regional parks, the John W. Flannagan Reservoir and the Breaks Interstate Park provide facilities for camping, hiking, swimming, boating and fishing. Both of these parks are located in Dickenson County. The Jefferson National Forest, a portion of which is located in Dickenson County, is also accessible to Clintwood's residents.

The location of a community's parks and recreation facilities is the primary factor that affects the amount of use. The Town has effectively utilized the centrally located Clintwood High School as an outdoor athletic area and should continue to do so. However, there are no neighborhood parks or play areas situated within the corporate limits. The playground facility behind the Clintwood Elementary School is too great a distance from the Town's residential areas and is not safely accessible by foot or bicycle.

The Heritage Conservation and Recreation Service (formerly the Bureau of Outdoor Recreation) of the U. S. Department of the Interior suggests the following space standards for neighborhood facilities.

- 1.25 acres/I ,000 population for playgrounds - usually part of a school ground.
- 1.25 acres/I,000 population for play fields - active sports activities such as baseball, f football and soccer.
- 2.0 acres/1,000 population for neighborhood parks in multi-family areas.
- .75 acres/1,000 population for neighborhood parks in single-family areas.

With the predominance of single-family housing in Clintwood, approximately 4.0 acres of neighborhood facilities are needed for every 1,000 persons. Combining this standard with the 1980 planning area population estimate of 1,850 persons, approximately 7.4 total acres of playgrounds, play fields and neighborhood parks are necessary to adequately serve the citizenry. Including the Clintwood Elementary School playground and the high school athletic fields, the Town currently has a total of 4.7 acres. By the year 2000 with an estimated population of 2,531 persons, 5.4 additional acres of parkland will be required for the residents of the Town and the peripheral planning area.

In conclusion, the Consultants must emphasize that parks and recreation space does not necessarily constitute service. In this and any future analysis the question of how good is as important as how much.

CHAPTER 4
THOROUGHFARE SYSTEM

THOROUGHFARE AND SERVICE STREET SYSTEM

The Town of Clintwood's existing thoroughfare and service street system includes the arterial and major collector streets that are essential to the economic, efficient, and safe movement of people and goods within and through the Town and the local streets and service alleys that are intended to serve adjacent land uses.

Arterial streets function primarily to move large volumes of vehicles from one part of the community to another. Access to and from adjacent land uses is secondary, although adjoining commercial development is common.

Major collector streets are conduits which channel vehicles from local streets to arterial routes and generators such as shopping centers, schools or community centers. Although this class of street often serves contiguous land uses, direct residential access is discouraged.

Local streets exist solely to provide access to an adjacent land use.

Service alleys provide access to utility services and allow access for garbage pickup and the loading and unloading of merchandise.

Clintwood and its peripheral planning areas are served by one State primary highway. Route 83. Route 83 is the major east-west thoroughfare transferring both the Town and Dickenson County. Route 83 connects to U. S. Route 23 at Pound about 20 miles west of Clintwood and intersects with U. S. Route 460 at Vansant in Buchanan County approximately 25 miles east of Clintwood.

A network of State secondary roads provides easy access to all parts of the Clintwood and Dickenson County areas. These routes are as follows: Route 631, Route 607 and Route 672.

The following tables examine the average daily traffic volumes on the primary and secondary routes that constitute Clintwood's existing thoroughfare system.

AVERAGE DAILY (24 hours) TRAFFIC VOLUME ON PRIMARY ROUTE 83 IN THE CLINTWOOD AREA. 1980

ROUTE NUMBER

83	Passenger Cars	Single Unit Trucks	Trailer Trucks	Buses	Total
* Vansant to Haysi	2,525	2,660	50	20	5,255
* Haysi to Rt. 63 (Clinchco)	1,610	1,000	20	25	2,655
* Rt. 63 (Clinchco) to Rt.	1,420	960	20	15	2,415
* Rt. 63 Fremont via Clintwood to Georges Fork	2,290	1,780	35	15	4,120
* Georges Fork to Pound	2,440	1,840	40	30	4,350

AVERAGE DAILY (24 Hours) TRAFFIC VOLUMES ON SELECTED STATE SECONDARY ROADS IN THE CLINTWOOD AREA, 1976-1980

ROUTE	YEAR 1976	1978	1980	INCREASE OR DECREASE 1978 to 1980	LENGTH in MILES
T 607 (Main Street)					
° Rt 83 to Rt T1003	10,674	10,741	10,798	57	.11
° Rt T1003 to Rt T1001	10,400	10,433	10,415	-18	.05
° Rt T1001 to Rt T672	8,280	8,299	8,312	13	.20
° Rt T672 to Rt T1010 West Int.	2,662	2,681	2,654	-27	.22
° Rt T1010 West Int. to Rt T1010 East Int.	1,840	1,881	1,868	-13	.07
° Rt T1010 East Int. to ECL of Clintwood	1,622	1,649	1,656	7	.12
607					
° ECL of Clintwood to Rt 733	1,482	1,561	1,573	12	.37
° Rt 733 to Rt 736	1,422	1,522	1,541	19	.93

T-631 (Brush Creek Road)					
° NCL Clintwood to Rt 83	1,502	1,596	1,613	17	.40
° Rt 83 to Rt T1014	300	388	399	11	.02
T-672					
° Rt T607 to Rt T1005	2,092	2,198	2,234	36	.13
° Rt T1005 to Rt T1013	1,660	1,785	1,803	18	.22
° Rt T1013 to ECL Clintwood	380	401	412	11	.07
672					
° ECL Clintwood to Rt 707	380	589	602	13	.04
° Rt 707 to Rt 1018	276	350	362	12	.25

Source: Commonwealth of Virginia, Department of Highways and Transportation, Division of Traffic and Safety.

ADDITIONAL OBSERVATIONS AND CONCLUSIONS

- The traffic volumes on all arterial and major collector streets in the Clintwood area have remained relatively stable during the study period.

- The greatest average daily traffic volumes were consistently recorded on Route T-607 (Main Street), but only in the central business district. This pattern suggests that the central business area of the Town is a destination for many persons living outside of the corporate limits.

- Access to the Town's only shopping center is difficult.

- There are few off-street parking areas.

- Circulation throughout the Town is impeded by an extreme number of very narrow streets. In addition, many service alleys are being used as local streets for the purpose of serving adjacent residential and commercial land uses. A lack of turning lanes compounds the problem.

- The following table describes the existing street pavement widths in the Town and the peripheral planning areas. (Note: right-of-way width of Route 83 in corporate limits is approximately 50 feet. All other routes have an approximate right-of-way width of 30 feet. The corresponding widths in the peripheral planning areas are approximately 110 feet and 40 feet respectively.)

TOWN OF CLINTWOOD

Pavement Width (feet)	10	15	20	25	30	35
Length (Miles)	.44	4.3	4.5	.13	.45	.75

Total Length 10.57 miles

EASTERN PERIPHERAL PLANNING AREA

Pavement Width (Feet)	10	15	20	25	30	35
Length (Miles)	.15	1.4	1.0	.72	.28	.10

Total Length 3.65 miles

WESTERN PERIPHERAL PLANNING AREA

Pavement Width (Feet)	10	15	20	25	30	35
Length (Miles)	.60	1.7	-	-	-	.74

Total Length 3.04 miles

Source: Balzer and Associates

The major thoroughfare plan will address these issues while emphasizing a distribution and storage system that will provide the motor vehicle user with viable options when he arrives in the vicinity of the downtown.

CHAPTER 5
UTILITIES

CHAPTER 5

UTILITIES

Revised in 1998

by Weldon Cooper Center for Public Service,

University of Virginia Southwest Virginia Office

Utilities

This section of the Comprehensive Plan will examine the existing facilities, in 1998, used by the Town of Clintwood for the provision of clean potable water, the removal of waste water, and disposal of solid waste material. Clintwood Water System Existing Water Supply and Storage Residents of Clintwood, the Town of Grundy and portions of Dickenson, Buchanan and Tazewell Counties are served by a water purification and distribution system owned and operated by the John W. Flannagan Water Authority. Raw water is obtained from the John W. Flannagan reservoir, a flood management facility completed in 1966 by the U.S. Army Corps of Engineers. After purification, water from the reservoir is pumped approximately 19 miles in to a one-half million gallon storage tank north of Clintwood's central business district. From this point water flows through the filtration system (owned, maintained, and operated by the town) to Town of Clintwood water customers.

The John W. Flannagan filtration plant has a designed production capacity of four (4) million gallons of finished potable water per day. This is an enlargement of the plant from its original two (2) MGD production capacity.

The town's total capacity to store potable water is 1,900,000 gallons. This capacity is provided with four (4) town owned water storage tanks. One is a 500,000 gallon tank on Mullins Ridge (mentioned above). One is a 600,000 gallon tank at Red Onion. Two are at the Dickenson County Technical Park and hold 500,000 and 300,000 gallons respectively. The town shares use of a fifth tank with the county Public Service Authority. That tank holds 200,000 gallons.

Existing Water Distribution System:

The 1981 edition of Clintwood's comprehensive plan makes reference to the need for a "fire flow" of 1,500 gallons a minute in its water distribution system. It said this was necessary for adequate fire protection" in a town the size of Clintwood. Deficiencies in the town's water distribution system at that time were cited as an obstacle to achieving proper fire protection. Management of the town's water system since that time has included a policy of unrelenting annual investments in the upgrading of the grid of distribution lines.

Today, the deficiencies cited in the 1981 plan are largely addressed. It is also noteworthy that a draw of 1,500 gallons per minute could be sustained for two hours by the towns smallest water tank even if the draw began with the tank filled to only 60% of capacity. (1,500 gals. x 120 minutes = 180,000 gallons. 60% of smallest tank at 300,000 gals. = 180,000 gallons.)

The improved state of Clintwood's water distribution system is also partly responsible for the town's ability to maintain a Class 5 ISO (Insurance Services Office) fire protection rating. This rating translates into fire insurance premiums for commercial properties in Clintwood 10% to 20% lower than for comparable properties located in Dickenson County outside of Clintwood's fire and water service area.

Existing Water Consumption and Water Losses:

There are 1,706 metered water users connected to the Town of Clintwood system. Of these, 902 are located in the town and 804 are located outside the town's corporate limits. "Accountability" is the term used in the water utility industry to denote the percentage of treated water (or wholesale purchased water) for which a system can account as product delivered to customers or users. For example: If Clintwood purchased ten(IO) million gals. of water from the J.W. Flannagan Authority in a given month and recorded metered sales of only six (6) million gals. during the same time frame, Clintwood's accountability would be calculated as 60%.

In fact, Clintwood's accountability, on a monthly basis, holds consistently in at least the mid 80's with frequent recordings of over 90%. This is very good by industry standards, and certainly compares favorably with many water utilities in southwest Virginia. Unaccounted for water can be the result of a number of things including undetected leakage, fire department operations, water line & storage tank maintenance, and the tendency of water meters to allow more water to pass through them than is recorded as their internal moving parts wear with age.

In 1997, the daily transfer of water from the John W. Flannagan Authority to the Town of Clintwood was in a range of 300,000 to 340,000 gallons. The town's recorded monthly sales convert to a daily average approaching 300,000 gallons.

Sanitary Sewerage Facilities:

Clintwood's sanitary sewerage treatment plant was built in 1988 as a replacement for a smaller inadequate facility built in 1963. The town's NPDES (National Pollutant Discharge Elimination System) permit provides for a discharge of up to .49 MGD or 490,000 gals. per day of treated effluent into the Crane's Nest River. A secondary treatment facility, the plant is located on route 607 near Holly Creek.

The Town of Clintwood contracts with Professional Services Group, Inc. (PSG) for the operation and maintenance of it's sewerage treatment plant. PSG's services include all administrative matters and testing connected to the town's NPDES permit issued by the state DEQ (Dept. of Environmental Quality). It also handles all operational and permitting requirements connected to the land application of sludge produced as a by-product at the plant.

Normal flow to the sewer plant averaged approximately 220,000 gals. per day in 1997, less than one half the plant's capacity. During some rain events, inflow and infiltration (17I) entering the town's sanitary sewer collector system consumes the treatment plant's entire capacity. Permit limitations have not been violated, but I & I does present a challenge in the maintenance of the town's sanitary sewer collector system. The seepage of ground water into sewer lines increases naturally as pipe joints, manholes, lid seals, etc. age, but a vigilant guard needs to be kept against intentional violations such as the connection of roof drains. Treating rain water with sanitary sewerage not only costs a community unnecessary financial expense but also robs it of potential capacity to accommodate new economic growth.

Solid Waste Disposal:

Dickenson County participates with Buchanan and Russell Counties in a regional solid waste authority operated by the Cumberland Plateau Planning District. The Town of Clintwood delivers solid waste to the regional authority's transfer station in Fremont, approximately six miles west of town.

Residential refuse customers in the Town of Clintwood receive weekly curb-side pick-up service and are charged a fee of $5.25 per month. Commercial service is geared to the specific needs of customers with a graduated fee structure starting at $8.25 per month. The town role in solid waste disposal is limited to pick-up and transport to Fremont. The regional authority currently transports the refuse to Hawkins County, Tenn., where it is disposed of in the Carter Valley Landfill. The authority's operating costs are $59.90 per ton.

In 1997, the Town of Clintwood generated an approximate average of 156 tons of solid waste per month.

Utilities - Summary

At the time of the original drafting of this comprehensive plan, in 1981, the term "infrastructure" was not in popular use. Utilities are clearly part of those things to which that term applies in the context of local government today. Clintwood certainly deserves high marks for its assiduous efforts over more than the last one and one-half decade to improve its utilities infrastructure.

CHAPTER 6
ECONOMIC ANALYSIS

ECONOMIC ANALYSIS

An understanding of the structure and functioning of Clintwood's urban economy is fundamental to all land use planning analysis and policy statements contained within this document. The purpose of this analysis is to define, describe and examine the economic characteristics of Clintwood by reviewing pertinent economic activities, employment, employment trends and income statistics.

ECONOMIC ACTIVITIES:

Mining:

Coal mining is currently and historically the major industrial activity and source of income in the Clintwood-Dickenson County area. In July of 1980, 20 percent of the employed persons residing in the Town were directly affiliated with the coal industry. In March of 1979, 54 percent of the persons employed by firms operating in Dickenson County (including Clintwood) were working within the coal mining industry.

In the first quarter of 1981, a payroll of $15,142 million was disbursed by 66 coal mining establishments operating in Dickenson County. This amount was 84 percent of the total 1981 first quarter payroll of $18,075 million paid by all establishments licensed to operate in the County. By comparison, in 1979 the mining industry in Virginia constituted only 1.9 percent of the State's total payroll and only 1 percent of the State's total employment. (Note: Bituminous coal mining comprises approximately 85 percent of Virginia's total mining activities.)

Dickenson County is one of 7 coal producing counties in southwestern Virginia. In 1979, the coal extracted from this area was valued at $1.14 billion, sixth among the nation's coal producing states. The value of coal mined in Dickenson County in 1979 was approximately $220 million.

The Federal Power Commission has designated 5 primary coal producing regions within the United States. In 1975, the Appalachia region, of which Dickenson County is a part, produced 49 percent of the coal purchased by the nation's utility companies. Because of increased production anticipated in the western part of the country, this percentage is projected to decrease to 34 percent by 1985. This decrease reflects a shifting share of the coal market and not a reduction in demand. Nationally, coal production, after sluggish growth from 1973 to 1978 has experienced dramatic increases in 1979, 1980 and 1981. The primary cause has been greatly increased purchases of coal by both domestic and foreign utility companies responding to the rapid price increase of oil and the difficulties encountered in constructing and operating nuclear power plants. During the past two years, domestic electric utilities have not only consumed much larger amounts of coal but have also built up large stockpiles. Virginia is in a very favorable position for supplying coal to the export market via the Hampton Roads port facilities.

Manufacturing:

Manufacturing employed less than 4 percent of Clintwood's residents in 1980. In March of 1979, manufacturing firms employed only 5.9 percent of the persons working within Dickenson County. The total first quarter payroll in 1981 for Dickenson County's manufacturing concerns was $535,854. This amount was less than 3 percent of the total first quarter payroll disbursed by all commercial and industrial establishments operating in the County. Seven manufacturing establishments are currently located within Dickenson County. Of these, only I is located in Clintwood. According to the Division of Industrial Development, there were no announcements in 1979 or 1980 of any new or expanding manufacturing firms in either the County or the Town.

The primary manufacturing businesses in Dickenson County produce clothing and lumber. The average hourly wage for manufacturing employees in Dickenson County is $3.93, considerably lower than either the State ($5.58) or the national ($6.69) average.

The gross state product, an estimate of the value of all goods and services produced in the state in I year, totalled $267,381.5 million in 1980. Of this amount, manufacturing accounted for 21.6 percent, as opposed to mining which contributed only 1.3 percent. Manufacturing has

PAYROLL AND NUMBER OF ESTABLISHMENTS BY INDUSTRY: FIRST QUARTER, 1981
DICKENSON COUNTY AND STATE OF VIRGINIA

INDUSTRY[1]	QUARTERLY PAYROLL ($1,000) DICKENSON COUNTY	STATE	% OF QUARTERLY COUNTY PAYROLL	NUMBER OF ESTABLISHMENTS DICKENSON COUNTY	STATE
Agriculture, Forestry & Fish	-	26,108	0	-	1,393
Mining & Quarrying	15,142	122,691	83.7	66	747
Construction	61	398,019	.3	15	13,835
Manufacturing	535	1,539,034	2.9	7	5,174
Transportation, Communication, Utilities	844	473,704	4.6	29	3,808
Trade	1,090	1,201,225	6.0	86	31,295
Finance, Insurance, Real Estate	74	352,803	.4	8	8,533
Services	327	1,141,826	1.8	40	30,997
TOTAL	18,075	5,255,414	100.0	251	95,782

[1] Excludes government and railroad employees, self employed persons.

Source: Virginia Employment Commission

been and will continue to be vital to Virginia's economic balance. Therefore, it is important that manufacturing concerns be encouraged to locate within Dickenson County and Clintwood. Not only does manufacturing bolster the local economy by way of property and income taxes, purchases and payrolls, but it has one of the highest employment multipliers of any economic sector.

An employment multiplier occurs as a new or expanded industry injects income into the community that results in a cumulative ()r multiplier effect on community income or employment that exceeds the initial input. The U. S. Chamber of Commerce has estimated that in rural areas, an increase of 68 nonmanufacturing jobs occurs for every increase of 100 factory workers. On an employment basis; therefore, the approximate multiplier effect for manufacturing in Clintwood is 1.68. Because of the Town's relative isolation, the effect may be even greater.

Trade and Service:

Retail and wholesale trade and service enterprises employed over 18 percent of Clintwood's residents in 1980. In March of 1979, trade and service activities employed 15.2 percent of the individuals working within Dickenson County. The total 1981 first quarter payroll for trade and service firms operating in Dickenson County was $1,417,478, or 7.8 percent of the total first quarter payroll disbursed by all commercial enterprises in the County. Of the 277 trade and service businesses operating in Dickenson County in 1981, approximately 95, or 34 percent are located in Clintwood.

Taxable sales (including motels, hotels, and selected other services but excluding automobiles, gasoline, and alcoholic beverages) in Dickenson County and Clintwood in 1979 were $35 million, an increase of 3.6 percent from 1978. Taxable sales in Virginia in 1979 were $17.8 billion, up 7.0 percent from 1978.

The chart on the following page, prepared from data published by the Virginia Department of Taxation, indicates that the growth rate of taxable sales in Dickenson County from 1971 to 1979 has been comparable to that of the State and the region. The Table demonstrates that the amount of taxable sales in

[1] Note: the rate of inflation between 1978 and 1979 was 11.5 percent.

TAXABLE SALES FOR VIRGINIA CITIES AND COUNTIES: 1979

TOTAL SALES	TOTAL DOLLAR SALES - 1979 ($000)	INDEX OF CHANGE (1971-100)								
		1971	1972	1973	1974	1975	1976	1977	1978	1979
STATE	$17,751,254	100.0	111.5	126.2	146.2	151.0	165.9	185.8	208.8	223.6
DICKENSON COUNTY	35,260	100.0	109.0	119.6	156.1	186.2	205.1	218.6	231.3	239.8
WISE COUNTY	121,927	100.0	113.0	128.6	163.4	192.4	213.1	231.2	243.2	250.3
BUCHANAN COUNTY	90,003	100.0	104.0	111.7	141.0	177.8	197.8	209.4	224.7	239.5
RUSSELL COUNTY	50,263	100.0	111.7	115.0	135.2	166.2	184.7	214.2	228.6	234.8
TAZEWELL COUNTY	158,470	100.0	117.2	129.4	144.6	173.0	191.2	211.5	234.3	253.5
REGIONAL AVERAGE	91,184.6									

GAF STORE SALES VIRGINIA CITIES AND COUNTIES: 1979

TOTAL SALES	TOTAL DOLLAR SALES - 1979 ($000)	INDEX OF CHANGE (1971=100)								
		1971	1972	1973	1974	1975	1976	1977	1978	1979
STATE	5,527,084	100.0	110.3	125.4	142.2	142.6	156.8	175.8	197.2	204.3
DICKENSON COUNTY	7,065	100.0	107.8	116.1	156.0	164.5	164.2	166.1	166.0	171.1
WISE COUNTY	25,403	100.0	127.7	159.6	193.1	182.1	197.7	212.7	221.4	217.6
BUCHANAN COUNTY	25,473	100.0	104.9	112.5	137.8	155.6	167.7	179.7	183.3	191.0
RUSSELL COUNTY	15,054	100.0	121.6	138.4	169.7	165.8	183.7	207.2	225.2	233.5
TAZEWELL COUNTY	38,384	100.0	131.9	135.5	149.1	171.4	183.4	195.9	205.1	228.7
REGIONAL AVERAGE	22,275.8									

Source: Virginia Department of Taxation

in 1979 however, was far below the regional average of $91,184,600. Careful examination reveals that the most significant retail growth has paralleled increases in coal mining activity.

GAF sales (general merchandise, apparel, furniture and appliances) in Dickenson County and Clintwood in 1979 were $7 million, an increase of 3.0 percent from 1978. However, the County's and Town's GAF sales in 1979 were substantially lower than GAF sales transacted in the neighboring Counties of Buchanan, Wise, Tazewell and Russell. GAF sales in Virginia advanced 3.6 percent from 1978 to 1979. The table on the preceding page documents these findings as well as the index of change for GAF sales in the State and the region.

Sales Tax Revenue:

Sales tax revenue is generally a reliable indicator of economic health. Patrons of businesses in Clintwood pay a sales tax of 4 percent for every $1 spent. Of this 4 percent, I percent is returned from the State to the County for local option, I percent is allocated by the State to all local school districts according to student membership and 2 percent is retained by the State.

In Dickenson County yearly sales made during the calendar year ending December 31, 1979 as reflected by deposits of sales tax revenues totaled $35,260,451. In 1980 this figure had increased 4.3 percent to $36,763,180. The consultants estimate that of these amounts sales transacted in Clintwood accounted for $11,988,553 and $12,499,481 respectively. Based on these estimates, it is clear that Clintwood is the retail trade center of Dickenson County.

EMPLOYMENT

Employment analyses and forecasts serve two primary purposes: they provide information necessary for population studies which in turn are used for determining space needs for residential areas and community facilities, and they aid in estimating commercial and industrial land use requirements.

Note: The rate of inflation between 1978 and 1979 was 11.5 percent.

Current Employment

Employment in the Town of Clintwood totaled 469 workers in July of 1980. This represents 34.3 percent of the Town's 1980 total population. Of these 469 workers, 220, or 47 percent, are employed within the Town. An additional 157 workers commute to places of employment in Dickenson County. The remaining 92 persons work in Wise, Buchanan, Tazewell or Russell Counties or in the adjacent counties of Kentucky.

Future Employment:

There are 2 primary means of forecasting future employment: the analytical method and the short-cut method. The analytical method develops employment projections by analyzing probable future production and worker output data. In essence, future demand for a particular good or service is determined. The short-cut method chosen for this analysis is much simpler, utilizing one or more employment statistics directly.

Projection Methodology:

A simple step-down procedure was developed to derive categorical employment projections for the year 1990. This methodology is founded upon the principle that local employment trends are a function of national trends and that by using a carefully conceived national forecast a reasonably accurate local estimate may be developed.

TOTAL EMPLOYMENT
TOWN OF CLINTWOOD, JULY, 1980

	1980	% OF TOTAL
POPULATION	1,369	-
EMPLOYMENT[1]		
Manufacturing	18	3.8
Non-Manufacturing	451	96.1
Mining	96	20.5
Construction	11	2.3
Transportation, Communication & Public Utilities	17	3.6
Trade	60	12.8
Finance, Insurance & Real Estate	19	4.0
Services	25	5.3
Government	133	28.4
Agricultural	0	0
Other Non-Argricultural (including self-employed)	90	19.2
TOTAL	469	100.0

[1] Employment data based on place of residence not place of work.

Sources: Survey by Town of Clintwood
Balzer and Associates

Projections for the Town of Clintwood were computed by using the current employment by place of residence figures for the Town and employment projections, 19781990 prepared by the United States Bureau of Labor Statistics. The national forecasts were calculated using the most recent data pertaining to population, industry, occupational employment, productivity and consumer expenditures. In addition, the Bureau's projections were based on the following assumptions:

* Inflation will decelerate to 5.2 percent annually during 1980-1990.

* A stable, long-run unemployment rate close to 4.5 percent will be achieved by the mid-1980's.

* Higher energy prices will not constrain growth in gross national products.

* The institutional framework of the U. S. economy will not change radically

* Current social, technological, and scientific trends will continue.

* No major event such as widespread or long lasting energy shortages or war will significantly alter the industrial structure of the economy or alter the rate of economic growth.

A per annum percentage increase as determined for each employment category, 1978-1990, by the Bureau of Labor Statistics was applied to the August, 1980 estimated labor force components of the Town of Clintwood. The results are as follows:

EMPLOYMENT PROJECTIONS, TOWN OF CLINTWOOD

1980-1990

INDUSTRIAL CATEGORY	1980 TOWN EMPLOYMENT[1]	PROJECTED PER ANNUM PERCENTAGE INCREASE	1990 TOWN PROJECTED EMPLOYMENT[1]
Manufacturing	18	1.3	20
Coal Mining	96	1.7	112
Transportation, Communications, Utilities	17	.88	18
Trade	60	2.3	74
Services	25	4.4	36
Finance-Real Estate	19	2.8	24
Construction	11	1.4	13
Government	133	1.1	148
Other	90	2.0	108
TOTAL	469	2.0	553

[1] Employment figures denote place of residence not place of work.

Source: U. S. Department of Labor, Bureau of Labor Statistics
Survey conducted by Town of Clintwood
Balzer and Associates, Inc.

Manufacturing:

Population increases and rising incomes have increased demands for almost all types of goods, but improved methods of production have and will continue to limit employment growth. Employment grew more slowly in manufacturing than in any other sector between 1965 and 1978. Between 1980 and 1990, however, employment in durable goods manufacturing is expected to increase substantially.

Coal Mining

As the nation's need for energy increases in the next decade, employment in the mining sector is expected to grow significantly.

Transportation - Communications - Public Utilities

Employment in the railroad and water transportation industries will continue to slowly decline. Other forms of transportation such as trucking and air transit will increase steadily.

The demand for communication equipment as well as electric power, gas utilities, water and sanitary services will increase as the population grows and more households and businesses are formed. Technological advances in the systems required to provide these services will moderately restrict future employment growth.

Trade:

Employment growth in the retail and wholesale industries will parallel increases in population and income. Retail employment is projected to increase much faster than wholesale employment.

Services:

Service employment which includes hotels, barber shops, auto repair shops, business services, hospitals and nonprofit organizations is projected to increase dramatically between 1980 and 1990. Employment opportunities in health care are expected to grow rapidly due to population growth - especially the elderly and rising incomes that increase people's ability to pay for medical care. Business services, including accounting, data processing and maintenance are also expected to increase.

Finance - Real Estate:

Employment in this sector is expected to rise in order to meet increasing consumer demand for credit and other financial services.

Construction:

The Department of Labor projects that during the early 1980's, the demand for new housing will remain high because the number of households is expected to increase. Expansion of businesses and maintenance of existing buildings will also require more construction employment.

Government

It is expected that new government programs will not be enacted because of the public's desire to limit government growth. However, school employment will rise moderately in response to the immigration of school age children accompanying adults employed by the coal mining industry and its service affiliates

INCOME

Personal income is made up of wage and salary disbursements, proprietors' income, rental income of persons, dividends, personal interest income, and transfer payments. Although most personal income is in a monetary form, there are several exceptions such as (1) wages and salaries paid in kind; (2) the net rental value of owner-occupied houses; (3) the net value of food and fuel produced and consumed on farms; and (4) imputed interest received by persons from financial intermediaries. Capital gains are not included in personal income principally because they are not attributable to current economic activity. Personal income is measured before deduction of income and other personal taxes, but after deduction of Social Security taxes, government retirement, and other social insurance programs.

Total Personal Income by Place of Residence

The total personal income of the residents of the State increased $18,418 billion (70 percent) between 1974 and 1979. The total personal income of those persons residing in Dickenson County increased 87 percent for the same time period. The estimated amounts of total personal income for the residents of Clintwood during the period 1974-1979 are presented on the following page:

"Personal Income Estimates for Virginia Counties and Cities," 1973-1978, p.7. Tayloe Murphy Institute

TOTAL PERSONAL INCOME BY PLACE OF RESIDENCE, 1974-1979 (millions of dollars)

	1974	1975	1976	1977	1978	1979	# CHANGE	% CHANGE
State of Virginia	$26,212	$28,738	$31,997	$35,431	$39,687	$44,630	$18,818	70%
Dickenson County	68.0	81.4	86.4	94.7	98.1	127.8	59.7	87%
Clintwood (estimated)	5.1	6.1	6.1	6.5	6.6	8.5	3.4	67%

Source: Regional Economics Informational System Bureau of Economics

Per Capita Personal Income

The per capita personal income of Dickenson County residents increased between 1969 and 1979. In 1969, the County's per capita personal income was $1,870 or 55% of the State average of $3,400. By 1979 the County's per capita personal income had risen to $6,340 or 73% of the State average, ranking the County 95 out of 136 Virginia localities. It is assumed that the per capita personal income of Clintwood's residents is equivalent to that of the County.

PER CAPITA INCOME 1974-1979

	1974	1975	1976	1977	1978	1979	1974-1979 # CHANGE	1974-1979 % CHANGE
State of Virginia	$5,339	$5,770	$6,333	$6,955	$7,666	$8,588	$3,249	61%
Dickenson County	3,827	4,531	4,538	4,829	4,941	6,340	2,513	66%

Source: Regional Economics Information System
Bureau of Economics

Low and Moderate Income

Low- and moderate-income persons are defined as those whose annual income is less than $12,004 per year, which is 80% of the Statewide non-metro median income, as defined by the United States Department of Housing and Urban Development in October 1980.

In July of 1980, there were 226 low- and moderate-income households in the Town of Clintwood. These households constituted 45.1 percent of all the households in the Town. Approximately 533 persons resided in these households.

In March of 1981, there were 69 low- and moderate-income households in the peripheral planning areas. These households comprise 50 percent of all the households located in these areas.

CHAPTER 7
POPULATION ANALYSIS

POPULATION ANALYSIS

Analysis of current and future population size is the foundation for almost all major planning decisions. Current and future demands for community services and facilities as well as land for residential, commercial and industrial purposes are directly affected by the size, composition, and spatial distribution of the population. Population size indicates the basic amounts of land required for the various types of uses. When a time element is introduced and future population trends are projected) these trends become the basis for calculating future community service facility and spatial requirements. Population composition encompasses age, household size and income levels, all of which are indices of the types and extent of services and facilities as well as policies required by the community. An examination of population distribution reveals the most functional location for future land uses, community services and facilities, and public utilities. Therefore, the population analysis of the Town of Clintwood is necessary as a means of defining the scale, location and temporal considerations of future public and private development within the Town and its environs.

CURRENT POPULATION SIZE:

Between 1940 and 1980, the Town of Clintwood experienced an increase in population of 263 persons, a net gain of 23.8 percent. The population of the Town in 1940 was 1,106. The 1980 final population count as prepared by the Bureau of the Census indicates that 1,369 persons reside in the Town. A 1981 survey conducted by the Consultants reveals that an additional 481 persons live within the Town's peripheral planning area. The current total population of Clintwood and its planning area is 1,850.

POPULATION GROWTH:

The Town of Clintwood's total population has increased on the average of .6 percent per annum since 1940. However, as may be seen in Figure I, this growth has not been continuous. The Town's population increased 27 percent from 1940 to 1960. Between 1960 and 1970 the Town experienced a 6 percent decline in population. Since the 1970 census the Town's population increased from 1,320 persons to the current total of 1,369 persons, a gain of 3.7 percent or a growth rate of .4 percent per annum.

By seeing aerial photographs and the standard of 3.0 persons per household, the Consultants were able to establish that 336 persons resided in the Town's peripheral planning area in 1970. Between 1970 and 1980, this area experienced a 43 percent increase in population or a per annum growth rate of 4.3 percent.

In summary, the population of the Town of Clintwood and its peripheral planning are grew from 1,656 person in 1970 to 1,850 person in 1980, an increase of 12 percent.

The Dickenson County Comprehensive Plan and the 1990 Report of the U.S. Census Bureau show population trends for the County, including the Town of Clintwood, as follows:

POPULATION TRENDS

1950-1990, Clintwood, Virginia

YEAR	TOWN POPULATION	NUMBER CHANGE	% CHANGE
1950	1,366		
1960	1,400	34	2.4
1970	1,320	-80	-5.7
1980	1,369	49	3.7
1990	1,542	173	12.6

Source: Virginia Statistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

POPULATION TRENDS

1950-1990 Dickenson County, Virginia

YEAR	COUNTY POPULATION	NUMBER CHANGE	% CHANGE
1950	23,393		
1960	20,211	-3,182	-13.60%
1970	16,077	-4,134	-20.40%
1980	19,806	3,729	23.20%
1990	17,620		

Source: Virginia Statistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

LOCATION	1980	1990	% CHANGE 1980-1990	% ANNUAL GROWTH
Clintwood Town	1,369	1,542	12.6	1.3
Dickenson County	19,806	17,620	-11.0	-1.1
Scott County	25,068	23,204	-7.4	-0.7
Buchanan County	37,989	31,333	-17.5	-1.8
Tazewell County	50,511	45,960	-9.0	-0.9
Russell County	31,761	28,667	-9.7	-1.0
Washington County	46,487	45,887	-1.3	-0.1
Lee County	25,956	24,496	-5.6	-0.6
Wise County	42,343	39,573	-6.5	-0.7
Norton City	4,757	4,247	-10.7	-0.7
Wise Town	3,891	3,894	0.08	-1
Bristol City	19,042	18,426	-3.2	0.008
				-0.3

Source: Virginia Statistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

BIRTH AND DEATH RATES PER 1,000 TOTAL POPULATION

Dickenson County 1990

Births		Deaths	
No.	Rate	No.	Rate
185	10.8	179	10.5

Source: Virginia Statistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

CURRENT AGE GROUP POPULATION

Town of Clintwood

AGE GROUP	NUMBER	PERCENT
0-5	73	4.7%
5_14	175	11.3%
15_24	208	13.5%
25_34	191	12.4%
35_44	244	15.8%
45_54	177	11.5%
55_64	178	11.6%
Over 65	296	19.2%
TOTAL	1,542	100%

	1980		1990		CHANGE	
AGE GROUP	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
0-18	363	26.5%	340	22.0%	-23	-6.3%
19-64	817	59.7%	906	58.8%	89	10.9%
Over 65	189	13.8%	296	19.2%	107	56.7%
TOTAL	1,369	100.0%	1,542	100%	173	61.3

ckenson County

AGE GROUP	NUMBER	PERCENT
0-5	1,037	5.8%
5_14	2,827	16.0%
15_24	2,567	15.0%
25_34	2,680	15.2%
35_44	2,668	15.1%
45_54	2,030	11.5%
55_64	1,664	9.4%
Over 65	2,147	12.0%
TOTAL	17,620	100%

Source: 1990 Census

RACE

	TOTAL POPULATION		TOTAL MINORITY POPULATION		% MINORITY	
LOCATION	1980	1990	1980	1990	1980	1990
Clintwood	1,369	1,542	10	7	0.73	0.45
Dickenson County	19,806	17,620	115	99	0.58	0.56

Source: 1990 Census

HOUSEHOLD SIZE

	POPULATION		OCCUPIED HOUSING UNITS		PERSONS/UNIT	
LOCATION	1980	1990	1980	1990	1980	1990
Clintwood	1,369	1,542	573	672	2.38	2.29
nson County	19,806	17,620	6,290	6,457	3.14	2.72

ce: 1990 Census

POPULATION DENSITY

LOCATION	POPULATION	AREA IN SQUARE MILES	PERSONS PER SQUARE MILE
Clintwood Town	1,542	1.9	812
Haysi Town	222	0.9	246
Norton City	4,247	7.3	582
Pound Town	995	2.6	383
Wise Town	3,193	3.0	1,064

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

PROJECTED POPULATION

YEAR	DICKENSON COUNTY
1995	16,994
2000	16,397
2005	16,050
2010	15,702

YEAR	Clintwood
1991	1,530
1992	1,577
1993	1,580
1994	1,583

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

INDUSTRY	
Town of Clintwood	
Employed Persons 16 Years & Over	
Agriculture, Forestry & Fisheries	
Mining	0
Construction	87
Manufacturing, Nondurable Goods	30
Manufacturing, Durable Goods	27
Transportation	4
Communications & Other Public Utilities	12
Wholesale Trade	13
Retail Trade	8
Finance, Insurance, & Real Estate	72
Business & Repair Services	29
Personal Services	6
Entertainment & Recreation Services	17
Professional & Related Services:	7
Health Services	
Educational Service	46
Other Professional & Related Services	102
Public Administration	39
Source: 1990 Census	53

OCCUPATION

Town of Clintwood	
Managerial & Professional Speciality Occupations :	
Executive, Administrative, & Managerial Occupations	63
Professional Speciality Occupations	115
Technical, Sales, & Administrative Support Occupations:	
Technicians & Related Support Occupations	12
Sales Occupations	57
Administrative Support Occupations, Included Clerical	77
Service Occupations:	
Private Household Occupations	2
Protective Service Occupations	17
Service Occupations, Except Protective & Household	51
Farming, Forestry, & Fishing Occupations	5
Precision Production, Craft, & Repair Occupations	78
Operators, Fabricators & Laborers:	
Machine Operators, Assemblers, & Inspectors	24
Transportation & Material Moving Occupations	37
Handlers, Equipment Cleaners, Helpers, & Laborers	14

Source: 1990 Census

PER CAPITA PERSONAL INCOME

	1993	1992	1991	1990
Virginia	$21,653	$20,883	$20,046	$19,701
Dickenson County	$14,321	$13,788	$13,435	$13,530

ce: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

PROJECTED MEDIAN FAMILY INCOME					
	1996	1995	1994	1993	1992
Virginia	$47,549	$46,096	$44,643	$43,919	$42,258
Dickenson County	$21,643	$21,456	$21,289	$24,929	$24,221

Source: Virginia Staistical Abstract, 1996-97 Edition. Weldon Cooper Center for Public Service.

PROJECTED MEDIAN HOUSEHOLD INCOME					
	1996	1995	1994	1993	1992
Virginia	$41,470	$40,203	$38,936	$37,202	$35,839
Dickenson County	$18,085	$17,928	$17,789	$21,514	$20,919

Source: Virginia Staistical Abstract, 1996-97 Edition. Weldon Cooper Center for Public Service.

CHAPTER 8
FINANCIAL ANALYSIS

FINANCIAL ANALYSIS

The purpose of this study is to determine the relative financial capability of the Town of Clintwood to undertake a program of capital improvements to support the developmental growth in the Town as envisioned by the future land use element of this document.

The analysis includes an evaluation and comparison of the past revenues and expenditures, from fiscal years 1972 through 1981, as well as a review of the Town's assessable basis and outstanding bonded indebtedness for fiscal year 1981.

GENERAL OPERATING FUND

General Operating Revenues

As stated in the municipal audits 1972-1980, general operating revenues increased every year. From a level of $152,552 in 1972-74, general operating revenues rose to $228,323 in 1978-1980. The budgeted revenues in 1980-82 were estimated to be $307,642. This budgeted amount represents a significant increase in revenues, not mere compensation for inflation. (Note: To account for inflation, adjust values using constant dollars - Appendix C.; Some of the major sources of revenue are discussed as follows: (Also see Table 1)

* Property Taxes increased from a total of $37,796 in 1972-74 to $41,453 in 1978-80. This is

an increase of $3,657 during the period and represents an overall increase of 9.6 percent or 1.2 percent per annum. The estimated property tax revenue for 1980-82 is $47,000.

* Local Sales Tax increased $13,256 from 1972-74 to 1978-80. An overall increase of 103 percent or 12.9 percent per year. (Note: Local sales tax is disbursed by Dickenson County to the Town on the basis of school children, not sales volume.) The estimated local sales tax revenue for 1980-82 is $24,500.

* Refuse removal fees received increased by 81 percent from 1972-74 to 197880 or 10 percent per year.

General Operating Expenditures:

As stated in the municipal audits 1972-1980, general operating expenditures have increased from $108,161 in 1972-74 to $294,718 in 1978-80. This rise of $186,557 represents an average annual increase of almost 22 percent per year. The average inflation rate during the same period was 8.3 percent. The major expenditures are briefly discussed below. (Also see Table 2.)

* Insurance costs have increased dramatically since 1972. Hospital, automobile and workman: compensation insurance have increased from a combined amount in 1972-74 of $6,624 to $36,325 in 1978-80. This represents a rise of $29,701 or a percentage increase of 448 percent.

* Fuel and power costs have also increased significantly during the study period.

* Police and Fire Departments combined increased from $36,358 in 1972-74 to $70,709 in 1978-80. This is an overall increase of 94 percent or amost 12 percent per year. The budgeted amount for 1980-82 is $80,138.

* Refuse collection has increased more than $15,400 between 1972 and 1980. This is an overall increase of 67 percent or 8.4 percent per year.

Comparison of Past General Operating Revenues and Expenditures

A comparison of the general operating revenues and expenditures for the period 1972 to 1980 indicates that revenues have increased an average of 6.2 percent per year while expenditures have increased an average of almost 22 percent per year. Table 3 shows that in 1978-80 general operating expenditures exceeded revenues by more than $66,000.

An examination of the municipal audits 1972-1980 reveals that the Town has maintained financial equilibrium only by way of short term bank loans and a modest amount of cash in bank savings.

UTILITY FUND

The Town of Clintwood maintains a separate water and sewer department budget. User charges (as opposed to tax revenues or licensing fees) for water and sewer services are imposed to pay operational expenses and to retire bonds that financed previously constructed facilities.

Tables 4 and 5 indicate that during the period 1972-1980, water department expenditures exceeded revenues by an average of $7,078 per year. Sewer department expenditures surpassed revenues by an average of $3,185 per annum.

TABLE 1

TOWN OF CLINTWOOD GENERAL REVENUE BY SOURCE, 1972-1982

REGULAR	1972-1974	1974-1976	1976-1978	1978-1980	BUDGETED 1981	BUDGETED 1982
Parking Meters	$ 10,495.50	$ 10,532.00	$ 10,501.59	$ 7,062.00	$ 5,000.00	$ 5,000.00
Traffic Violations	619.03	794.78	1,934.34	333.50	450.00	1,000.00
Garbage Fees	20,238.50	25,009.25	15,374.50	36,732.00	18,000.00	27,500.00
Merchants Licenses	4,372.50	4,917.50	6,055.00	5,520.50	3,000.00	3,000.00
Privilege & Professional Liceses	6,937.66	5,895.38	3,990.00	5,438.00	2,600.00	1,000.00
Building Permits	50.00	-	-	-	-	1,000.00
District Court Fines	9,031.75	9,180.75	3,950.77	3,848.69	3,000.00	3,000.00
Amusement Licenses	1,157.00	1,241.00	1,450.00	835.00	300.00	800.00
A.B.C. Funds	9,594.00	10,245.00	10,400.36	14,744.60	5,500.00	5,500.00
Property Tax	37,796.38	40,959.68	46,742.93	41,452.76	22,000.00	25,000.00
Auto Tags	12,015.00	12,850.00	8,474.50	13,690.00	7,000.00	7,000.00
Bank Stock Tax	19,876.78	38,398.06	43,322.36	61,974.14	30,500.00	33,000.00
Utilities Tax	1,128.25	1,791.78	5,028.36	6,101.90	3,000.00	3,500.00
Sales Tax	12,787.48	9,365.23	16,775.06	26,042.95	11,000.00	13,500.00
Trailer Sales	-	-	2,624.69	1,398.74	500.00	1,500.00
Trailer Park Licenses	-	-	780.00	1,095.00	500.00	1,200.00
Miscellaneous	870.42	652.12	1,744.46	790.59	1,050.00	500.00
TOTAL	$146,970.25	$171,832.53	$179,148.92	$227,060.37	$113,400.00	$133,000.00
OTHERS						
Grants	-	-	-	-	$ 14,669.88	$ 11,253.00
Reimbursements (Revenue Sharing)	-	-	-	-	16,000.00	18,000.00
Miscellaneous	-	-	3,930.85	1,262.71	-	1.320.00
Loan Payment	2,581.27	-	-	-	-	-
Sale of Equipment	-	-	2,081.50	-	-	-
Sale of Land	-	3,000.00	-	-	-	-
Bank Loan	-	-	-	-	-	-
Board of Supervisors	3,000.00	-	-	-	-	-
Cumberland Plateau	-	-	-	-	-	-
TOTAL	$ 5,581.27	$ 3,000.00	$ 6,012.35	$ 1,262.71	$ 30,669.88	$ 30,573.00
TOTAL RECEIPTS	$152,551.52	$174,832.53	$185,161.27	$228,323.08	$144,069.88	$163,573.00

Sources: Municipal Audits, Town of Clintwood
Adopted General Fund Budget, Town of Clintwood, 1981 & 1982

TABLE 2

TOWN OF CLINTWOOD GENERAL GOVERNMENTAL EXPENDITURES BY FUNCTION, 1972-1982

	1972-1974	1974-1976	1976-1978	1978-1980	BUDGETED 1981	BUDGETED 1982
LICE DEPARTMENT						
SALARIES	$ 25,374.91	$ 38,851.22	$ 42,490.44	$ 49,168.60	$ 23,984.24	$ 33,654.48
POLICE EXPENSES	7,915.76	14,082.76	11,661.36	16,549.94	8,300.00	8,700.00
TOTAL	$ 33,290.67	$ 52,933.98	$ 54,151.80	$ 65,718.54	$ 32,284.24	$ 42,354.48
RBAGE COLLECTION						
SALARIES	$ 16,709.43	$ 20,676.22	$ 20,358.17	$ 27,559.36	$ 15,536.40	$ 16,696.26
TRUCK EXPENSES	6,160.32	9,659.53	6,894.25	10,738.88	8,000.00	8,000.00
TOTAL	$ 22,869.75	$ 30,335.75	$ 27,252.42	$ 38,298.24	$ 23,536.40	$ 24,696.26
RE DEPARTMENT						
GENERAL EXPENSES	$ 2,516.51	$ 1,329.30	$ 4,466.61	$ 3,242.91	$ 800.00	$ 800.00
TRUCK EXPENSES	550.28	1,483.15	2,635.89	1,747.56	2,200.00	1,700.00
TOTAL	$ 3,066.79	$ 2,812.45	$ 7,102.50	$ 4,990.47	$ 3,000.00	$ 2,500.00
RKING METER COSTS	$ 610.13	$ 59.70	$ 742.88	$ 106.11	$ -	$ 500.00
TO STICKER COSTS	$ 369.60	$ 193.05	$ 419.25	$ 590.30	$ 300.00	$ 350.00
WN HALL ADMINISTRATION						
SALARIES	$ 5,090.15	$ 7,083.54	$ 8,469.93	$ 18,219.52	$ 16,698.84	$ 13,744.07
SUPPLIES & POSTAGE	752.73	1,731.35	2,640.19	2,435.67	900.00	1,000.00
T[illegible]PHONE	304.42	395.57	1,869.43	2,680.53	1,100.00	2,000.00
[illegible] AND POWER	711.77	636.63	1,506.35	2,430.18	900.00	2,100.00
TOTAL	$ 6,859.07	$ 9,847.09	$ 14,485.90	$ 25,765.90	$ 19,598.84	$ 18,844.07
YROLL COSTS						
TAXES	$ 3,755.04	$ 5,420.23	$ 4,069.83	$ 7,900.65	$ 5,000.00	$ 5,000.00
HOSPITAL INSURANCE	2,066.39	3,840.06	3,639.36	5,843.35	4,417.00	3,500.00
TOTAL	$ 5,821.43	$ 9,260.29	$ 7,709.19	$ 13,744.00	$ 9,417.00	$ 8,500.00
REET MAINTENANCE	1,640.58	22,701.37	19,147.82	26,976.95	26,671.40	20,392.77
REET CLEANING	9,377.99	19,310.48	18,295.47	23,689.79	-	-
PAIRS & SUPPLIES	870.42	1,449.11	2,039.37	1,854.98	600.00	1,500.00
WER	8,421.98	9,545.48	14,926.31	14,149.70	-	-
TORNEY FEES	425.00	1,504.83	2,982.59	2,331.57	1,200.00	1,500.00
COUNTING FEES	-	-	4,225.56	6,823.05	3,201.00	2,800.00
SURANCE	4,558.30	7,072.00	10,957.40	30,482.56	18,200.00	10,425.00
ECTION EXPENSES	1,193.50	890.22	1,388.05	1,175.50	-	2,500.00
UNCILMAN'S EXPENSES	5,625.73	8,579.22	9,948.98	11,237.18	500.00	500.00
X COLLECTION EXPENSES	300.00	-	1,050.00	900.00	500.00	500.00
AVEL	200.00	75.00	-	643.54	500.00	250.00
TEREST ON LOANS	343.70	-	-	-	-	-
RVEYING	-	480.00	485.00	10.00	-	200.00
SCELLANEOUS	2,315.95	1,937.28	12,189.23	11,471.51	4,500.00	2,000.00
TER DEPARTMENT CONTRIBUTION	-	-	-	13,758.50	-	-
VERTISING	-	-	-	-	1,000.00	1,000.00
W BUILDING EXPENSES	-	-	-	-	-	2,000.00
YMENT ON LOANS	-	-	-	-	-	15,000.00
TAL EXPENSES	$108,160.59	$178,987.30	$209,499.72	$294,718.39	$145,008.88	$158,312.58

[illegible]: Municipal Audits, Town of Clintwood
Adopted General Fund Budget, Town of Clintwood, 1981 & 1982

TABLE 3

TOWN OF CLINTWOOD - COMPARISON OF TOTAL RECEIPTS AND TOTAL EXPENDITURES

GENERAL OPERATING FUND 1972-1982

FISCAL YEARS	1972-1974	1974-1976	1976-1978	1978-1980	BUDGETED 1981	BUDGETED 1982
TOTAL RECEIPTS	$152,551.52	$174,832.53	$185,161.27	$228,323.08	$144,069.88	$163,573.00
TOTAL EXPENDITURES	108,169.59	178,987.30	209,499.72	294,718.39	145,008.88	158,312.58
DIFFERENCE	44,390.93	(4,154.77)	(24,337.73)	(66,395.31)	(939.00)	5,260.42
CUMULATIVE DIFFERENCE	44,390.93	40,236.16	15,898.43	(50,496.88)	(51,435.88)	(46,175.46)

Source: Muncipal Audits, Town of Clintwood
Adopted General Fund Budgets, Town of Clintwood, 1981 and 1982

TABLE 4

TOWN OF CLINTWOOD

WATER DEPARTMENT COMPARATIVE STATEMENT OF RECEIPTS AND DISBURSEMENTS

4 YEARS ENDED JUNE 30, 1980

	1977	1978	1979	1980	BUDGETED 1981	BUDGETED 1982
RECEIPTS						
Water	$100,817	$119,599	$126,499	$125,536		
Hook-Ups	4,280	6,375	8,505	2,995		
Interest			22	138		
Disaster Flood Relief	2,696					
TOTAL RECEIPTS	$107,793	$125,974	$135,026	$128,669	$132,980	$216,000
EXPENDITURES						
Office Salaries	$ 3,340	$ 4,129	$ 7,071	$ 12,865		
Gross Payroll	43,305	44,721	50,470	55,669		
Employee Taxes and Fringe Benefits	4,233	4,141	5,133	8,927		
Workmens Compensation	1,055	1,206	1,584	1,916		
Bond Interest	19,000	30,072	18,807	16,885		
Bond Retirement		2,262	3,537	3,719		
Professional Fees		1,454	2,290	2,508		
Permits & Licenses	114	438	375	85		
Office Supplies	983	1,769	1,589	1,883		
Water Supplies	9,860	12,612	20,871	20,460		
Electricity	10,049	11,524	10,883	13,599		
Telephone	803	646	657	699		
Chemicals	2,924	3,352	3,984	1,634		
Pipe				10,000		
Gas & Oil - Truck	2,537	3,093	1,840	3,290		
Repairs	1,847	4,463	4,242	5,091		
Meters	1,713	2,477	1,194	729		
Pumps	5,544	1,100	4,428	1,216		
Equipment Rental	235	50	690	8,472		
Contract Services				5,029		
Stone	942	786	301	1,261		
Water Purchase	205	495	420	589		
Position Bonds				425		
Miscellaneous	410	168	1,154	810		
Cash Difference				4,111		
Drilling Expense		1,393				
TOTAL EXPENDITURES	$109,099	$132,351	$141,520	$181,872	$142,795	$208,379
EXCESS OF RECEIPTS OVER DISBURSEMENTS	$ (3,306)	$ (6,377)	$ (6,494)	$(53,203)	$ (9,815)	$ 7,621

Source: Municipal Audits, Town of Clintwood
Adopted Budget, Town of Clintwood, 1981 and 1982
Water Fund

TABLE 5

TOWN OF CLINTWOOD

SEWER DEPARTMENT COMPARATIVE STATEMENT OF RECEIPTS AND DISBURSEMENTS

	4 YEARS ENDED JUNE 30, 1980					
	1977	1978	1979	1980	BUDGETED 1981	BUDGETED 1982
RECEIPTS						
Sewer Receipts	$43,991	$44,698	$45,753	$50,132		
Hook-Ups	200	380	465	250		
Interest and Other Income	951	220	231	110		
TOTAL RECEIPTS	$45,142	$45,298	$46,449	$50,492	$46,400	$84,000
EXPENDITURES						
Office Salaries	$ 2,038	$ 4,220	$ 2,648	$ 2,376		
Gross Payroll	10,701	11,208	11,427	24,018		
Payroll Taxes & Fringe Benefits	1,002	802	1,815	3,601		
Bond Interest	4,688	4,313	3,971	3,503		
Bond Retirement	10,000	10,000	10,000	15,000		
Bank Service Fee	68	135	32	34		
Professional Fees		1,454	1,309	1,301		
Office Supplies	264	370	94	444		
Sewer Supplies	2,018	3,070	3,017	1,436		
Licenses - Permits	10	22	15	10		
Electricity	2,117	2,032	1,915	1,646		
Telephone		46		226		
Chemicals	12,755	9,795	2,593	4,574		
Gas & Oil	522	445	2	773		
Repairs	909	417	336	1,140		
Equipment Rental	150	1,198	1,000	950		
Cleaning Sewer Lines		817	495	228		
Miscellaneous	96	17	39	836		
Cash Difference				12,356		
TOTAL EXPENDITURES	$47,338	$50,361	$40,708	$74,452	$60,748	$82,526
EXCESS OF RECEIPTS OVER DISBURSEMENTS	$(2,196)	$(5,063)	$ 5,741	$(23,960)	$(14,348)	$ 1,474

Source: Municipal Audits, Town of Clintwood
Adopted Sewer Fund Budget, 1981 and 1982

ASSESSED VALUATION:

The assessed valuation of the Town of Clintwood has increased from $1,046,270 in 1975 to $22,107,340 in 1981. Prior to 1980, all real estate and public service corporations were assessed at 10 percent of their fair market values. Mobile homes were assessed as personal property at 10 percent of their fair market value. After 1980, real estate, mobile homes and public service corporations were all assessed at 100% of their fair market values. During the study period the assessment procedures for personal property, machinery and tools and merchant's capital remained unchanged.

From 1975 to 1980 the tax rates on real and personal property, machinery and tools, merchant's capital and public service corporations were constant. Subsequent to the 1980 reassessment, taxes on real estate declined from $2.00 per $100 of value to $.10 per $100 of value. Taxes on personal property, machinery and tools and merchant's capital increased from $2.00 per $100 of value to $3.00 per $100 of value. Mobile homes were taxed as real property but categorized as personal property. (See Table 6)

INDEBTEDNESS

As of June 30, 1981, Clintwood's long-term municipal debt was estimated to be $587,895. All of this debt has been incurred to finance improvements to the Town's water and sewer system with a major portion, $532,895, incurred within the last 2 years to pay for the Town's distribution line from the John Flannagan reservoir.

As of June 30, 1981, the Town's short-term municipal debt was estimated to be approximately $39,000.

RATIO OF BONDED INDEBTEDNESS TO ASSESSED VALUATION

Clintwood can not legally issue any bonds or other interest bearing obligations which, including existing indebtedness, exceed 10 percent of the assess valuation of that real estate property in the Town which is subject to taxation as determined by the proceeding tax assessment. This limitation does not apply to any short-term notes or to bonds used for the supply of water or other undertakings from which the Town may derive a revenue. As of June 30, 1981, the Town had $55,000 of bonded indebtedness backed by the full faith and credit of the Town.

ASSESSED VALUE, TAX RATE 1975-1981, TOWN OF CLINTWOOD, VIRGINIA

BLE 6

FISCAL YEAR	ASSESSED VALUE	% OF FAIR MARKET VALUE	TAX RATE	TAX RATE 100%
1975				
Real Estate	$ 640,350	10%	$2.00	$ .20
Personal Property	140,820	10%	1.50	.15
Mobile Homes	-	-	-	-
Machinery and Tools	26,850	10%	1.50	.15
Merchant's Capital	101,430	10%	1.50	.15
Public Service Corporation	136,820	10%	2.00	.20
TOTAL	$1,046,270			
1976				
Real Estate	$ 609,890	10%	2.00	.20
Personal Property	201,480	10%	2.00	.20
Mobile Homes	-	-	-	-
Machinery & Tools	26,820	10%	2.00	.20
Merchant's Capital	107,730	10%	2.00	.20
Public Service Corporation	119,258	10%	2.00	.20
TOTAL	$1,065,178			
1977				
Real Estate	$ 639,680	10%	2.00	.20
Personal Property	158,289	10%	2.00	.20
Mobile Homes	-	-	-	-
Machinery & Tools	-	10%	2.00	.20
Merchant's Capital	63,110	10%	2.00	.20
Public Service Corporation	127,308	10%	2.00	.20
TOTAL	$ 988,387			
1978				
Real Estate	$ 644,510	10%	2.00	.20
Personal Property	205,770	10%	2.00	.20
Mobile Homes	-	-	-	-
Machinery & Tools	9,770	10%	2.00	.20
Merchant's Capital	175,650	10%	2.00	.20
Public Service Corporation	105,012	10%	2.00	.20
TOTAL	$1,140,712			
1979				
Real Estate	$ 652,500	10%	2.00	.20
Personal Property	167,450	10%	2.00	.20
Mobile Homes	-	-	-	-
Machinery & Tools	14,420	10%	2.00	.20
Merchant's Capital	125,704	10%	2.00	.20
Public Service Corporation	91,722	10%	2.00	.20
TOTAL	$1,051,796			
1980				
Real Estate	$20,184,850	100%	.10	.10
Personal Property	150,210	10%	3.00	.30
Mobile Homes	453,000	100%	.10	.10
Machinery & Tools	131,330	10%	3.00	.30
Merchant's Capital	97,662	10%	3.00	.30
Public Service Corporation	1,037,739	100%	.10 2.00 3.00	.10 2.00 3.00
TOTAL	$22,054,791			
1981				
Real Estate	$20,116,850	100%	.10	.10
Personal Property	163,310	10%	3.00	.30
Mobile Homes	575,838	100%	.10	.10
Machinery & Tools	18,466	10%	3.00	.30
Merchant's Capital	100,608	10%	2.00	.20
Public Service Corporation[1]	1,162,268	100%	.10 2.00 3.00	.10 2.00 3.00
TOTAL	$22,107,340			

[1] Not calculated as of 10/81, estimated by Balzer and Associates

Source: Dickenson County Treasurer's Office
Balzer and Associates

Epilogue to Chapter 8 Financial Analyses "Two Decades Later"

Today, in 1998, the Town of Clintwood, Virginia operates with an annual budget of more than one million dollars. Once the new Red Onion prison becomes operational, the town's combined operations, including general government operation and water and sewer utility services, will equal approximately 1.25 million dollars annually in total. The constituent parts are:

General Fund, approximately	$ 500,000
Water Fund, ..	$ 500,000
Sewer Fund, ..	$ 250,000
	$ 1,250,000

The budget's growth to current levels from a total of less than one-half million dollars annually in 1980 may, at first blush, seem surprising. However, a review of circumstances surrounding the town's finances makes the budget's growth understandable.

Town of Clintwood financial records from the late 1970's reveal successive annual deficits indicating a state of virtual insolvency. In addition to starting from a deficit position, each of the eighteen years between 1980 and 1998 has been inflationary. Indeed, the federal Consumer Price Index (CPI), which measures changes in the costs of commodities, including labor, recorded a cumulative increase of nearly 100% during the eighteen year period ending in 1998.

In 1986 the Town of Clintwood also annexed approximately 300 new residents, expanding its service base by roughly 25%. As alluded to above, serving, the new Red Onion prison will also expand the town utility customer base.

Various circumstances and actions have enabled the Town of Clintwood to successfully respond to the financial challenges before it in the 1980's and 1990's. The real estate subject to town property taxation increased from an assessed value of $20,116,850 in 1980 to a 1998 value of $38,421,069. This helped produce a comparable increase in property revenues during the same time frame. The 1986 annexation, new construction and the effect of inflation generally, as reflected in updated county assessments, caused the increase.

While inflation pulls only certain line items on the revenue side of a municipal budget up with it, it pushes all the items on the expenditure side upward over time. For Clintwood to maintain the level of service funded in its general fund budget, new taxation strategies were employed. In April, 1992, a consumer utility tax payable by tenants and property owners alike with a moderate cap was implemented. In December, 1988, a prepared good and beverage tax, known as the meals tax, was installed at the rate of four percent (4%).

Public utilities are commonly operated as free-standing entities known as enterprise fund activities. Clintwood has applied the philosophy that its water and sewer utilities should not only be free-standing but also self-supporting. In the sewer fund this led to contracting with a private firm(PSG-Prof. Services Group) to operate and maintain its sewer treatment plant. Public

CHAPTER 6
ECONOMIC ANALYSIS

ECONOMIC ANALYSIS

An understanding of the structure and functioning of Clintwood's urban economy is fundamental to all land use planning analysis and policy statements contained within this document. The purpose of this analysis is to define, describe and examine the economic characteristics of Clintwood by reviewing pertinent economic activities, employment, employment trends and income statistics.

ECONOMIC ACTIVITIES:

Mining:

Coal mining 1s currently and historically the major industrial activity and source of income in the Clintwood-Dickenson County area. In July of 1980, 20 percent of the employed persons residing in the Town were directly affiliated with the coal industry. In March of 1979, 54 percent of the persons employed by firms operating in Dickenson County (including Clintwood) were working within the coal mining industry.

In the first quarter of 1981, a payroll of $15,142 million was disbursed by 66 coal mining establishments operating in Dickenson County. This amount was 84 percent of the total 1981 first quarter payroll of $18,075 million paid by all establishments licensed to operate in the County. By comparison, in 1979 the mining industry in Virginia constituted only 1.9 percent of the State's total payroll and only I percent of the State's total employment. (Note: Bituminous coal mining comprises approximately 85 percent of Virginia's total mining activities.)

Dickenson County is one of 7 coal producing counties in southwestern Virginia. In 1979, the coal extracted from this area was valued at $1.14 billion, sixth among the nation's coal producing states. The value of coal mined in Dickenson County in 1979 was approximately $220 million.

The Federal Power Commission has designated 5 primary coal producing regions within the United States. In 1975, the Appalachia region, of which Dickenson County is a part, produced 49 percent of the coal purchased by the nation's utility companies. Because of increased production anticipated in the western part of the country, this percentage is projected to decrease to 34 percent by 1985. This decrease reflects a shifting share of the coal market and not a reduction in demand. Nationally, coal production, after sluggish growth from 1973 to 1978 has experienced dramatic increases in 1979, 1980 and 1981. The primary cause has been greatly increased purchases of coal by both domestic and foreign utility companies responding to the rapid price increase of oil and the difficulties encountered in constructing and operating nuclear power plants. During the past two years, domestic electric utilities have not only consumed much larger amounts of coal but have also built up large stockpiles. Virginia is in a very favorable position for supplying coal to the export market via the Hampton Roads port facilities.

Manufacturing:

Manufacturing employed less than 4 percent of Clintwood's residents in 1980. In March of 1979, manufacturing firms employed only 5.9 percent of the persons working within Dickenson County. The total first quarter payroll in 1981 for Dickenson County's manufacturing concerns was $535,854. This amount was less than 3 percent of the total first quarter payroll disbursed by all commercial and industrial establishments operating in the County. Seven manufacturing establishments are currently located within Dickenson County. Of these, only I is located in Clintwood. According to the Division of Industrial Development, there were no announcements in 1979 or 1980 of any new or expanding manufacturing firms in either the County or the Town.

The primary manufacturing businesses in Dickenson County produce clothing and lumber. The average hourly wage for manufacturing employees in Dickenson County is $3.93, considerably lower than either the State ($5.58) or the national ($6.69) average.

The gross state product, an estimate of the value of all goods and services produced in the state in I year, totalled $267,381.5 million in 1980. Of this amount, manufacturing accounted for 21.6 percent, as opposed to mining which contributed only 1.3 percent. Manufacturing has

PAYROLL AND NUMBER OF ESTABLISHMENTS BY INDUSTRY: FIRST QUARTER, 1981
DICKENSON COUNTY AND STATE OF VIRGINIA

INDUSTRY[1]	QUARTERLY PAYROLL ($1,000) DICKENSON COUNTY	STATE	% OF QUARTERLY COUNTY PAYROLL	NUMBER OF ESTABLISHMENTS DICKENSON COUNTY	STATE
Agriculture, Forestry & Fish	-	26,108	0	-	1,393
Mining & Quarrying	15,142	122,691	83.7	66	747
Construction	61	398,019	.3	15	13,835
Manufacturing	535	1,539,034	2.9	7	5,174
Transportation, Communication, Utilities	844	473,704	4.6	29	3,808
Trade	1,090	1,201,225	6.0	86	31,295
Finance, Insurance, Real Estate	74	352,803	.4	8	8,533
Services	327	1,141,826	1.8	40	30,997
TOTAL	18,075	5,255,414	100.0	251	95,782

[1] Excludes government and railroad employees, self employed persons.

Source: Virginia Employment Commission

been and will continue to be vital to Virginia's economic balance. Therefore, it is important that manufacturing concerns be encouraged to locate within Dickenson County and Clintwood. Not only does manufacturing bolster the local economy by way of property and income taxes, purchases and payrolls, but it has one of the highest employment multipliers of any economic sector.

An employment multiplier occurs as a new or expanded industry injects income into the community that results in a cumulative or multiplier effect on community income or employment that exceeds the initial input. The U. S. Chamber of Commerce has estimated that in rural areas, an increase of 68 nonmanufacturing jobs occurs for every increase of 100 factory workers. On an employment basis; therefore, the approximate multiplier effect for manufacturing in Clintwood is 1.68. Because of the Town's relative isolation, the effect may be even greater.

Trade and Service:

Retail and wholesale trade and service enterprises employed over 18 percent of Clintwood's residents in 1980. In March of 1979, trade and service activities employed 15.2 percent of the individuals working within Dickenson County. The total 1981 first quarter payroll for trade and service firms operating in Dickenson County was $1,417,478, or 7.8 percent of the total first quarter payroll disbursed by all commercial enterprises in the County. Of the 277 trade and service businesses operating in Dickenson County in 1981, approximately 95, or 34 percent are located in Clintwood.

Taxable sales (including motels, hotels, and selected other services but excluding automobiles, gasoline, and alcoholic beverages) in Dickenson County and Clintwood in 1979 were $35 million, an increase of 3.6 percent from 1978. Taxable sales in Virginia in 1979 were $17.8 billion, up 7.0 percent from 1978.

The chart on the following page, prepared from data published by the Virginia Department of Taxation, indicates that the growth rate of taxable sales in Dickenson County from 1971 to 1979 has been comparable to that of the State and the region. The Table demonstrates that the amount of taxable sales in

[1] Note: the rate of inflation between 1978 and 1979 was 11.5 percent.

TAXABLE SALES FOR VIRGINIA CITIES AND COUNTIES: 1979

TOTAL SALES	TOTAL DOLLAR SALES - 1979 ($000)	INDEX OF CHANGE (1971-100) 1971	1972	1973	1974	1975	1976	1977	1978	1979
STATE	$17,751,254	100.0	111.5	126.2	146.2	151.0	165.9	185.8	208.8	223.6
DICKENSON COUNTY	35,260	100.0	109.0	119.6	156.1	186.2	205.1	218.6	231.3	239.8
WISE COUNTY	121,927	100.0	113.0	128.6	163.4	192.4	213.1	231.2	243.2	250.3
BUCHANAN COUNTY	90,003	100.0	104.0	111.7	141.0	177.8	197.8	209.4	224.7	239.5
RUSSELL COUNTY	50,263	100.0	111.7	115.0	135.2	166.2	184.7	214.2	228.6	234.8
TAZEWELL COUNTY	158,470	100.0	117.2	129.4	144.6	173.0	191.2	211.5	234.3	253.5
REGIONAL AVERAGE	91,184.6									

GAF STORE SALES VIRGINIA CITIES AND COUNTIES: 1979

TOTAL SALES	TOTAL DOLLAR SALES - 1979 ($000)	INDEX OF CHANGE (1971=100) 1971	1972	1973	1974	1975	1976	1977	1978	1979
STATE	5,527,084	100.0	110.3	125.4	142.2	142.6	156.8	175.8	197.2	204.3
DICKENSON COUNTY	7,065	100.0	107.8	116.1	156.0	164.5	164.2	166.1	166.0	171.1
WISE COUNTY	25,403	100.0	127.7	159.6	193.1	182.1	197.7	212.7	221.4	217.6
BUCHANAN COUNTY	25,473	100.0	104.9	112.5	137.8	155.6	167.7	179.7	183.3	191.0
RUSSELL COUNTY	15,054	100.0	121.6	138.4	169.7	165.8	183.7	207.2	225.2	233.5
TAZEWELL COUNTY	38,384	100.0	131.9	135.5	149.1	171.4	183.4	195.9	205.1	228.7
REGIONAL AVERAGE	22,275.8									

Source: Virginia Department of Taxation

in 1979 however, was far below the regional average of $91,184,600. Careful examination reveals that the most significant retail growth has paralleled increases in coal mining activity.

GAF sales (general merchandise, apparel, furniture and appliances) in Dickenson County and Clintwood in 1979 were $7 million, an increase of 3.0 percent from 1978. However, the County's and Town's GAF sales in 1979 were substantially lower than GAF sales transacted in the neighboring Counties of Buchanan, Wise, Tazewell and Russell. GAF sales in Virginia advanced 3.6 percent from 1978 to 1979. The table on the preceding page documents these findings as well as the index of change for GAF sales in the State and the region.

Sales Tax Revenue:

Sales tax revenue is generally a reliable indicator of economic health. Patrons of businesses in Clintwood pay a sales tax of 4 percent for every $1 spent. Of this 4 percent, I percent is returned from the State to the County for local option, I percent is allocated by the State to all local school districts according to student membership and 2 percent is retained by the State.

In Dickenson County yearly sales made during the calendar year ending December 31, 1979 as reflected by deposits of sales tax revenues totaled $35,260,451. In 1980 this figure had increased 4.3 percent to $36,763,180. The consultants estimate that of these amounts sales transacted in Clintwood accounted for $11,988,553 and $12,499,481 respectively. Based on these estimates, it is clear that Clintwood is the retail trade center of Dickenson County.

EMPLOYMENT

Employment analyses and forecasts serve two primary purposes: they provide information necessary for population studies which in turn are used for determining space needs for residential areas and community facilities, and they aid in estimating commercial and industrial land use requirements.

Note: The rate of inflation between 1978 and 1979 was 11.5 percent.

Current Employment

Employment in the Town of Clintwood totaled 469 workers in July of 1980. This represents 34.3 percent of the Town's 1980 total population. Of these 469 workers, 220, or 47 percent, are employed within the Town. An additional 157 workers commute to places of employment in Dickenson County. The remaining 92 persons work in Wise, Buchanan, Tazewell or Russell Counties or in the adjacent counties of Kentucky.

Future Employment:

There are 2 primary means of forecasting future employment: the analytical method and the short-cut method. The analytical method develops employment projections by analyzing probable future production and worker output data. In essence, future demand for a particular good or service is determined. The short-cut method chosen for this analysis is much simpler, utilizing one or more employment statistics directly.

Projection Methodology:

A simple step-down procedure was developed to derive categorical employment projections for the year 1990. This methodology is founded upon the principle that local employment trends are a function of national trends and that by using a carefully conceived national forecast a reasonably accurate local estimate may be developed.

TOTAL EMPLOYMENT
TOWN OF CLINTWOOD, JULY, 1980

	1980	% OF TOTAL
POPULATION	1,369	-
EMPLOYMENT[1]		
Manufacturing	18	3.8
Non-Manufacturing	451	96.1
Mining	96	20.5
Construction	11	2.3
Transportation, Communication & Public Utilities	17	3.6
Trade	60	12.8
Finance, Insurance & Real Estate	19	4.0
Services	25	5.3
Government	133	28.4
Agricultural	0	0
Other Non-Argricultural (including self-employed)	90	19.2
TOTAL	469	100.0

[1] Employment data based on place of residence not place of work.

Sources: Survey by Town of Clintwood
Balzer and Associates

Projections for the Town of Clintwood were computed by using the current employment by place of residence figures for the Town and employment projections, 19781990 prepared by the United States Bureau of Labor Statistics. The national forecasts were calculated using the most recent data pertaining to population, industry, occupational employment, productivity and consumer expenditures. In addition, the Bureau's projections were based on the following assumptions:

* Inflation will decelerate to 5.2 percent annually during 1980-1990.

* A stable, long-run unemployment rate close to 4.5 percent will be achieved by the mid-1980's.

* Higher energy prices will not constrain growth in gross national products.

* The institutional framework of the U. S. economy will not change radically

* Current social, technological, and scientific trends will continue.

* No major event such as widespread or long lasting energy shortages or war will significantly alter the industrial structure of the economy or alter the rate of economic growth.

A per annum percentage increase as determined for each employment category, 1978-1990, by the Bureau of Labor Statistics was applied to the August, 1980 estimated labor force components of the Town of Clintwood. The results are as follows:

EMPLOYMENT PROJECTIONS, TOWN OF CLINTWOOD

1980-1990

INDUSTRIAL CATEGORY	1980 TOWN EMPLOYMENT[1]	PROJECTED PER ANNUM PERCENTAGE INCREASE	1990 TOWN PROJECTED EMPLOYMENT[1]
Manufacturing	18	1.3	20
Coal Mining	96	1.7	112
Transportation, Communications, Utilities	17	.88	18
Trade	60	2.3	74
Services	25	4.4	36
Finance-Real Estate	19	2.8	24
Construction	11	1.4	13
Government	133	1.1	148
Other	90	2.0	108
TOTAL	469	2.0	553

[1] Employment figures denote place of residence not place of work.

Source: U. S. Department of Labor, Bureau of Labor Statistics
Survey conducted by Town of Clintwood
Balzer and Associates, Inc.

Manufacturing:

Population increases and rising incomes have increased demands for almost all types of goods, but improved methods of production have and will continue to limit employment growth. Employment grew more slowly in manufacturing than in any other sector between 1965 and 1978. Between 1980 and 1990, however, employment in durable goods manufacturing is expected to increase substantially.

Coal Mining

As the nation's need for energy increases in the next decade, employment in the mining sector is expected to grow significantly.

Transportation - Communications - Public Utilities

Employment in the railroad and water transportation industries will continue to slowly decline. Other forms of transportation such as trucking and air transit will increase steadily.

The demand for communication equipment as well as electric power, gas utilities, water and sanitary services will increase as the population grows and more households and businesses are formed. Technological advances in the systems required to provide these services will moderately restrict future employment growth.

Trade:

Employment growth in the retail and wholesale industries will parallel increases in population and income. Retail employment is projected to increase much faster than wholesale employment.

Services:

Service employment which includes hotels, barber shops, auto repair shops, business services, hospitals and nonprofit organizations is projected to increase dramatically between 1980 and 1990. Employment opportunities in health care are expected to grow rapidly due to population growth - especially the elderly and rising incomes that increase people's ability to pay for medical care. Business services, including accounting, data processing and maintenance are also expected to increase.

Finance - Real Estate:

Employment in this sector is expected to rise in order to meet increasing consumer demand for credit and other financial services.

Construction:

The Department of Labor projects that during the early 1980's, the demand for new housing will remain high because the number of households is expected to increase. Expansion of businesses and maintenance of existing buildings will also require more construction employment.

Government

It is expected that new government programs will not be enacted because of the public's desire to limit government growth. However, school employment will rise moderately in response to the immigration of school age children accompanying adults employed by the coal mining industry and its service affiliates

INCOME

Personal income is made up of wage and salary disbursements, proprietors' income, rental income of persons, dividends, personal interest income, and transfer payments. Although most personal income is in a monetary form, there are several exceptions such as (1) wages and salaries paid in kind; (2) the net rental value of owner-occupied houses; (3) the net value of food and fuel produced and consumed on farms; and (4) imputed interest received by persons from financial intermediaries. Capital gains are not included in personal income principally because they are not attributable to current economic activity. Personal income is measured before deduction of income and other personal taxes, but after deduction of Social Security taxes, government retirement, and other social insurance programs.

Total Personal Income by Place of Residence

The total personal income of the residents of the State increased $18,418 billion (70 percent) between 1974 and 1979. The total personal income of those persons residing in Dickenson County increased 87 percent for the same time period. The estimated amounts of total personal income for the residents of Clintwood during the period 1974-1979 are presented on the following page:

"Personal Income Estimates for Virginia Counties and Cities," 1973-1978, p.7. Tayloe Murphy Institute

TOTAL PERSONAL INCOME BY PLACE OF RESIDENCE, 1974-1979 (millions of dollars)

	1974	1975	1976	1977	1978	1979	# CHANGE	% CHANGE
State of Virginia	$26,212	$28,738	$31,997	$35,431	$39,687	$44,630	$18,818	70%
Dickenson County	68.0	81.4	86.4	94.7	98.1	127.8	59.7	87%
Clintwood (estimated)	5.1	6.1	6.1	6.5	6.6	8.5	3.4	67%

Source: Regional Economics Informational System Bureau of Economics

Per Capita Personal Income

The per capita personal income of Dickenson County residents increased between 1969 and 1979. In 1969, the County's per capita personal income was $1,870 or 55% of the State average of $3,400. By 1979 the County's per capita personal income had risen to $6,340 or 73% of the State average, ranking the County 95 out of 136 Virginia localities. It is assumed that the per capita personal income of Clintwood's residents is equivalent to that of the County.

PER CAPITA INCOME 1974-1979

	1974	1975	1976	1977	1978	1979	1974-1979 # CHANGE	% CHANGE
State of Virginia	$5,339	$5,770	$6,333	$6,955	$7,666	$8,588	$3,249	61%
Dickenson County	3,827	4,531	4,538	4,829	4,941	6,340	2,513	66%

Source: Regional Economics Information System
Bureau of Economics

Low and Moderate Income

Low- and moderate-income persons are defined as those whose annual income is less than $12,004 per year, which is 80% of the Statewide non-metro median income, as defined by the United States Department of Housing and Urban Development in October 1980.

In July of 1980, there were 226 low- and moderate-income households in the Town of Clintwood. These households constituted 45.1 percent of all the households in the Town. Approximately 533 persons resided in these households.

In March of 1981, there were 69 low- and moderate-income households in the peripheral planning areas. These households comprise 50 percent of all the households located in these areas.

CHAPTER 7
POPULATION ANALYSIS

POPULATION ANALYSIS

Analysis of current and future population size is the foundation for almost all major planning decisions. Current and future demands for community services and facilities as well as land for residential, commercial and industrial purposes are directly affected by the size, composition, and spatial distribution of the population. Population size indicates the basic amounts of land required for the various types of uses. When a time element is introduced and future population trends are projected) these trends become the basis for calculating future community service facility and spatial requirements. Population composition encompasses age, household size and income levels, all of which are indices of the types and extent of services and facilities as well as policies required by the community. An examination of population distribution reveals the most functional location for future land uses, community services and facilities, and public utilities. Therefore, the population analysis of the Town of Clintwood is necessary as a means of defining the scale, location and temporal considerations of future public and private development within the Town and its environs.

CURRENT POPULATION SIZE:

Between 1940 and 1980, the Town of Clintwood experienced an increase in population of 263 persons, a net gain of 23.8 percent. The population of the Town in 1940 was 1,106. The 1980 final population count as prepared by the Bureau of the Census indicates that 1,369 persons reside in the Town. A 1981 survey conducted by the Consultants reveals that an additional 481 persons live within the Town's peripheral planning area. The current total population of Clintwood and its planning area is 1,850.

POPULATION GROWTH:

The Town of Clintwood's total population has increased on the average of .6 percent per annum since 1940. However, as may be seen in Figure I, this growth has not been continuous. The Town's population increased 27 percent from 1940 to 1960. Between 1960 and 1970 the Town experienced a 6 percent decline in population. Since the 1970 census the Town's population increased from 1,320 persons to the current total of 1,369 persons, a gain of 3.7 percent or a growth rate of .4 percent per annum.

By seeing aerial photographs and the standard of 3.0 persons per household, the Consultants were able to establish that 336 persons resided in the Town's peripheral planning area in 1970. Between 1970 and 1980, this area experienced a 43 percent increase in population or a per annum growth rate of 4.3 percent.

In summary, the population of the Town of Clintwood and its peripheral planning are grew from 1,656 person in 1970 to 1,850 person in 1980, an increase of 12 percent.

The Dickenson County Comprehensive Plan and the 1990 Report of the U.S. Census Bureau show population trends for the County, including the Town of Clintwood, as follows:

POPULATION TRENDS

1950-1990, Clintwood, Virginia

YEAR	TOWN POPULATION	NUMBER CHANGE	% CHANGE
1950	1,366		
1960	1,400	34	2.4
1970	1,320	-80	-5.7
1980	1,369	49	3.7
1990	1,542	173	12.6

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

POPULATION TRENDS

1950-1990 Dickenson County, Virginia

YEAR	COUNTY POPULATION	NUMBER CHANGE	% CHANGE
1950	23,393		
1960	20,211	-3,182	-13.60%
1970	16,077	-4,134	-20.40%
1980	19,806	3,729	23.20%
1990	17,620		

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

LOCATION	1980	1990	% CHANGE 1980-1990	% ANNUAL GROWTH
Clintwood Town	1,369	1,542	12.6	1.3
Dickenson County	19,806	17,620	-11.0	-1.1
Scott County	25,068	23,204	-7.4	-0.7
Buchanan County	37,989	31,333	-17.5	-1.8
Tazewell County	50,511	45,960	-9.0	-0.9
Russell County	31,761	28,667	-9.7	-1.0
Washington County	46,487	45,887	-1.3	-0.1
Lee County	25,956	24,496	-5.6	-0.6
Wise County	42,343	39,573	-6.5	-0.7
Norton City	4,757	4,247	-10.7	-1
Wise Town	3,891	3,894	0.08	0.008
Bristol City	19,042	18,426	-3.2	-0.3

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

BIRTH AND DEATH RATES PER 1,000 TOTAL POPULATION

Dickenson County

		1990	
Births		Deaths	
No.	Rate	No.	Rate
185	10.8	179	10.5

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

CURRENT AGE GROUP POPULATION

Town of Clintwood

AGE GROUP	NUMBER	PERCENT
0-5	73	4.7%
5_14	175	11.3%
15_24	208	13.5%
25_34	191	12.4%
35_44	244	15.8%
45_54	177	11.5%
55_64	178	11.6%
Over 65	296	19.2%
TOTAL	1,542	100%

	1980		1990		CHANGE	
AGE GROUP	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
0-18	363	26.5%	340	22.0%	-23	-6.3%
19-64	817	59.7%	906	58.8%	89	10.9%
Over 65	189	13.8%	296	19.2%	107	56.7%
TOTAL	1,369	100.0%	1,542	100%	173	61.3

ckenson County

AGE GROUP	NUMBER	PERCENT
0-5	1,037	5.8%
5_14	2,827	16.0%
15_24	2,567	15.0%
25_34	2,680	15.2%
35_44	2,668	15.1%
45_54	2,030	11.5%
55_64	1,664	9.4%
Over 65	2,147	12.0%
TOTAL	17,620	100%

Source: 1990 Census

RACE

	TOTAL POPULATION		TOTAL MINORITY POPULATION		% MINORITY	
LOCATION	1980	1990	1980	1990	1980	1990
Clintwood	1,369	1,542	10	7	0.73	0.45
Dickenson County	19,806	17,620	115	99	0.58	0.56

Source: 1990 Census

HOUSEHOLD SIZE

	POPULATION		OCCUPIED HOUSING UNITS		PERSONS/UNIT	
LOCATION	1980	1990	1980	1990	1980	1990
Clintwood	1,369	1,542	573	672	2.38	2.29
nson County	19,806	17,620	6,290	6,457	3.14	2.72

ce: 1990 Census

POPULATION DENSITY

LOCATION	POPULATION	AREA IN SQUARE MILES	PERSONS PER SQUARE MILE
Clintwood Town	1,542	1.9	812
Haysi Town	222	0.9	246
Norton City	4,247	7.3	582
Pound Town	995	2.6	383
Wise Town	3,193	3.0	1,064

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

PROJECTED POPULATION

YEAR	DICKENSON COUNTY
1995	16,994
2000	16,397
2005	16,050
2010	15,702

YEAR	Clintwood
1991	1,530
1992	1,577
1993	1,580
1994	1,583

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

INDUSTRY					
Town of Clintwood					
Employed Persons 16 Years & Over					
Agriculture, Forestry & Fisheries					
Mining	0				
Construction	87				
Manufacturing, Nondurable Goods	30				
Manufacturing, Durable Goods	27				
Transportation	4				
Communications & Other Public Utilities	12				
Wholesale Trade	13				
Retail Trade	8				
Finance, Insurance, & Real Estate	72				
Business & Repair Services	29				
Personal Services	6				
Entertainment & Recreation Services	17				
Professional & Related Services:	7				
Health Services					
Educational Service	46				
Other Professional & Related Services	102				
Public Administration	39				
Source: 1990 Census	53				

OCCUPATION

Town of Clintwood

Managerial & Professional Speciality Occupations :	
Executive, Administrative, & Managerial Occupations	63
Professional Speciality Occupations	115
Technical, Sales, & Administrative Support Occupations:	
Technicians & Related Support Occupations	12
Sales Occupations	57
Administrative Support Occupations, Included Clerical	77
Service Occupations:	
Private Household Occupations	2
Protective Service Occupations	17
Service Occupations, Except Protective & Household	51
Farming, Forestry, & Fishing Occupations	5
Precision Production, Craft, & Repair Occupations	78
Operators, Fabricators & Laborers:	
Machine Operators, Assemblers, & Inspectors	24
Transportation & Material Moving Occupations	37
Handlers, Equipment Cleaners, Helpers, & Laborers	14

Source: 1990 Census

PER CAPITA PERSONAL INCOME

	1993	1992	1991	1990
Virginia	$21,653	$20,883	$20,046	$19,701
Dickenson County	$14,321	$13,788	$13,435	$13,530

ce: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

PROJECTED MEDIAN FAMILY INCOME

	1996	1995	1994	1993	1992
Virginia	$47,549	$46,096	$44,643	$43,919	$42,258
Dickenson County	$21,643	$21,456	$21,289	$24,929	$24,221

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

PROJECTED MEDIAN HOUSEHOLD INCOME

	1996	1995	1994	1993	1992
Virginia	$41,470	$40,203	$38,936	$37,202	$35,839
Dickenson County	$18,085	$17,928	$17,789	$21,514	$20,919

Source: Virginia Staistical Abstract. 1996-97 Edition. Weldon Cooper Center for Public Service.

CHAPTER 8
FINANCIAL ANALYSIS

FINANCIAL ANALYSIS

The purpose of this study is to determine the relative financial capability of the Town of Clintwood to undertake a program of capital improvements to support the developmental growth in the Town as envisioned by the future land use element of this document.

The analysis includes an evaluation and comparison of the past revenues and expenditures, from fiscal years 1972 through 1981, as well as a review of the Town's assessable basis and outstanding bonded indebtedness for fiscal year 1981.

GENERAL OPERATING FUND

General Operating Revenues

As stated in the municipal audits 1972-1980, general operating revenues increased every year. From a level of $152,552 in 1972-74, general operating revenues rose to $228,323 in 1978-1980. The budgeted revenues in 1980-82 were estimated to be $307,642. This budgeted amount represents a significant increase in revenues, not mere compensation for inflation. (Note: To account for inflation, adjust values using constant dollars - Appendix C.; Some of the major sources of revenue are discussed as follows: (Also see Table 1)

- Property Taxes increased from a total of $37,796 in 1972-74 to $41,453 in 1978-80. *This is* an increase of $3,657 during the period and represents an overall increase of 9.6 percent or 1.2 percent per annum. The estimated property tax revenue for 1980-82 is $47,000.

* Local Sales Tax increased $13,256 from 1972-74 to 1978-80. An overall increase of 103 percent or 12.9 percent per year. (Note: Local sales tax is disbursed by Dickenson County to the Town on the basis of school children, not sales volume.) The estimated local sales tax revenue for 1980-82 is $24,500.

* Refuse removal fees received increased by 81 percent from 1972-74 to 197880 or 10 percent per year.

General Operating Expenditures:

As stated in the municipal audits 1972-1980, general operating expenditures have increased from $108,161 in 1972-74 to $294,718 in 1978-80. This rise of $186,557 represents an average annual increase of almost 22 percent per year. The average inflation rate during the same period was 8.3 percent. The major expenditures are briefly discussed below. (Also see Table 2.)

* Insurance costs have increased dramatically since 1972. Hospital, automobile and workman: compensation insurance have increased from a combined amount in 1972-74 of $6,624 to $36,325 in 1978-80. This represents a rise of $29,701 or a percentage increase of 448 percent.

* Fuel and power costs have also increased significantly during the study period.

- * Police and Fire Departments combined increased from $36,358 in 1972-74 to $70,709 in 1978-80. This is an overall increase of 94 percent or amost 12 percent per year. The budgeted amount for 1980-82 is $80,138.

- * Refuse collection has increased more than $15,400 between 1972 and 1980. This is an overall increase of 67 percent or 8.4 percent per year.

Comparison of Past General Operating Revenues and Expenditures

A comparison of the general operating revenues and expenditures for the period 1972 to 1980 indicates that revenues have increased an average of 6.2 percent per year while expenditures have increased an average of almost 22 percent per year. Table 3 shows that in 1978-80 general operating expenditures exceeded revenues by more than $66,000.

An examination of the municipal audits 1972-1980 reveals that the Town has maintained financial equilibrium only by way of short term bank loans and a modest amount of cash in bank savings.

UTILITY FUND

The Town of Clintwood maintains a separate water and sewer department budget. User charges (as opposed to tax revenues or licensing fees) for water and sewer services are imposed to pay operational expenses and to retire bonds that financed previously constructed facilities.

Tables 4 and 5 indicate that during the period 1972-1980, water department expenditures exceeded revenues by an average of $7,078 per year. Sewer department expenditures surpassed revenues by an average of $3,185 per annum.

TABLE 1

TOWN OF CLINTWOOD GENERAL REVENUE BY SOURCE, 1972-1982

REGULAR	1972-1974	1974-1976	1976-1978	1978-1980	BUDGETED 1981	BUDGETED 1982
Parking Meters	$ 10,495.50	$ 10,532.00	$ 10,501.59	$ 7,062.00	$ 5,000.00	$ 5,000.00
Traffic Violations	619.03	794.78	1,934.34	333.50	450.00	1,000.00
Garbage Fees	20,238.50	25,009.25	15,374.50	36,732.00	18,000.00	27,500.00
Merchants Licenses	4,372.50	4,917.50	6,055.00	5,520.50	3,000.00	3,000.00
Privilege & Professional Liceses	6,937.66	5,895.38	3,990.00	5,438.00	2,600.00	1,000.00
Building Permits	50.00	-	-	-	-	1,000.00
District Court Fines	9,031.75	9,180.75	3,950.77	3,848.69	3,000.00	3,000.00
Amusement Licenses	1,157.00	1,241.00	1,450.00	835.00	300.00	800.00
A.B.C. Funds	9,594.00	10,245.00	10,400.36	14,744.60	5,500.00	5,500.00
Property Tax	37,796.38	40,959.68	46,742.93	41,452.76	22,000.00	25,000.00
Auto Tags	12,015.00	12,850.00	8,474.50	13,690.00	7,000.00	7,000.00
Bank Stock Tax	19,876.78	38,398.06	43,322.36	61,974.14	30,500.00	33,000.00
Utilities Tax	1,128.25	1,791.78	5,028.36	6,101.90	3,000.00	3,500.00
Sales Tax	12,787.48	9,365.23	16,775.06	26,042.95	11,000.00	13,500.00
Trailer Sales	-	-	2,624.69	1,398.74	500.00	1,500.00
Trailer Park Licenses	-	-	780.00	1,095.00	500.00	1,200.00
Miscellaneous	870.42	652.12	1,744.46	790.59	1,050.00	500.00
TOTAL	$146,970.25	$171,832.53	$179,148.92	$227,060.37	$113,400.00	$133,000.00
OTHERS						
Grants	-	-	-	-	$ 14,669.88	$ 11,253.00
Reimbursements (Revenue Sharing)	-	-	-	-	16,000.00	18,000.00
Miscellaneous	-	-	3,930.85	1,262.71	-	1.320.00
Loan Payment	2,581.27	-	-	-	-	-
Sale of Equipment	-	-	2,081.50	-	-	-
Sale of Land	-	3,000.00	-	-	-	-
Bank Loan	-	-	-	-	-	-
Board of Supervisors	3,000.00	-	-	-	-	-
Cumberland Plateau	-	-	-	-	-	-
TOTAL	$ 5,581.27	$ 3,000.00	$ 6,012.35	$ 1,262.71	$ 30,669.88	$ 30,573.00
TOTAL RECEIPTS	$152,551.52	$174,832.53	$185,161.27	$228,323.08	$144,069.88	$163,573.00

Sources: Municipal Audits, Town of Clintwood
Adopted General Fund Budget, Town of Clintwood, 1981 & 1982

TABLE 2

TOWN OF CLINTWOOD GENERAL GOVERNMENTAL EXPENDITURES BY FUNCTION, 1972-1982

	1972-1974	1974-1976	1976-1978	1978-1980	BUDGETED 1981	BUDGETED 1982
LICE DEPARTMENT						
SALARIES	$ 25,374.91	$ 38,851.22	$ 42,490.44	$ 49,168.60	$ 23,984.24	$ 33,654.48
POLICE EXPENSES	7,915.76	14,082.76	11,661.36	16,549.94	8,300.00	8,700.00
TOTAL	$ 33,290.67	$ 52,933.98	$ 54,151.80	$ 65,718.54	$ 32,284.24	$ 42,354.48
RBAGE COLLECTION						
SALARIES	$ 16,709.43	$ 20,676.22	$ 20,358.17	$ 27,559.36	$ 15,536.40	$ 16,696.26
TRUCK EXPENSES	6,160.32	9,659.53	6,894.25	10,738.88	8,000.00	8,000.00
TOTAL	$ 22,869.75	$ 30,335.75	$ 27,252.42	$ 38,298.24	$ 23,536.40	$ 24,696.26
RE DEPARTMENT						
GENERAL EXPENSES	$ 2,516.51	$ 1,329.30	$ 4,466.61	$ 3,242.91	$ 800.00	$ 800.00
TRUCK EXPENSES	550.28	1,483.15	2,635.89	1,747.56	2,200.00	1,700.00
TOTAL	$ 3,066.79	$ 2,812.45	$ 7,102.50	$ 4,990.47	$ 3,000.00	$ 2,500.00
RKING METER COSTS	$ 610.13	$ 59.70	$ 742.88	$ 106.11	$ -	$ 500.00
TO STICKER COSTS	$ 369.60	$ 193.05	$ 419.25	$ 590.30	$ 300.00	$ 350.00
WN HALL ADMINISTRATION						
SALARIES	$ 5,090.15	$ 7,083.54	$ 8,469.93	$ 18,219.52	$ 16,698.84	$ 13,744.07
SUPPLIES & POSTAGE	752.73	1,731.35	2,640.19	2,435.67	900.00	1,000.00
T[illegible]PHONE	304.42	395.57	1,869.43	2,680.53	1,100.00	2,000.00
[illegible] AND POWER	711.77	636.63	1,506.35	2,430.18	900.00	2,100.00
TOTAL	$ 6,859.07	$ 9,847.09	$ 14,485.90	$ 25,765.90	$ 19,598.84	$ 18,844.07
YROLL COSTS						
TAXES	$ 3,755.04	$ 5,420.23	$ 4,069.83	$ 7,900.65	$ 5,000.00	$ 5,000.00
HOSPITAL INSURANCE	2,066.39	3,840.06	3,639.36	5,843.35	4,417.00	3,500.00
TOTAL	$ 5,821.43	$ 9,260.29	$ 7,709.19	$ 13,744.00	$ 9,417.00	$ 8,500.00
REET MAINTENANCE	1,640.58	22,701.37	19,147.82	26,976.95	26,671.40	20,392.77
REET CLEANING	9,377.99	19,310.48	18,295.47	23,689.79	-	-
PAIRS & SUPPLIES	870.42	1,449.11	2,039.37	1,854.98	600.00	1,500.00
WER	8,421.98	9,545.48	14,926.31	14,149.70	-	-
TORNEY FEES	425.00	1,504.83	2,982.59	2,331.57	1,200.00	1,500.00
COUNTING FEES	-	-	4,225.56	6,823.05	3,201.00	2,800.00
SURANCE	4,558.30	7,072.00	10,957.40	30,482.56	18,200.00	10,425.00
ECTION EXPENSES	1,193.50	890.22	1,388.05	1,175.50	-	2,500.00
UNCILMAN'S EXPENSES	5,625.73	8,579.22	9,948.98	11,237.18	500.00	500.00
X COLLECTION EXPENSES	300.00	-	1,050.00	900.00	500.00	500.00
AVEL	200.00	75.00	-	643.54	500.00	250.00
TEREST ON LOANS	343.70	-	-	-	-	-
RVEYING	-	480.00	485.00	10.00	-	200.00
SCELLANEOUS	2,315.95	1,937.28	12,189.23	11,471.51	4,500.00	2,000.00
TER DEPARTMENT CONTRIBUTION	-	-	-	13,758.50	-	-
VERTISING	-	-	-	-	1,000.00	1,000.00
W BUILDING EXPENSES	-	-	-	-	-	2,000.00
YMENT ON LOANS	-	-	-	-	-	15,000.00
TAL EXPENSES	$108,160.59	$178,987.30	$209,499.72	$294,718.39	$145,008.88	$158,312.58

U[illegible]: Municipal Audits, Town of Clintwood
Adopted General Fund Budget, Town of Clintwood, 1981 & 1982

TABLE 3

TOWN OF CLINTWOOD - COMPARISON OF TOTAL RECEIPTS AND TOTAL EXPENDITURES

GENERAL OPERATING FUND 1972-1982

FISCAL YEARS	1972-1974	1974-1976	1976-1978	1978-1980	BUDGETED 1981	BUDGETED 1982
TOTAL RECEIPTS	$152,551.52	$174,832.53	$185,161.27	$228,323.08	$144,069.88	$163,573.00
TOTAL EXPENDITURES	108,169.59	178,987.30	209,499.72	294,718.39	145,008.88	158,312.58
DIFFERENCE	44,390.93	(4,154.77)	(24,337.73)	(66,395.31)	(939.00)	5,260.42
CUMULATIVE DIFFERENCE	44,390.93	40,236.16	15,898.43	(50,496.88)	(51,435.88)	(46,175.46)

Source: Muncipal Audits, Town of Clintwood
Adopted General Fund Budgets, Town of Clintwood, 1981 and 1982

TABLE 4

TOWN OF CLINTWOOD

WATER DEPARTMENT COMPARATIVE STATEMENT OF RECEIPTS AND DISBURSEMENTS

	4 YEARS ENDED JUNE 30, 1980				BUDGETED	BUDGETED
	1977	1978	1979	1980	1981	1982
RECEIPTS						
Water	$100,817	$119,599	$126,499	$125,536		
Hook-Ups	4,280	6,375	8,505	2,995		
Interest			22	138		
Disaster Flood Relief	2,696					
TOTAL RECEIPTS	$107,793	$125,974	$135,026	$128,669	$132,980	$216,000
EXPENDITURES						
Office Salaries	$ 3,340	$ 4,129	$ 7,071	$ 12,865		
Gross Payroll	43,305	44,721	50,470	55,669		
Employee Taxes and Fringe Benefits	4,233	4,141	5,133	8,927		
Workmens Compensation	1,055	1,206	1,584	1,916		
Bond Interest	19,000	30,072	18,807	16,885		
Bond Retirement		2,262	3,537	3,719		
Professional Fees		1,454	2,290	2,508		
Permits & Licenses	114	438	375	85		
Office Supplies	983	1,769	1,589	1,883		
Water Supplies	9,860	12,612	20,871	20,460		
Electricity	10,049	11,524	10,883	13,599		
Telephone	803	646	657	699		
Chemicals	2,924	3,352	3,984	1,634		
Pipe				10,000		
Gas & Oil - Truck	2,537	3,093	1,840	3,290		
Repairs	1,847	4,463	4,242	5,091		
Meters	1,713	2,477	1,194	729		
Pumps	5,544	1,100	4,428	1,216		
Equipment Rental	235	50	690	8,472		
Contract Services				5,029		
Stone	942	786	301	1,261		
Water Purchase	205	495	420	589		
Position Bonds				425		
Miscellaneous	410	168	1,154	810		
Cash Difference				4,111		
Drilling Expense		1,393				
TOTAL EXPENDITURES	$109,099	$132,351	$141,520	$181,872	$142,795	$208,379
EXCESS OF RECEIPTS OVER DISBURSEMENTS	$ (3,306)	$ (6,377)	$ (6,494)	$(53,203)	$ (9,815)	$ 7,621

Source: Municipal Audits, Town of Clintwood
Adopted Budget, Town of Clintwood, 1981 and 1982
Water Fund

TABLE 5

TOWN OF CLINTWOOD

SEWER DEPARTMENT COMPARATIVE STATEMENT OF RECEIPTS AND DISBURSEMENTS

4 YEARS ENDED JUNE 30, 1980

	1977	1978	1979	1980	BUDGETED 1981	BUDGETED 1982
RECEIPTS						
Sewer Receipts	$43,991	$44,698	$45,753	$50,132		
Hook-Ups	200	380	465	250		
Interest and Other Income	951	220	231	110		
TOTAL RECEIPTS	$45,142	$45,298	$46,449	$50,492	$46,400	$84,000
EXPENDITURES						
Office Salaries	$ 2,038	$ 4,220	$ 2,648	$ 2,376		
Gross Payroll	10,701	11,208	11,427	24,018		
Payroll Taxes & Fringe Benefits	1,002	802	1,815	3,601		
Bond Interest	4,688	4,313	3,971	3,503		
Bond Retirement	10,000	10,000	10,000	15,000		
Bank Service Fee	68	135	32	34		
Professional Fees		1,454	1,309	1,301		
Office Supplies	264	370	94	444		
Sewer Supplies	2,018	3,070	3,017	1,436		
Licenses - Permits	10	22	15	10		
Electricity	2,117	2,032	1,915	1,646		
Telephone		46		226		
Chemicals	12,755	9,795	2,593	4,574		
Gas & Oil	522	445	2	773		
Repairs	909	417	336	1,140		
Equipment Rental	150	1,198	1,000	950		
Cleaning Sewer Lines		817	495	228		
Miscellaneous	96	17	39	836		
Cash Difference				12,356		
TOTAL EXPENDITURES	$47,338	$50,361	$40,708	$74,452	$60,748	$82,526
EXCESS OF RECEIPTS OVER DISBURSEMENTS	$(2,196)	$(5,063)	$ 5,741	$(23,960)	$(14,348)	$ 1,474

Source: Municipal Audits, Town of Clintwood
Adopted Sewer Fund Budget, 1981 and 1982

ASSESSED VALUATION:

The assessed valuation of the Town of Clintwood has increased from $1,046,270 in 1975 to $22,107,340 in 1981. Prior to 1980, all real estate and public service corporations were assessed at 10 percent of their fair market values. Mobile homes were assessed as personal property at 10 percent of their fair market value. After 1980, real estate, mobile homes and public service corporations were all assessed at 100% of their fair market values. During the study period the assessment procedures for personal property, machinery and tools and merchant's capital remained unchanged.

From 1975 to 1980 the tax rates on real and personal property, machinery and tools, merchant's capital and public service corporations were constant. Subsequent to the 1980 reassessment, taxes on real estate declined from $2.00 per $100 of value to $.10 per $100 of value. Taxes on personal property, machinery and tools and merchant's capital increased from $2.00 per $100 of value to $3.00 per $100 of value. Mobile homes were taxed as real property but categorized as personal property. (See Table 6)

INDEBTEDNESS

As of June 30, 1981, Clintwood's long-term municipal debt was estimated to be $587,895. All of this debt has been incurred to finance improvements to the Town's water and sewer system with a major portion, $532,895, incurred within the last 2 years to pay for the Town's distribution line from the John Flannagan reservoir.

As of June 30, 1981, the Town's short-term municipal debt was estimated to be approximately $39,000.

RATIO OF BONDED INDEBTEDNESS TO ASSESSED VALUATION

Clintwood can not legally issue any bonds or other interest bearing obligations which, including existing indebtedness, exceed 10 percent of the assess valuation of that real estate property in the Town which is subject to taxation as determined by the proceeding tax assessment. This limitation does not apply to any short-term notes or to bonds used for the supply of water or other undertakings from which the Town may derive a revenue. As of June 30, 1981, the Town had $55,000 of bonded indebtedness backed by the full faith and credit of the Town.

ASSESSED VALUE, TAX RATE 1975-1981, TOWN OF CLINTWOOD, VIRGINIA

BLE 6

FISCAL YEAR	ASSESSED VALUE	% OF FAIR MARKET VALUE	TAX RATE	TAX RATE 100%
1975				
Real Estate	$ 640,350	10%	$2.00	$ .20
Personal Property	140,820	10%	1.50	.15
Mobile Homes	-	-	-	-
Machinery and Tools	26,850	10%	1.50	.15
Merchant's Capital	101,430	10%	1.50	.15
Public Service Corporation	136,820	10%	2.00	.20
TOTAL	$1,046,270			
1976				
Real Estate	$ 609,890	10%	2.00	.20
Personal Property	201,480	10%	2.00	.20
Mobile Homes	-	-	-	-
Machinery & Tools	26,820	10%	2.00	.20
Merchant's Capital	107,730	10%	2.00	.20
Public Service Corporation	119,258	10%	2.00	.20
TOTAL	$1,065,178			
1977				
Real Estate	$ 639,680	10%	2.00	.20
Personal Property	158,289	10%	2.00	.20
Mobile Homes	-	-	-	-
Machinery & Tools	-	10%	2.00	.20
Merchant's Capital	63,110	10%	2.00	.20
Public Service Corporation	127,308	10%	2.00	.20
TOTAL	$ 988,387			
1978				
Real Estate	$ 644,510	10%	2.00	.20
Personal Property	205,770	10%	2.00	.20
Mobile Homes	-	-	-	-
Machinery & Tools	9,770	10%	2.00	.20
Merchant's Capital	175,650	10%	2.00	.20
Public Service Corporation	105,012	10%	2.00	.20
TOTAL	$1,140,712			
1979				
Real Estate	$ 652,500	10%	2.00	.20
Personal Property	167,450	10%	2.00	.20
Mobile Homes	-	-	-	-
Machinery & Tools	14,420	10%	2.00	.20
Merchant's Capital	125,704	10%	2.00	.20
Public Service Corporation	91,722	10%	2.00	.20
TOTAL	$1,051,796			
1980				
Real Estate	$20,184,850	100%	.10	.10
Personal Property	150,210	10%	3.00	.30
Mobile Homes	453,000	100%	.10	.10
Machinery & Tools	131,330	10%	3.00	.30
Merchant's Capital	97,662	10%	3.00	.30
			.10	.10
Public Service Corporation	1,037,739	100%	2.00	2.00
			3.00	3.00
TOTAL	$22,054,791			
1981				
Real Estate	$20,116,850	100%	.10	.10
Personal Property	163,310	10%	3.00	.30
Mobile Homes	575,838	100%	.10	.10
Machinery & Tools	18,466	10%	3.00	.30
Merchant's Capital	100,608	10%	2.00	.20
			.10	.10
Public Service Corporation[1]	1,162,268	100%	2.00	2.00
			3.00	3.00
TOTAL	$22,107,340			

[1] Not calculated as of 10/81, estimated by Balzer and Associates

Source: Dickenson County Treasurer's Office
Balzer and Associates

Epilogue to Chapter 8 Financial Analyses "Two Decades Later"

Today, in 1998, the Town of Clintwood, Virginia operates with an annual budget of more than one million dollars. Once the new Red Onion prison becomes operational, the town's combined operations, including general government operation and water and sewer utility services, will equal approximately 1.25 million dollars annually in total. The constituent parts are:

General Fund, approximately	$ 500,000
Water Fund, ..	$ 500,000
Sewer Fund, ..	$ 250,000
	$ 1,250,000

The budget's growth to current levels from a total of less than one-half million dollars annually in 1980 may, at first blush, seem surprising. However, a review of circumstances surrounding the town's finances makes the budget's growth understandable.

Town of Clintwood financial records from the late 1970's reveal successive annual deficits indicating a state of virtual insolvency. In addition to starting from a deficit position, each of the eighteen years between 1980 and 1998 has been inflationary. Indeed, the federal Consumer Price Index (CPI), which measures changes in the costs of commodities, including labor, recorded a cumulative increase of nearly 100% during the eighteen year period ending in 1998.

In 1986 the Town of Clintwood also annexed approximately 300 new residents, expanding its service base by roughly 25%. As alluded to above, serving, the new Red Onion prison will also expand the town utility customer base.

Various circumstances and actions have enabled the Town of Clintwood to successfully respond to the financial challenges before it in the 1980's and 1990's. The real estate subject to town property taxation increased from an assessed value of $20,116,850 in 1980 to a 1998 value of $38,421,069. This helped produce a comparable increase in property revenues during the same time frame. The 1986 annexation, new construction and the effect of inflation generally, as reflected in updated county assessments, caused the increase.

While inflation pulls only certain line items on the revenue side of a municipal budget up with it, it pushes all the items on the expenditure side upward over time. For Clintwood to maintain the level of service funded in its general fund budget, new taxation strategies were employed. In April, 1992, a consumer utility tax payable by tenants and property owners alike with a moderate cap was implemented. In December, 1988, a prepared good and beverage tax, known as the meals tax, was installed at the rate of four percent (4%).

Public utilities are commonly operated as free-standing entities known as enterprise fund activities. Clintwood has applied the philosophy that its water and sewer utilities should not only be free-standing but also self-supporting. In the sewer fund this led to contracting with a private firm(PSG-Prof. Services Group) to operate and maintain its sewer treatment plant. Public discussions of government frequently include comments like this; "government is a business, it should be run like one." This business analogy has been taken seriously in the operation of Clintwood's water utility system. The control of overhead has been pursued aggressively and is reflected in the system's improved "accountability" figures as explained in chapter five. Placing the revenue collection process on a more business like footing has brought accounts receivable in line with proper expectations. When the opportunity to expand presented itself, with regard to the new prison, negotiations were conducted with an eye on the bottom line.

PART 2
GOALS AND OBJECTIVES

CHAPTER 9
GOALS AND OBJECTIVES

GOALS AND OBJECTIVES

INTRODUCTION:

THE GOALS AND OBJECTIVES ARE THE FOUNDATION OF THE CLINTWOOD PLANNING DOCUMENT. THEY ARE "THE CORNERSTONE OF THE PLANNING PROCESS" FOR THEY PROVIDE THE DIRECTION AND FRAMEWORK FOR PUBLIC AND PRIVATE DECISION-MAKING RELATIVE TO THE PHYSICAL DEVELOPMENT OF THE COMMUNITY.(1)

A GOAL IS A GENERAL STATEMENT OF A FUTURE STATE THAT HAS BEEN DETERMINED TO BE DESIRABLE; IT IS AN END TOWARDS WHICH THE TOWN'S ACTIONS ARE TO BE DIRECTED.

AN OBJECTIVE IS A STATEMENT OF PURPOSE; IT IS A CLEAR AND REALISTIC MEANS OF ACHIEVING A GOAL.

Objectives are realized by the formulation of policies, definitive actions which are officially adopted by the Town and are selected from among carefully specified alternatives. Alternatives (many of which were described in the proceeding inventory and analysis) are founded upon planning principles and standards; rules that provide qualitative and quantitative measurements that serve as the basis for community design or future courses of action.

(1) Goodman, W., ed Principles and Practice of Urban Planning, p. 327.

The planning goals and objectives of the Town of Clintwood are presented on the following pages:

ENVIRONMENTAL GOAL:

TO ELIMINATE EXCESSIVE OR WASTEFUL LIMITED NATURAL RESOURCES SUCH AS FOSSIL FUEL, LAND SUITABLE FOR URBANIZATION, FRESH WATER AND AIR, WILDERNESS AREAS, ENVIRONMENTALLY SENSITIVE AREAS, AND OTHER TYPES OF NON-RENEWABLE RESOURCES SUCH AS HISTORIC SITES THAT ARE LIMITED IN BOTH LOCATION AND QUANTITY.

OBJECTIVE:

To establish the location, extent and type of growth and development the natural environment of the town can expect to absorb without either degradation or the endangerment of the public health, safety and welfare.

OBJECTIVE: To direct new development to those areas that are the most intrinsically suited.

OBJECTIVE:

Where in the public interest, to increase the capacity of the natural environment to absorb growth and development by encouraging the construction of appropriate public facilities and capital improvements.

HOUSING GOAL:

TO INSURE THAT ALL CITIZENS HAVE A DECENT HOME IN A SUITABLE LIVING ENVIRONMENT

OBJECTIVE: To encourage the development of a variety of housing that reflects community needs and allows a prospective owner or renter a choice of price, type and location.

OBJECTIVE: To require that all homes, new and existing, be structurally sound and large enough to prevent crowding.

OBJECTIVE: To encourage the removal of all houses (except those of historical or architectural significance) which have serious deficiencies and are not practical to repair.

OBJECTIVE: To insure that all housing is free from the dangers of flooding.

OBJECTIVE: To insure adequate access to and from the areas of work, education, community facilities and services, recreation, public transportation, health care and shopping.

OBJECTIVE: To insure an adequate living environment by providing necessary community services and facilities required to guarantee the public health, safety and welfare.

LAND USE GOAL:

TO INSURE THAT ALL LAND, WITHIN THE CORPORATE LIMITS AS WELL AS LAND ADJOINING AND VITALLY AFFECTING THE DEVELOPMENT OF THE TOWN, BE CONSIDERED A VALUABLE RESOURCE DESERVING OF RESPONSIBLE USE BY ALL CITIZENS, AND BE ABLE TO ACCOMODATE GENERAL GROWTH AND DEVELOPMENT WITHOUT COMPROMISING THE PUBLIC HEALTH, SAFETY, OR WELFARE, ECONOMIC FEASIBILITY, CONVENIENCE, LIVABILITY OR HISTORICAL SIGNIFICANCE.

OBJECTIVE: To develop a community ethic and community trust by basing all land use decisions upon consistent policies, principles and plans.

OBJECTIVE: To develop and observe space and location standards that guide the development of the residential, commercial, industrial, educational, recreational, and civic areas of the community.

OBJECTIVE: To reduce the flood-prone areas of the Town to the maximum extent possible.

OBJECTIVE: To increase the amount of usable land in Town through recovery of flood hazard areas.

OBJECTIVE: To control the amount of improvements and other impediments within flood hazard areas where such improvements and impediments might: (1) aggravate the flooding problem; (2) pose a threat to personal safety; (3) be otherwise contrary to the public interest.

OBJECTIVE: To protect and strengthen the existing downtown area and adjacent shopping center. Accommodate new commercial development through redevelopment and modest expansion in a direction and manner which would minimize disruption in the surrounding area.

OBJECTIVE: To maintain the prevailing low density character of Clintwood. Higher density areas would.. be limited in number and be located near principal roads, sewer interceptors and water mains.

OBJECTIVE: To utilize scarce undeveloped or uncommitted land in an efficient manner.

OBJECTIVE: To encourage new industrial development within and adjacent to the Town. Identify sites and accommodate the type of industry desired.

OBJECTIVE: To monitor the development of land contiguous to the Town to insure that growth is managed consistently with the principles and policies established by this planning document.

OBJECTIVE: To assume an active role in Dickenson County's planning objectives for the

Clintwood area.

TRANSPORTATION GOAL:

TO ESTABLISH AND MAINTAIN A CIRCULATION SYSTEM THAT FACILITATES THE ECONOMIC, EFFICIENT, AND SAFE MOVEMENT OF PEOPLE AND GOODS WITHIN AND THROUGH THE TOWN.

OBJECTIVE: To develop and maintain a street, highway, and alley network that is compatible with, and complimentary to, the surrounding land use.

OBJECTIVE: To encourage the development of properly designed streets, highways and off-street parking areas which include satisfactory storm drainage facilities.

OBJECTIVE : To develop city-wide pedestrian and non-motorized alternatives that will serve to better manage traffic, improve the environment, conserve resources, increase safety, and encourage utilization of existing educational, recreational and commercial areas.

OBJECTIVE: To promote area-wide public transportation and paratransit systems that are responsive to the needs of the community, but especially the young, the elderly and the handicapped.

ECONOMIC DEVELOPMENT GOAL:

TO ESTABLISH AND MAINTAIN AN ADEQUATE ECONOMIC BASE AND TO DEVELOP POTENTIAL economic RESOURCES AVAILABLE TO THE COMMUNITY.

OBJECTIVE: To provide suitable space within the Town for industrial development and expansion, and to encourage neighboring governmental agencies to do the same within their respective jurisdictions.

OBJECTIVE: To encourage the arrival of new and suitable Industry as well as the expansion and development of existing industry.

OBJECTIVE: To enhance the commercial base of the community by encouraging rehabilitation, reuse, and new construction in the central business district.

PUBLIC SERVICES AND FACILITIES GOAL:

TO PROVIDE AND ANTICIPATE THOSE COMMUNITY SERVICES AND FACILITIES REQUIRED TO MAINTAIN HIGH STANDARDS OF PUBLIC HEALTH, SAFETY, AND WELFARE.

OBJECTIVE: To provide all residents of the Town an adequate and safe supply of water for human consumption and fire protection.

OBJECTIVE: To expand the Town's water system to serve adjacent developing and develop able areas as is consistent with the Town's overall growth policy.

OBJECTIVE: To rehabilitate or replace portions of the existing water distribution system as is required to stop excessive leakage and to insure adequate fire flow.

OBJECTIVE: To provide all residents of the Town a sanitary and economic means of wastewater and solid waste disposal.

OBJECTIVE: To expand the Town's public sewerage system to serve adjacent developing and develop able areas as is consistent with the Town's overall growth policy.

OBJECTIVE: To expand the sanitary sewerage treatment facility to accommodate anticipated growth.

OBJECTIVE: To encourage the development of suitable community facilities designed to promote education, the arts, recreation, and efficient municipal administration.

OBJECTIVE: To provide parks, playgrounds, and other recreational facilities located and designed to accommodate a wide range of activities throughout all the seasons, and suitable for the differing needs of all age groups.

PART 3

COMPREHENSIVE COMMUNITY DEVELOPMENT PLAN

CHAPTER 10
COMPREHENSIVE COMMUNITY DEVELOPMENT PLAN
-FUTURE LAND USE
-MAJOR THOROUGHFARES
-COMMUNITY FACILITIES

THE CLINTWOOD COMPREHENSIVE COMMUNITY DEVELOPMENT PLAN

The Clintwood comprehensive community development plan is an official public document adopted by local government as a policy guide for decisions concerning the physical development of the Town. There are three types of physical development plans.

The short-range project plan is required for specific projects and buildings which can be completed within one to five years. These plans may be contained within the Town's capital improvements program and must reflect the policies of both the mid and long-range plans.

Mid-range plans have a time range of 5 to 10 years. They are more limited in scale and more specific in application than the long-range plans. These plans must be consistent with the long-range goals. Mid-range plans have a project orientation and may take the form of the site development plan.

Longer range plans, such as this one, provide comprehensive and general policies for guiding community growth 5 to 20 years into the future. These plans provide a guide for both public and private decision-making by clearly indicating policy for each type of development. Long-range plans apply to the entire community and should reflect community interrelationships.

Natural and Man-Made Environmental Policies of the Plan:

Natural Environmental Policies

The comprehensive community development plan should provide the basis for all decisions dealing with the use of the environment. It should establish policies that deal with land, water, and air resources; fragile environmental elements, unique natural features such as special conservation or restoration areas, and natural hazard areas; and policies that supervise the use, protection, and production of such things as forests, fisheries, and mines.

Man-Made Environmental Policies

These policies pertain to the general elements of the more traditional comprehensive community development plan. They are divided according to private and public uses. Private uses include commercial, residential, industrial, and institutional facilities and areas. Public uses include those dealing with education, recreation, public housing, communication, and transportation.

Characteristics of Clintwood's Comprehensive Community Development Plan:

Clintwood's comprehensive community development plan must focus on physical development. It must be long-range to provide for the future needs of the community. The plan must specify distant objectives so that the community can progress in one direction. The plan must be comprehensive, accounting for all of the essential physical elements of the urban area as well as recognizing the importance of the Town's regional setting and the social and economic forces it proposes to accommodate. The plan must be general, and it must remain general. It cannot be vague. It is important to note that private planning and innovation are facilitated primarily when public policies for major public services are very specific and when public policies for guiding and coordinating the development and use of private land are as general and flexible as possible. The general plan must relate the major physical design proposals to the bas'ic plan policies. It must clarify the subordinate role of these proposals to the role of the policies. The plan must be suitable for debate. Two of the primary uses of the plan are policy determination and policy effectuation both of which are the responsibility of the Town Council. This body should act on important questions of policy only after thorough public debate. The plan should be identified as a tool of the Town Council. The plan should be available to the public and easily understood. Its understanding will facilitate its potential as an educational tool. To guarantee that the plan is effective, it must be amendable.

The Uses of the Comprehensive Community Development Plan:

The primary use of the plan is that it allows the Town Council to consider and agree upon a definite set of policies that may be utilized to determine the future physical development of the community and a physical design which will allow the policies to be effectuated. The plan affords the Council an opportunity to evaluate every specific project in view of desirable long-range developmental goals. The plan communicates long-range physical development policies to both leaders and citizens encouraging constructive debate and action. The nature of the plan enables the Town Council to receive advice and recommendations concerning physical development from the Town planning Commission in a unified and coherent form. The plan allows the members of the Town Council to learn about the physical development problems and opportunities of the community and the relationship of these problems to the social and economic issues involved.

FUTURE LAND USE PLAN

The future land use plan of the Town of Clintwood proposes how growth and rehabilitation should proceed in the future, recognizing the Town's goals, objectives and generally accepted principles and standards of location and space.

The land use goals and objectives of the Town were presented in the proceeding chapter. The following section will define and describe the location and space requirements upon which Clintwood's future land use plan will be founded.

LOCATION REQUIREMENTS:

Location requirements are guiding principles and standards that determine the placement of uses on the land. Location requirements seek to insure the health, safety, convenience, economy and the general amenities of urban living. For example, health and safety standards may deal with the dangers of flooding. Convenience standards may relate to the time and distance which separate land uses. Economic principles may be concerned with land values or the cost of development. Amenity standards may address the livability and general appearance of the community. The way in which each of these principles and standards is defined depends entirely upon local goals and objectives as well as local characteristics. Each locality has its own environmental hazards, fiscal capabilities or concept of convenience.

There are, however, general locational principles and standards that apply to all communities. They may be categorized as follows:

1. Work Areas (industrial, trade and service)

Industrial:

* Fast, easy and convenient access to good transportation facilities including highway and rail is required.

* A reasonable location with respect to labor supplies, raw materials source, markets, and existing and/or planned urbanization is needed

* A location that is compatable with adjacent land uses and protected from encroachment of residential or other land uses. (Note: compatibility is often determined by the type of industry

* An adequate amount of land that is as flat as possible, well drained, devoid of low load bearing capacity soils, shallow or pinnacled bed-rock, peat, a high water table and sinkholes is mandatory.

* An adequate amount of land is necessary to accomodate current as well as future industrial demands.

* Property must be under the ownership or control of the Town, County, industrial

development corporation, chamber of commerce, or other person or agency responsible for and desirous of industrial development.

* An adequate water supply and distribution system is required to provide water for human consumption, manufacturing processes and fire protection.

* The existing or proposed sewer system must have adequate capacity to accept estimated flows from the proposed development. The sewage treatment plan must have an adequate capacity and capability to treat sewage effluents.

* Adequate electric and telephone service as well as fuel supplies must be available.

Trade and Service:

* Trade and service areas should be accessible to living areas but should not occur as spot commercial areas within residential neighborhoods.

* Commercial areas should be accessible by major streets.

* Strip or ribbon commercial development along major streets should not be encouraged. Shops and stores should be grouped in a rectangular or square arrangement.

* Trade and service areas should be located on sites of sufficient size to provide for ample

off-street parking.

* If possible, compatible commercial enterprises should be grouped together.

* The central business district should be recognized as the central location of the Town's commercial interests.

* Commercial establishments designed to serve tourist traffic should be located along tourist routes.

* Commercial establishments requiring areas for open displays, such as automobile dealers, should be located in outlying areas along major thoroughfares.

* Shopping centers are more accessible and visible when situated at intersections.

2. Living Areas (residential areas, elderly residential areas, schools and parks)

Residential Areas:

* Residential areas should be convenient to work areas and leisure time areas by way of thoroughfare routes.

* Residential areas should be convenient to larger open space and should include smaller

open space areas.

* Residential areas should be protected from through traffic and incompatible land uses.

* Residential areas should be located on sites which are economically feasible to develop.

* Residential areas should be attractive and able to accomodate a wide range of densities.

Elderly Residential Areas:

* Elderly housing must be located within walking distance (1,500 to 3,000 feet) of commercial, civic, health and government services.

* Cultural and recreational facilities such as a community elderly center, neighborhood park, and churches should be located within 2,000 feet of the elderly housing site.

* The location should have immediate access to a lighted, paved, and maintained walkway.

* The elderly housing site and the pathways to the affiliate service areas should be located so as to insure maximum pedestrian security.

* The topography of the site should not exceed 10 percent.

* Elderly housing should be located so as to insure continuing family and friend relationships.

* Elderly housing should not be located adjacent to strip commercial areas, heavy industry, noise generating land uses, or automotive servicing facilities which are larger than a service station.

Schools and Parks:

* The elementary school should be near the center of the population to be served.

* Parks and recreation facilities should be located within residential neighborhoods, easily accessible by walking.

3. Leisure Time Areas (major educational, recreational and cultural facilities)

* Leisure time areas should be convenient to living areas.

* Cultural and sporting facilities should be centrally located and on sites of an adequate size.

* Parks and Open space should take advantage of natural or unusual features and should provide for a variety of activities.

These general principles and standards serve as reference points for assigning locations to Clintwood's future land uses. As these locations are identified and a pattern of distribution is designed, more specific analyses such as land capability, provisions of utilities or ownership may be pursued.

SPACE REQUIREMENTS:

Space requirements are used to determine the amount of land needed to accommodate future growth in the urban area.

Future space requirements are developed by analyzing existing land use .and distribution as well as current and projected population and employment characteristics. These indexes are combined with generally accepted standards of space allocation to formulate approximate future guidelines.

Review of Past Development Trends

As described in Chapter 2, Existing Land Use, the consultants evaluated past development trends in Clintwood and the peripheral planning areas by identifying building permits issued for new construction.

Using this data it was determined that 18 acres of vacant land in the Town of Clintwood were converted to active use between January 1977 and July 1981. The corresponding amount of newly developed land in the peripheral planning areas for the same period was II acres. Based on this past combined rate of 6.5 acres per annum it was estimated that an additional 124 acres of undeveloped or uncommitted land would be required for development within the Town and the peripheral planning area by the year 2000. Of this amount, 78 acres would be needed in the Town, 46 acres would be required in the planning areas.

Assuming that the past building trends remain constant and the current percentages of land uses continue to the year 2000, the consultants estimate that the 124 acres of land would be develooed as follows:

LAND USE	ACREAGE
Residential	94
Commercial	12
Office and Institutional	16
Industrial	2
TOTAL	124 acres

(Note: the total of 124 acres does not include future demand for educational, recreational, civic/cultural, and health facilities or corridor open space and drainage. These land uses will be accounted for in the following discussion.)

Recommended Minimum Spatial Allocations - Year 2000

The following estimated minimum space requirements for Clintwood and the peripheral planning areas for the year 2000 are founded upon projected population and economic growth as well as generally accepted planning principles and standards. The past development trends discussed previously are used only as points of reference (For further detail, please refer to Appendix C)

RESIDENTIAL

TOTAL PROJECTED NEED		CURRENT AMOUNT	DEFICIT
TOTAL	335 acres	169 acres	166 acres
LOW DENSITY	316 acres	168.1 acres	147.9 acres
MEDIUM DENSITY	3 acres	.9 acre	2.1 acres
HIGH DENSITY	16 acres	0 acre	16 acres

Source: Estimates by Balzer and Associates Land Use Survey, Balzer and Associates

COMMERCIAL

TOTAL PROJECTED NEED	CURRENT AMOUNT	DEFICIT
49 acres	35.5 acres	13.5 acres

Sources: Estimates by Balzer and Associates
Land Use Survey, Balzer and Associates

INDUSTRIAL

TOTAL PROJECTED NEED		CURRENT AMOUNT	DEFICIT
TOTAL	184 acres	4.8 acres	179.2 acres
LIGHT	35 acres	4.7 acres	30.3 acres
HEAVY	104 acres	.1 acres	103.9 acres
RESERVE	45 acres	0	45 acres

Sources: Estimates by Balzer and Associates
Land Use Survey, Balzer and Associates

PUBLIC RECREATION

TOTAL PROJECTED NEED	CURRENT AMOUNT	DEFICIT
10 acres	4.7 acres	5.3 acres

Sources: Estimates by Balzer and Associates
Land Use Survey, Balzer and Associates

GOVERNMENT/CIVIC/HEALTH

TOTAL PROJECTED NEED	CURRENT AMOUNT	DEFICIT
50 acres	8 acres	42 acres

Sources: Estimate by Balzer and Associates
Land Use Survey, Balzer and Associates

FUTURE LAND USE CLASSIFICATIONS

The following classifications were utilized to identify future land uses either in the Town and the peripheral planning areas or the courthouse-commercial center (the central business district). The accompanying definitions are intended to be representative of some of the individual uses which may occur within each land use classification.

Residential

- Low Density Residential - primarily single family homes occuring at a maximum density of 3 units per net residential acre.

- Medium and High Density Residential - single family, duplex and multi-family homes occuring at a minimum density of 3 units per net residential acre.

Transitional

Transitional Residential/Commercial - a mixed use area characterized by established single family homes, loft apartments, small shops and professional offices.

Commercial

- Retail, Service and Office Commercial - a concentrated area offering retail sales and general, professional and financial services.

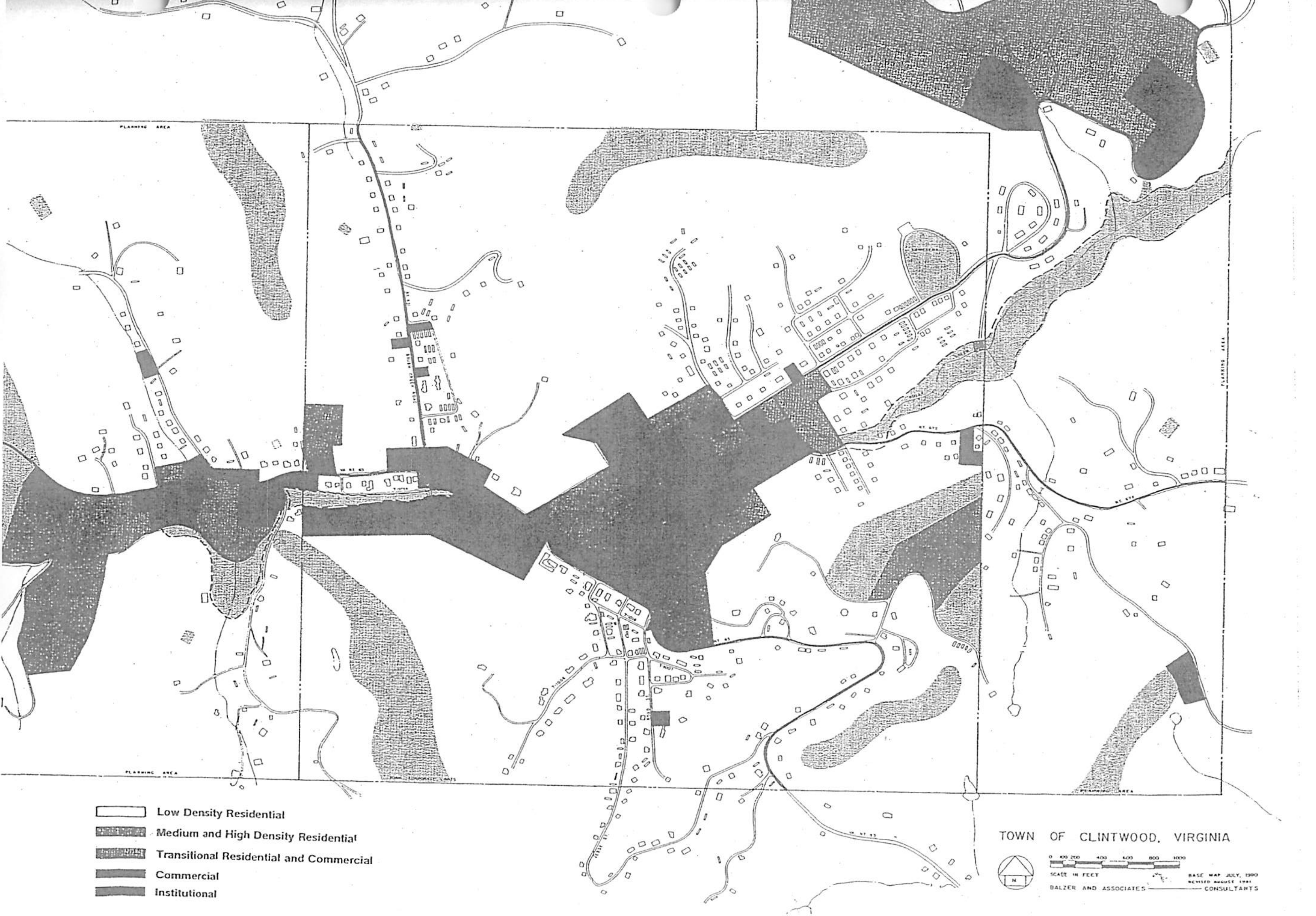
- General Commercial - retail and service uses requiring open areas such as gas stations or automobile dealerships.

Institutional

- Civic/Government - Town, County, State and Federal government offices, as well as community facilities devoted to history, the arts, and the social needs of the elderly and the poor.

- Education - high school and elementary school buildings and the accompanying properties.

FUTURE LAND USE PLAN



- Health and Health Services - health clinic, health department, or institutional home for the elderly and handicapped.

Industrial

- Restricted/Light Industrial - manufacturing, assembling, and fabrication conducted within enclosed buildings or in open areas screened from view from adjacent areas.

- Heavy Industrial - operations which create a large amount of noise, dust, odor, blast or smoke.

Open Environmentally Sensitive Areas

- Flood Plain - area required to accommodate a 100 year flood.

- Parks/Recreation - neighborhood or community parkland facility, private recreation facility.

- Open Space - corridor open space designated to establish an interconnected system of public greenblets which may be used for recreation, buffers, easements, or pedestrian walkways.

FUTURE LAND USE

CLINTWOOD, VIRGINIA

CATEGORY	ACRES	PERCENT
Low Density Residential	994	76.5
Medium and High Density Residential	69	5.3
Transitional Residential/Commercial	16[1]	1.2
Retail, Service, and Office Commercial	32	2.5
Civic/Government/Health	14	1.0
Education	17	1.3
Restricted/Light Industrial	18	1.4
Heavy Industrial	13	1.0
Park	13	1.0
Open Space	114	8.8
TOTAL	1,300 Acres	100.0%

1. Includes acreage identified as commercial in existing land use survey.

Source: Balzer and Associates

Commentary

- Low density residential, the predominant future land use designation, functions to preserve the rural characteristics of the community.

- Medium and high density residential areas are required to insure that the residents of the Clintwood community have a choice of housing types and prices. The future land use area for medium and high density housing has been concentrated primarily in the eastern peripheral planning area adjacent to the elementary school. This location has direct access to the retail and services stores in the courthouse-commercial center (central business district) but is removed from the strip commercial area west of Town and the High School, both of which are major traffic generators.

- The acreage allocated for future medium and high density residential useage is three times greater than the anticipated need. However, most of the need (18 acres) was determined to be for higher density multi-family development. The provision of a greater amount of land for future utilization will allow for lower density multi-family development via internal open space or low density residential infill.

- Land for future commercial use has been concentrated primarily in the courthouse-commercial center (central business district). The existing commercial area west of Town has not been enlarged.

- Although land appropriated for future total industrial use is far below the anticipated need, it is assumed that virtually all heavy industrial activity; i.e., mining will take place in the hinterlands. Land designated for future industrial use in the Town and the planning areas should be adequate to accommodate the needs of light, labor intensive industries. If required, limited amounts of this land may also be used for heavy industrial purposes.

- Open space designations were used to protect environmentally sensitive area such as ridge tops and flood hazard areas.

TRANSPORTATION PLAN

The Clintwood transportation plan proposes improvements to the community's vehicular and pedestrian circulation system. The suggested enhancements are founded upon the Town's goals, objectives, desired future land uses and generally accepted planning principles and standards.

The recommendations (which are shown on the Future Land Use and the Clintwood Courthouse-Commercial Center maps on display in the Town Hall) and the desired results are as follows:

- Route T-1001 (McClure Road) should be widened to a paving width of 40 feet.
    - two moving traffic lanes 24 feet wide and 2 parking lanes will improve access to stores and parking facilities located in the interior of the courthouse-commercial center.

- Route T-1009 (Chase Street) between McClure Road and Mullins Avenue should be widened to a paving width of 28 feet.
    - Two moving traffic lanes will facilitate access to the public library, the proposed library park and the proposed Chase Street parking lot.

- The Town should promote the development of the Chase Street Parking Facility.
    - A 40,000 square foot parking lot capable of accomodating approximately 100 vehicles. The facility will utilize the vacant parcel(s) located in the Holly Creek flood plain.
    - The facility will exemplify the merits of proper parking lot landscaping and surface runoff disposal.
    - The facility will increase the total number of off-street parking places in the courthouse-commercial center to over 250.

- The Town should encourage the development of the Walnut Walkway by prohibiting all vehicles, except emergency units, on Walnut Avenue between Alley 4 and McClure Road. Pedestrian comfort and convenience should be provided for.

  - The walkway, in conjunction with the proposed adjacent parking facility, will provide for better pedestrian accessibility to existing stores and offices in the courthouse-commercial center. The walkway will provide an impetus for the construction of new stores and shops on parcels that have remained vacant.
  - Tax revenue, property values and sales volumes will likely increase.

- The open space corridors which parallel Holly Creek should be developed as pedestrian, bicycle and bridle paths.
  - The development of these paths will separate non-motorized and vehicular traffic thereby increasing safety and encouraging the utilization of existing educational, recreational and commercial centers.

- Controlled pedestrian crosswalks should be established on Route 607 in the courthouse-commercial center and near the Clintwood Elementary School.

n addition to these capital improvements, the consultants recommend that the Town adopt the following planning principles and standards to guide the future development of streets, alleys, and pedestrian pathways in Clintwood.

- Residential driveway entrances should be disallowed on heavily traveled streets.
- All streets and alleys must be accessible by emergency and service vehicles.
- Through-traffic on residential streets should be limited.
- Pedestrian, bicycle and vehicular traffic should be separated.
- Proper lighting along streets and walkways should be provided.
- Sight distances should conform to traffic speed, terrain and road alignments.
- Turning lanes at heavily used intersections should be provided.
- Provision of streetside sidewalks should only be in response to a need.
- Future street planning should correlate with the Future Land Use plan contained within this document.

COMMUNITY FACILITIES PLAN

The Clintwood community facilities plan proposes improvements to the community's public parks, and public service accommodations. The suggested enhancements are founded upon the Town's goals, objectives, desired future land uses and generally accepted planning principles and standards.

The recommendations (the locations of which are shown on the Future Land Use and Clintwood Courthouse-Commercial Center maps) are desribed below:

- The existing fire station should be enlarged or replaced. The improved facility should be large enough to accommodate 6 vehicles and should have space for drying hose, equipment maintenance and storage, offices and meeting rooms. The consultants estimate that an adequately sized facility would require approximately 4,560 square feet of floor space. If a new building is constructed, the same location snould be used.

- A community recreation facility should be constructed in a central and accessable location. The consultants recommend that a suitable parcel from the proposed library park be used for this purpose. Accommodations for recreation, indoor sports and community meetings should be provided.

- The Town Council should advocate the establishment of neighborhood parks and playgrounds. The consultants have proposed several parks located in residential areas as well as the expansive park surrounding the existing public library facility.

PART 4

COMMUNITY DEVELOPMENT PROGRAMMING

COMMUNITY DEVELOPMENT PROGRAMMING

The Community Development Block Grant Program was first authorized in 1974 and subsequently continued under the Housing and Community Development Act of 1977. The Community Development Program, administered by the United States Department of Housing and Urban Development (HUD), was designed to provide financial assistance in the form of grants to communities to meet their housing and community development needs.

The Housing and Community Development Act Amendments of 1981 revised the original Act by shifting the allocation of CDBG funds to States wishing to develop their own Community Development Block Grant Program. Virginia opted to set up its own small cities CDBG Program and gave responsibility for operating the Program to the Virginia Department of Housing and Community Development.

The 1981 Amendment did not, however, change the primary objective of the Community Development Program which continued to be the development of viable communities, including decent housing and a suitable living environment and expanding economic opportunities, principally for persons of low-and moderate-income. This objective is achieved by the following means:

* Elimination of slums and blight and the prevention of blighting influences;

* Prevention of deterioration of property and neighborhood and community facilities;

* Elimination of conditions detrimental to health, safety, and public welfare;

* Conservation and expansion of housing opportunities;

* Increased public services;

* Improved use of land;

* Increased neighborhood diversity;

* Preservation of property with special value; and

* Alleviation of community physical and economic distress.

What Community Development Block Grants May Be Used For

Grant funds may be used for a variety of local housing and community development needs. The following brief descriptions summarize the project types that are eligible under the Virginia CDBG Program:

* Comprehensive Community Development

* Industrial Employment Creation/Retention

* Marketed Shell Building Program

* Distressed Communities Economic Development

* Commercial Employment Creation/Retention

* Central Business District Revitalization

* Vocational Education/Sheltered Workshop

* Tourism

* Microenterprise Assistance Projects

* Other Economic Development Projects

* Housing Preservation

* Housing Production

* Other Housing Projects

* Water and/or Sewer Improvements

* Drainage/Flood Control

* Other Community Facilities

*Day Care Facilities

* Facilities for Protected Populations

* Community Centers/Recreation

* Other Community Service Facilities

Eligible activities within each project type include acquisition and/or development activities that address the structural needs of a community or neighborhood in the areas of community facilities, housing, economic development, comprehensive community development, and community service facilities.

The Town originally established the following priorities for its community development needs in 1982:

1. Courthouse - Commercial Center -
   - acquisition, construction and rehabilitation of commercial buildings
   - center for elderly, handicapped
   - parking facilities
   - pedestrian walkways
   - street improvements
   - flood and drainage facilities

2. Community fire protection facilities
   - enlargement or replacement of existing firehouse

- water line improvements including leak detection

3. Acquisition of land for industrial purposes

    - improvement of the site

4. Residential rehabilitation

Of these needs, the Town has addressed all of them except the Courthouse-Commercial Center and residential rehabilitation needs. And within the Courthouse-Commercial Center priority, the Town has addressed the need for flood and drainage facilities on Holly Creek. In addition, the very few substandard homes present today are scattered around the community and do not lend themselves to inclusion in a CDBG project.

Therefore, upon review of these needs, the Town Council has identified the Revitalization of Downtown Clintwood as its primary community development need. This would include the acquisition and rehabilitation of commercial buildings and residential structures, as well as the development of parking facilities, street improvements, pedestrian walkways, and recreation facilities in the Central Business District.

APPENDICES

APPENDIX A LEGAL DESCRIPTION OF PERIPHERAL PLANNING AREAS

Legal description of the eastern and western peripheral planning areas is as follows:

BEGINNING at a point on the existing corporate limits said point being the southwest corner of the existing corporate limits, thence with the present corporate limits S 90 00' W (due west) 2,515 feet to a point; thence N 0 00' E (due north) 5,280 feet to a point; thence N 90 00' E (due east) 2,414 feet to a point, said point being the northwest corner of the existing corporate limits; thence with the existing corporate limits N 90 00' E (due east) 3,510 feet to a point, thence N 0 00' E (due north) 1,300 feet to a point, thence N 90 00' E (due east) 3,780 feet to a point, thence S 0 00' W (due south) 6,580 feet to a point, thence S 90 00' W (due west) 2,010 feet to a point, said point being the southeast corner of the existing corporate limits, thence with the existing corporate limits S 90 00' W (due west) 5,280 feet to a point, said point being the southwest corner of the existing corporate limits.

Source: Town of Clintwood

APPENDIX B

LAND USE GUIDE

RESIDENTIAL

- Single Family
- Two Family
- Multi Family
- Mobile Home

RETAIL AND SERVICE COMMERCIAL

Retail sales and service uses generally enclosed in a structure, including:

- Motels, hotels
- Restaurants
- ABC Store
- Night Club
- Barber Shop, Beauty Shop
- Grocery Store
- Cleaners
- Furniture Sales
- Carpet Sales
- Theater
- Pharmacy
- Sewing Center
- Lock Smith
- Car Sales
- Photography Studio
- Skate Arena (Skate Land)

GENERAL COMMERCIAL

Retail and service uses generally not fully enclosed in a structure, including:

- Gas Station
- Car Wash
- Lumber Sales
- Auto, truck, boat, mobile home, heavy equipment sales
- Repair garages
- Veterinary Hospitals
- Tire recapping

OFFICE and INSTITUTIONAL

- Banks and other financial institutions
- Real Estate and Insurance
- Attorney
- Public Offices
- Community Services
- Clubs
- Churches
- Radio and TV Studios
- Passenger Transportation Terminals
- Utility Company Offices
- Medical Offices
- Hospitals
- Schools
- Libraries
- Newspaper
- Museum
- Clinic
- Senior Citizens Center
- Mental Health Clinic
- DMV
- Funeral Home

LIGHT INDUSTRY

Industrial uses generally enclosed in buildings without outside storage, and including:

- Wholesale and warehouse facilities
- Radio and TV transmission facilities
- Power substations
- Trucking terminals
- Public, trasportation, and utility company vehicle and equipment, storage and repair facilities
- Garment Company
- Water Plant
- Water storage tank

HEAVY INDUSTRY

Industrial uses generally not fully enclosed in buildings and with outside raw material and product storage and including:

- Mining
- Coal loading operations
- Sawmills
- Junk yards

PARKS and OPEN SPACE

- Cemetary
- Community Athletic Field

APPENDIX C
FUTURE SPACE REQUIREMENTS

Residential

- Existing households within Clintwood and the peripheral planning area categorized according to household size:

HOUSEHOLD SIZE	1	2	3	4	5 or more	TOTAL
HOUSEHOLDS	137	206	131	97	58	629
% OF TOTAL	21.8	32.7	20.8	15.4	9.2	100.0

Source: Balzer and Associates

Housing Data: Survey conducted by Town of Clintwood July, 1980 and March, 1981.

- Households for the year 2000 projected and categorized according to household size:

HOUSEHOLD SIZE	1	2	3	4	5 or more	TOTAL
HOUSEHOLDS	190	285	181	134	80	870

Source: Balzer and Assoiates

(Note: 1980 average household size for Town and planning area, 2.76 and 3.53 respectively, applied to projected Town and planning area populations for the year 2000 to determine total households. 1980 household size percentages as defined above applied to projected totals.)

- Dwelling type percentage established according to household size:

	DWELLING TYPE			
HOUSEHOLD SIZE	SINGLE FAMILY[1]	DUPLEX	MULTI FAMILY	TOTAL
1	49.0%	1.0%	50.0%	100.0%
2	77.0%	1.5%	21.5%	100.0%
3	90.0%	1.0%	9.0%	100.0%
4	93.5%	1.0%	5.5%	100.0%
5 or more	96.8%	.8%	2.4%	100.0%

[1] Includes mobile homes

Source: Balzer and Associates

- Total number of units by dwelling type established for households ranging from 1 to 5 or more persons:

SIZE OF HOUSEHOLD	TOTAL NUMBER OF UNITS	SINGLE FAMILY	DUPLEX	MULTI FAMILY
1	190	93	2	95
2	285	219	5	61
3	181	163	2	16
4	134	125	2	7
5 or more	80	77	1	2
TOTAL	870	677	12	181

Source: Calculated by Balzer and Associates

- Net residential acres determined per dwelling type:

Net residential acres calculated by dividing the total units per dwelling type by desired density of units per net residential acre, multiplied by an affluence factor. The affluence factor varies from 1.2 to 1.4 and indicates the ability to inhabit differing amounts of acreage based on income levels. Higher affluence factors attached to single family homes. The results are as follows:

	TOTAL UNITS	÷	DESIRED DENSITY NET RESIDENTIAL ACRES	x	AFFLUENCE FACTOR	=	NET RESIDENTIAL ACRES
SINGLE FAMILY	677		3.0		1.4		316
DUPLEX	12		6.0		1.3		3
MULTI FAMILY	181		14.0		1.2		16

Source: Balzer and Associates

- Residential density classifications:

TYPE	DESIRED DENSITY	NET RESIDENTIAL ACRES
LOW DENSITY	1-3 units	316
MEDIUM DENSITY	3-6 units	3
HIGH DENSITY	6-14 units	16

Commercial

- The commercial element was calculated as 4 percent of the total net acreage.

Industrial

The calculation of industrial area was based upon the number of the persons in the labor force and the type of industrial base. For the purposes of this analysis it was assumed that Clintwood's industrial base is and will continue to be essentially commercial. Industrial density was determined by the number of workers required for the type of job, for example a higher density of workers requires a smaller land area. The following table describes the standards used to calculate future industrial densities for the Town and the planning areas.

DENSITY CATEGORY	PLANNING STANDARD WORKERS/NET ACRE
LIGHT	
Printing, publishing, allied industries	48
Food and kindred products	
Lumber and wood products	
Garment production	
LIGHT-INTERMEDIATE	
Research development/testing laboratories	
Machinery (except electrical)	24
Professional, scientific, controlling instruments	
Primary metals industries	
Fabricated metal products	
HEAVY-INTERMEDIATE	
Motor freight transportation/warehousing	
Wholesale trade	12
Paper and allied products	
Electrical machinery equipment, supplies	
HEAVY	
Chemical and allied products	
Furniture and fixtures	6
Petroleum and coal products	

Source: Balzer and Associates

Results

TYPE OF INDUSTRY	WORKERS[1] ÷	WORKERS/NET ACRE +	RESERVE FACTOR =	TOTAL INDUSTRIAL NET ACRES
LIGHT	500	48	3 acres	13 acres
LIGHT-INTERMEDIATE	600	24	8 acres	33 acres
HEAVY-INTERMEDIATE	450	12	12 acres	50 acres
HEAVY	400	6	22 acres	88 acres
TOTAL	1,950		45 acres	184 acres

[1] Estimated potential labor supply available to Clintwood within a 20 mile radius.

Sources: Virginia Employment Commission
Calculations by Balzer and Associates

Public Recreation

The Heritage Conservation and Recreation Service (formerly the Bureau of Outdoor Recreation) of the U. S. Department of the Interior suggests the following space standards for neighborhood facilities:

- 1.25 acres/1,000 population for playgrounds - usually part of a school ground.
- 1.25 acres/1,000 population for playfields - active sports activities such as baseball, football and soccer.
- 2.0 acres/1,000 population for neighborhood parks in multi-family areas.
- .75 acres/1,000 population for neighborhood parks in single-family areas.

With the predominance of single-family housing in Clintwood, approximately 4.0 acres of neighborhood facilities are needed for every 1,000 persons. By the year 2000 with an estimated population of 2,531 persons, 10 acres of parkland will be required for the residents of the Town and the peripheral planning area.

Civic/Health

- 20 acres were allocated for Dickenson County health facilities.
- 30 acres were allocated for Town and County civic facilities.

APPENDIX D

CONSUMER PRICE INDEX ANALYSIS

JANUARY 1st	CPI[1] INDEX	PERCENT CHANGE YEARLY AVERAGE	FACTOR TO CONVERT TO FISCAL 1981 DOLLARS[2]
(Dec) 1981	258.4	-	1.0
1980	233.2	13.5	1.108
1979	204.7	11.5	1.262
1978	187.2	7.6	1.380
1977	175.3	6.5	1.474
1976	166.7	5.8	1.550
1975	156.1	9.1	1.655
1974	139.7	11.0	1.850
1973	127.7	6.2	2.023
1972	123.2	3.3	2.097

[1] Source: Bureau of Labor Statistics
U. S. Department of Labor (1/23/81)

[2] Calculated by Balzer and Associates, Inc.

APPENDIX IX: VDCR SCORING CRITERIA: ELIGIBILITY AND CAPACITY BUILDING & PLANNING, AND VDCR CHECKLIST

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Town of Clintwood	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	**X**
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	**X**
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	**NA**
No	Not eligible for consideration	**NA**
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	**X**
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	**X**
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	**Yes** **No**

Applicant Name:	Town of Clintwood

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	
Development of a new resilience plan.	**55**	**55**
Resource assessments, planning, strategies and development.	**45**	**45**
Policy management and/or development.	**40**	
Stakeholder engagement and strategies.	**25**	
Goal planning, implementation and evaluation.	**25**	
Long term maintenance strategy.	**25**	**25**
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	**8**
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No – Drainage area through Town is 1.79 square miles, deemed too small for the NFIP.	**0**	**NA**
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	**10**
No	**0**	
10. Does this project provide "community scale" benefits?		
Yes	**20**	**20**
No		
Total Points		**163**

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative – Town of Clintwood	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance (copy attached)	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan The Town has no Hazard Mitigation Plan. The Dickenson County Plan is attached.	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan (copy attached)	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

APPENDIX X: CERTIFIED FLOODPLAIN MANAGER

ASSOCIATION OF STATE
FLOODPLAIN MANAGERS, INC.
CERTIFICATION BOARD OF REGENTS

HEREBY CERTIFIES THAT PURSUANT TO THE PROVISIONS OF THE CHARTER FOR THE CERTIFIED FLOODPLAIN MANAGER PROGRAM

Chris Rakes, CFM

IS DULY REGISTERED AS AN

ASFPM CERTIFIED FLOODPLAIN MANAGER

IN TESTIMONY WHEREOF THIS CERTIFICATE HAS BEEN ISSUED BY THE AUTHORITY OF THE CERTIFICATION BOARD OF REGENTS, CERTIFICATE NO. US-19-11075, ISSUED 5/17/2019. THIS CERTIFICATE SHALL EXPIRE 7/31/2023, UNLESS RENEWED ACCORDING TO THE RULES OF THIS BOARD.

Roger A. Lindsey

CERTIFICATION BOARD OF REGENTS
PRESIDENT, ROGER LINDSEY, P.E., CFM

ASSOCIATION OF STATE FLOODPLAIN MANAGERS
EXECUTIVE DIRECTOR, CHAD M. BERGINNIS, CFM

APPENDIX XI: TOWN FLOODPLAIN ORDINANCE

2. Any use permitted in the Single Family Residential District.
3. Any use permitted in the Multiple Family Residential District.

Section 8. Lot Size Standards

1. Single family dwelling or individual mobile home:

	Minimum Lot Area
A. Without public water service or public sewer service	20,000 sq ft
B. With public water service but not public sewer service	15,000 sq ft
C. With both public water service and public sewer service	5,000 sq ft

Section 9. Yard and Set Back Standards

1. Single Family Dwelling or Individual Mobile Home Minimum In Feet:

Front yard shall be 25 feet from edge of paved road or street or 10 feet from edge of right of way, whichever shall be the greater distance. Side yard 5 feet. Rear yard 15 feet. Total width of both side yards shall be at least 15 feet.

Section 10. Flood Plain District

I. Purpose of the District

The purpose of this district is to aid in the reduction of losses to life and property, the reduction of health and safety hazards, the disruption of commerce and governmental services, the imposition of extraordinary public expenditures for flood protection and relief, and impairments of the tax base, which result from periodic flooding. Recognizing that these flood losses are caused by the cumulative effect of obstructions in floodways causing increases in flood heights and velocity, and the occupancy of flood hazard areas by uses vulnerable to floods or hazardous to others which are inadequately elevated or otherwise protected from flood damages, this district is designed to restrict or prohibit uses which are dangerous to health, safety, or property in time of flood or cause increased flood heights or velocities by requiring that uses vulnerable to floods, including public facilities which serve such uses, be provided with flood protection at the time of initial construction, and further to protect individuals from purchasing lands which are unsuited for intended purposes because of flood hazard.

II. Application of the District

To enable the district to operate in harmony with the plan for land use and population density embodied in these regulations, the Flood Plain District is created as a special district to be superimposed on other districts contained in these regulations and is to be so designated by a special symbol for its boundaries on the Zoning District Map. Except as they are in conflict with the specific requirements for the Flood Plain District, permitted uses, accessory uses, and signs, minimum lot requirements, minimum yard requirements, maximum height, and requirements for off-street parking and loading, shall be determined by the requirements of the basic district regulations contained elsewhere in this ordinance.

III. Warning and Disclaimer

This section does not imply that areas outside Flood Plain District boundaries or land uses permitted within such districts will be free from flooding or flood damages. The granting of approval of any structure or use or approval of filling shall not constitute a representation, guarantee or warranty of any kind or nature by the Town of Clintwood or the Board of Zoning Appeals, or by any officer or employee of either thereof, of the practicality or safety of any structure or use proposed and shall create no liability upon or cause action against such public body, officer or employee for any damage that may result from such approval.

IV. Permitted Uses

A building or land shall be used only for the following purposes, subject to applicable district regulations:

1. Agriculture and forestry, general farming, truck gardens, cultivation of field crops, orchards, nurseries, turf farming and livestock.

2. Open-type private or commercial recreational uses of facilities.

3. Open-type uses such as open yard areas, loading and unloading areas, parking lots, used car lots, and signs.

4. Storage yards for equipment and material not subject to major damage by floods or which may cause damage by floating away in flood waters and not including inflammables such as gasoline.

5. Facilities and structures necessary for rendering public utility service, including poles, wires, transformers, telephone booths, and the like for normal electrical power distribution or communication service, and pipe lines or conduits for electrical, gas, sewer, or water service, but not including buildings, treatment plants, pumping or regulator stations, sub-stations and power transmission lines which are permitted as conditionals uses.

6. Accessory uses incidental to and customarily found in connection with permitted uses of the premises as determined by this section and applicable district regulations.

V. Special Provisions

1. No structure (temporary or permanent), fill, including fill for roads and levies, deposit, obstruction, storage of materials or equipment or other uses shall be permitted, which acting alone or in combination with existing or future uses, unduly affects the efficiency or the capacity of the floodway or unduly increases flood heights, consideration of the affects of a proposed use shall be based on a reasonable assumption that there will be an equal degree of encroachment extending for a significant reach on both sides of the stream.

2. Any fill proposed to be deposited in the floodway must be shown to have some beneficial purpose and the amount thereof not greater than is necessary to achieve that purpose as demonstrated by a plan submitted by the owner showing the uses to which the filled land will be put and the final dimensions of the proposed fill or other material. Such fill or other materials shall be protected against

erosion by rip-rap, vegetative cover, or bulkheading.

3. Structures shall not be designed for human habitation and shall have a low flood damage potential. The structure or structures, if permitted, shall be constructed and placed on the building site so as to offer the minimum obstruction to the flow of flood waters.

4. The storage or processing of materials that are buoyant, flammable, explosive or could be injurious to human, animal, or plant life in time of flooding, is prohibited. Storage of other material or equipment may be allowed if not subject to major damage by floods, firmly anchored to prevent floatation or shall be readily removable from the area within the limited time available after flood warning.

VI. Encroachment on Drainage Channels and Streams

1. Location of any Structure

Any structure proposed to be located within one hundred (100) feet of any main drainage channel or stream (hereafter referred to as stream) within any zone must be approved by the *Town Council. The Town Council* shall determine on the basis of the area of the watershed, and probable runoff, the opening needed for the streams or how close a structure may be built to the stream - in order to assure adequate space for flow of floodwater; provided, however, no building shall be permitted within ten (10) feet of the top of bank of any stream.

2. Location of Drain Pipes

Any individual who proposes to install a drain pipe to be located within one hundred (100) feet of any main drainage channel or stream (hereinafter referred to as stream) within any zone must be approved by the Town Council and Building Inspector. A permit to install said drain pipe must be obtained from the Town Hall. The fee for such permit shall be $25.00. Any individual who proposes to install such a drain pipe must comply with all standards as set forth by the Virginia Department of Transportation and Town Building Inspector. The Town Building Inspector's decision may be appealed to the Board of Zoning Appeals as set forth in Article 6 of this Ordinance.

ARTICLE 5 NONCONFORMING USES

Section 1. Nonconforming Use May Be Continued

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510051-DCR1_TownofClintwood_CFPF Grant Application

4 messages

Jennifer Carter <jcarter@thelanegroupinc.com> Thu, Apr 7, 2022 at 1:39 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Jeff Cochran <jcochran@thelanegroupinc.com>, Chris Mullins <cmullins@thelanegroupinc.com>

Good afternoon.

Please find the link below for the VDCR-VRA Flood grant application, CID510051-DCR1_TownofClintwood_CFPF.

PDF CID510051-DCR1_TownofClintwood_CFPF.pdf

Have a great day!

Jen

Jennifer Carter – Administrative Assistant

276.523.3771 – office | 276.523.3568 – fax

the LANE GROUP engineering architecture environmental

Abingdon | Big Stone Gap | Galax

CFPF, rr <cfpf@dcr.virginia.gov> Thu, Apr 7, 2022 at 1:51 PM
To: Jennifer Carter <jcarter@thelanegroupinc.com>
Cc: Jeff Cochran <jcochran@thelanegroupinc.com>, Chris Mullins <cmullins@thelanegroupinc.com>

Received, thank you.
[Quoted text hidden]

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cfpf@dcr.virginia.gov <cfpf@dcr.virginia.gov> Thu, Apr 7, 2022 at 1:54 PM
To: jcarter@thelanegroupinc.com, jcarter@thelanegroupinc.com

Your message

To: jcarter@thelanegroupinc.com
Subject: CID510051-DCR1_TownofClintwood_CFPF Grant Application
Sent: 4/7/22, 1:39:13 PM AST

was read on 4/7/22, 1:54:03 PM AST

Jennifer Carter <jcarter@thelanegroupinc.com> Thu, Apr 7, 2022 at 1:54 PM
To: "CFPF, rr" <cfpf@dcr.virginia.gov>
Cc: Jeff Cochran <jcochran@thelanegroupinc.com>, Chris Mullins <cmullins@thelanegroupinc.com>

Great, thank you so much!

[Quoted text hidden]

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

March 29, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Matthew Wells,

Enclosed in this packet are twelve applications for flood protection and prevention projects that involve implementation of nature-based shoreline solutions.

Among the applications are projects which are currently at the design stage. Design projects are requesting funds for professional designs and development of Joint Permit Applications which are needed before the property owner can move to construction of a nature-based flood protection solution.

Below is short summary of proposed projects in Gloucester County:

A. **Prevention and Protection for Wilson Farm Lane for Altemus**
(CID): 510071 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. The shoreline is seemingly protected by a high riprap sill, but the original design has failed and did not include any backing with Filter Cloth to prevent soil from leaking out through the riprap. Over time, tidal water through the rocks has dissolved the soil and created a scarp. In effect, it has changed from a shoreline sill at the edge of the lawn to an offshore sill with tidal wetlands behind it. The project site needs a more comprehensive design solution.

B. **Flood Prevention and Protection for Guinea Road for Blackburn**
(CID): 510071 Total Cost (from individual project application): $19,671
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. The applicant is also willing to donate 16 acres of pristine tidal wetlands in Monday Creek in Gloucester if the value of the

land can count toward the applicant's match. The land donation would be held by the Middle Peninsula Chesapeake Bay Public Access Authority as a nature-based flood mitigation protection site. The assessed value of the tidal wetlands is $8,000.

C. **Flood Prevention and Protection for Marshfield Lane for Doyel**
(CID): 510071 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. The applicant is partnering with adjoining landowner who previously submitted a proposal during Round 1, creating a greater community-scale impact.

D. **Flood Prevention and Protection for White Hall Road for Meeker**
(CID): 510071 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss in a high energy, high erosion VE flood zone. The Fight the Flood program (Figure 11A) is already having an impact on driving community scale applications with greater reach. Within 700 yds of the project site four Round 1 and Round 2 applicants have applied to the Flood Fund for financial assistance.

E. **Prevention and Protection for Ware Point Road for Morgan**
(CID): 510071 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft joint permit application to reduce the impacts of storm events, flooding, and wetland loss. The property owner has been seeking a solution for over 20 years for two contiguous parcels along the North River in Gloucester County; however, has not been in a position to support the funding necessary for construction of a nature-based solution which was designed in the late 1990s. This project will revisit and modify the existing design to incorporate nature-based features which protect further flooding and erosion of the shoreline and property to the greatest extent possible. The project site needs a more comprehensive design solution to achieve an effective level of flood protection.

F. **Flood Prevention Design and Legal work to Maintain Access on Griffin Road**
(CID): 510071 Total Cost (from individual project application): $16,089
This proposal requests funding for the development of a nature-based shoreline design solution to prevent impacts of storm events, flooding and wetland loss to a private right of way (ROW) in Gloucester County. This project will also entail legal work associated with preparing for implementation/construction of the nature-based shoreline design as the solution may need to be implemented outside of the deeded ROW.

G. **Flood Prevention and Protection for Robins Neck Road**
(CID): 510071 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design

solution and draft joint permit application to reduce the impacts of storm events, flooding, and wetland loss. The property was purchased in 1972 and the owner has witnessed significant changes due to erosion. The northeast facing part of the property has lost 100 yards. Also there are three large tees falling into the water that will have negative impacts to the pecan grove and daffodil garden on the property. This project will look to address the site needs to prevent flooding.

H. **Flood Prevention and Protection for Pinewold Lane**
(CID): 510071 Total Cost (from individual project application): $6,807
This proposal requests funding for the development of a nature-based shoreline design solution to prevent impacts of storm events, flooding and wetland loss. The property has approximately 200 feet of riprap that is beginning to fail. As the waves overtake it, this causes erosion issues. Additionally, the property is experiencing undercutting of its shorelines.

I. **Flood Prevention and Protection for Briggs Cove Road**
(CID): 510071 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution to prevent impacts of storm events, flooding and wetland loss. The property has approximately 300 feeet of shorleing that has seen challenges over the years with erosion and now its occurring an an exponential rate. While previous efforts have been taken to mitigate erosion there has not been an effective solution. This project will look to implement a more comprehensive nature-based shoreline design.

J. **Flood Prevention and Protection for L's Island Road**
(CID): 510071 Total Cost (from individual project application): $9,836
This proposal requests funding for the development of a nature-based shoreline design solution to prevent impacts of storm events, flooding and wetland loss. This project looks to utilize NATRX nature-based solution to address the lose of tidal widal wetlands and to protect a long family legacy on the property.

K. **Flood Prevention and Protection for Briggs Cove Road**
(CID): 510071 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution to prevent impacts of storm events, flooding and wetland loss. The property has approximately 300 feeet of shorleing that has seen challenges over the years with erosion and now its occurring an an exponential rate. While previous efforts have been taken to mitigate erosion there has not been an effective solution. This project will look to implement a more comprehensive nature-based shoreline design.

L. **Flood Prevention and Protection for Friends Road**
(CID): 510071 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution to prevent impacts of storm events, flooding and wetland loss. This project will

address severe erosion issues on the shoreline and the water inundation around and under the road to access the home on this property.

M. Flood Prevention and Protection for Ware Neck Road
(CID): 510071 Total Cost (from individual project application): $6,807
This proposal requests funding for the development of a nature-based shoreline design solution to prevent impacts of storm events, flooding and wetland loss. This project site has about 300 feet of shoreline. The entire 7 foot high bank is being undercut at high tide and storm surge. Where there is no shading from plants on the bank, the eroded sand component supports marsh grass, but the bank still is being assaulted.

The total project costs for Gloucester County Round 3 applications is **$181,003** and MPPDC staff are requesting **$126,707** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at llawrence@mppdc.com or by phone at 804-758-2311.

Lewis Lawrence
Executive Director

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Wilson Farm Lane for Altemus

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X___

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0065F

Total Cost of Project: ________$17,399______________________

Total Amount Requested: _____$12,180_____________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. The shoreline is seemingly protected by a high riprap sill, but the original design has failed and did not include any backing with Filter Cloth to prevent soil from leaking out through the riprap. Over time, tidal water through the rocks has dissolved the soil and created a scarp. In effect, it has changed from a shoreline sill at the edge of the lawn to an offshore sill with tidal wetlands behind it. The project site needs a more comprehensive design solution.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem-based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located Wilson Farm Lane in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan*

  (2021) can be found at: [https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.)
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
  - *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

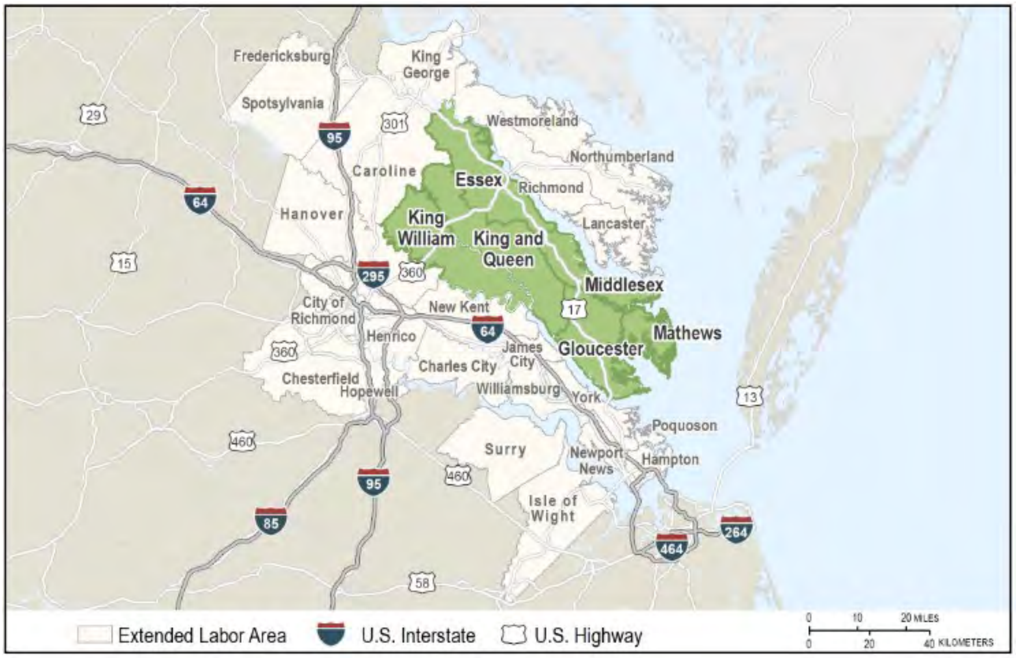
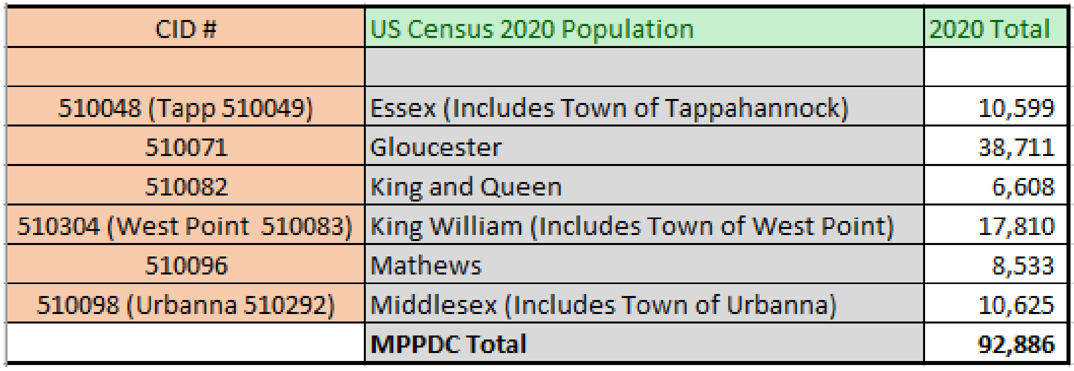


Figure 2. Middle Peninsula Population

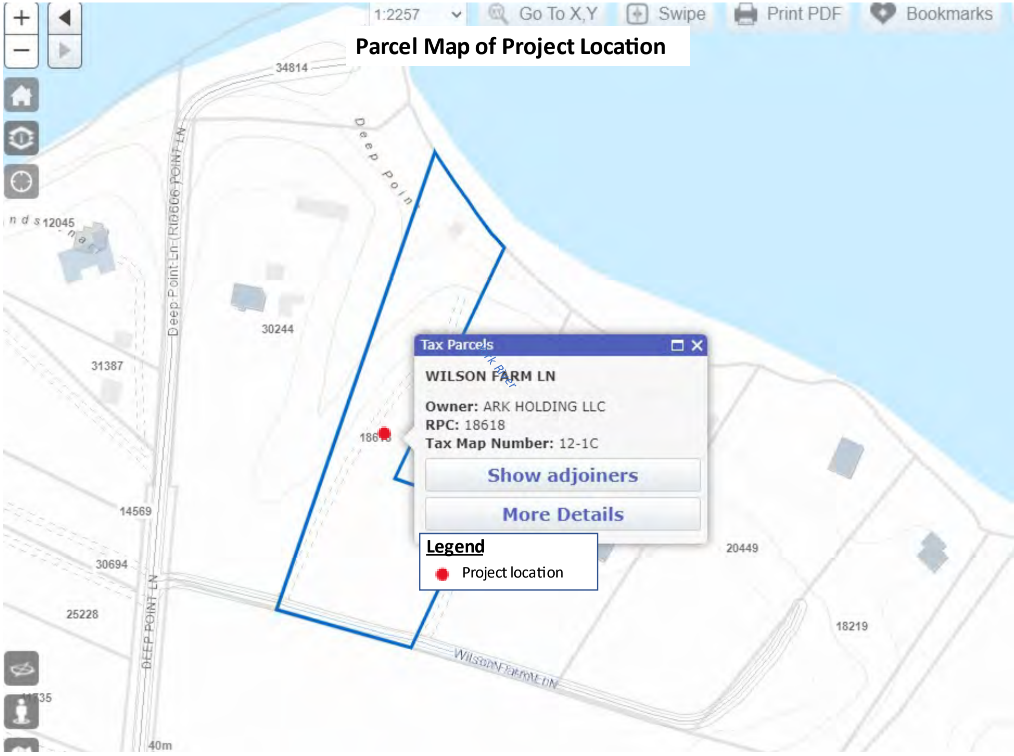


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design nature based solution on one private property on Wilson Farm Lane in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

Figure 4. Parcel Map of Project Location



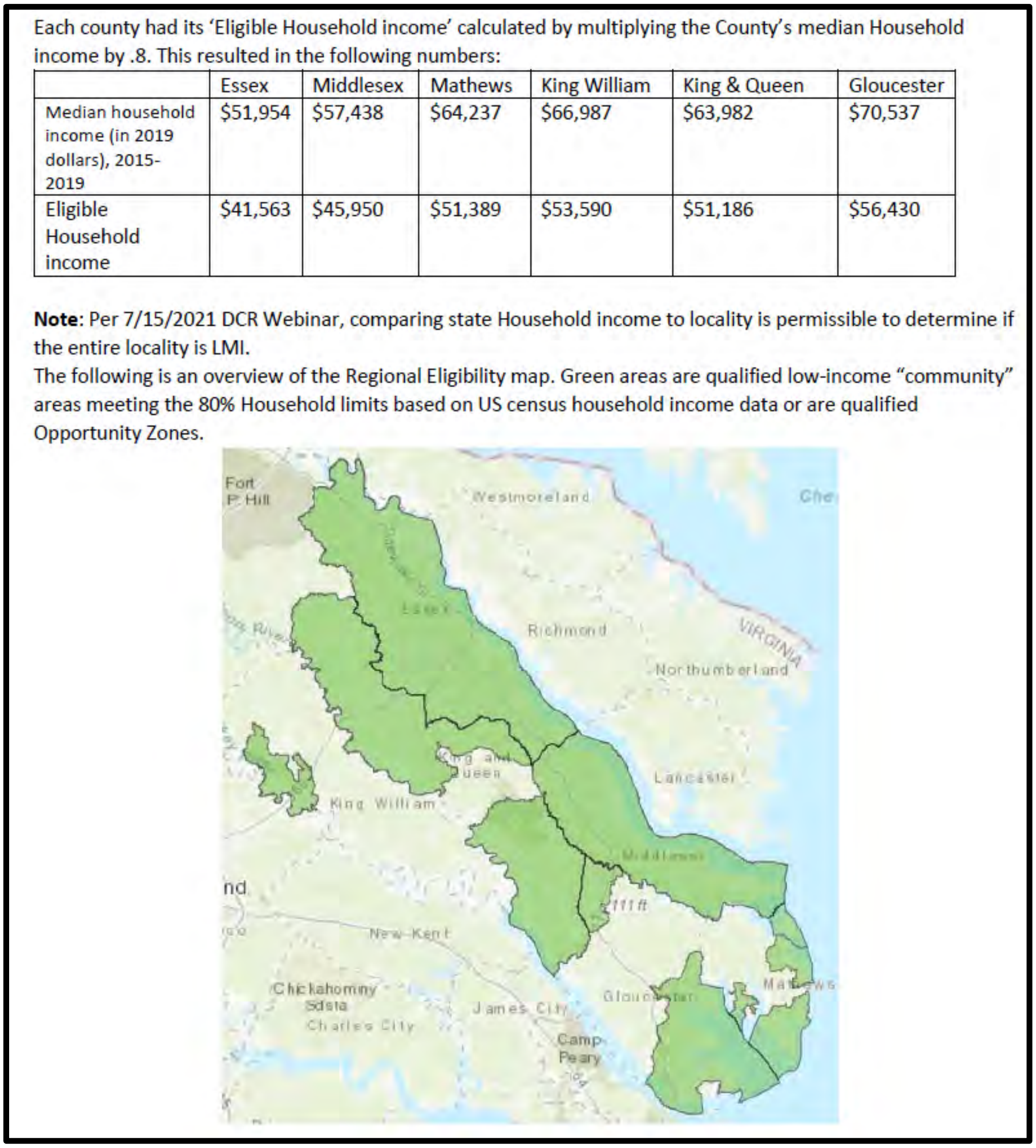
Tax Parcels

WILSON FARM LN

Owner: ARK HOLDING LLC
RPC: 18618
Tax Map Number: 12-1C

Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

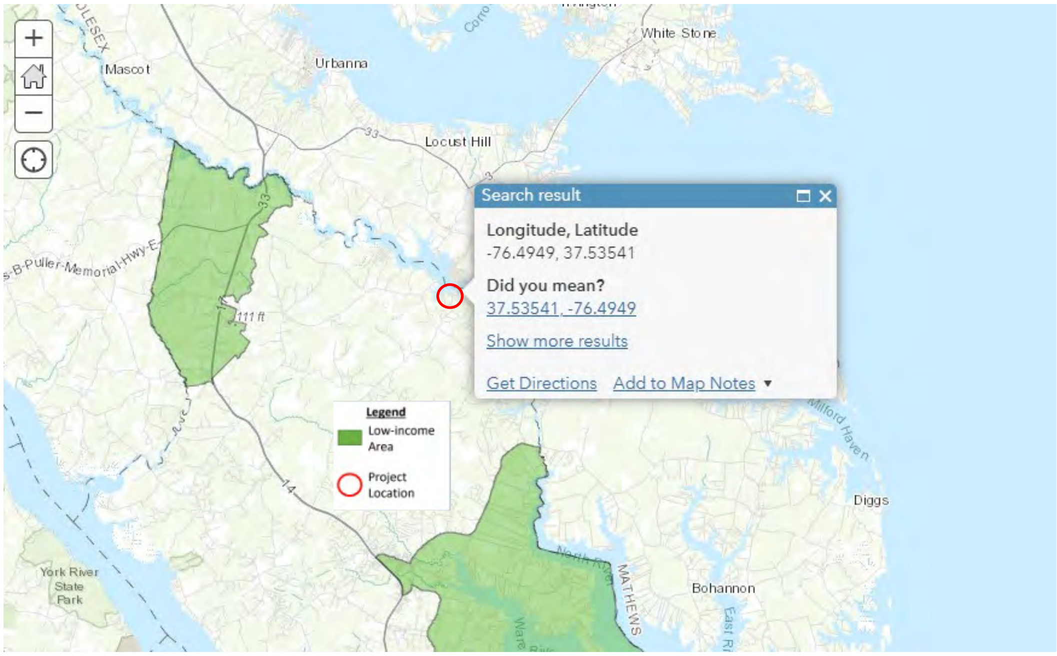
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is not within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



Search result

Longitude, Latitude
-76.4949, 37.53541

Did you mean?
37.53541, -76.4949

Show more results

Get Directions Add to Map Notes

According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a low social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively low level of vulnerability as seen in **Figure 8**.

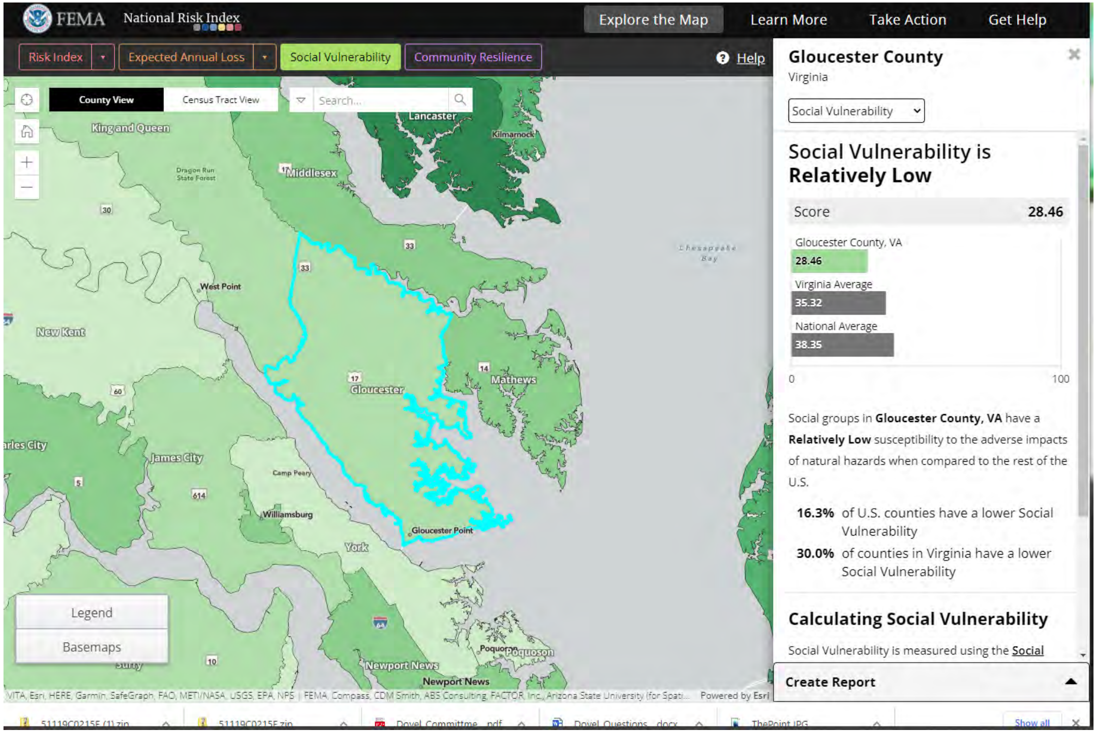
Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

Social Vulnerability

Social Vulnerability Index Classification: Low Social Vulnerability
Vulnerability Index Score: -0.3
Housing Vulnerability: others
Housing Characteristics: high pct. mobile homes
Tract Name: Census Tract 1002.01, Gloucester County, Virginia

Zoom to

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Gloucester County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Low

Score	28.46
Gloucester County, VA	28.46
Virginia Average	35.32
National Average	38.35

0 100

Social groups in **Gloucester County, VA** have a **Relatively Low** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

16.3%	of U.S. counties have a lower Social Vulnerability
30.0%	of counties in Virginia have a lower Social Vulnerability

Calculating Social Vulnerability

Social Vulnerability is measured using the Social

Create Report

The project is located at Wilson Farm Lane, Gloucester, VA 23061 (-76.4949, 37.53541). The property was purchased in 2006 and has experienced a number of issues over the past 15 years. The shoreline is seemingly protected by a high riprap sill, but the design did not include any backing with Filter Cloth to prevent soil from leaking out through the riprap. Over time, tidal water through the rocks has dissolved the soil and created a scarp. In effect, it has changed from a shoreline sill at the edge of the lawn to an offshore sill with tidal wetlands behind it. While the eroded space has been replaced with marsh grasses, the 1’ high erosion scarp has steadily advanced toward the property owner’s house along a 72’ long front. It is now within 3’ of the deck corner support pole and will surely undermine it soon. See accompanying pictures.

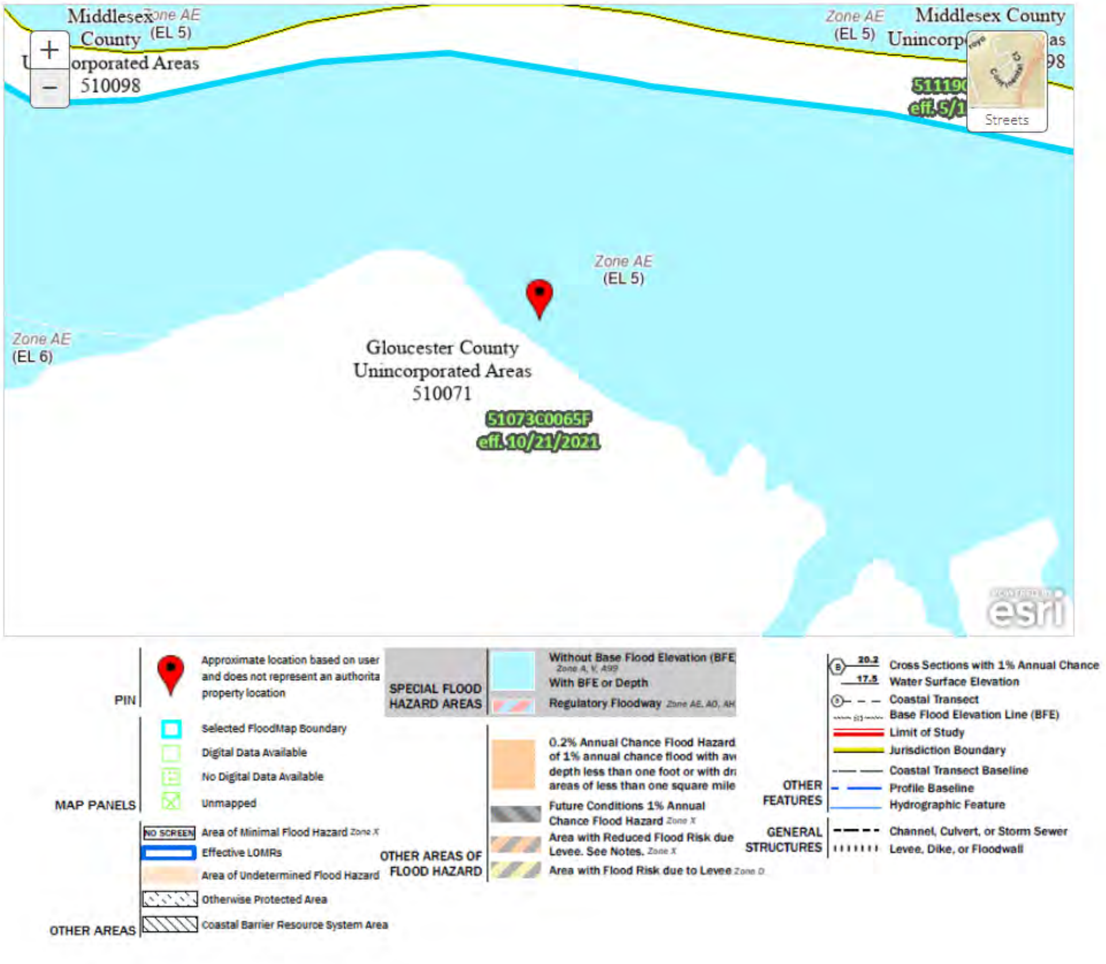

SCARP AT DECK


SCARP DROPOFF

Please see **Appendix 2** for additional property photos.

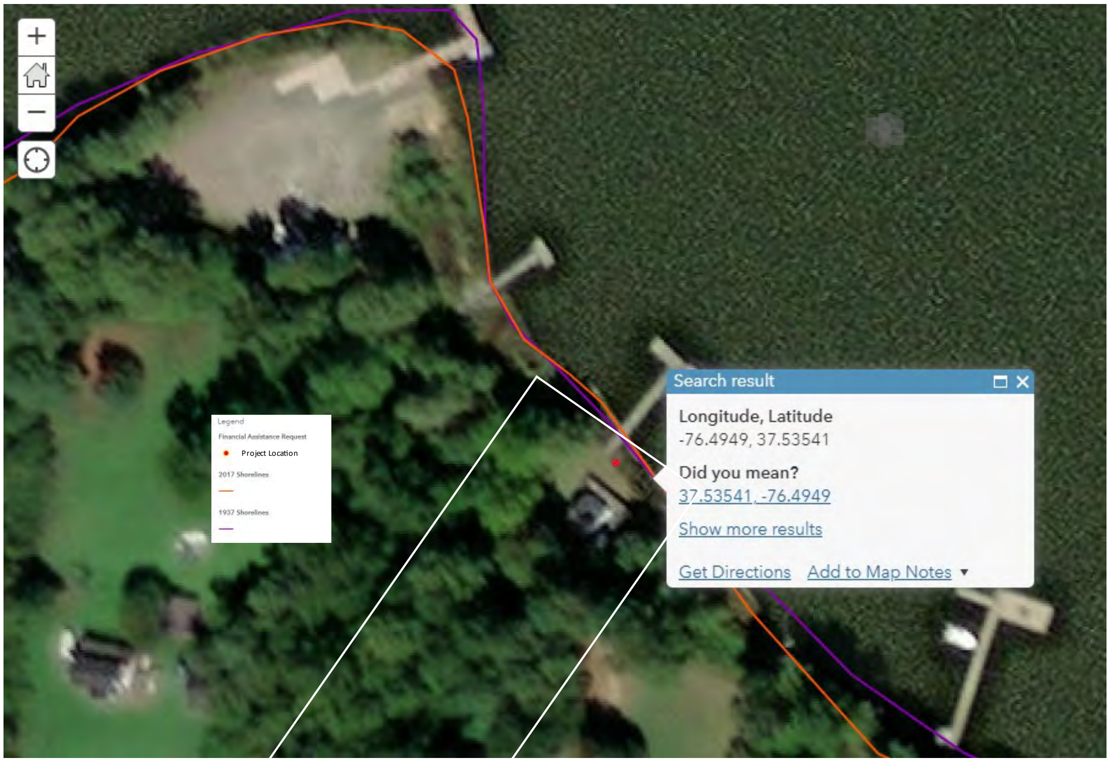
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 10/21/2021).

Figure 9: Map of FEMA Flood Zones



Due to the project site’s proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate change of 427.8 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor’easter events. **Appendix 4** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017



Search result

Longitude, Latitude
-76.4949, 37.53541

Did you mean?
37.53541, -76.4949

Show more results

Get Directions Add to Map Notes ▾

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)

For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5.*

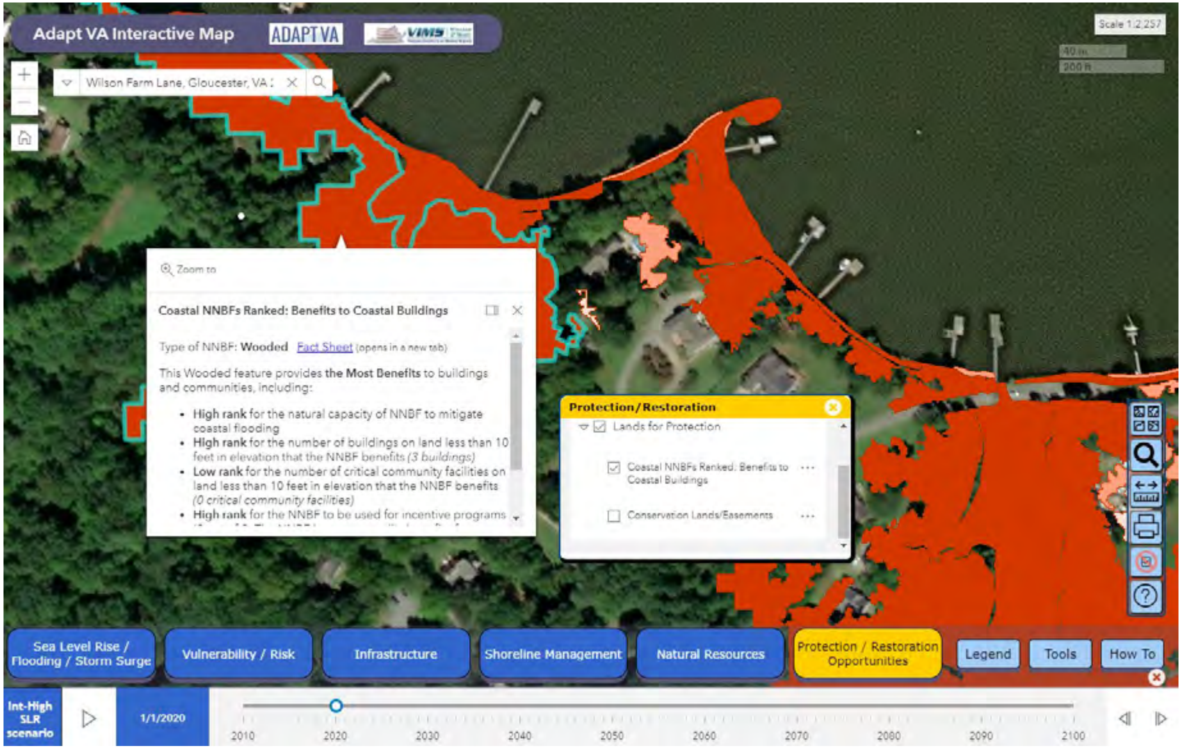
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(3 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs

Protection/Restoration

☑ Lands for Protection

☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

☐ Conservation Lands/Easements

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES*.*

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural*

shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

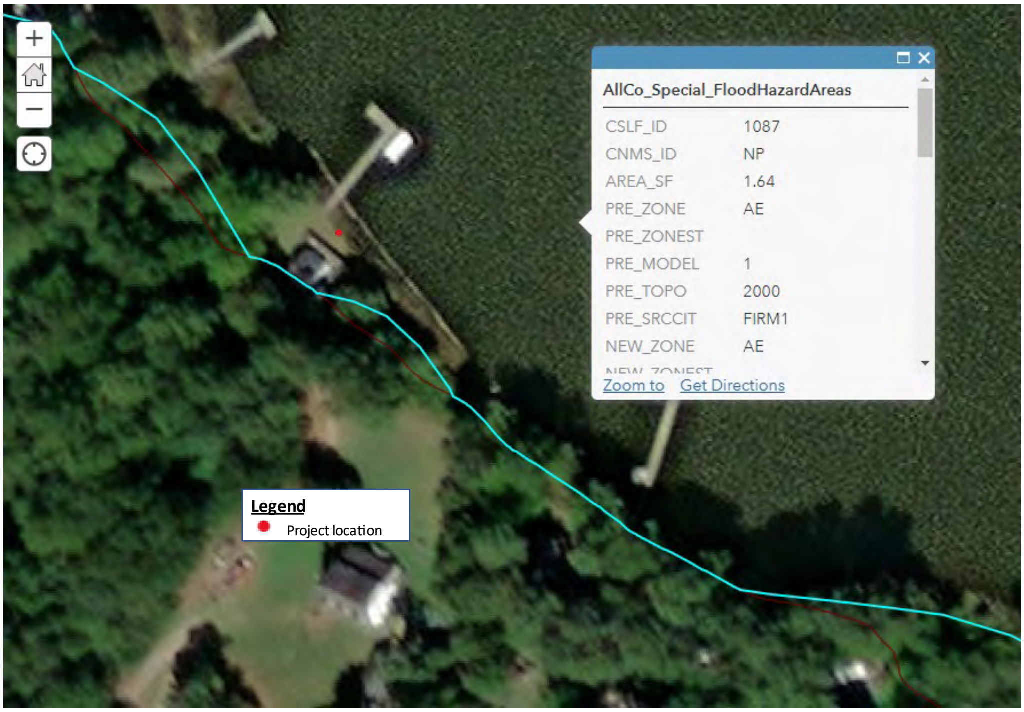
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	1087
CNMS_ID	NP
AREA_SF	1.64
PRE_ZONE	AE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	FIRM1
NEW_ZONE	AE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula

PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		73

SCOPE OF WORK CHECKLIST.

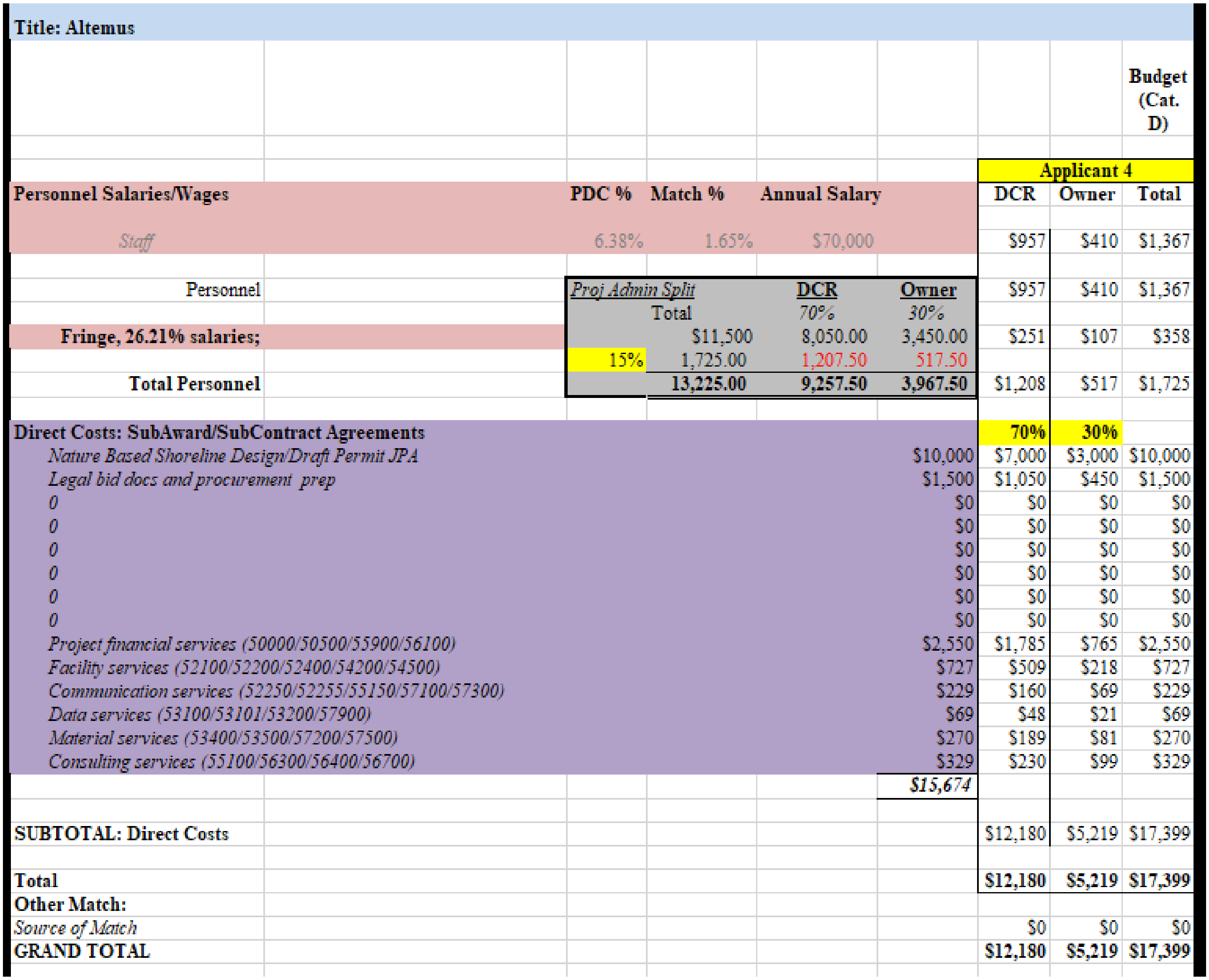
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that reside in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not reside in a low-income area, then the following does not apply. For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

The project budget is:

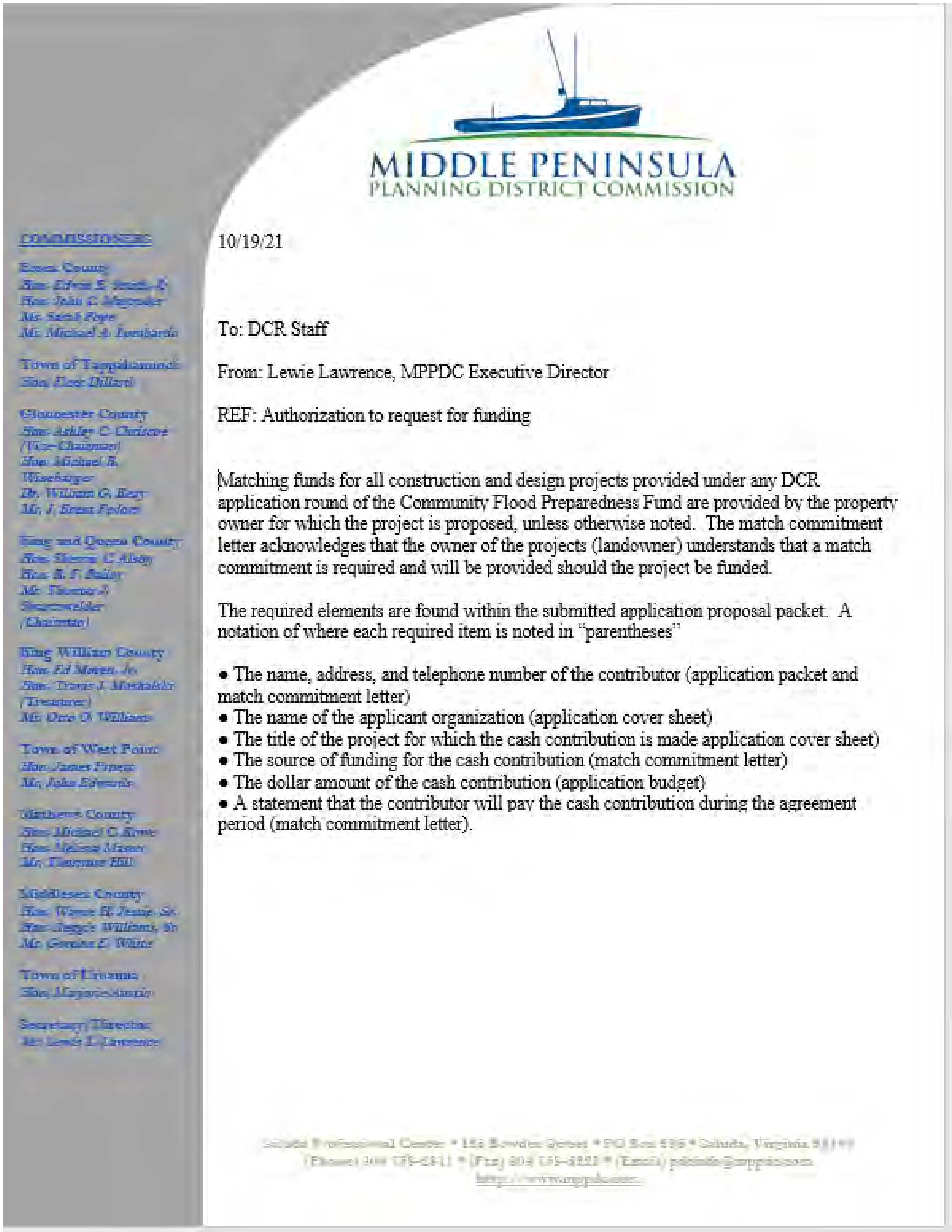
- ***Estimated total project cost: $17,399***
- ***Amount of funds requested from the Fund 12,180***



Title: Altemus								
								Budget (Cat. D)
						Applicant 4		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		6.38%	1.65%	$70,000		$957	$410	$1,367
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			$11,500	8,050.00	3,450.00	$251	$107	$358
		15%	1,725.00	1,207.50	517.50			
Total Personnel			**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)					$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)					$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)					$229	$160	$69	$229
Data services (53100/53101/53200/57900)					$69	$48	$21	$69
Material services (53400/53500/57200/57500)					$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)					$329	$230	$99	$329
					$15,674			
SUBTOTAL: Direct Costs						$12,180	$5,219	$17,399
Total						**$12,180**	**$5,219**	**$17,399**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$12,180**	**$5,219**	**$17,399**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

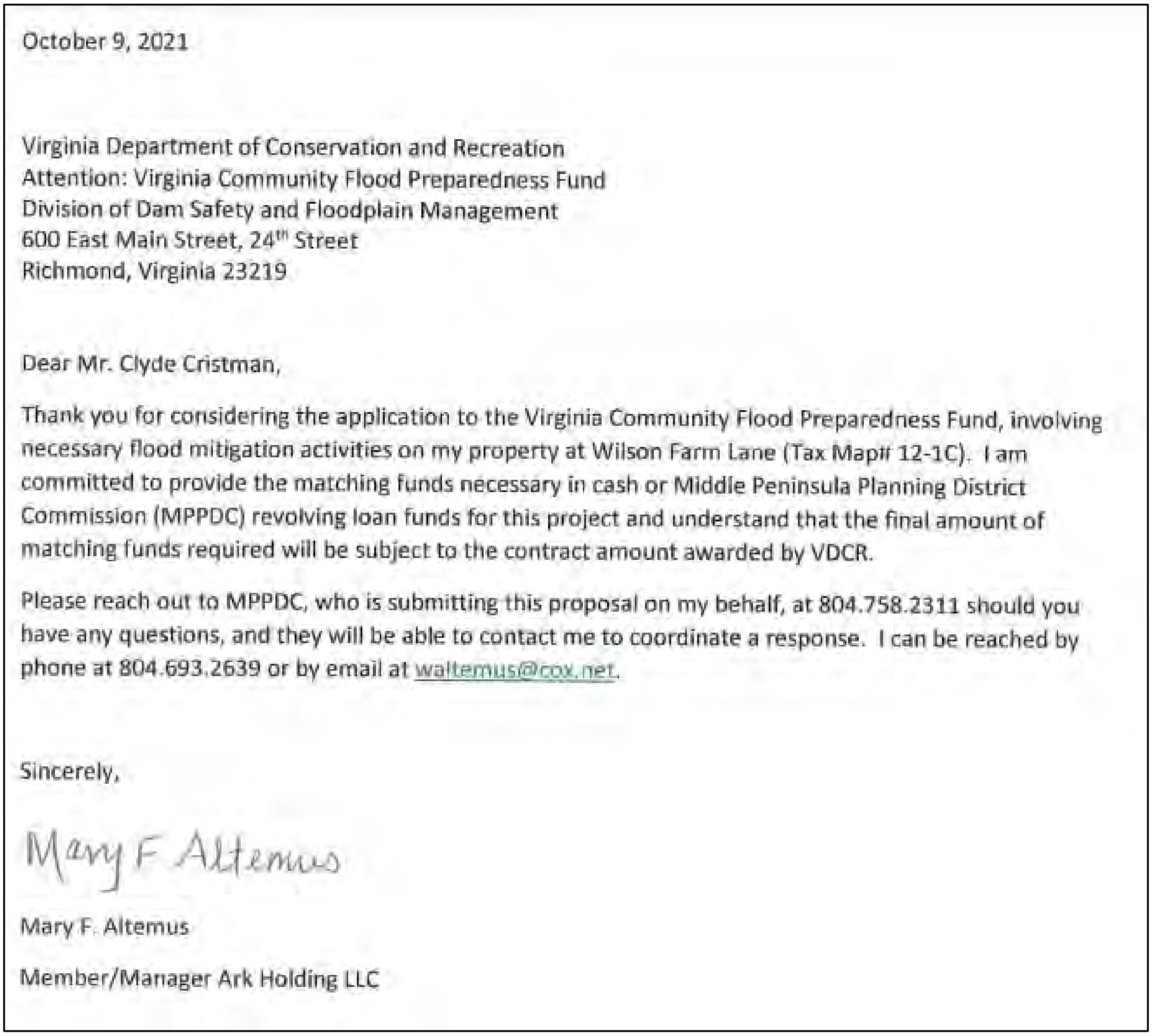
REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:



October 9, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Street
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at Wilson Farm Lane (Tax Map# 12-1C). I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to MPPDC, who is submitting this proposal on my behalf, at 804.758.2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804.693.2639 or by email at waltemus@cox.net.

Sincerely,

Mary F Altemus

Mary F. Altemus

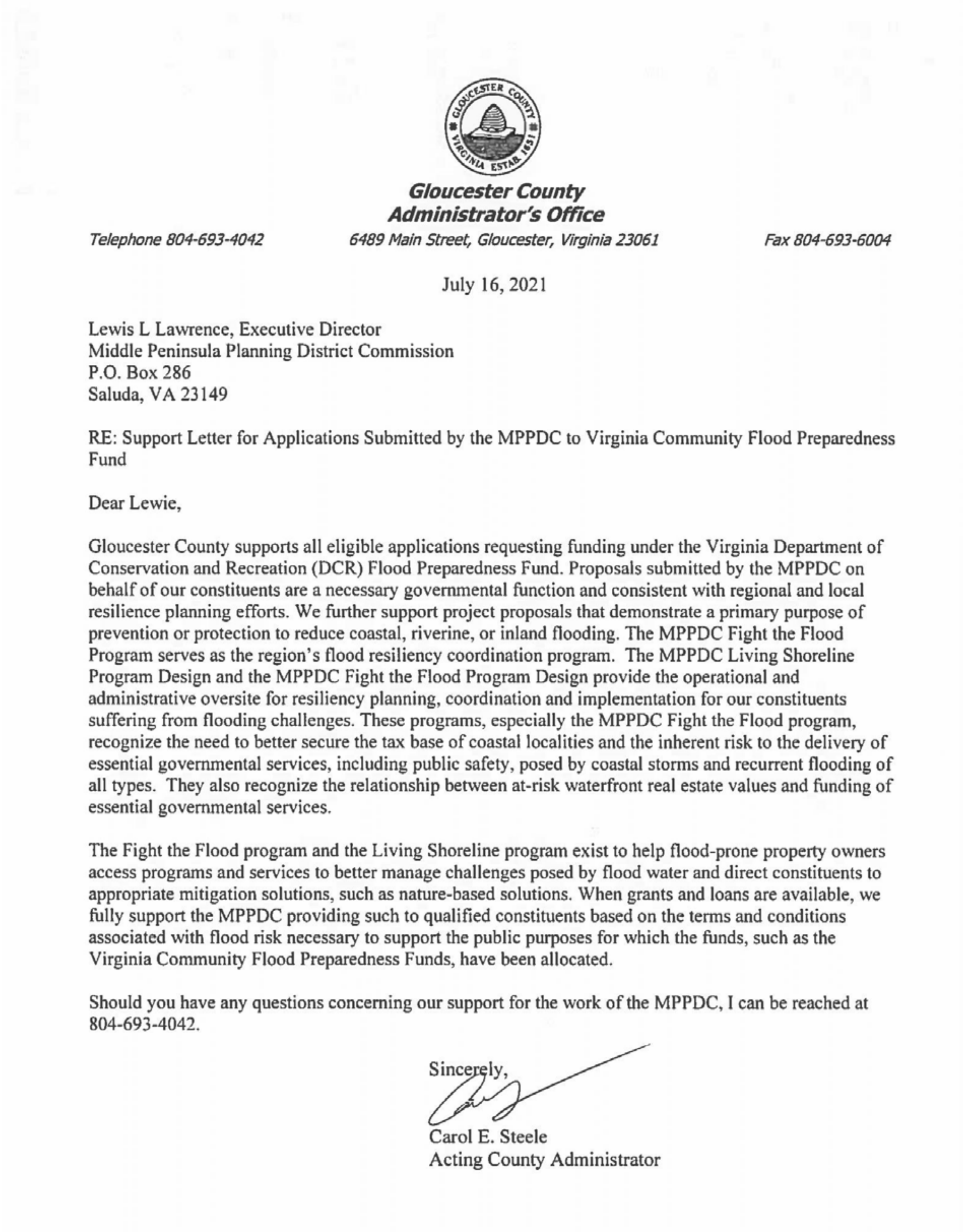
Member/Manager Ark Holding LLC

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office

Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

Carol E. Steele
Acting County Administrator

APPENDIX 2

Additional Property Photos

ScARP At Dock

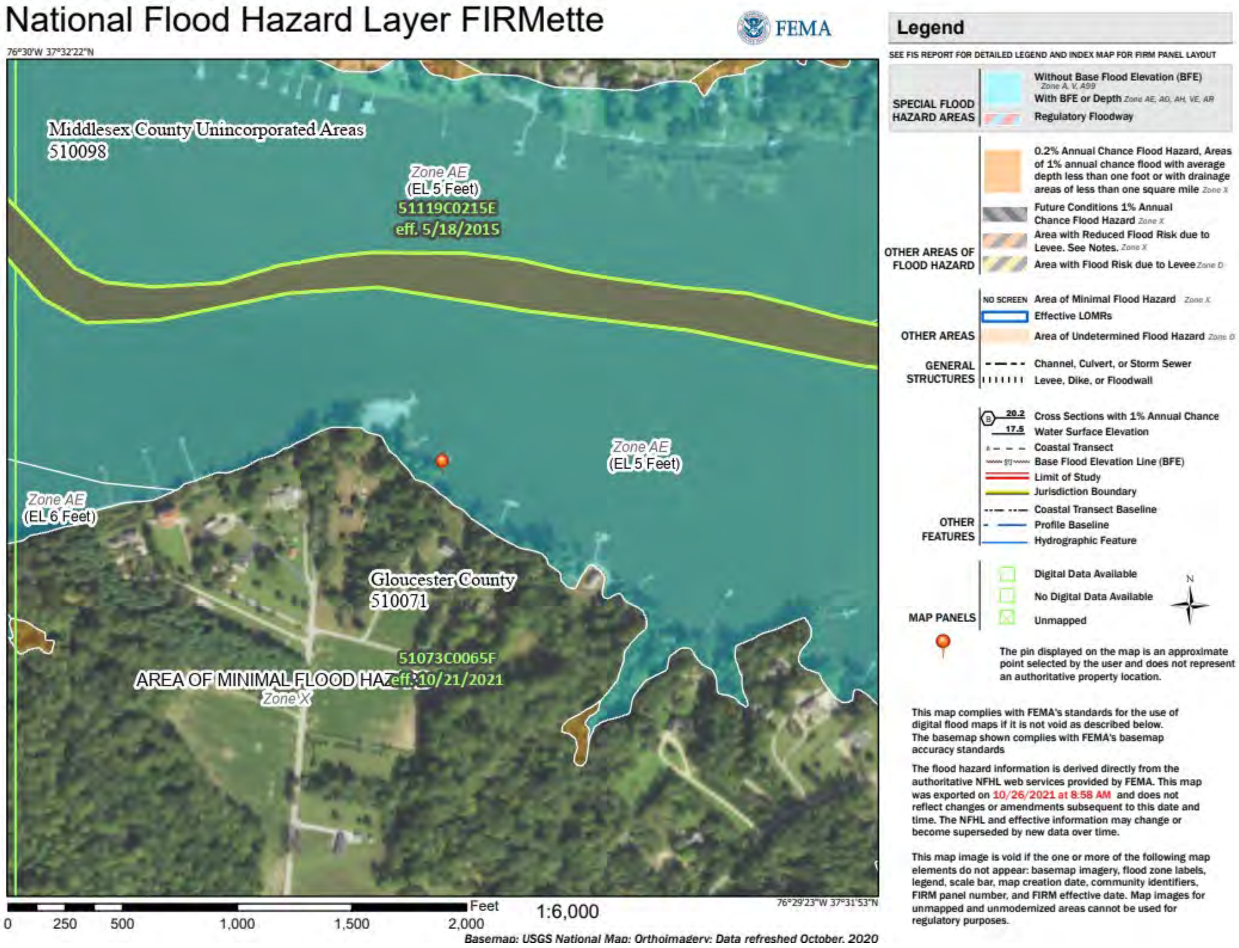
VIEW FROM RIVER


2003/10/23

APPENDIX 3

Project Location FIRMette

(FIRMette #: 51073C0065F)



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

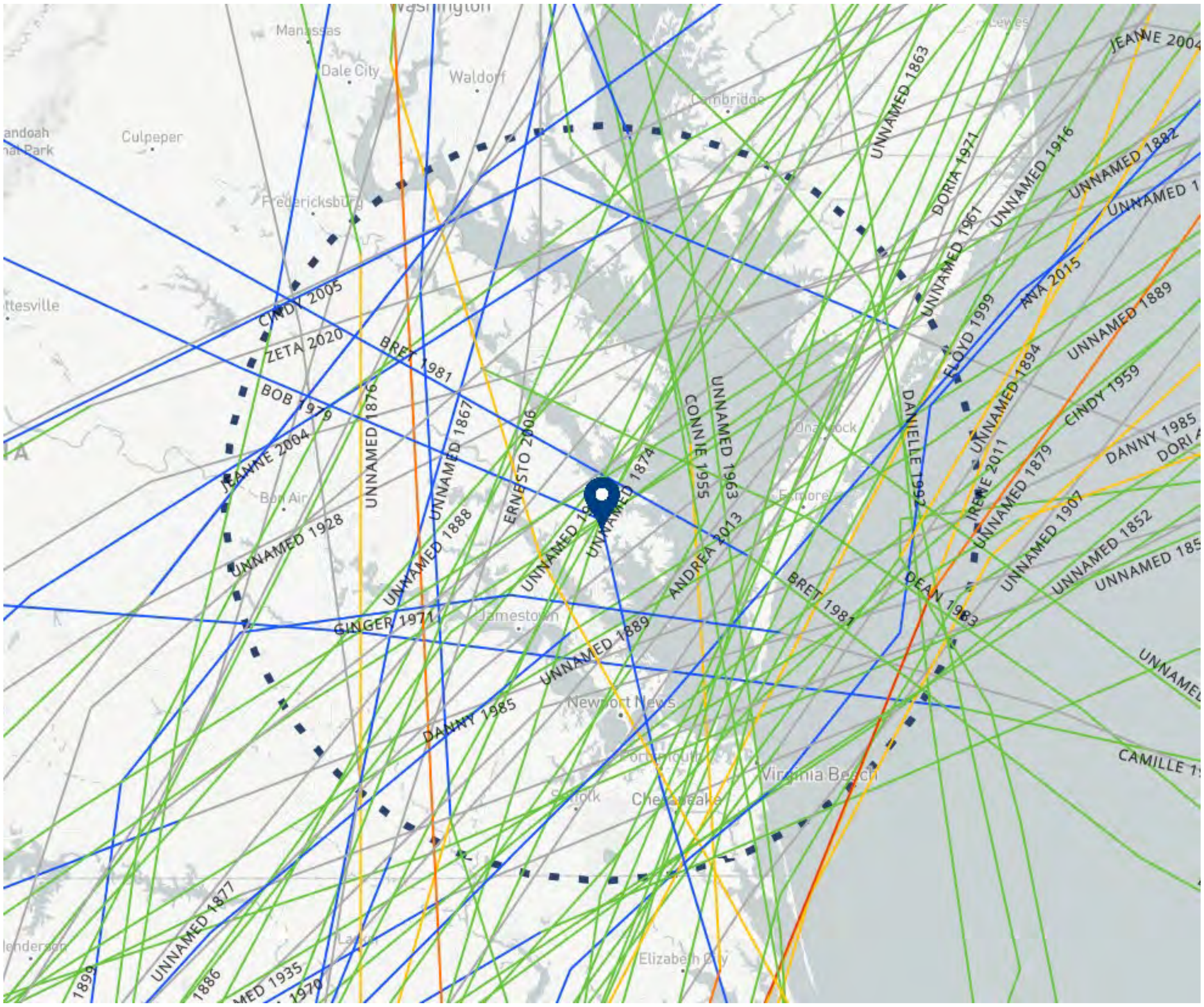
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/26/2021 at 8:58 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.53541 -76.4949

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter

October 9, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Street
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at Wilson Farm Lane (Tax Map# 12-1C). I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to MPPDC, who is submitting this proposal on my behalf, at 804.758.2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804.693.2639 or by email at waltemus@cox.net.

Sincerely,

Mary F Altemus

Mary F. Altemus

Member/Manager Ark Holding LLC

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories – Round 2

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Guinea Road for Blackburn

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
Wetland restoration.
X__Floodplain restoration.
☐ Construction of swales and settling ponds.
X__Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large-scale Low Impact Development (LID) in urban areas.
X Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0213F

Total Cost of Project: ***$19,671***

Total Amount Requested: ***$13,769***

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. The applicant is also willing to donate 16 acres of pristine tidal wetlands in Monday Creek in Gloucester if the value of the land can count toward the applicant's match. The land donation would be held by the Middle Peninsula Chesapeake Bay Public Access Authority as a nature-based flood mitigation protection site. The assessed value of the tidal wetlands is $8,000.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem-based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Guinea Road in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at:* https://fightthefloodva.com/wp-

  content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.
  - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
  - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan*.

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

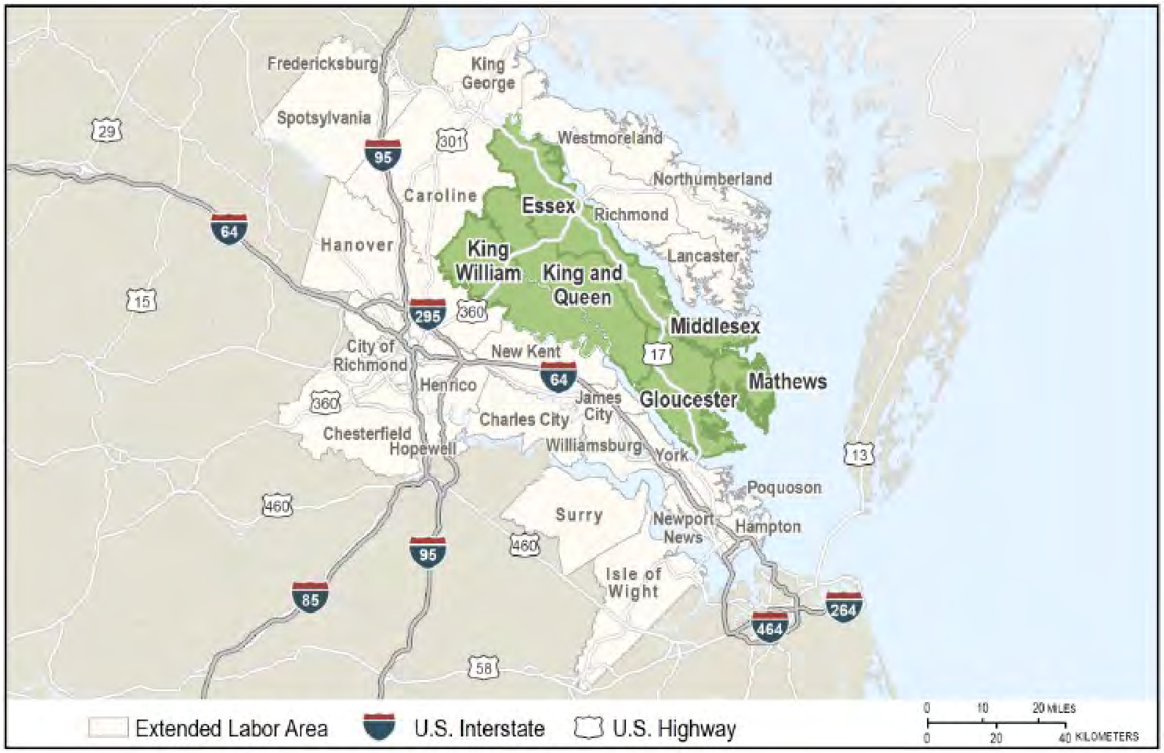
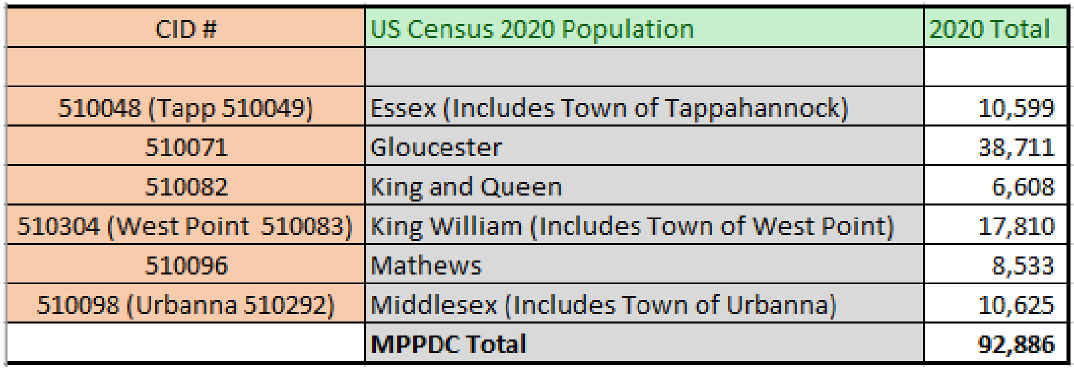


Figure 2. Middle Peninsula Population

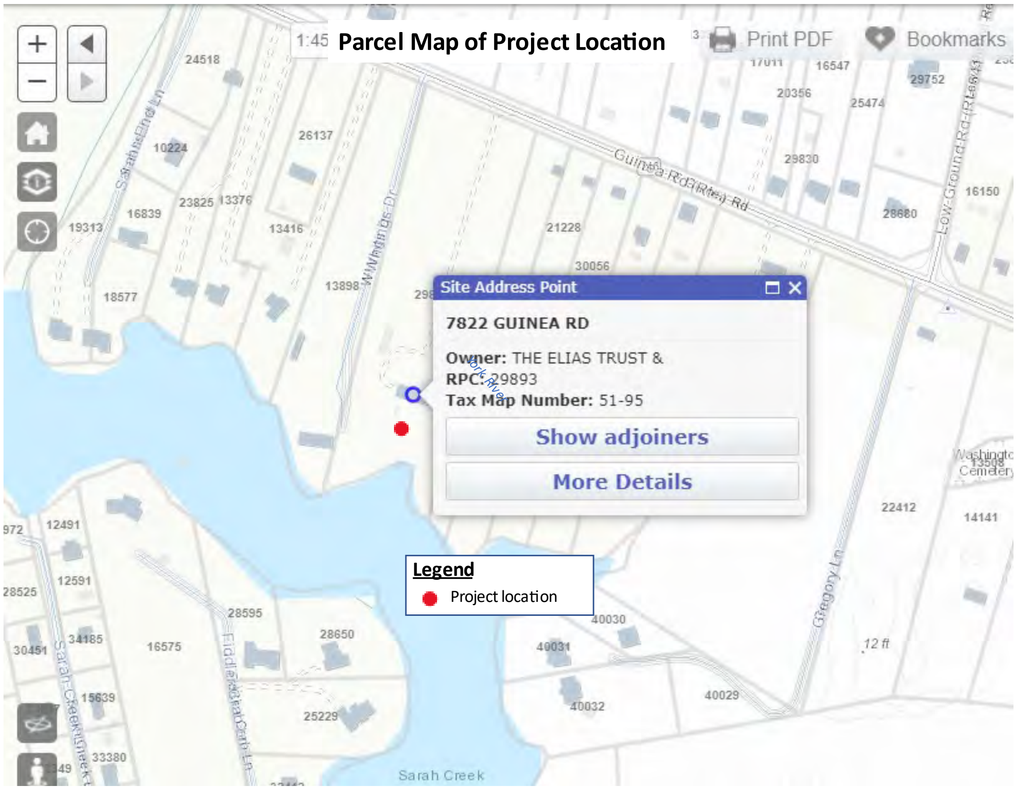


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature based shoreline solution on one private property on Guinea Road in Gloucester County as found in **Figures 3 and 4 and 4A (possible donated wetlands)**.

Figure 3. County Map of Project Location

Figure 4. Parcel Map of Project Location



Parcel Map of Project Location

Site Address Point

7822 GUINEA RD

Owner: THE ELIAS TRUST &
RPC: 29893
Tax Map Number: 51-95

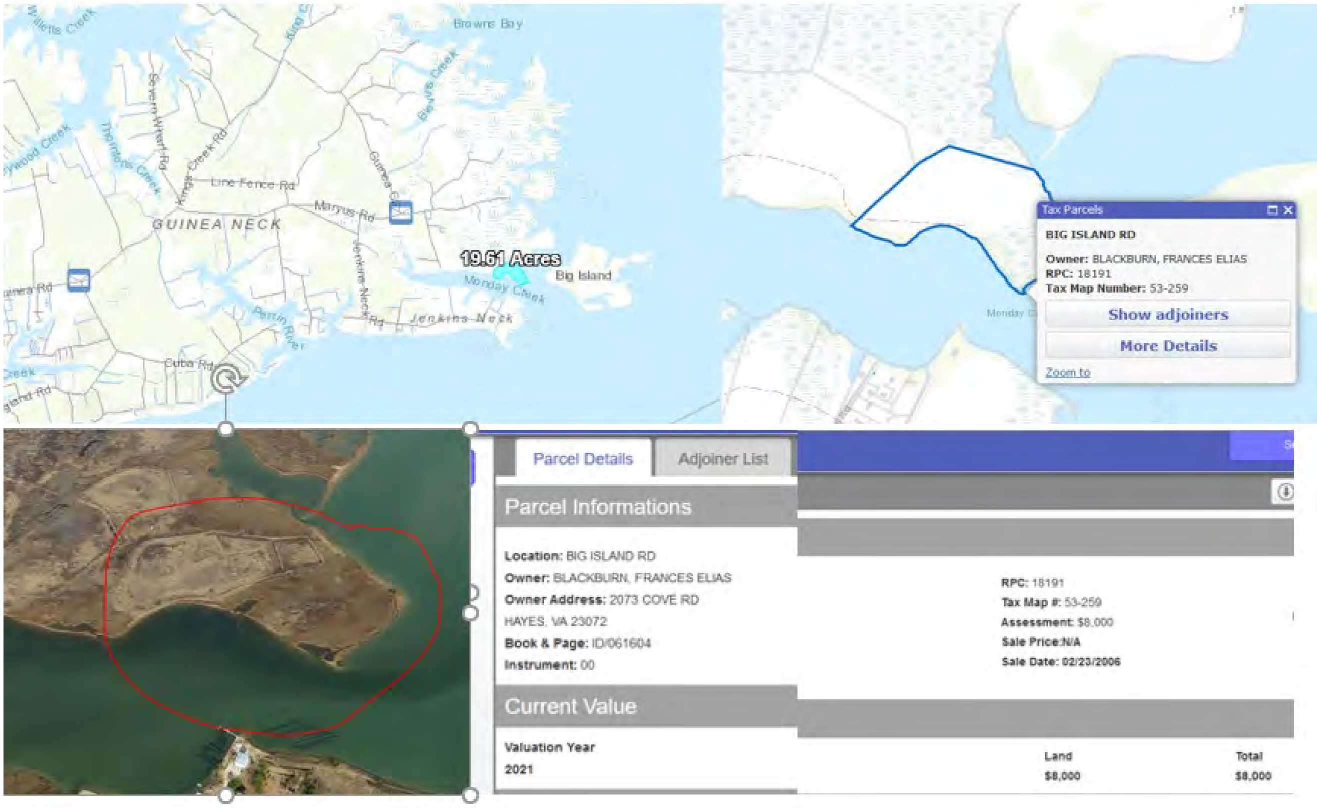
Show adjoiners

More Details

Legend

● Project location

Fig 4A- Location of possible donated wetlands for flood protection by Blackburn



Tax Parcels

BIG ISLAND RD

Owner: BLACKBURN, FRANCES ELIAS
RPC: 18191
Tax Map Number: 53-259

Show adjoiners

More Details

Zoom to

Parcel Details | Adjoiner List

Parcel Informations

Location: BIG ISLAND RD
Owner: BLACKBURN, FRANCES ELIAS
Owner Address: 2073 COVE RD
HAYES, VA 23072
Book & Page: ID/061604
Instrument: 00

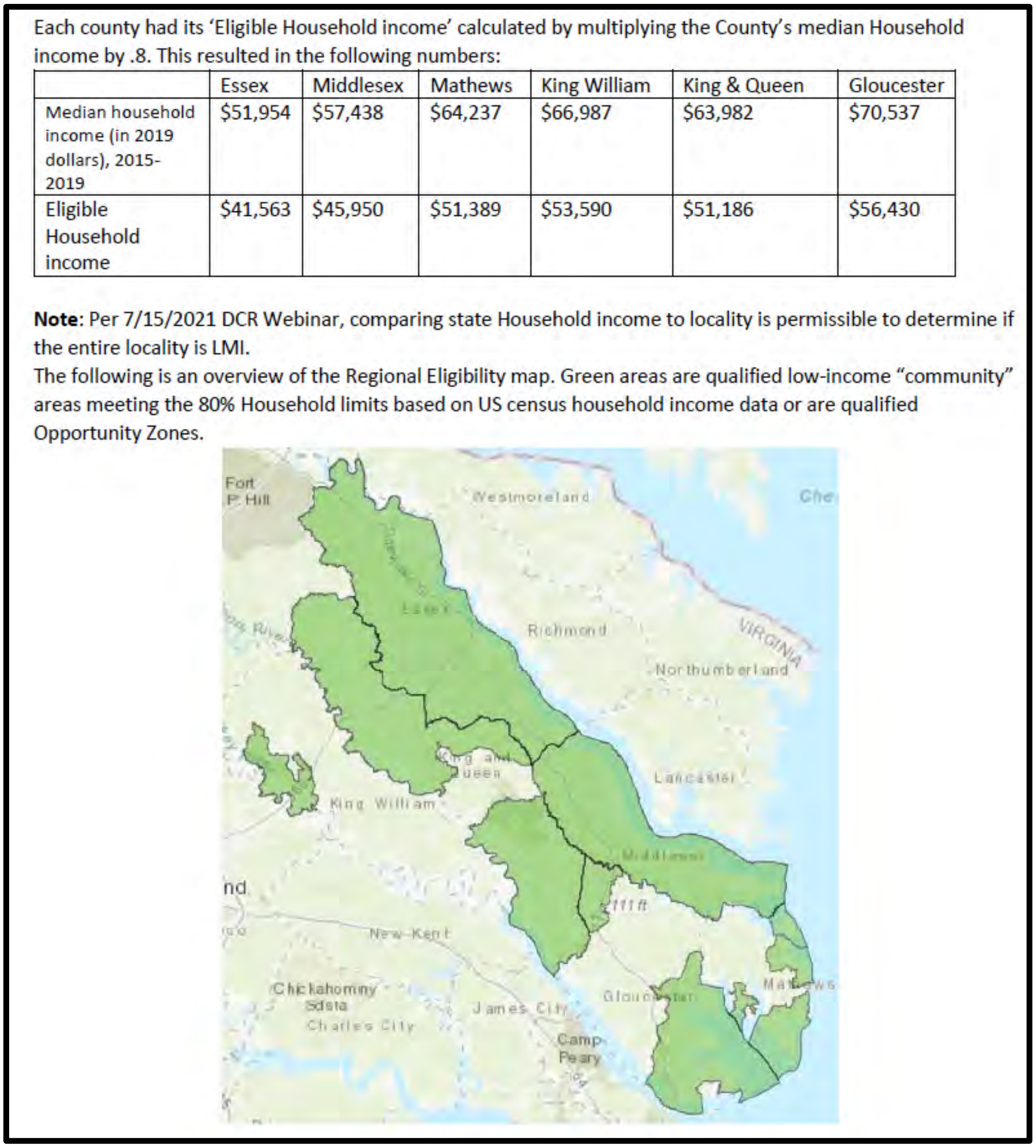
RPC: 18191
Tax Map #: 53-259
Assessment: $8,000
Sale Price: N/A
Sale Date: 02/23/2006

Current Value

Valuation Year	Land	Total
2021	$8,000	$8,000

Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

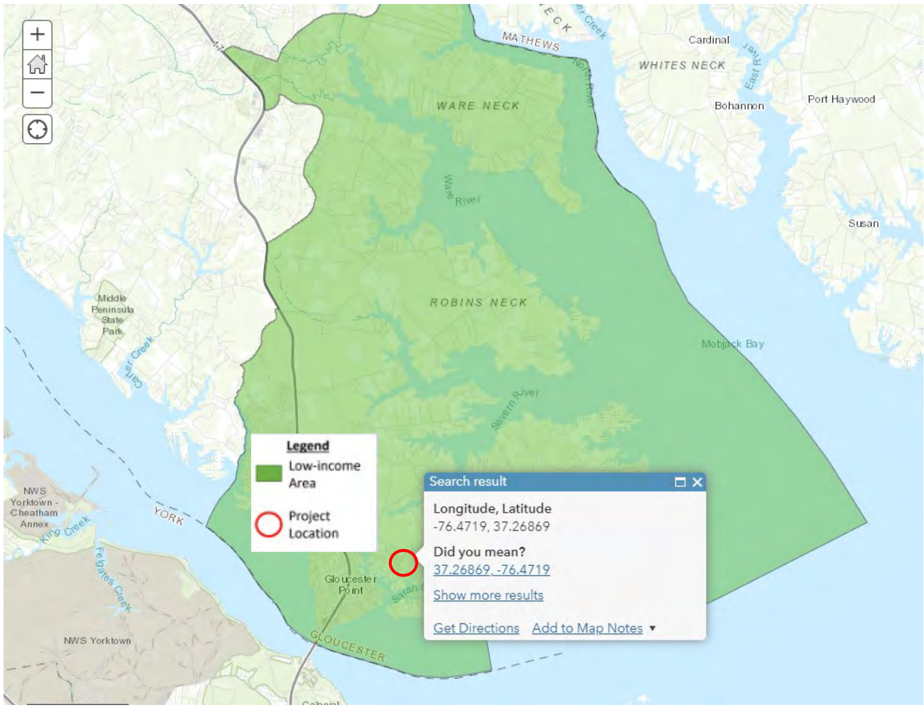
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a low social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively low level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

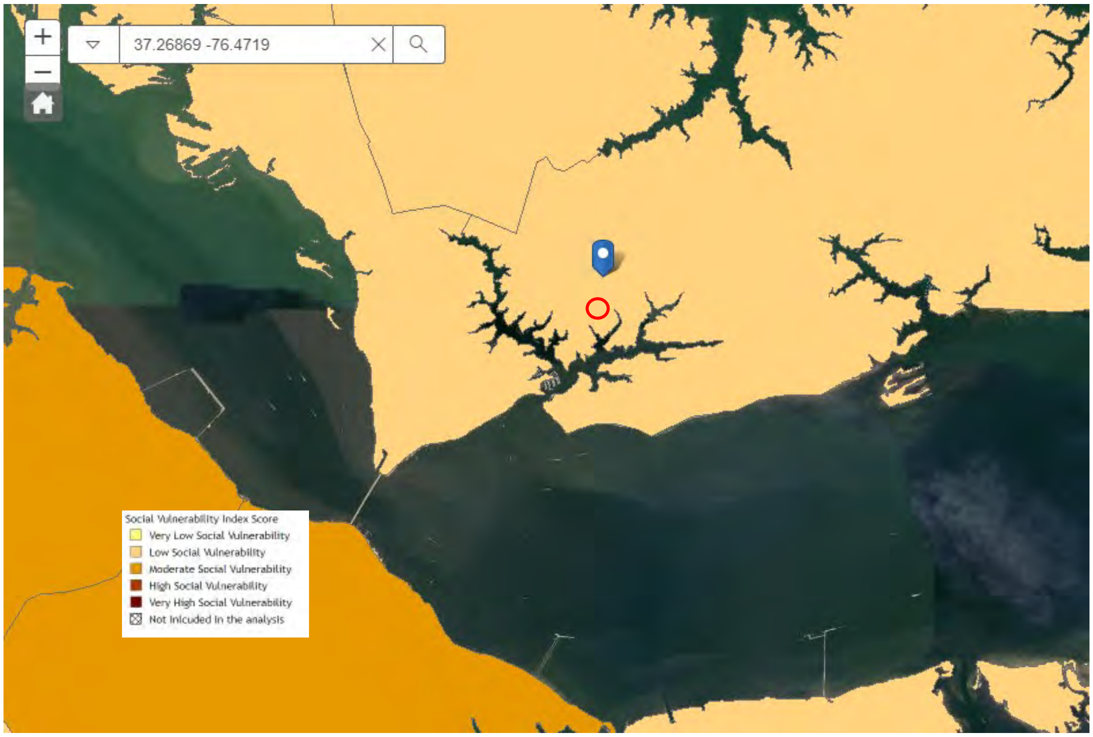
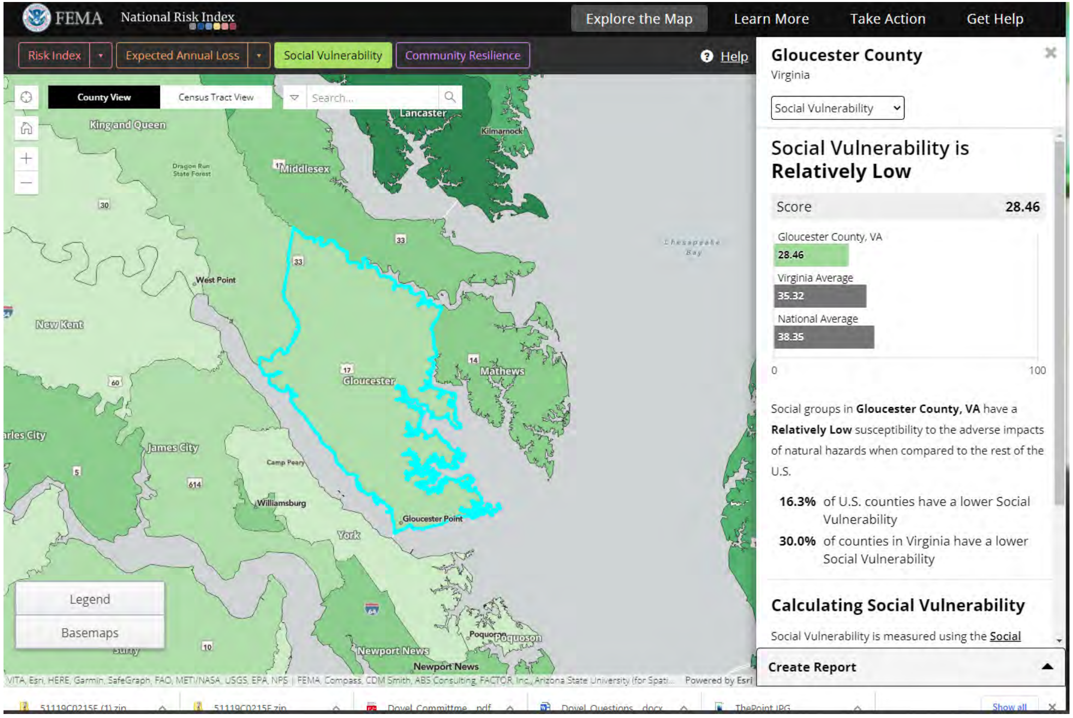


Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Gloucester County
Virginia

Social Vulnerability

Social Vulnerability is **Relatively Low**

Score 28.46

Gloucester County, VA 28.46
Virginia Average 35.32
National Average 38.35

Social groups in **Gloucester County, VA** have a **Relatively Low** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

16.3% of U.S. counties have a lower Social Vulnerability

30.0% of counties in Virginia have a lower Social Vulnerability

Calculating Social Vulnerability

Social Vulnerability is measured using the Social

Create Report

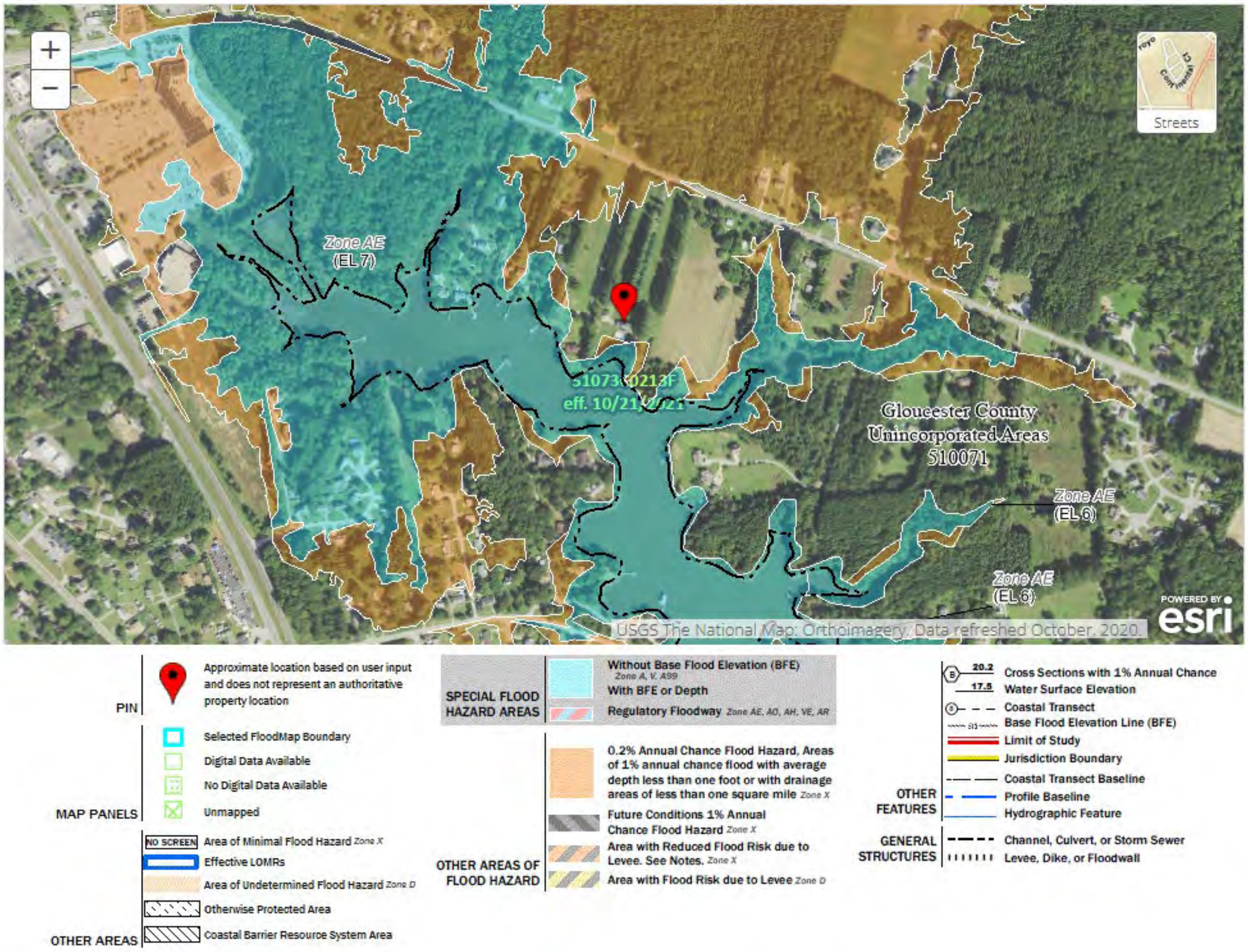
The project is located at 7822 Guinea Road, Hayes, VA 23072 (-76.4719, 37.26869). The property was purchased in 1975 and has experienced a number of issues the past 45+ years. The property owner's father tried to stop erosion on the approximately 300-400 feet long shoreline several years ago by bulkheading using old railroad ties which are coated with creosote. Over the years, many have floated out into the creek and river, potentially causing other harmful impacts to the environment. It would be ideal to remove the remaining railroad ties and do shoreline remediation with natural grasses to enhance the ecosystem. Additionally, although there are not currently any tree deaths falling into water, erosion due to wind and wave action is getting close enough that a few trees are close to falling. There have been other erosion issues increasingly getting closer to the septic system. See accompanying pictures.

Photos of railroad ties lining the shoreline and mature tree close to the shoreline.

Please see **Appendix 2** for additional property photos.

This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 10/21/2021).

Figure 9: Map of FEMA Flood Zones

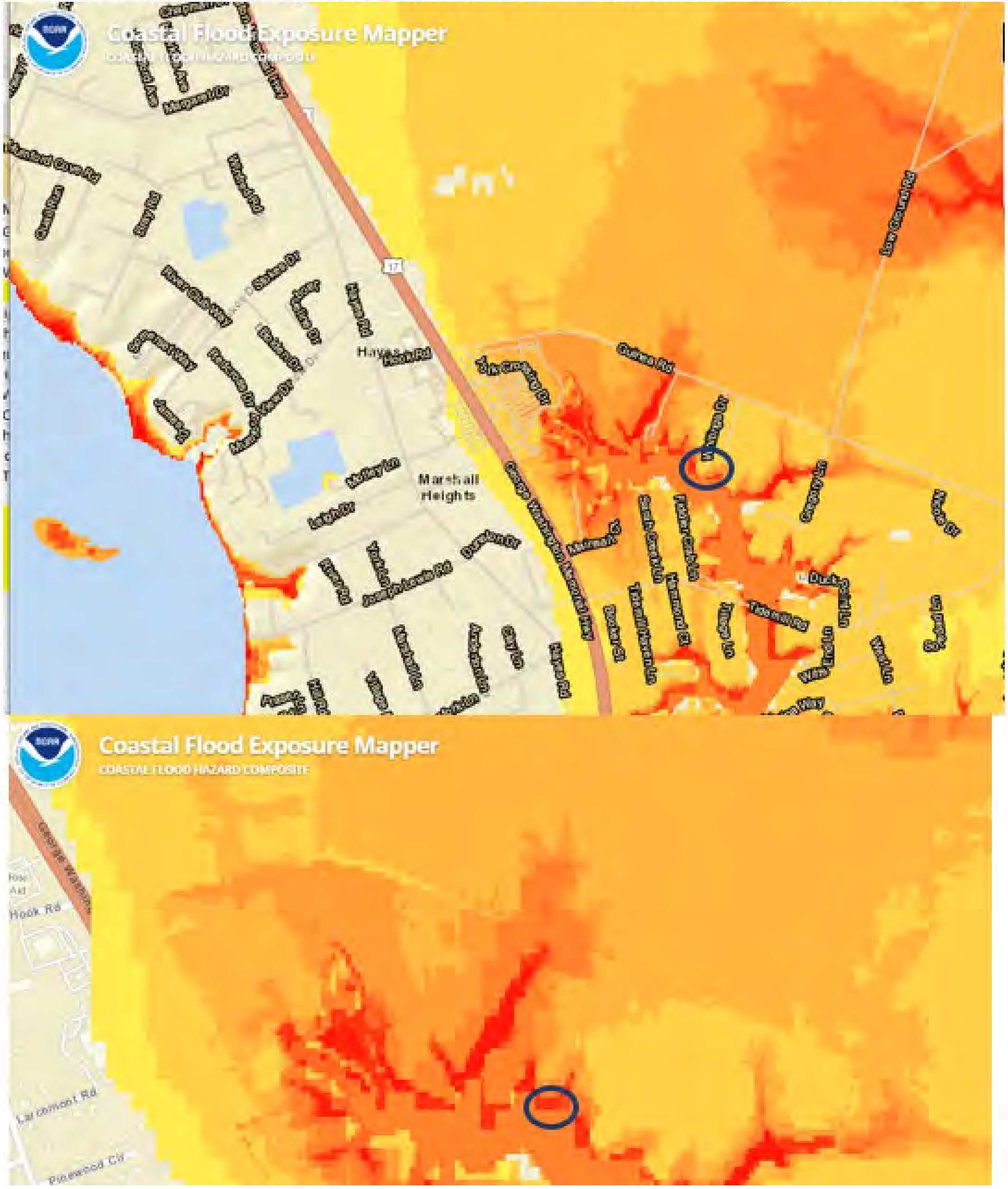


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate change of 4,342.8 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 87 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 (Purple) and 2017 (red).

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5.*

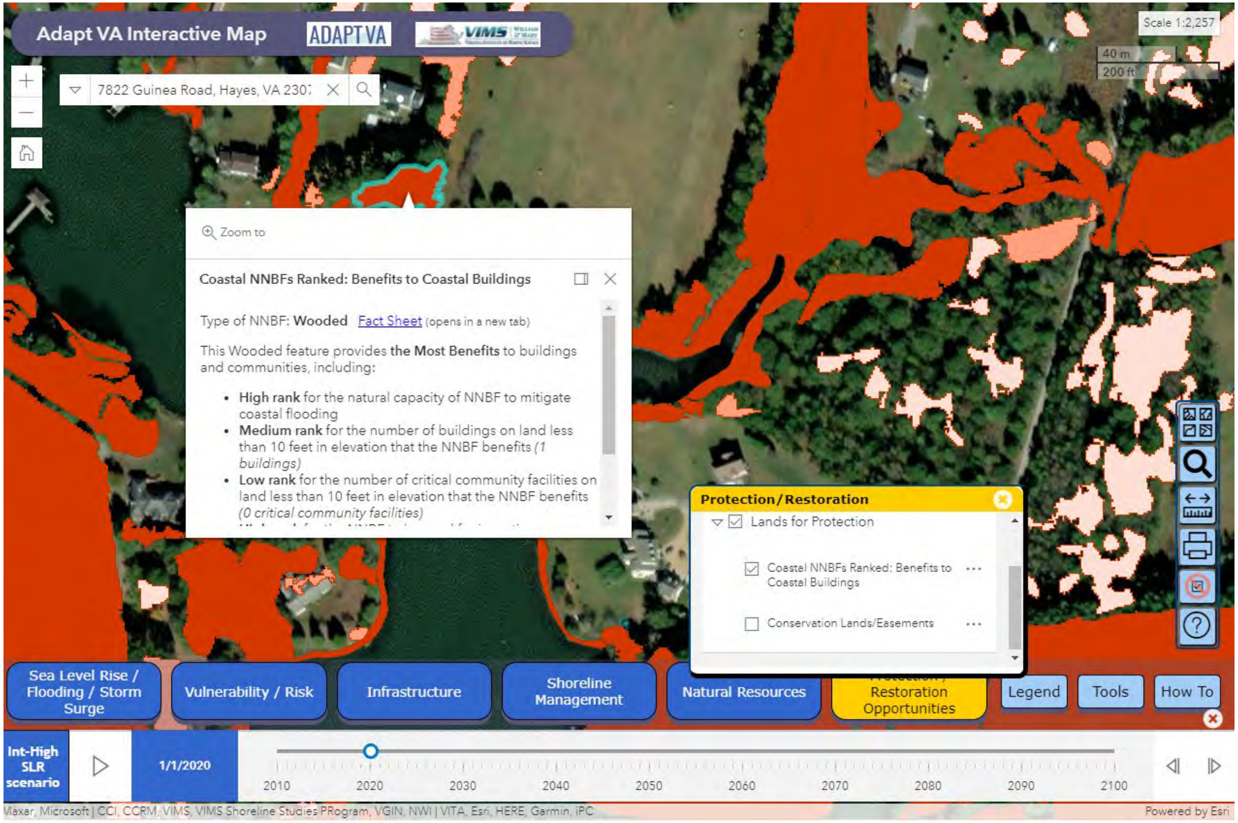
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Medium rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(1 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*

Protection/Restoration

▽ ☑ Lands for Protection

☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

☐ Conservation Lands/Easements

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Gloucester County, which is local government, public schools, and the medical community.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

<u>Long Term Planning</u>

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

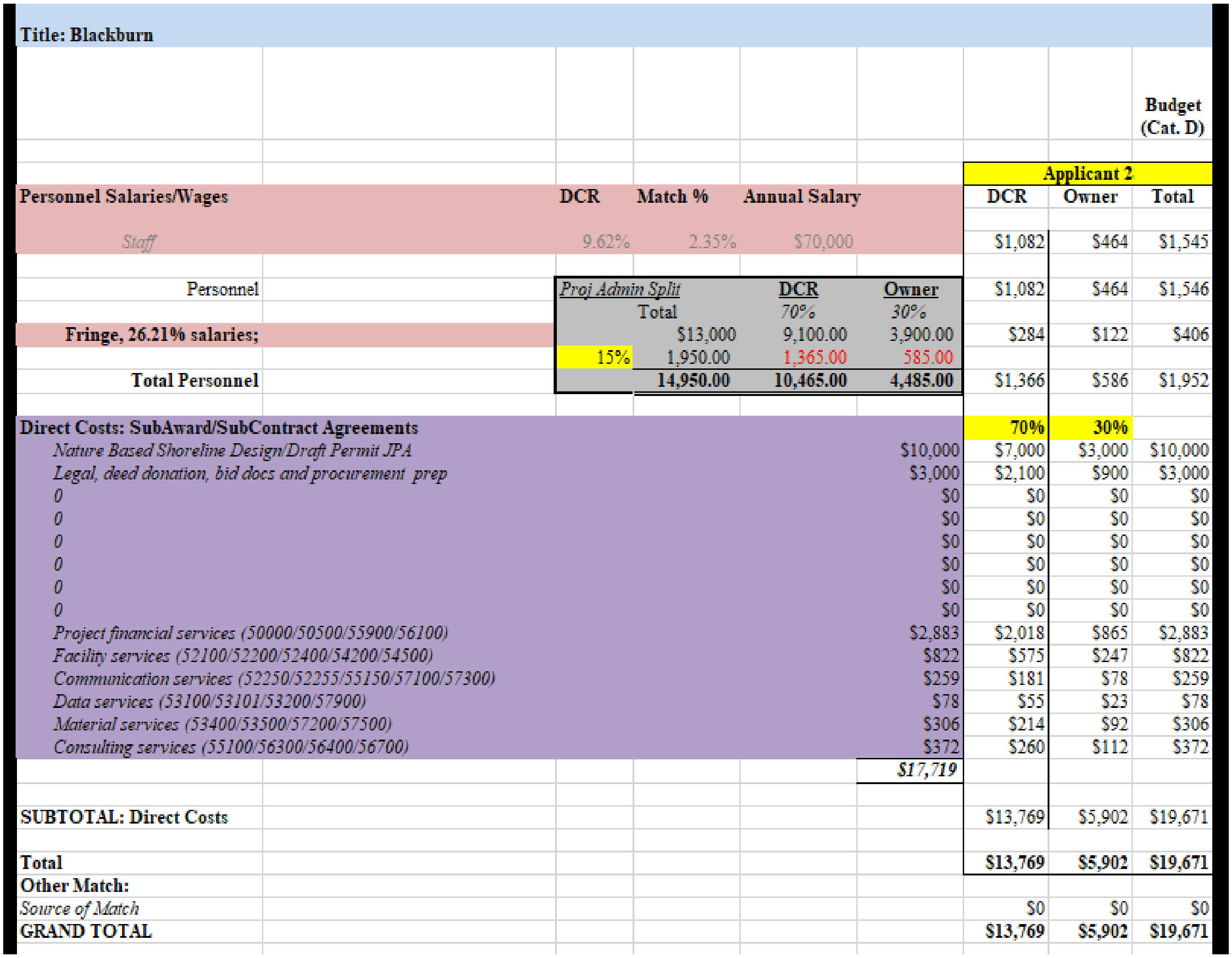
SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that reside in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not reside in a low-income area, then the following does not apply. For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

The proposed project budget is:
Estimated total project cost: $19,671
Amount of funds requested from the Fund: $13,769

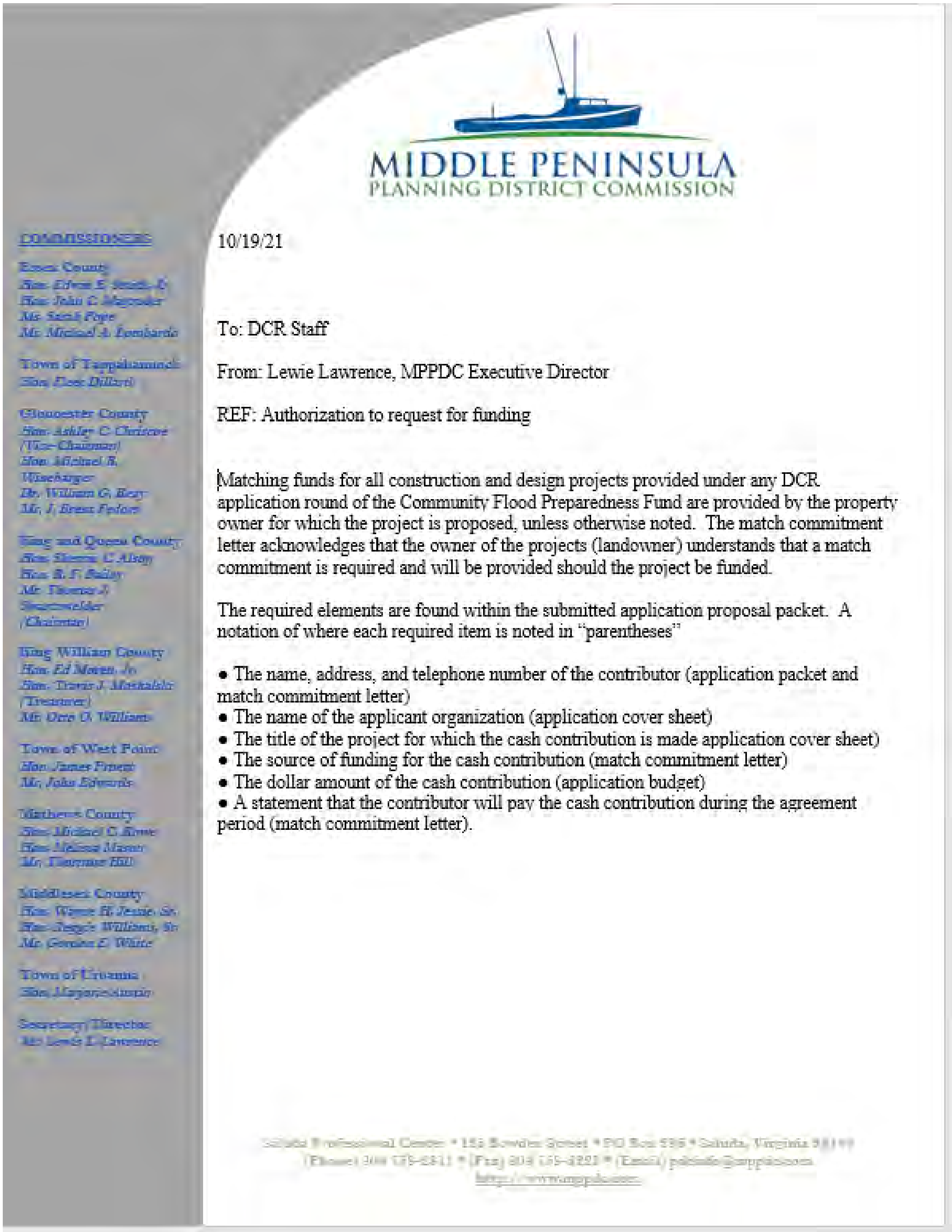


Title: Blackburn

							Budget (Cat. D)
					Applicant 2		
Personnel Salaries/Wages	**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	9.62%	2.35%	$70,000		$1,082	$464	$1,545
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$1,082	$464	$1,546
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		$13,000	9,100.00	3,900.00	$284	$122	$406
	15%	1,950.00	1,365.00	585.00			
Total Personnel		**14,950.00**	**10,465.00**	**4,485.00**	$1,366	$586	$1,952
Direct Costs: SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal, deed donation, bid docs and procurement prep				$3,000	$2,100	$900	$3,000
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$2,883	$2,018	$865	$2,883
Facility services (52100/52200/52400/54200/54500)				$822	$575	$247	$822
Communication services (52250/52255/55150/57100/57300)				$259	$181	$78	$259
Data services (53100/53101/53200/57900)				$78	$55	$23	$78
Material services (53400/53500/57200/57500)				$306	$214	$92	$306
Consulting services (55100/56300/56400/56700)				$372	$260	$112	$372
				$17,719			
SUBTOTAL: Direct Costs					$13,769	$5,902	$19,671
Total					**$13,769**	**$5,902**	**$19,671**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$13,769**	**$5,902**	**$19,671**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.
]

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

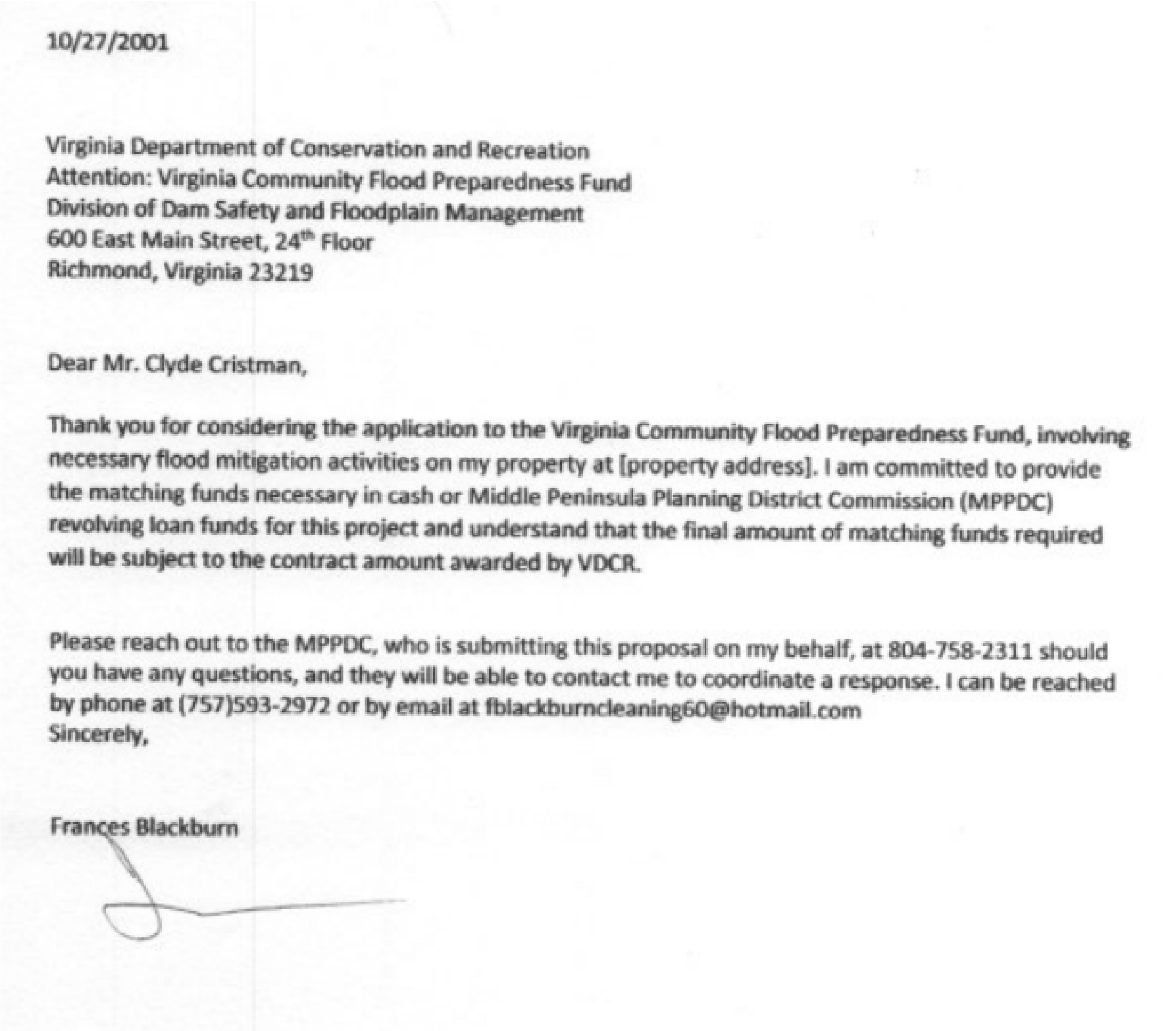
Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Signed pledge agreement from each contributing organization:



10/27/2001

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

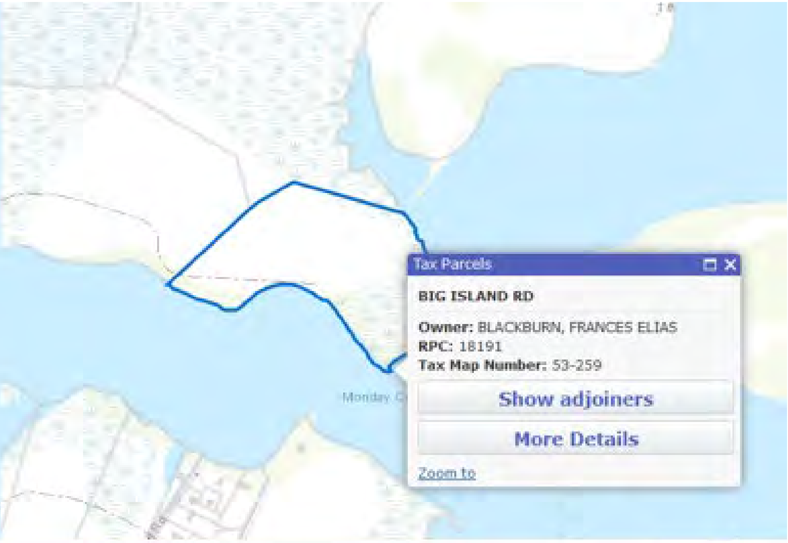
Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (757)593-2972 or by email at fblackburncleaning60@hotmail.com
Sincerely,

Frances Blackburn

The applicant also owns a parcel on Monday creek in Gloucester County and is willing to donate the parcel to the Middle Peninsula Chesapeake Bay Public Access Authority for nature-based flood protection as part of the required match.



BIG ISLAND RD

Owner: BLACKBURN, FRANCES ELIAS
RPC: 18191
Tax Map Number: 53-259

Parcel Informations

Location: BIG ISLAND RD
Owner: BLACKBURN, FRANCES ELIAS
Owner Address: 2073 COVE RD
HAYES, VA 23072
Book & Page: ID/061604
Instrument: 00

RPC: 18191
Tax Map #: 53-259
Assessment: $8,000
Sale Price:N/A
Sale Date: 02/23/2006

Current Value

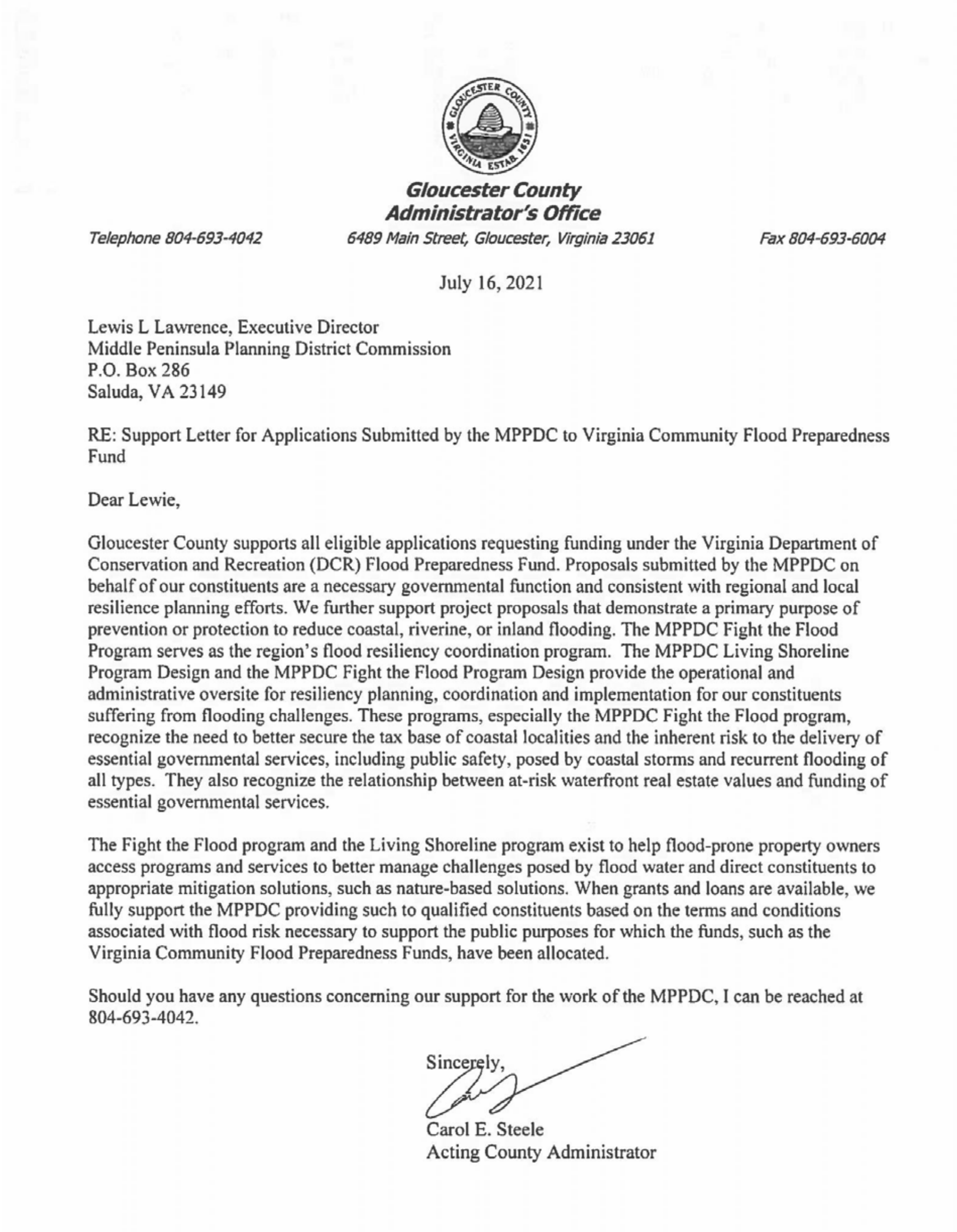
Valuation Year	Land	Total
2021	$8,000	$8,000

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

Carol E. Steele
Acting County Administrator

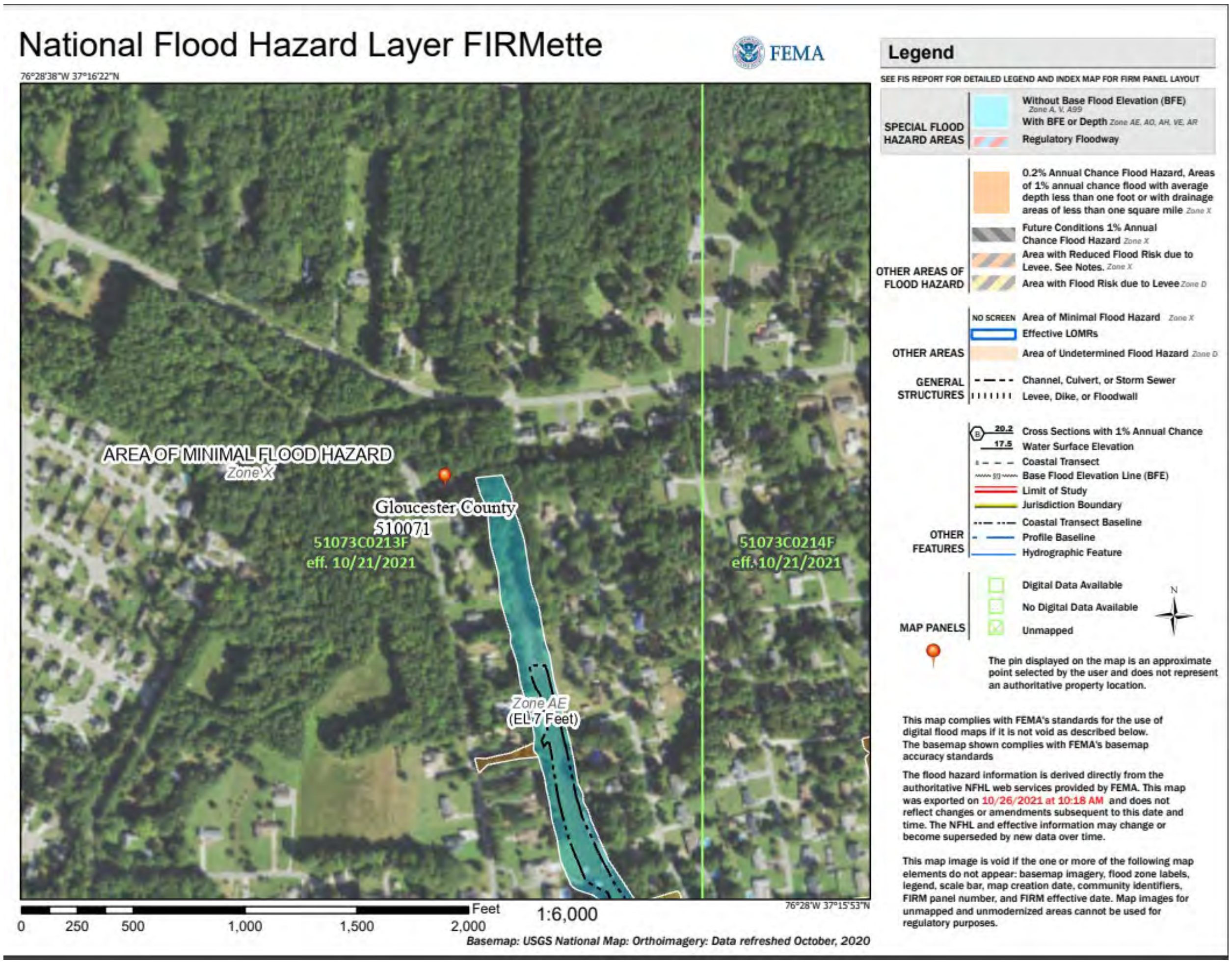
APPENDIX 2

Additional Property Photos

APPENDIX 3

Project Location FIRMette

(FIRMette #: 51073C0213F)



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

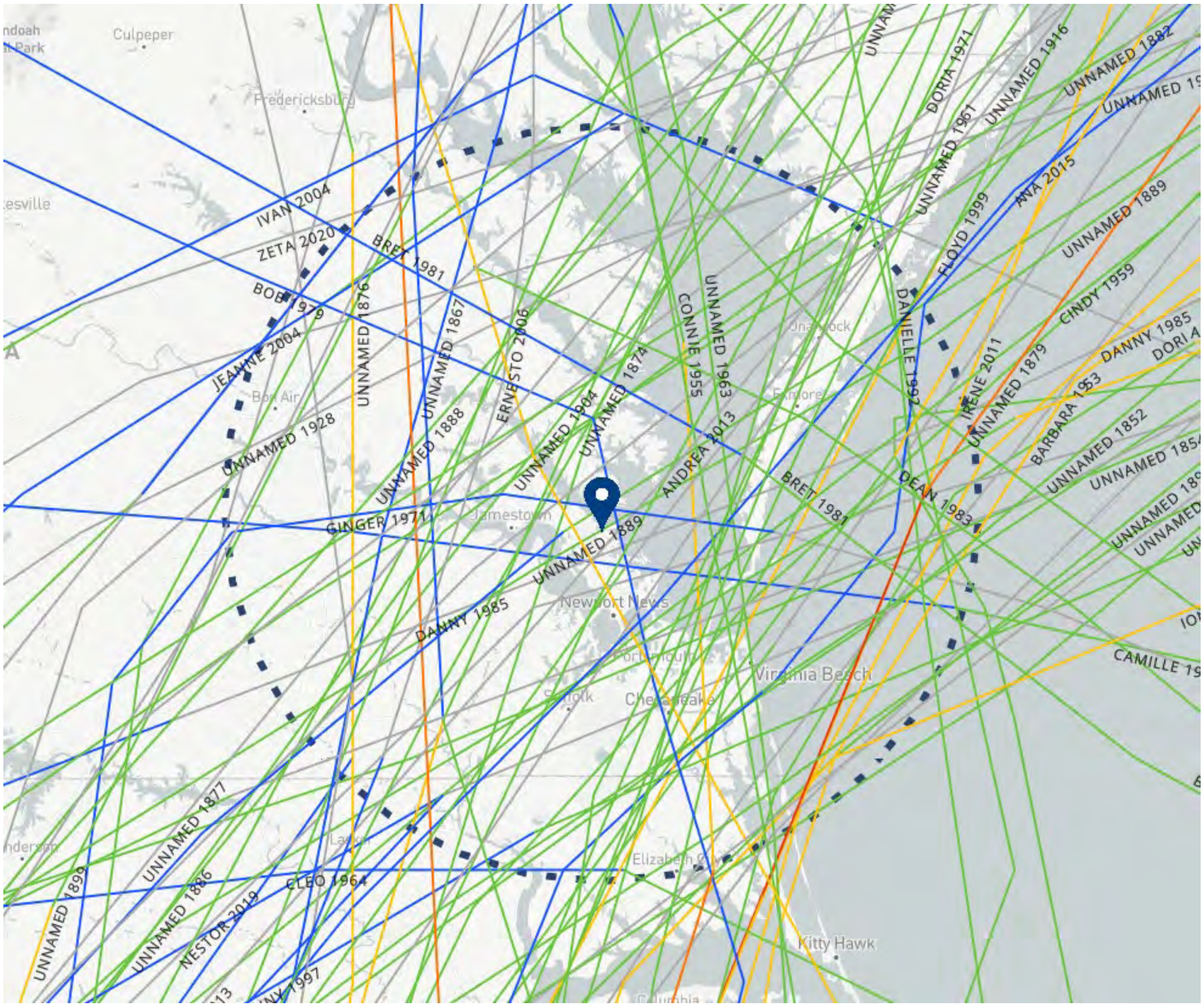
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/26/2021 at 10:18 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.26869 -76.4719

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
CLEO 1964	Aug 20, 1964 to Sep 11, 1964	130	938	H4
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1949	Sep 11, 1949 to Sep 14, 1949	45	-1	TS
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

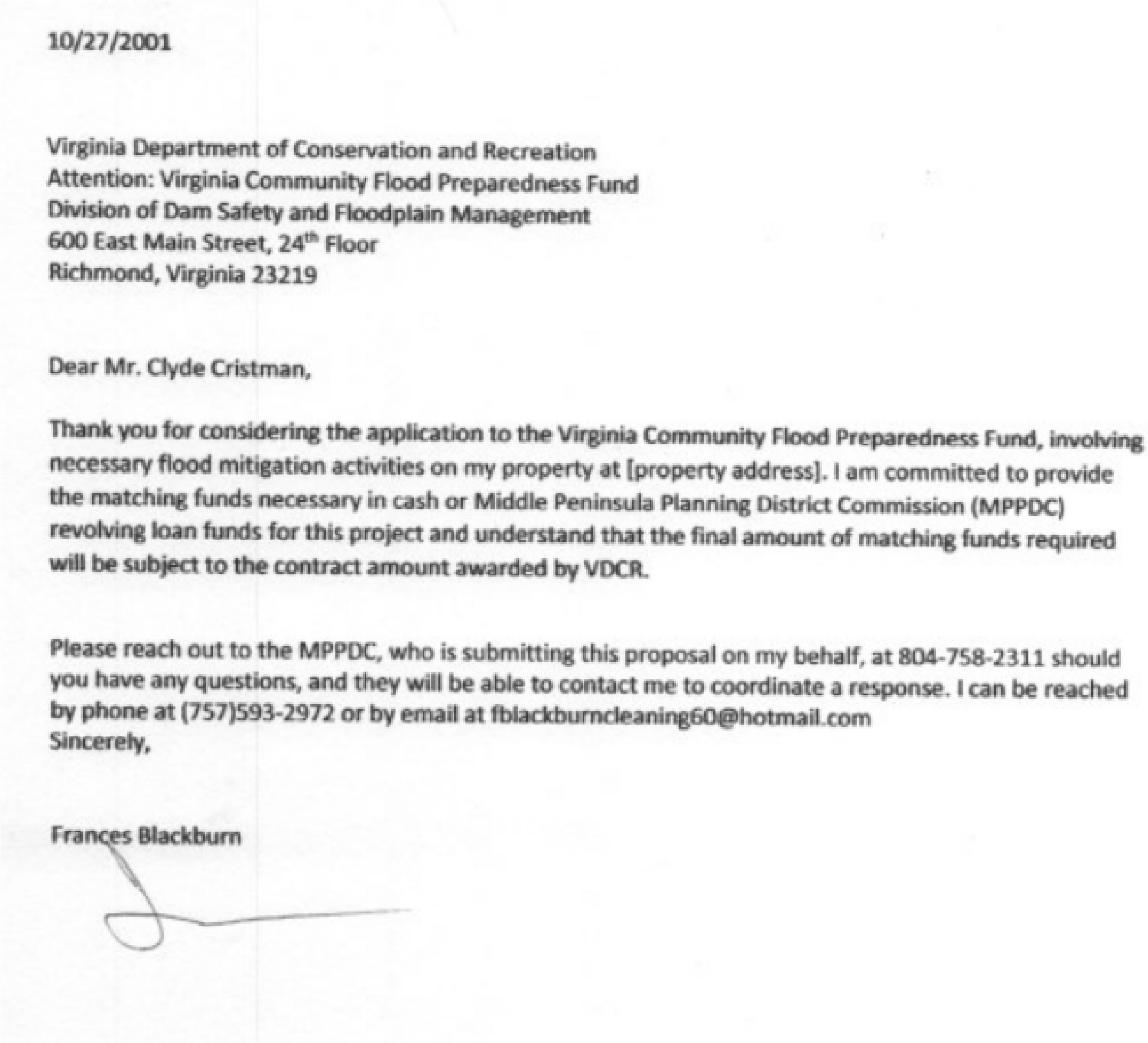
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



10/27/2001

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (757)593-2972 or by email at fblackburncleaning60@hotmail.com
Sincerely,

Frances Blackburn

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories – Round 2

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Marshfield Lane for Doyel

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ________________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0140F

Total Cost of Project: *$17,399*

Total Amount Requested: *$12,180*

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. The applicant is partnering with adjoining landowner who previously submitted a proposal during Round 1, creating a greater community-scale impact.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem-based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a shoreline on a private property located on Marshfield Lane in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: [https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf)*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)*
  - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

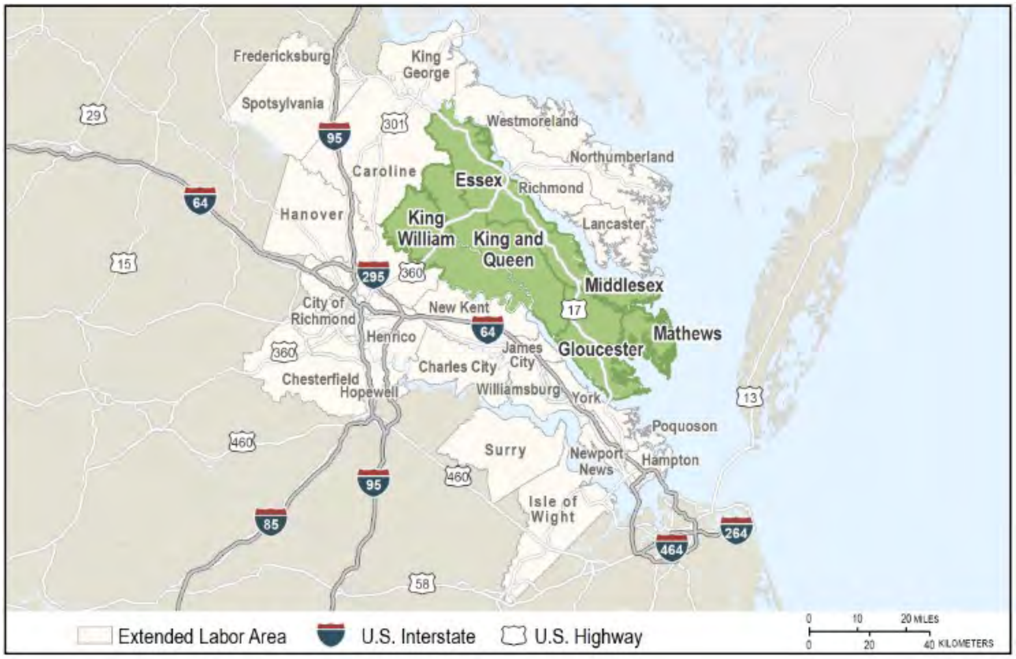
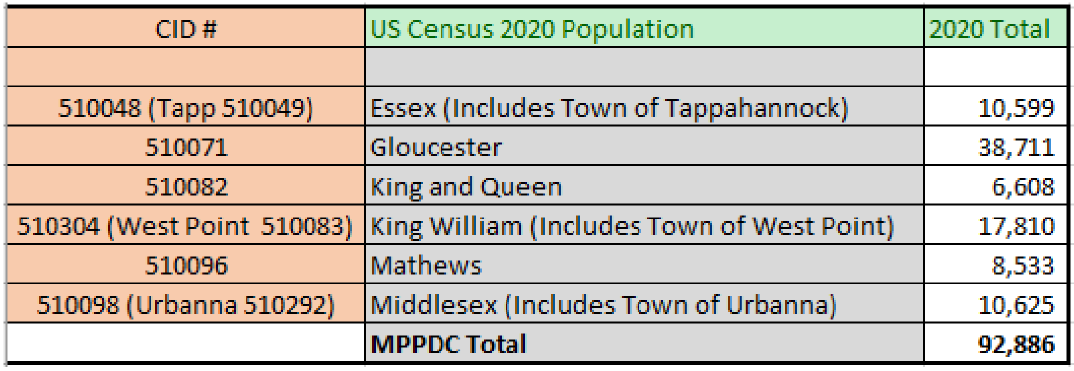


Figure 2. Middle Peninsula Population

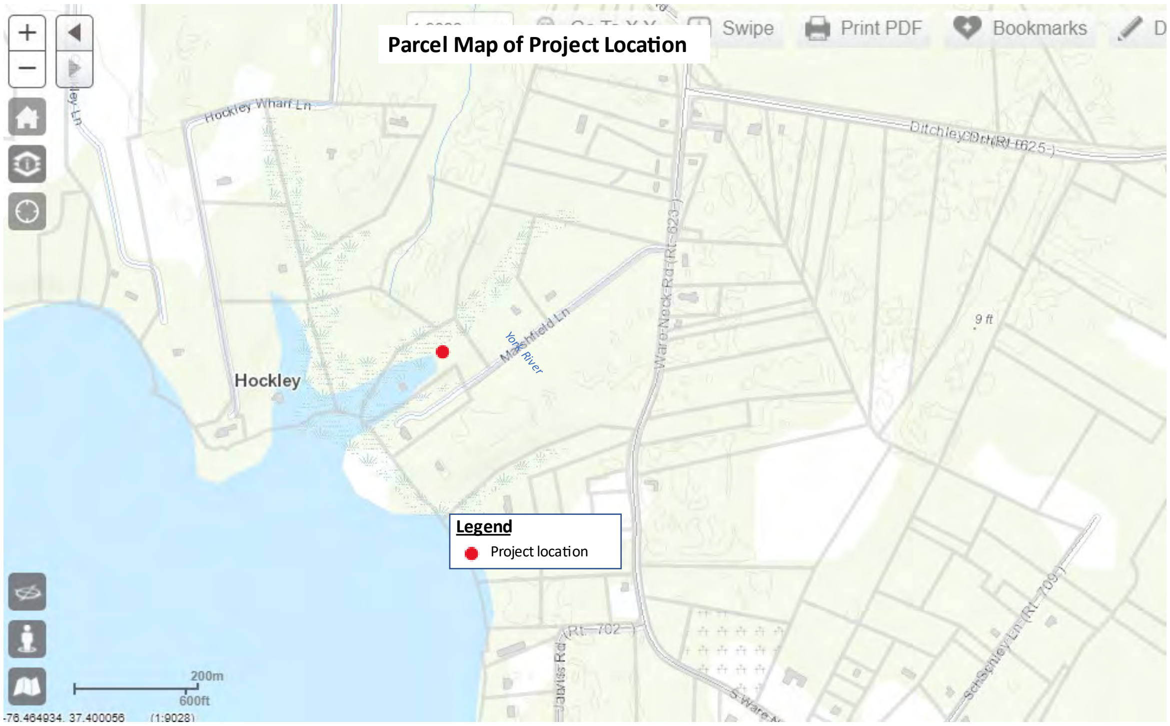


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Marshfield Lane in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

Figure 4. Parcel Map of Project Location



Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

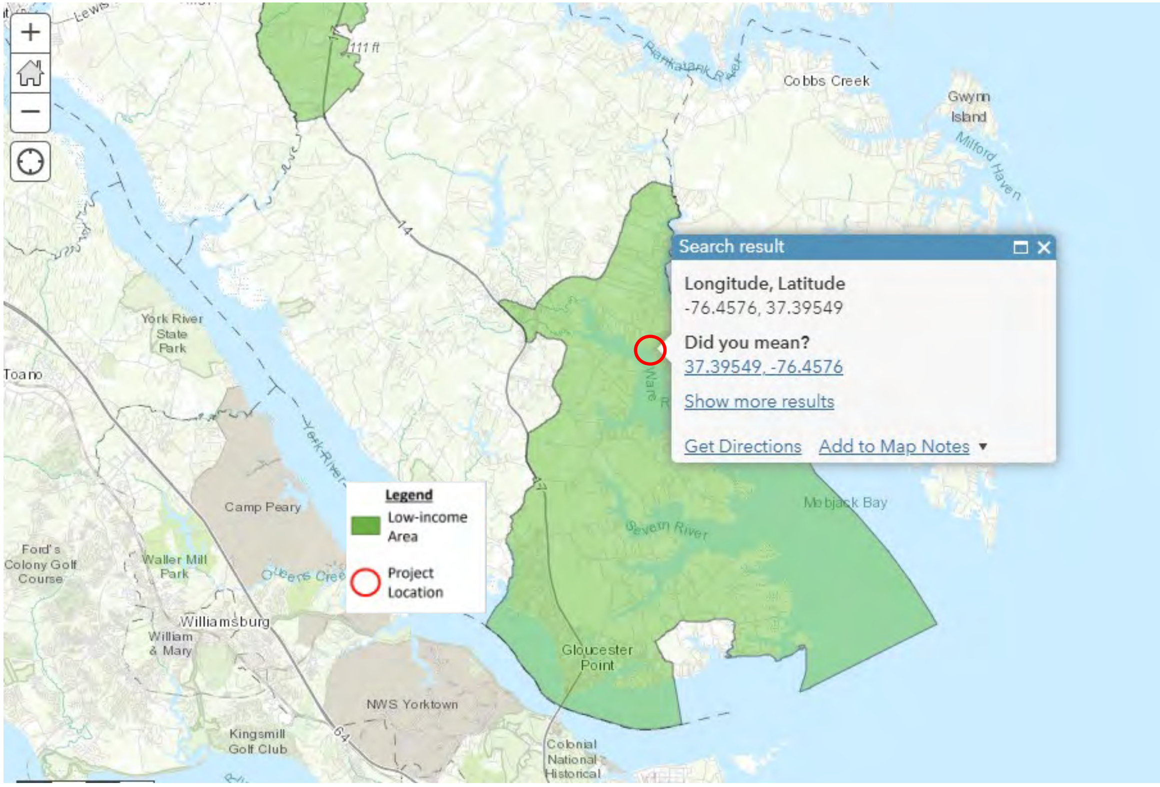
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

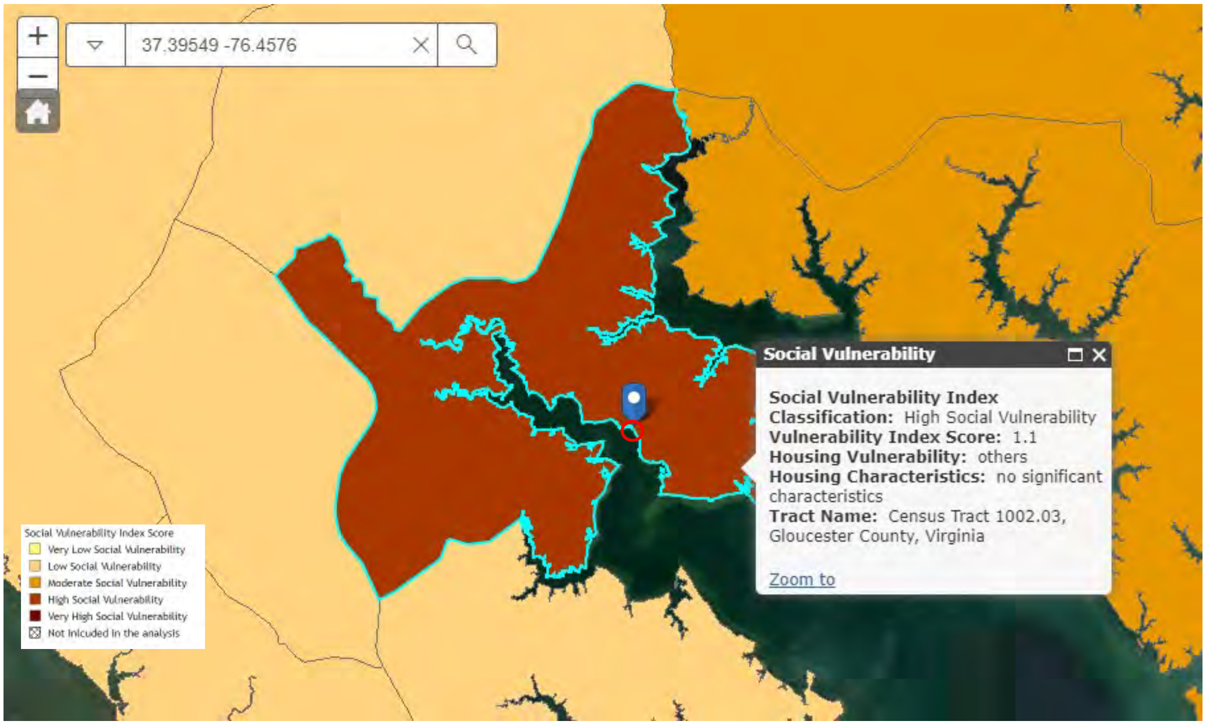
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a high social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively low level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

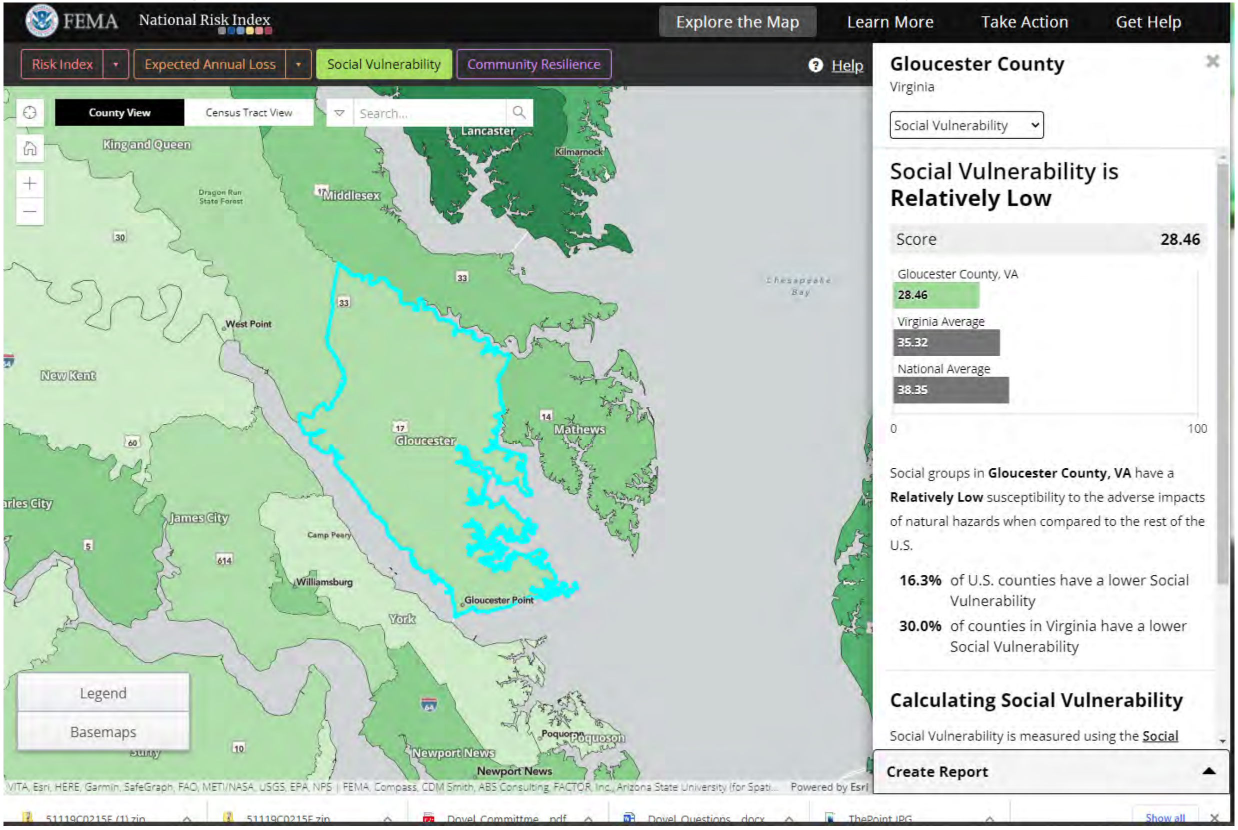


Social Vulnerability

Social Vulnerability Index
Classification: High Social Vulnerability
Vulnerability Index Score: 1.1
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1002.03, Gloucester County, Virginia

Zoom to

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Gloucester County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Low

Score	28.46
Gloucester County, VA	28.46
Virginia Average	35.32
National Average	38.35

0 100

Social groups in **Gloucester County, VA** have a **Relatively Low** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

16.3% of U.S. counties have a lower Social Vulnerability

30.0% of counties in Virginia have a lower Social Vulnerability

Calculating Social Vulnerability

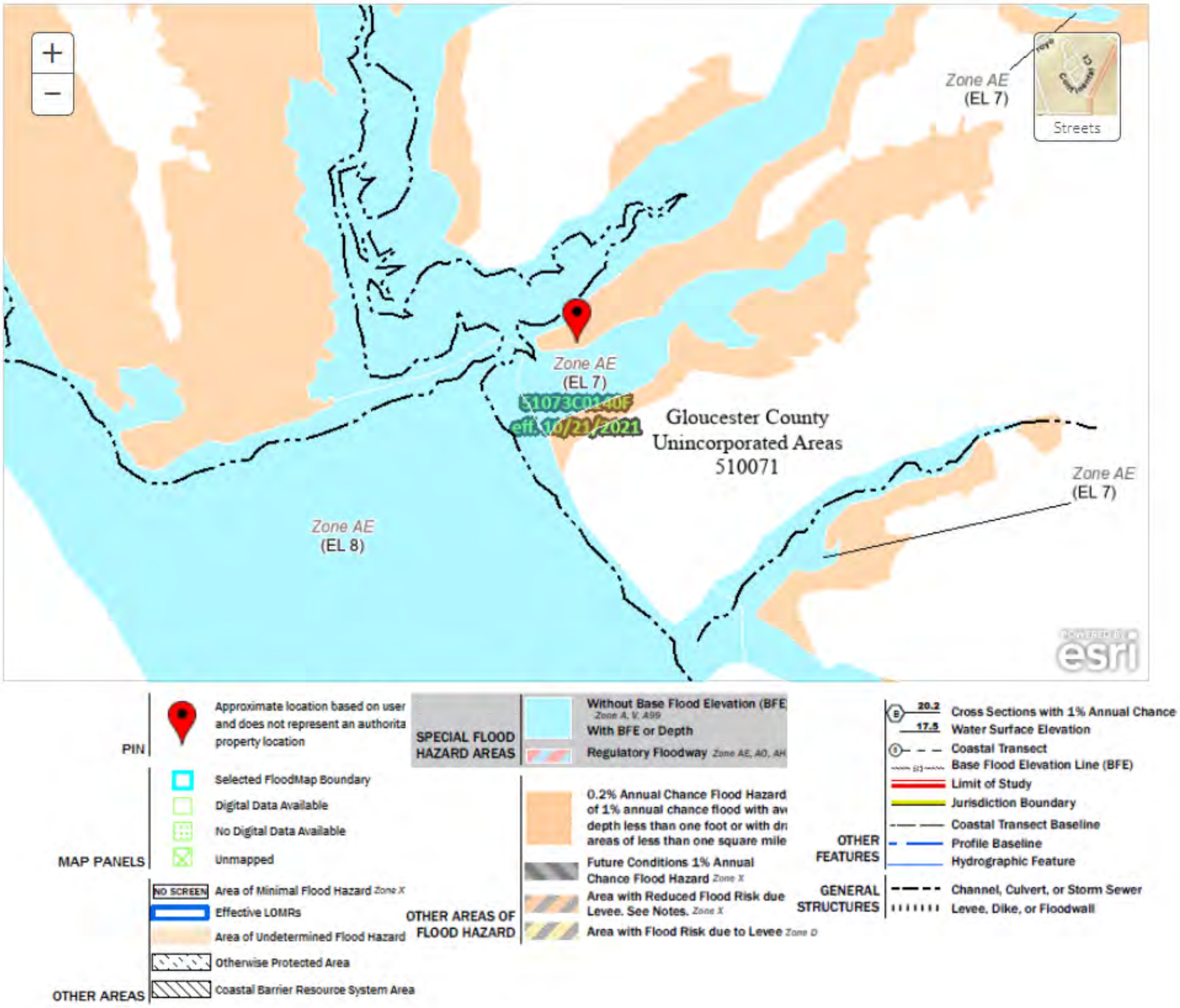
Social Vulnerability is measured using the Social

Create Report

The project is located at 8651 Marshfield Lane, Gloucester, VA 23061 (-76.4576, 37.39549). The property was purchased in 1994 and has experienced a number of issues over nearly three decades. There is significant erosion along the shoreline due to wave and wind action (length of shoreline is approximately 700 feet). Over the past few years, the bank began falling into the marsh. Because it is tidal, the bank is now a shear drop off. There are a number of large trees along the edge that could fall into the water, especially as erosion continues or if there is a direct impact from a strong storm. See accompanying pictures below.

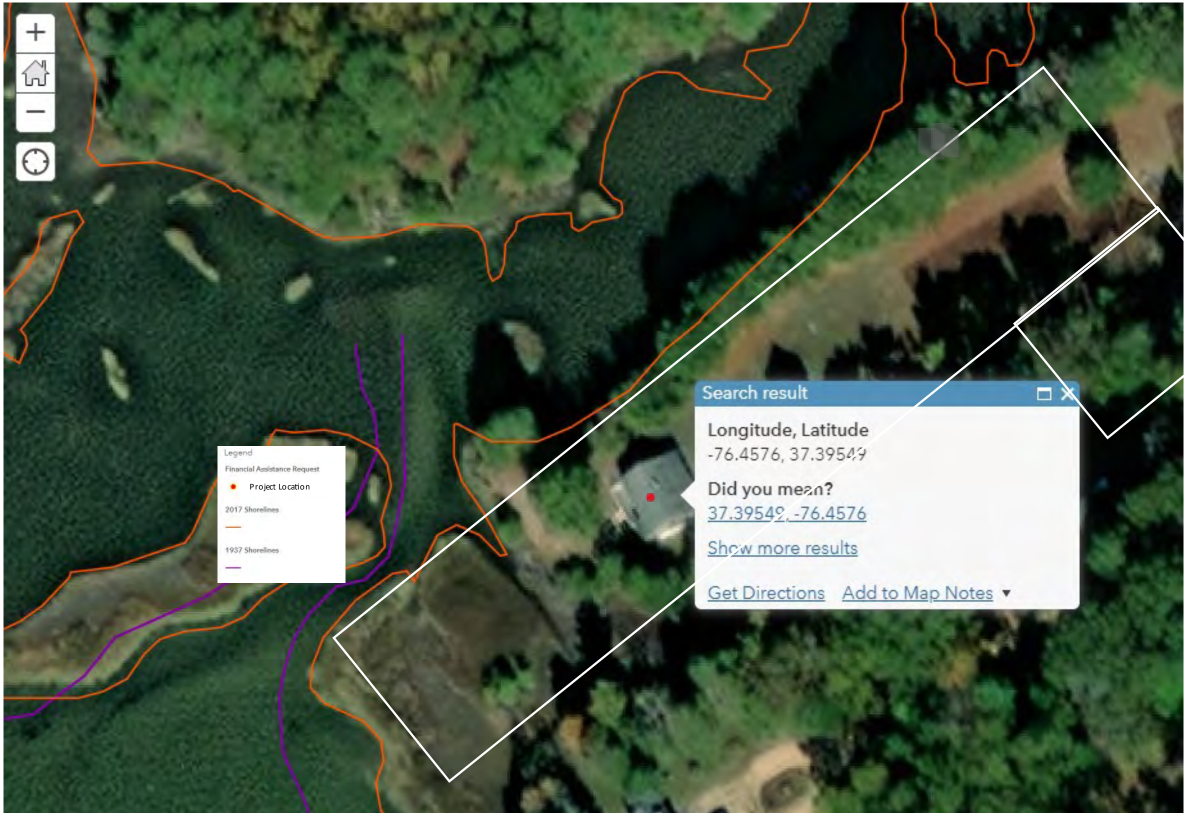
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 2** for the FIRMettes (last mapped 5/18/2015).

Figure 9: Map of FEMA Flood Zones



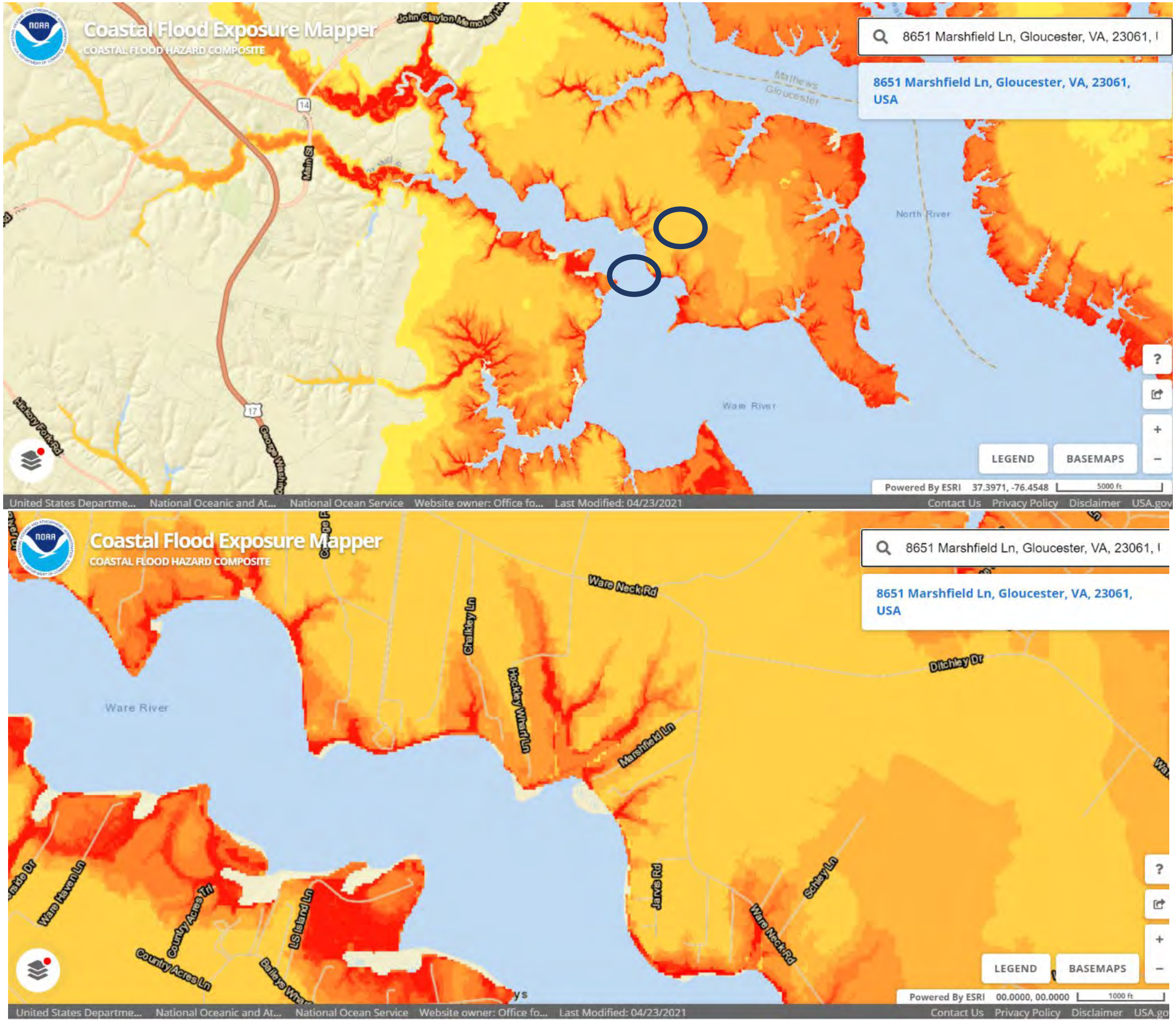
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 17,115.1 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 3** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5.*

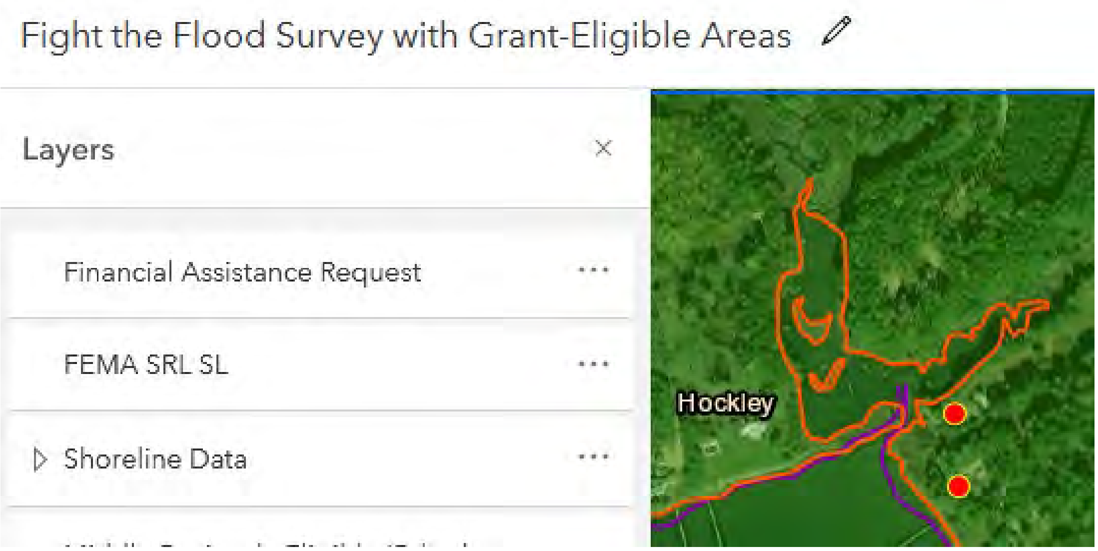
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

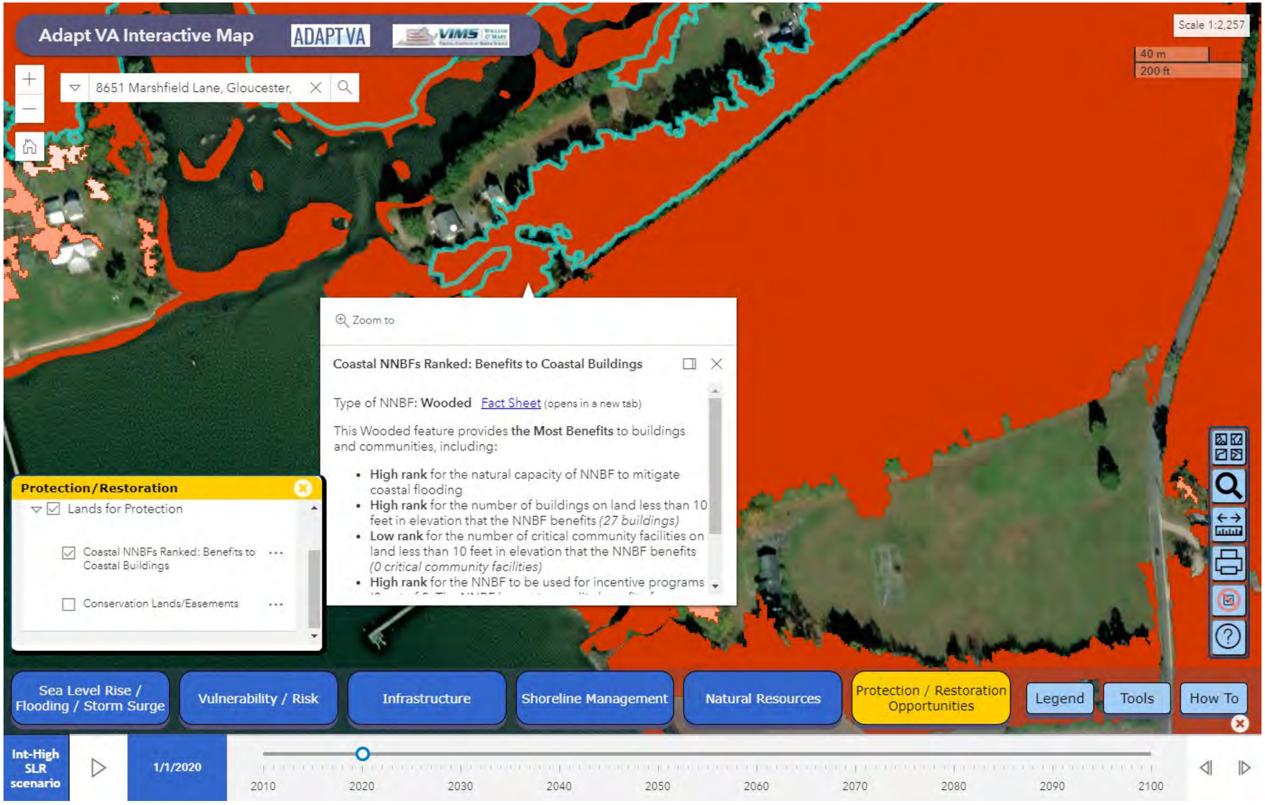
Figure 11A illustrates how Round 1 and Round 2 citizens are partnering for a larger community reach under Fight the Flood.

Figure 11A - FTF partnering applications



Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(27 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year; therefore, as this proposed design with look to potentially design and eventually construct a 700 ft living shoreline this project will substantially increase the amount of nutrients and sediment. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

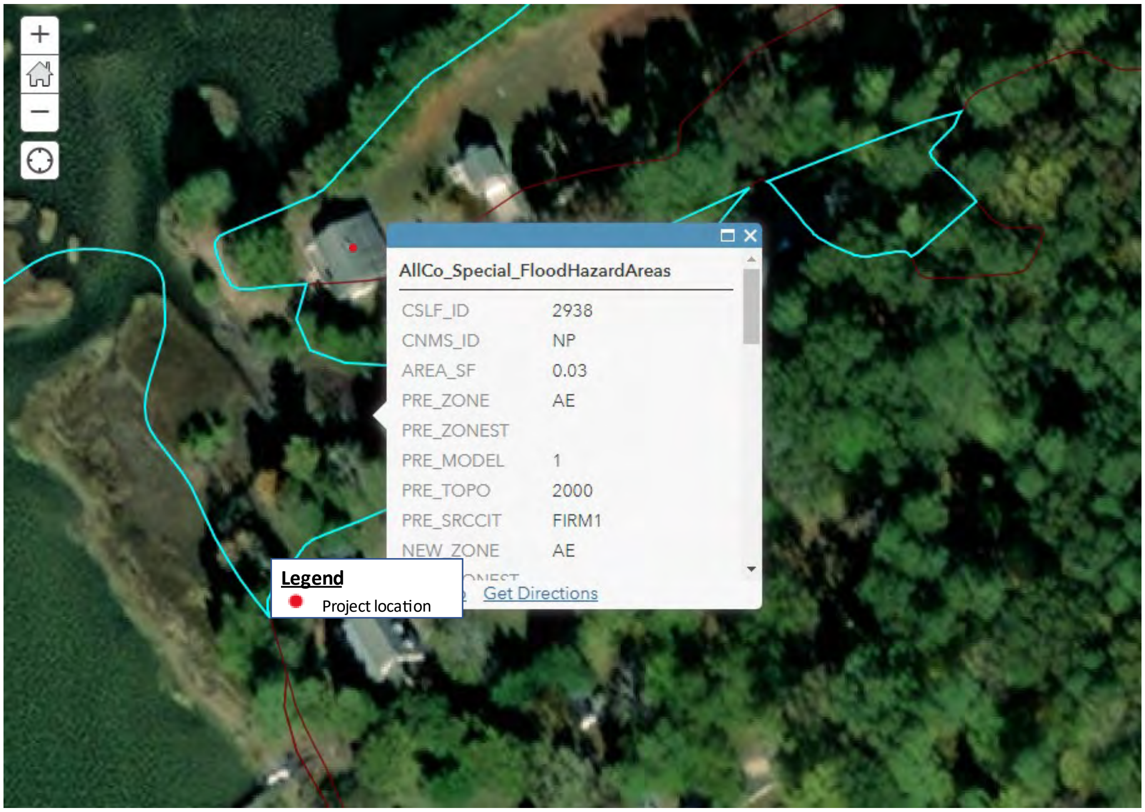
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	2938
CNMS_ID	NP
AREA_SF	0.03
PRE_ZONE	AE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	FIRM1
NEW_ZONE	AE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

<u>Long Term Planning</u>

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 4.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fighttheflоodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 5.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

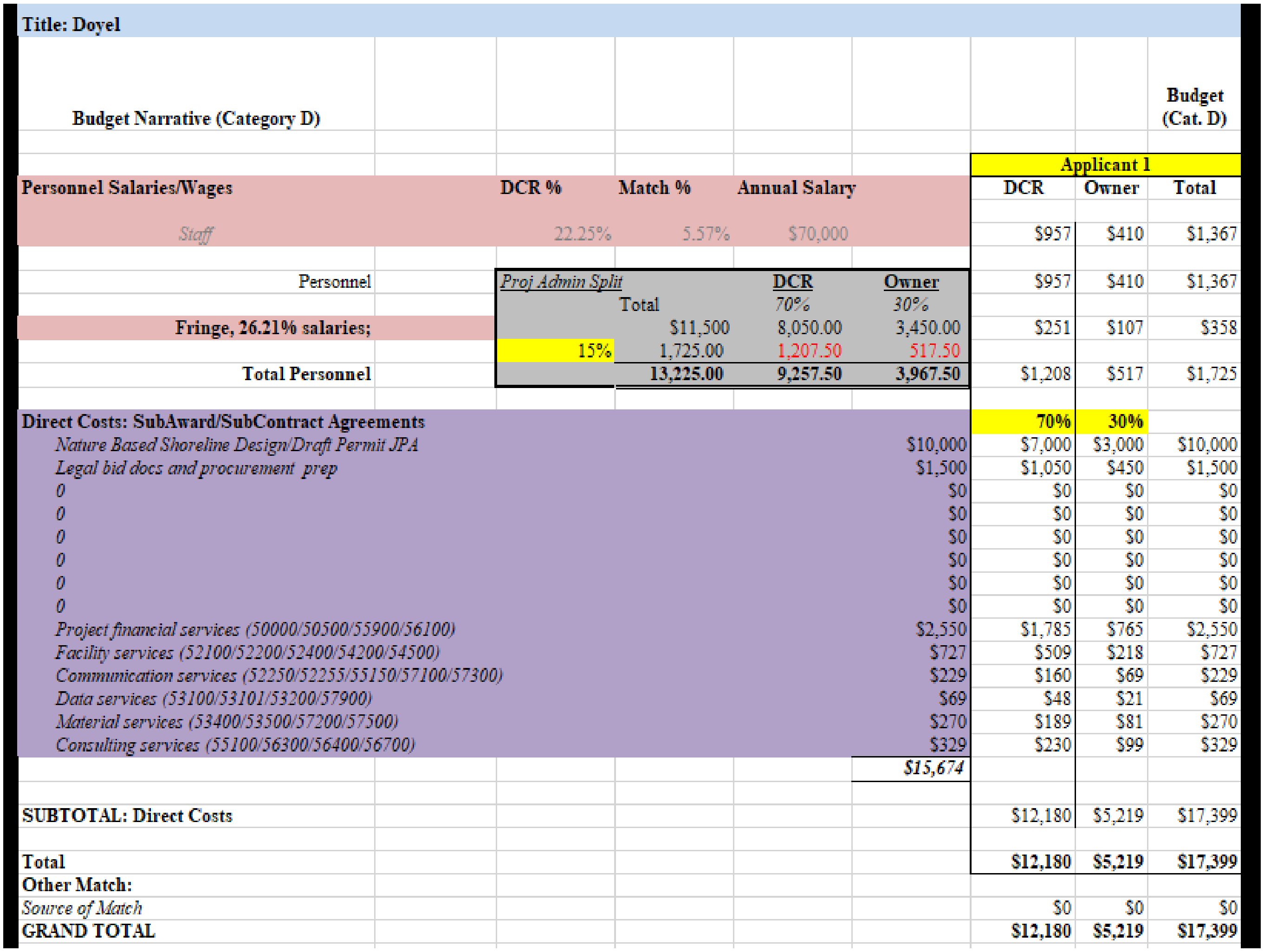
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that reside in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not reside in a low-income area, then the following does not apply. For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

The proposed project budget is:

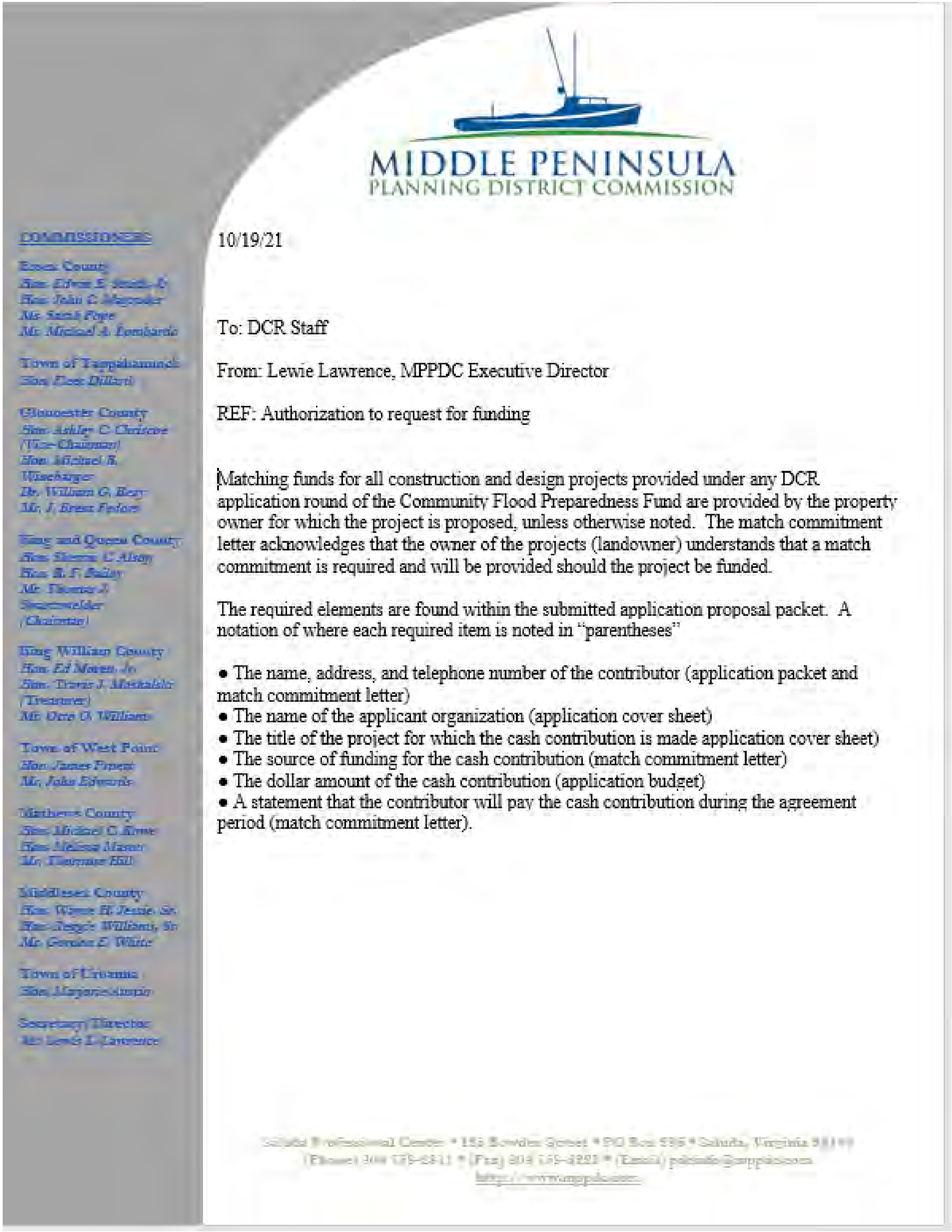
- ***Estimated total project cost:*** *$17,399*
- ***Amount of funds requested from the Fund:*** *$12,180*



Title: Doyel							
Budget Narrative (Category D)							**Budget (Cat. D)**
					Applicant 1		
Personnel Salaries/Wages	**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	22.25%	5.57%	$70,000		$957	$410	$1,367
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		$11,500	8,050.00	3,450.00	$251	$107	$358
	15%	1,725.00	1,207.50	517.50			
Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)				$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)				$229	$160	$69	$229
Data services (53100/53101/53200/57900)				$69	$48	$21	$69
Material services (53400/53500/57200/57500)				$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)				$329	$230	$99	$329
				$15,674			
SUBTOTAL: Direct Costs					$12,180	$5,219	$17,399
Total					**$12,180**	**$5,219**	**$17,399**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,180**	**$5,219**	**$17,399**

The Middle Peninsula PDC staff will manage and administer this project. The Middle Peninsula PDC staff will manage and administer this project. MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

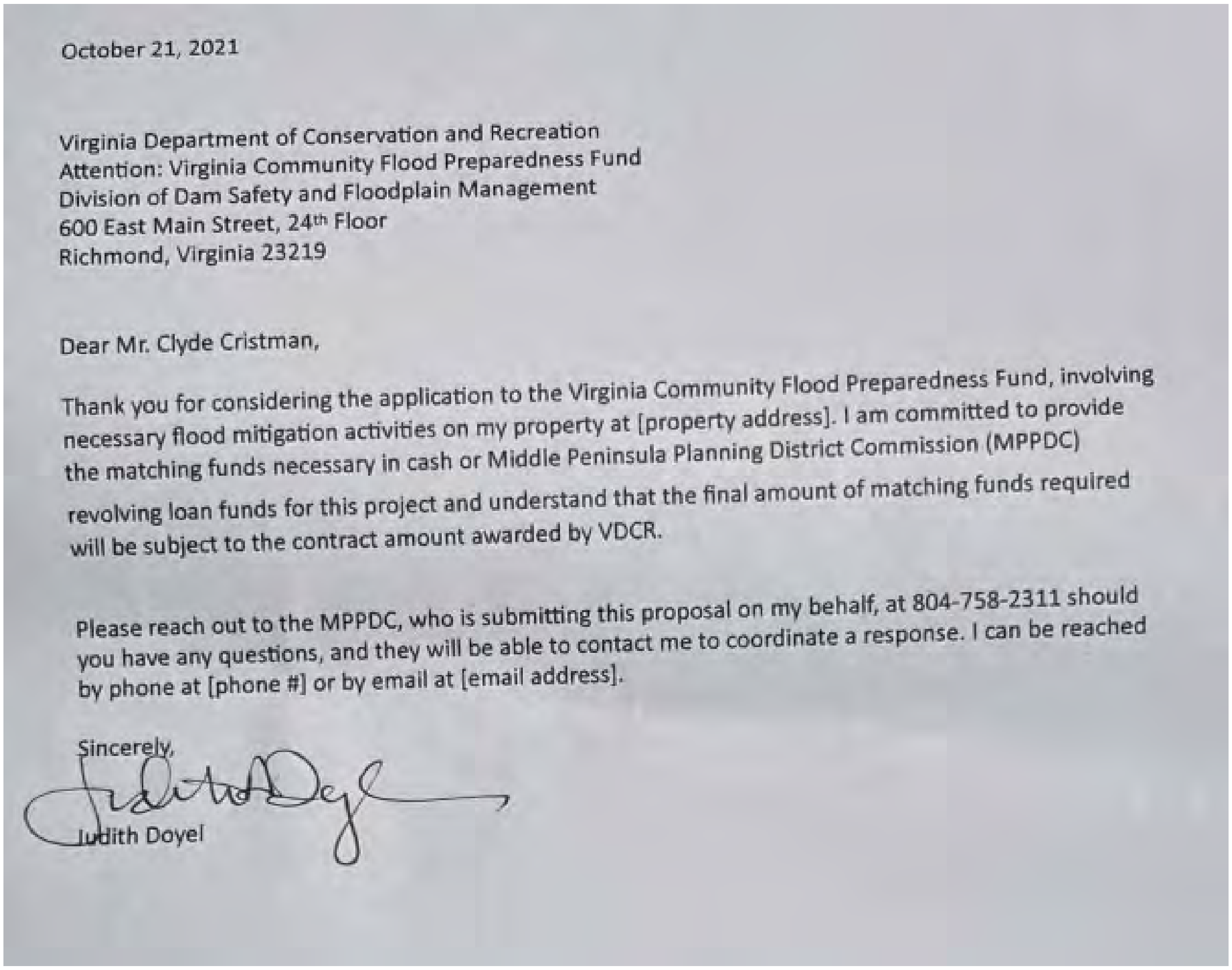
REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:



October 21, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at [phone #] or by email at [email address].

Sincerely,

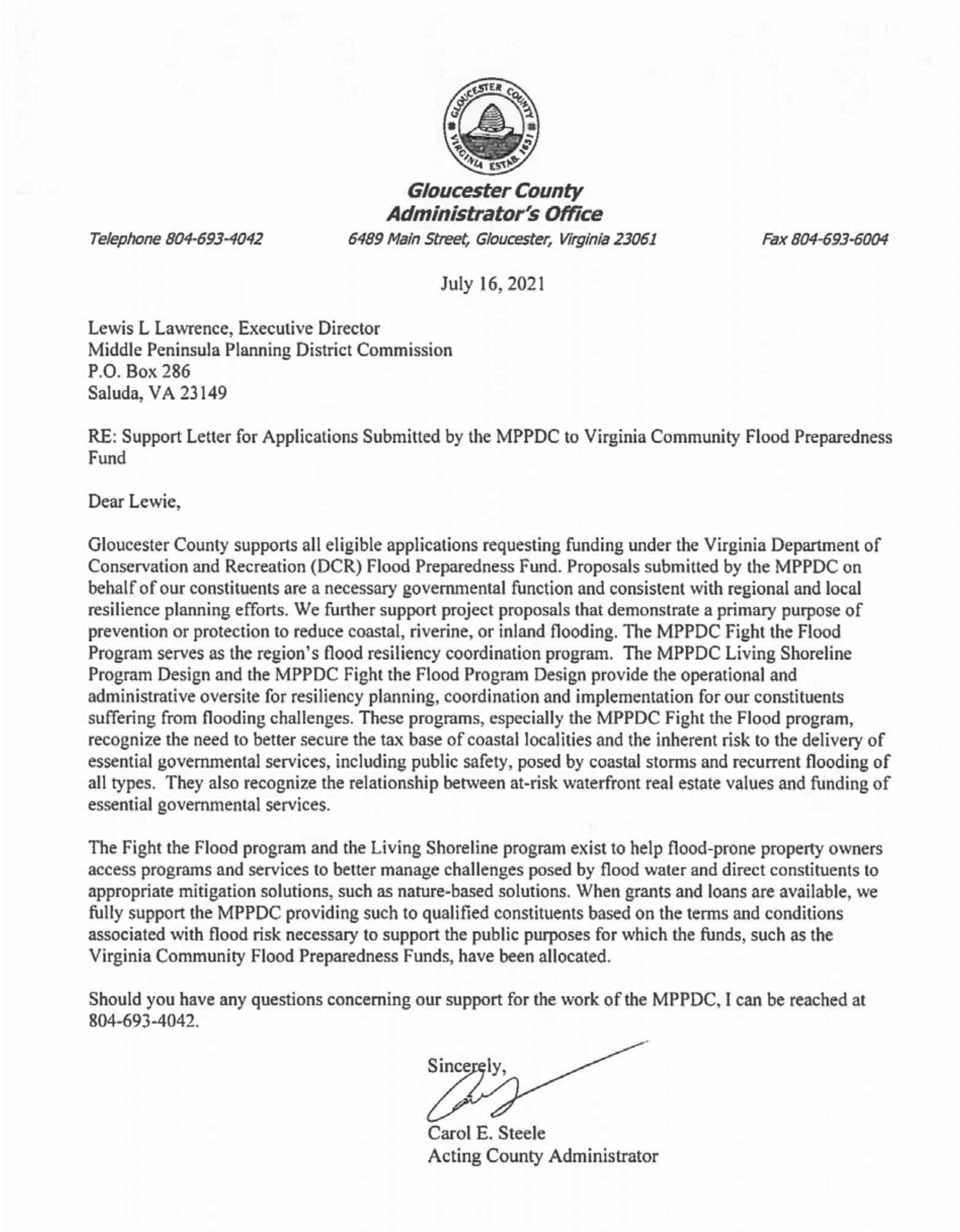
Judith Doyel

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

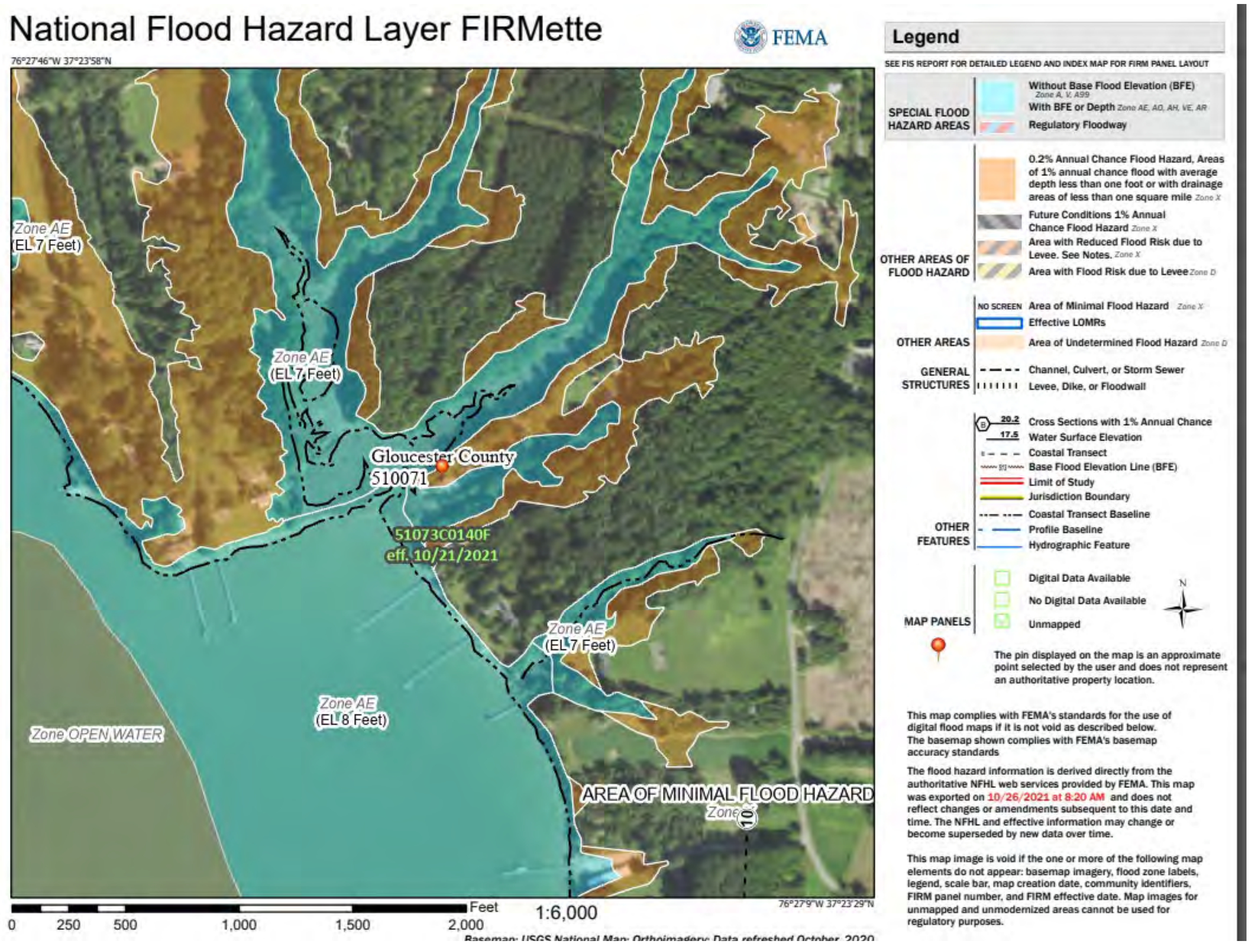
Sincerely,

Carol E. Steele
Acting County Administrator

APPENDIX 2

Project Location FIRMette

(FIRMette #: 51119C0215E)



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

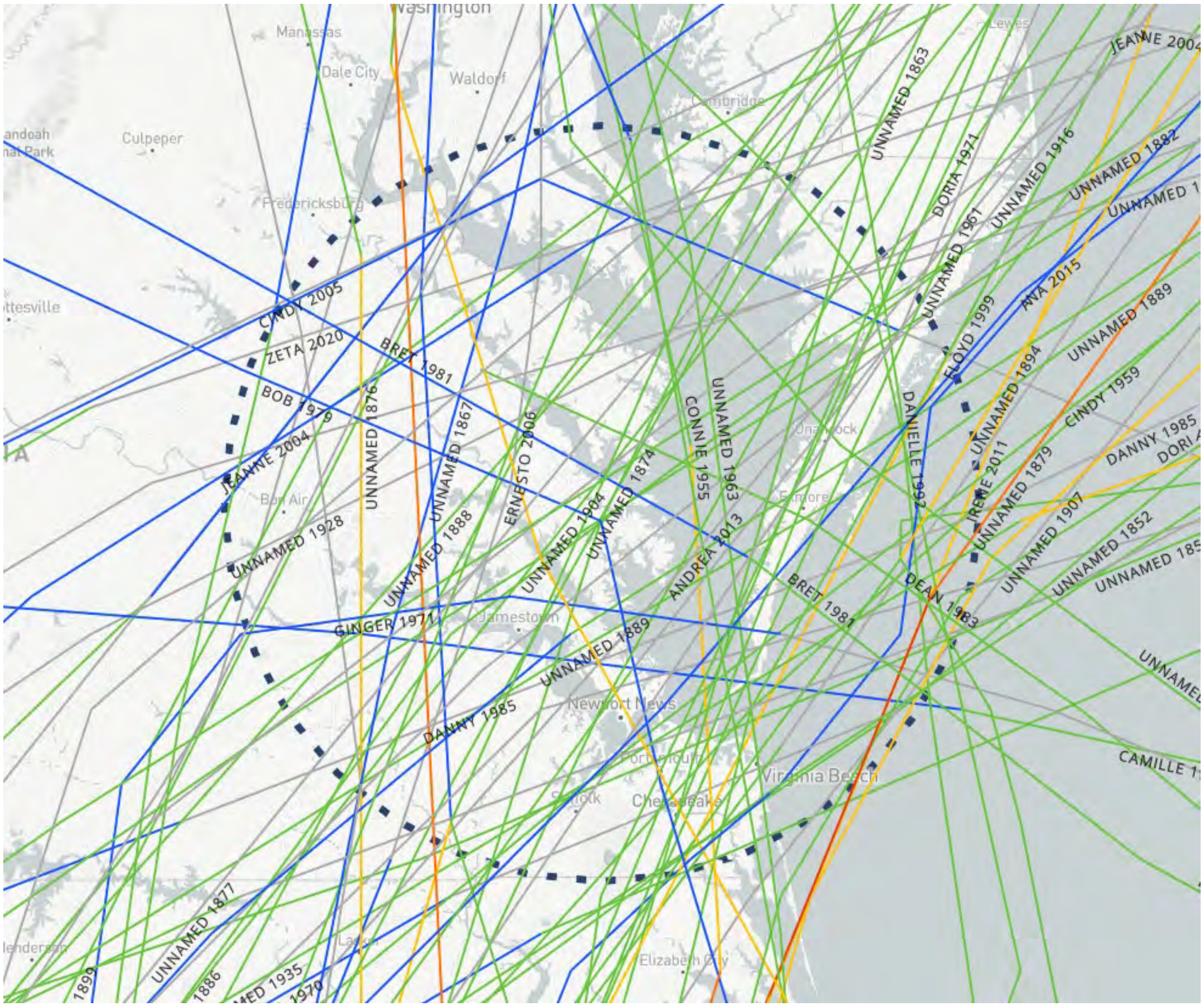
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/26/2021 at 8:20 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX 3

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.53939 -76.4962

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 4

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

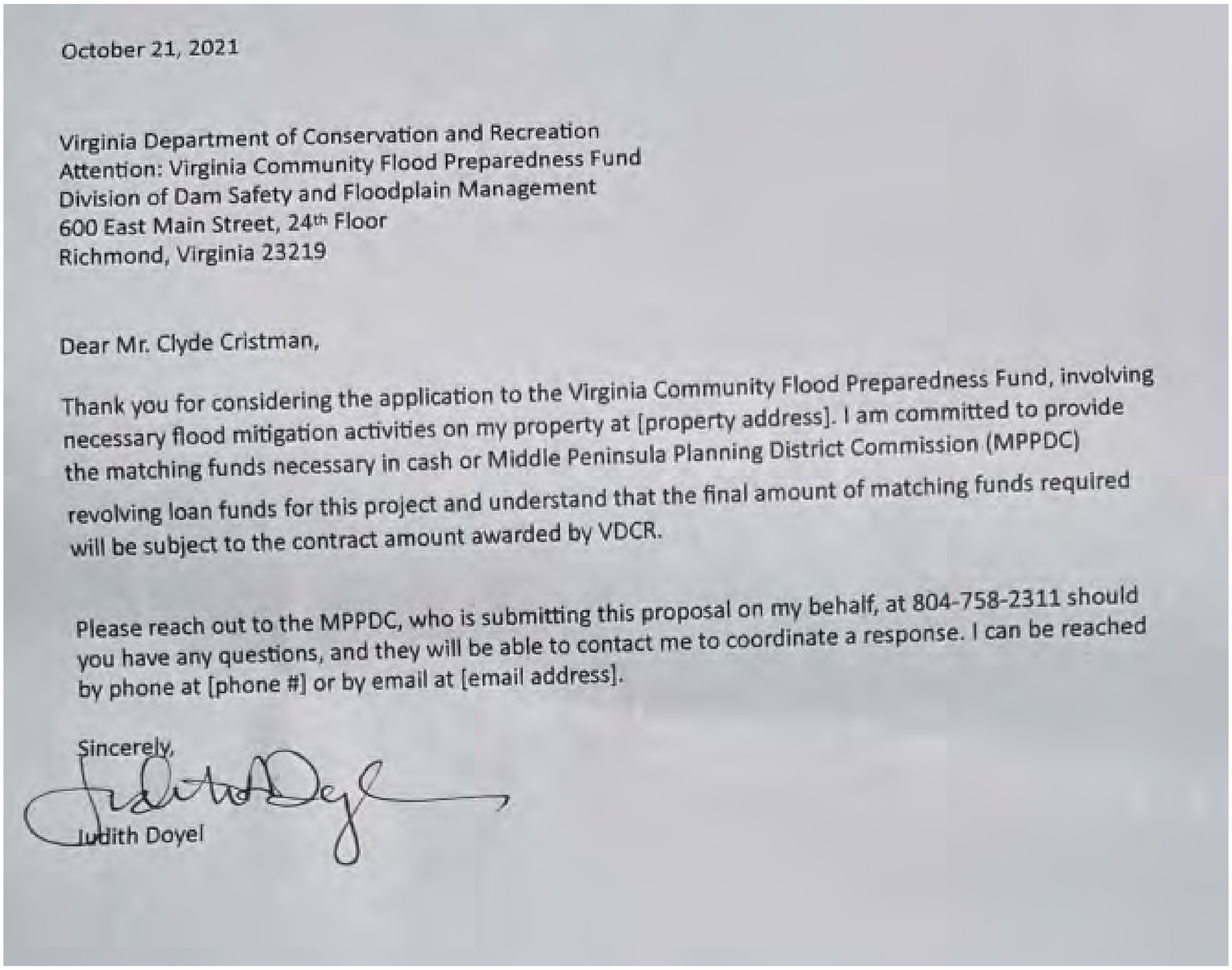
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 5

Match Commitment Letter



October 21, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at [phone #] or by email at [email address].

Sincerely,

Judith Doyel

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for Al Categories l

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for White Hall Road for Meeker

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0201F

Total Cost of Project: $17,399

Total Amount Requested: $12,180

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss in a high energy, high erosion VE flood zone. The Fight the Flood program (Figure 11A) is already having an impact on driving community scale applications with greater reach. Within 700 yds of the project site four Round 1 and Round 2 applicants have applied to the Flood Fund for financial assistance.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem-based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely "green" (i.e., consisting of only ecosystem elements) or "hybrid" (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on White Hall Lane in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*

    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

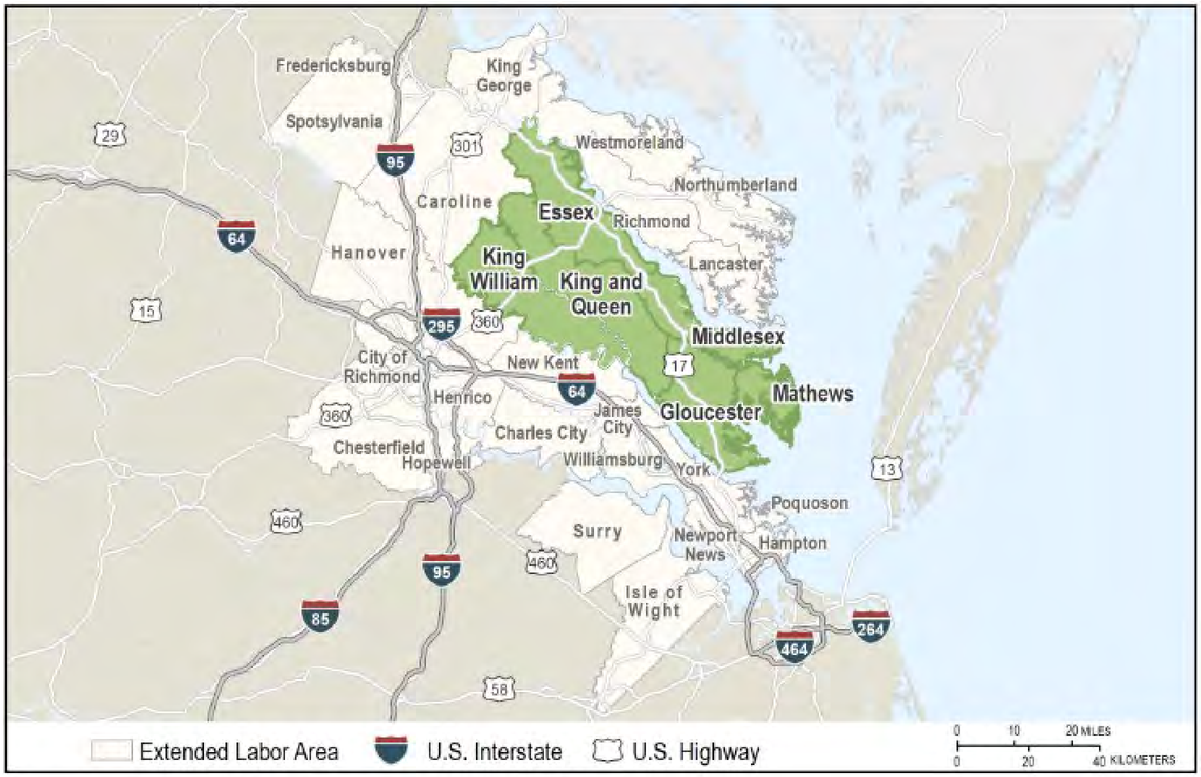
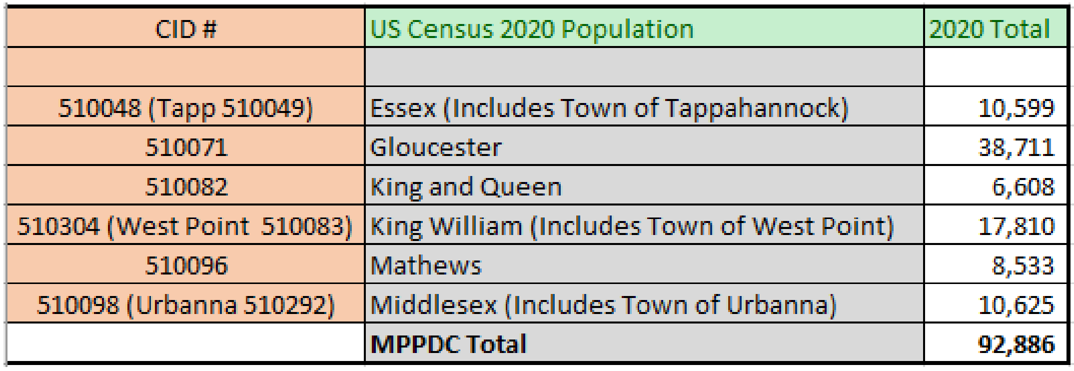


Figure 2. Middle Peninsula Population

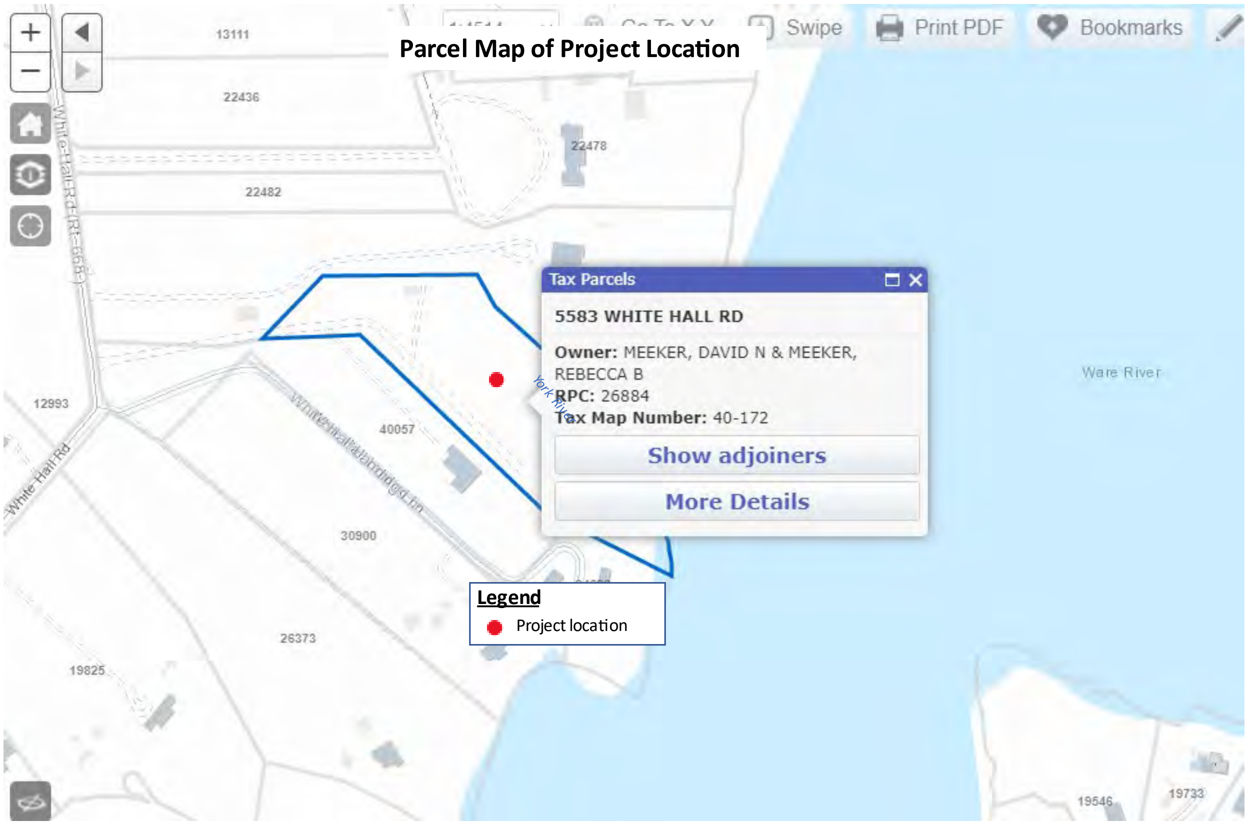


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature-based shoreline solution on one private property on White Hall Lane in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

Figure 4. Parcel Map of Project Location



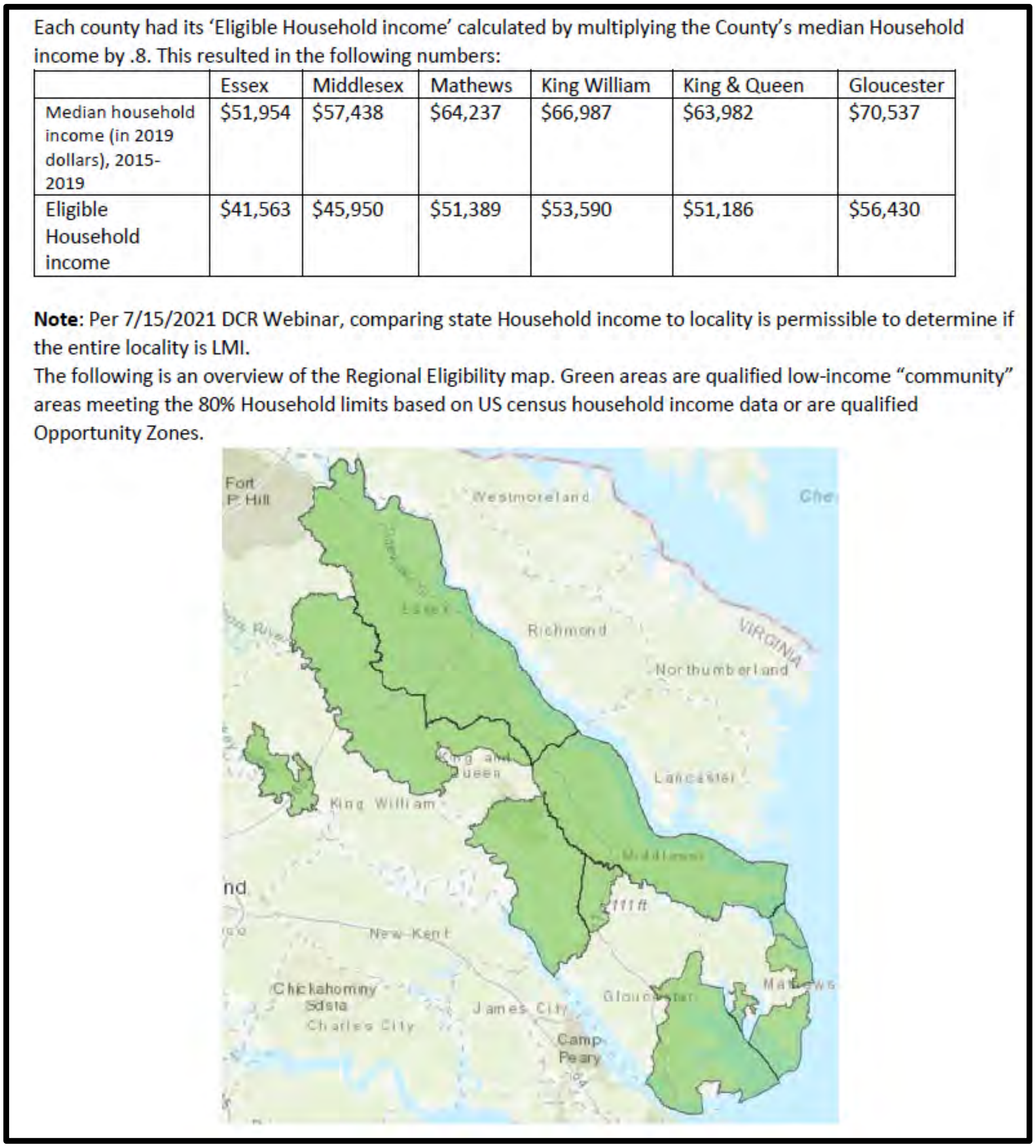
Tax Parcels

5583 WHITE HALL RD

Owner: MEEKER, DAVID N & MEEKER, REBECCA B
RPC: 26884
Tax Map Number: 40-172

Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

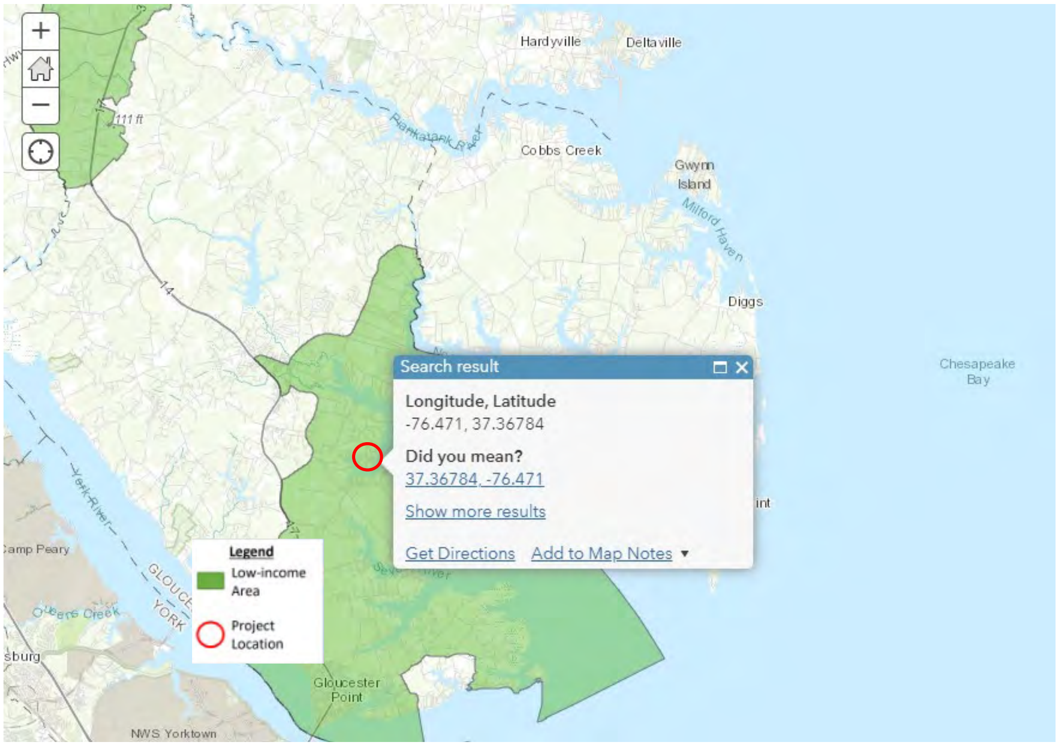
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

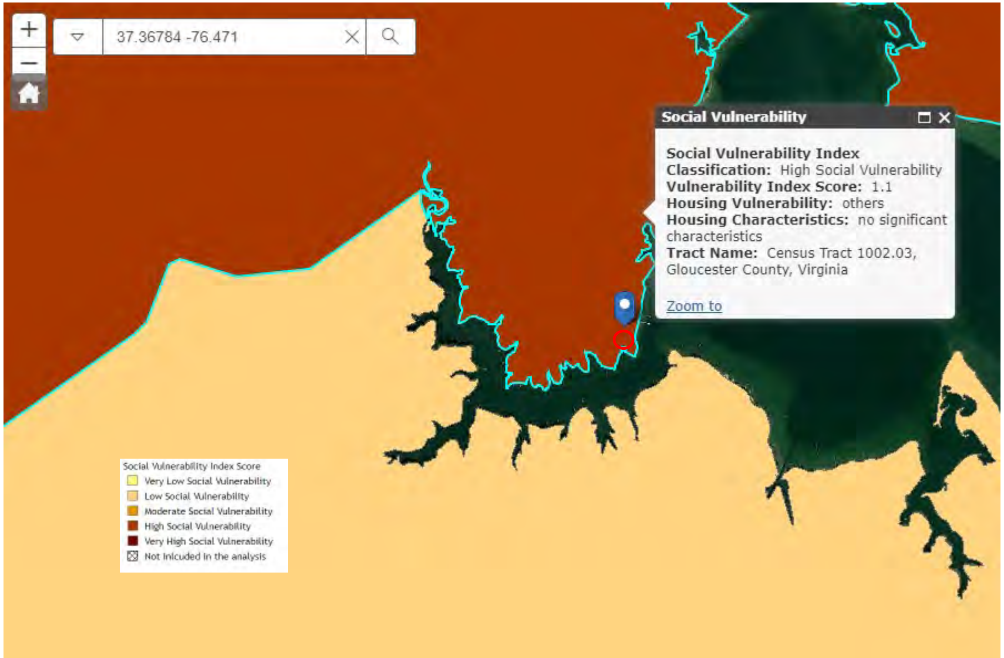
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



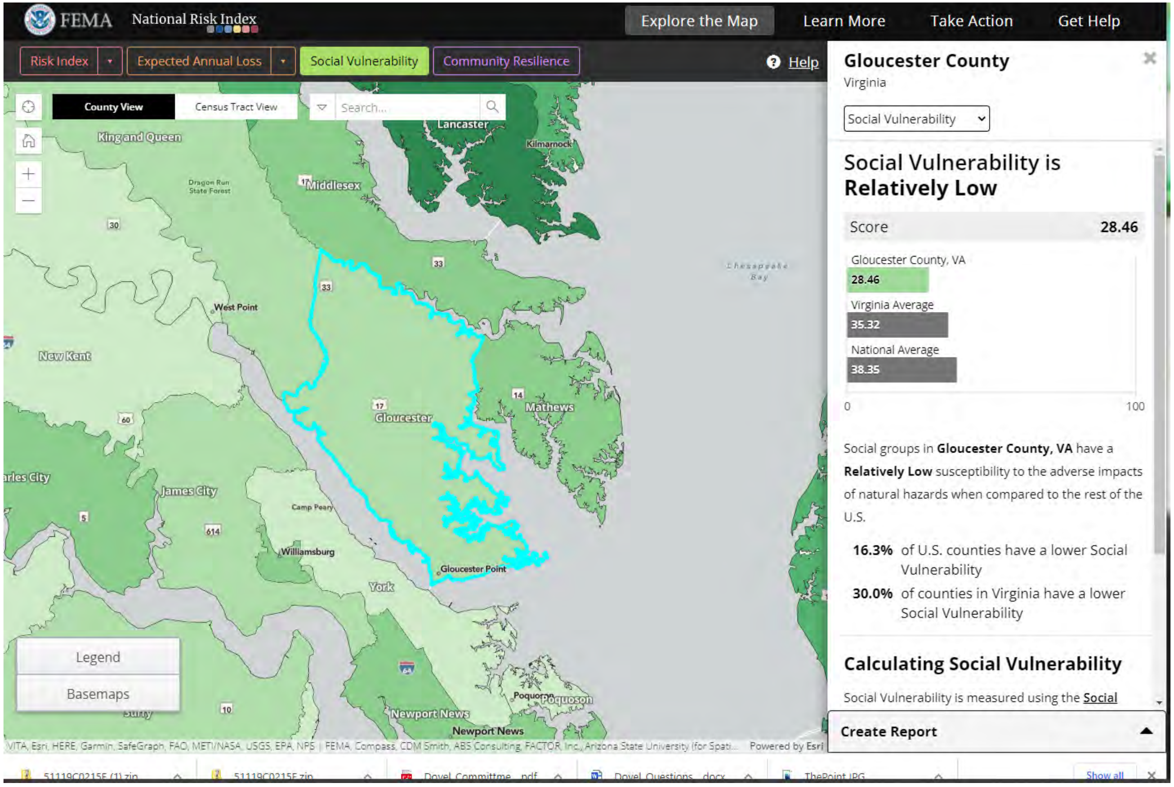
According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a high social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively low level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index
Classification: High Social Vulnerability
Vulnerability Index Score: 1.1
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1002.03, Gloucester County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Gloucester County
Virginia

Social Vulnerability is Relatively Low

Score	28.46
Gloucester County, VA	28.46
Virginia Average	35.32
National Average	38.35

0 100

Social groups in **Gloucester County, VA** have a **Relatively Low** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

16.3%	of U.S. counties have a lower Social Vulnerability
30.0%	of counties in Virginia have a lower Social Vulnerability

Calculating Social Vulnerability

Social Vulnerability is measured using the Social

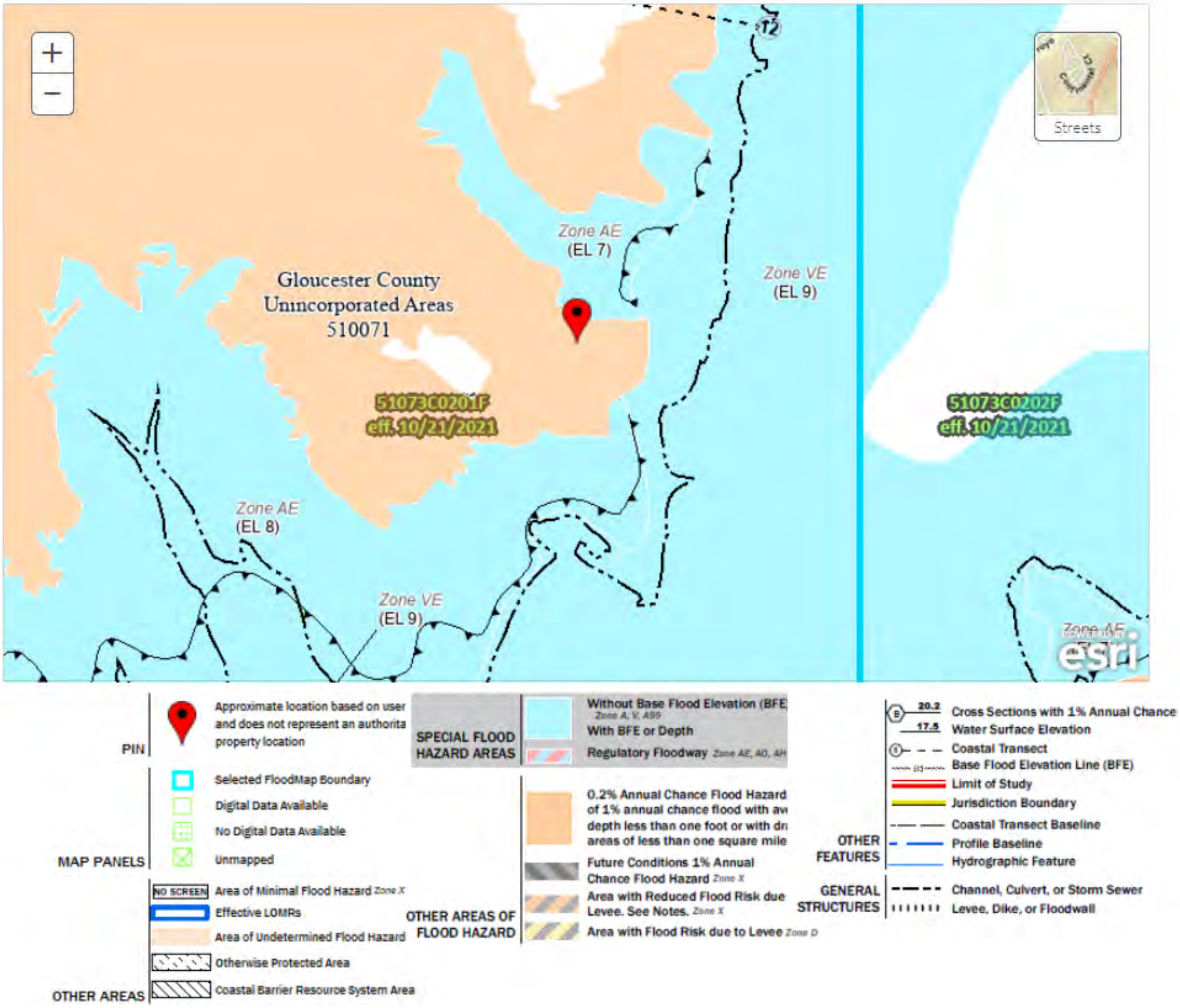
The project is located at 5583 White Hall Road, Gloucester VA 23061 (-76.471, 37.36784). The property was purchased in 1982 and has experienced a number of issues the past 40 years. Upon purchase of the property, there was once a reference stake of the edge of the loam in

1982. There was minor erosion at first, then occurring more rapidly in the past 10 years with significant changes in last three years, especially along south portion of shoreline where high tides reach the lawn and escarping areas (shoreline is approximately 425 feet). See accompanying pictures below.

Please see **Appendix 2** for additional property photos.

This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 10/21/2021).

Figure 9: Map of FEMA Flood Zones

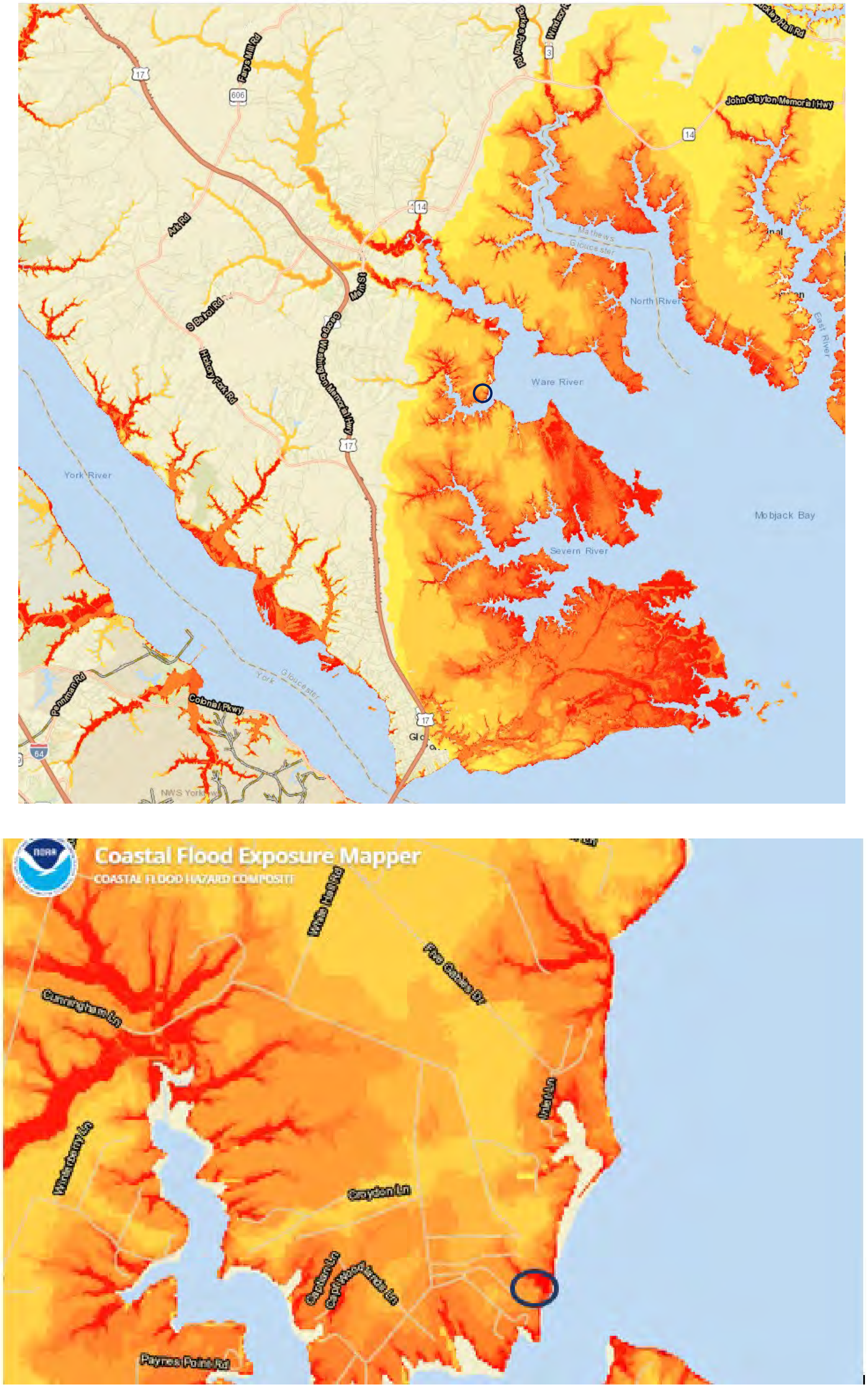


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 26,983.1 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 82 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017 (red)

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5.*

COMMUNITY SCALE BENFITES.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

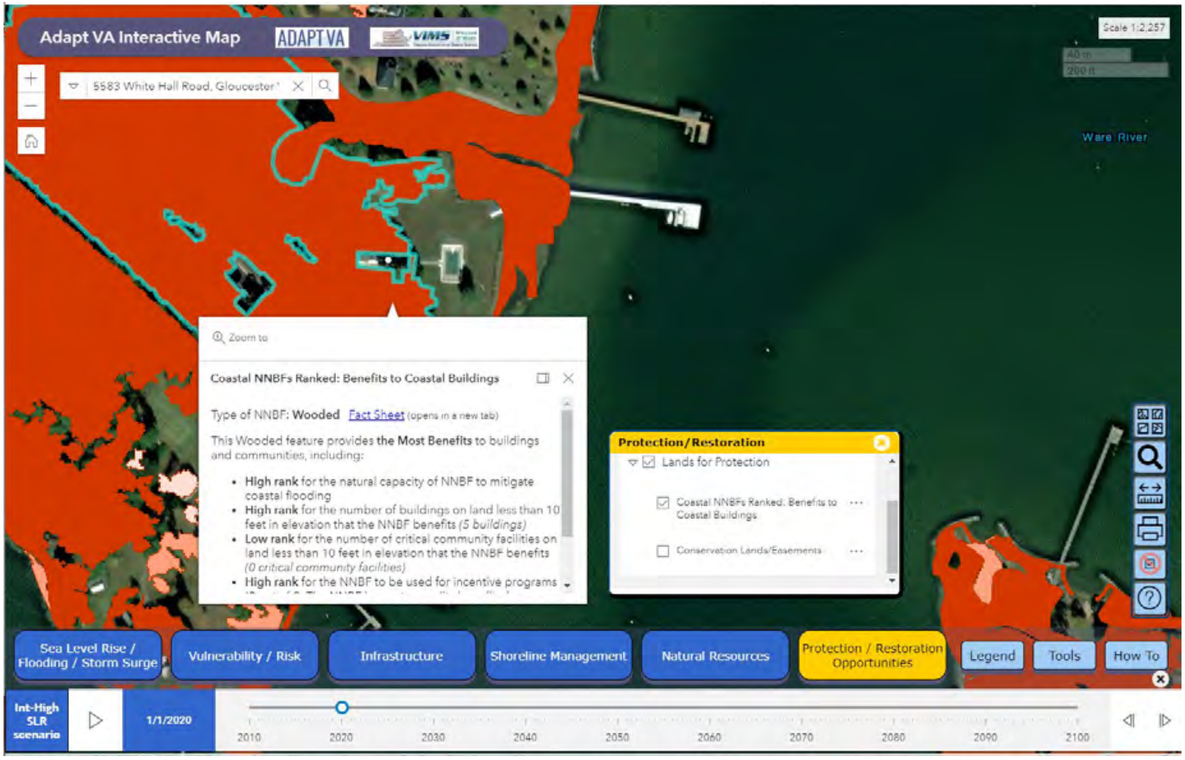
The Fight the Flood program (**Figure 11A**) is already having an impact on driving broader community scale applications. Within 700 yards of the project site, four Round 1 and Round 2 applicants have applied to the Flood Fund for financial assistance (red dots).

Figure 11a- Fight the Flood Wilson Creek Participants in Close Proximity

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(5 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs

Protection/Restoration

☑ Lands for Protection
  ☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings
  ☐ Conservation Lands/Easements

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

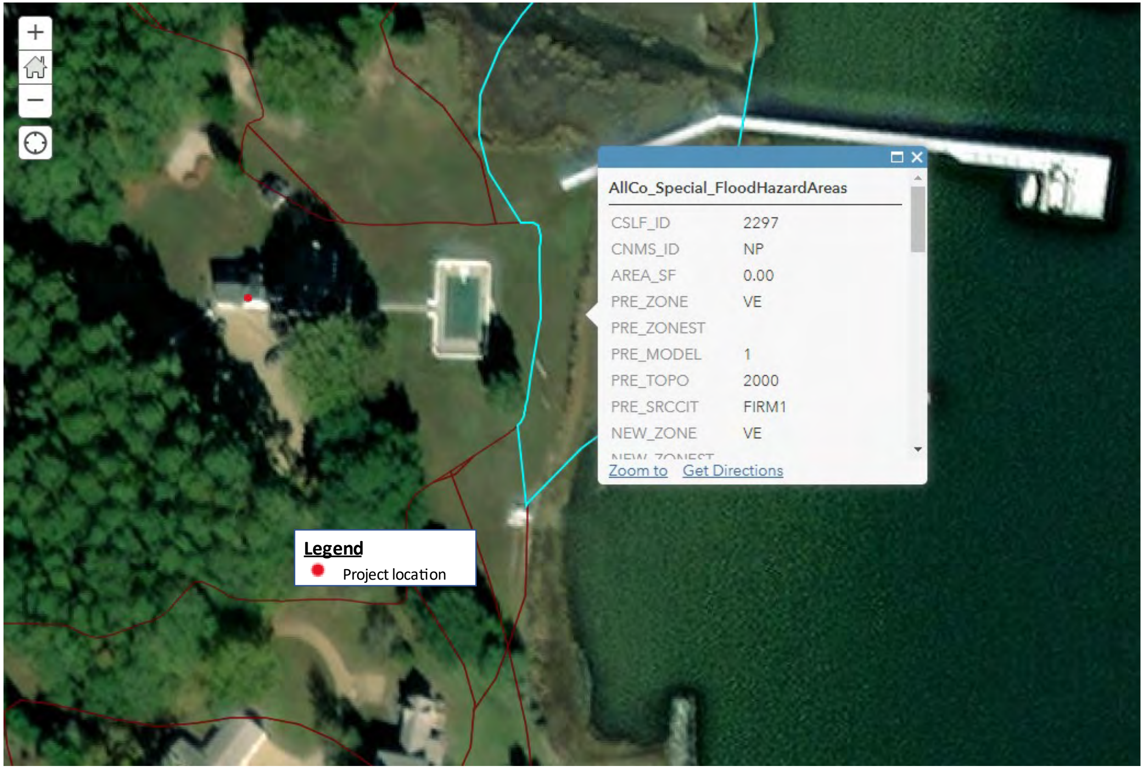
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area


AllCo_Special_FloodHazardAreas

CSLF_ID	2297
CNMS_ID	NP
AREA_SF	0.00
PRE_ZONE	VE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	FIRM1
NEW_ZONE	VE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			

Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula

PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that reside in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not reside in a low-income area, then the following does not apply. For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

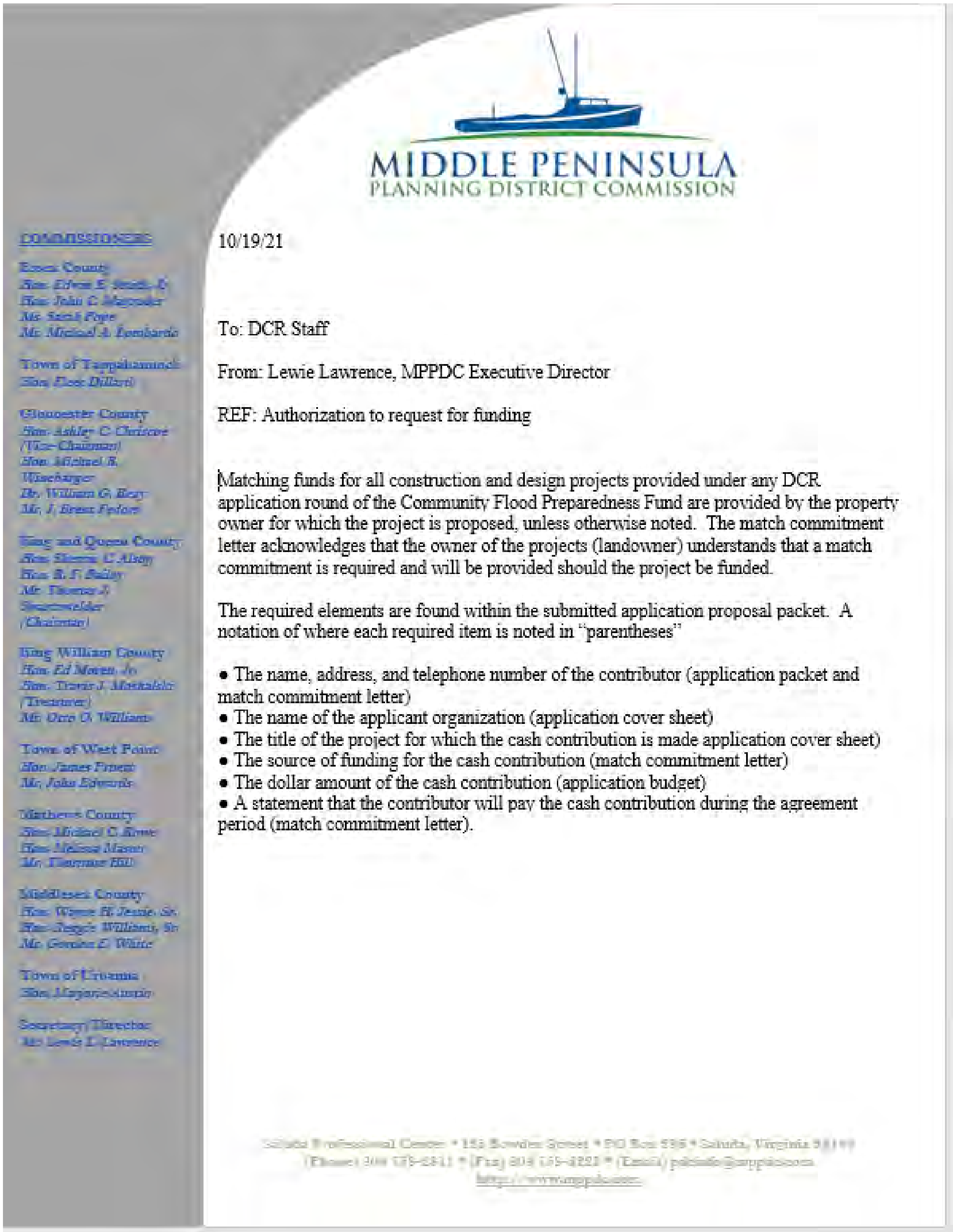
The proposed project budget is:

- ***Estimated total project cost: $17,399***
- ***Amount of funds requested from the Fund: $12,180***

Title: Meeker							**Budget (Cat. D)**
					Applicant 3		
Personnel Salaries/Wages	**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	16.75%	4.19%	$70,000		$957	$410	$1,367
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		11,500	8,050.00	3,450.00	$251	$107	$358
	15%	1,725.00	1,207.50	517.50			
Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)				$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)				$229	$160	$69	$229
Data services (53100/53101/53200/57900)				$69	$48	$21	$69
Material services (53400/53500/57200/57500)				$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)				$329	$230	$99	$329
				$15,674			
SUBTOTAL: Direct Costs					$12,180	$5,219	$17,399
Total					**$12,180**	**$5,219**	**$17,399**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,180**	**$5,219**	**$17,399**

The Middle Peninsula PDC staff will manage and administer this project. MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

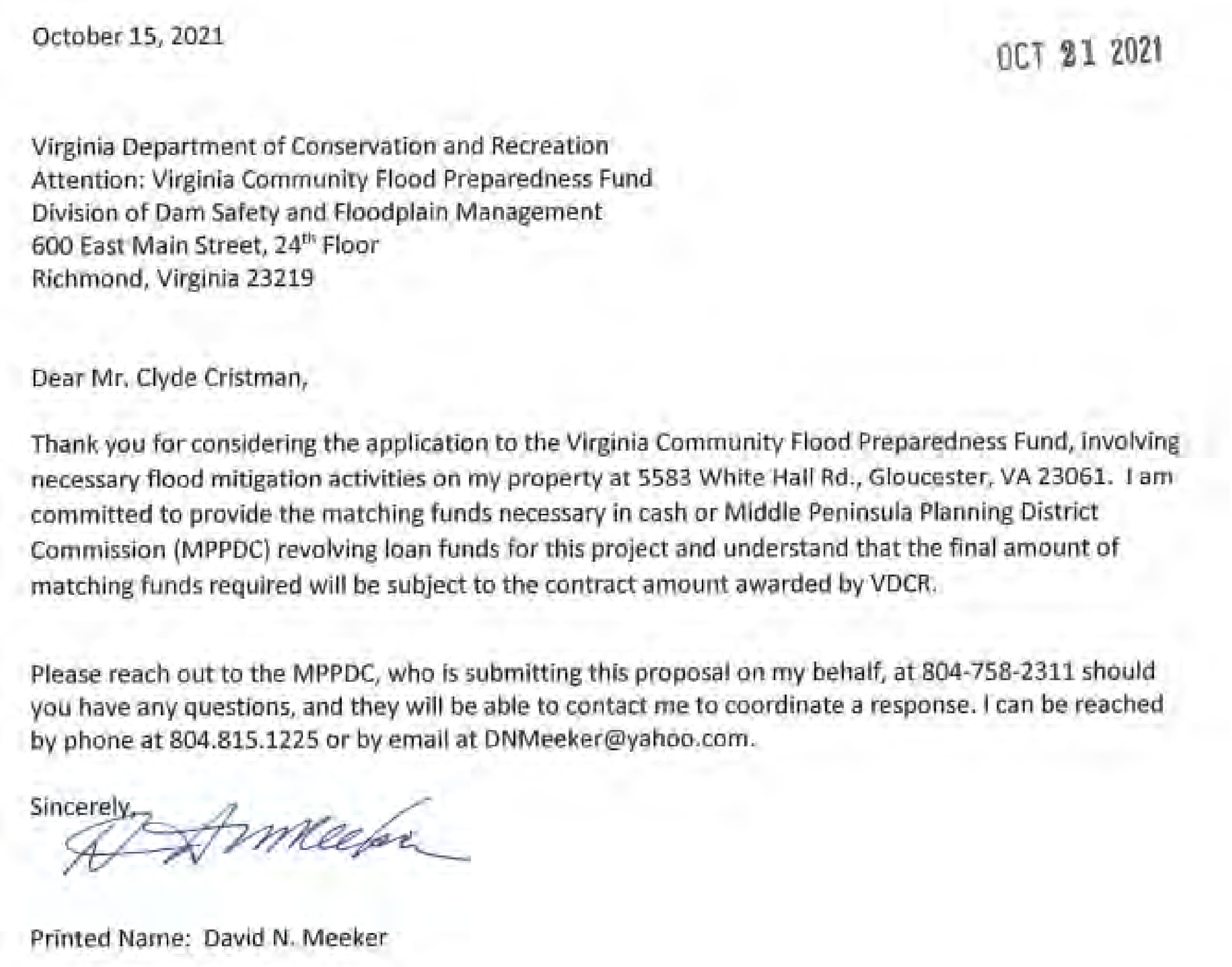
REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:



October 15, 2021

OCT 21 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 5583 White Hall Rd., Gloucester, VA 23061. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804.815.1225 or by email at DNMeeker@yahoo.com.

Sincerely,

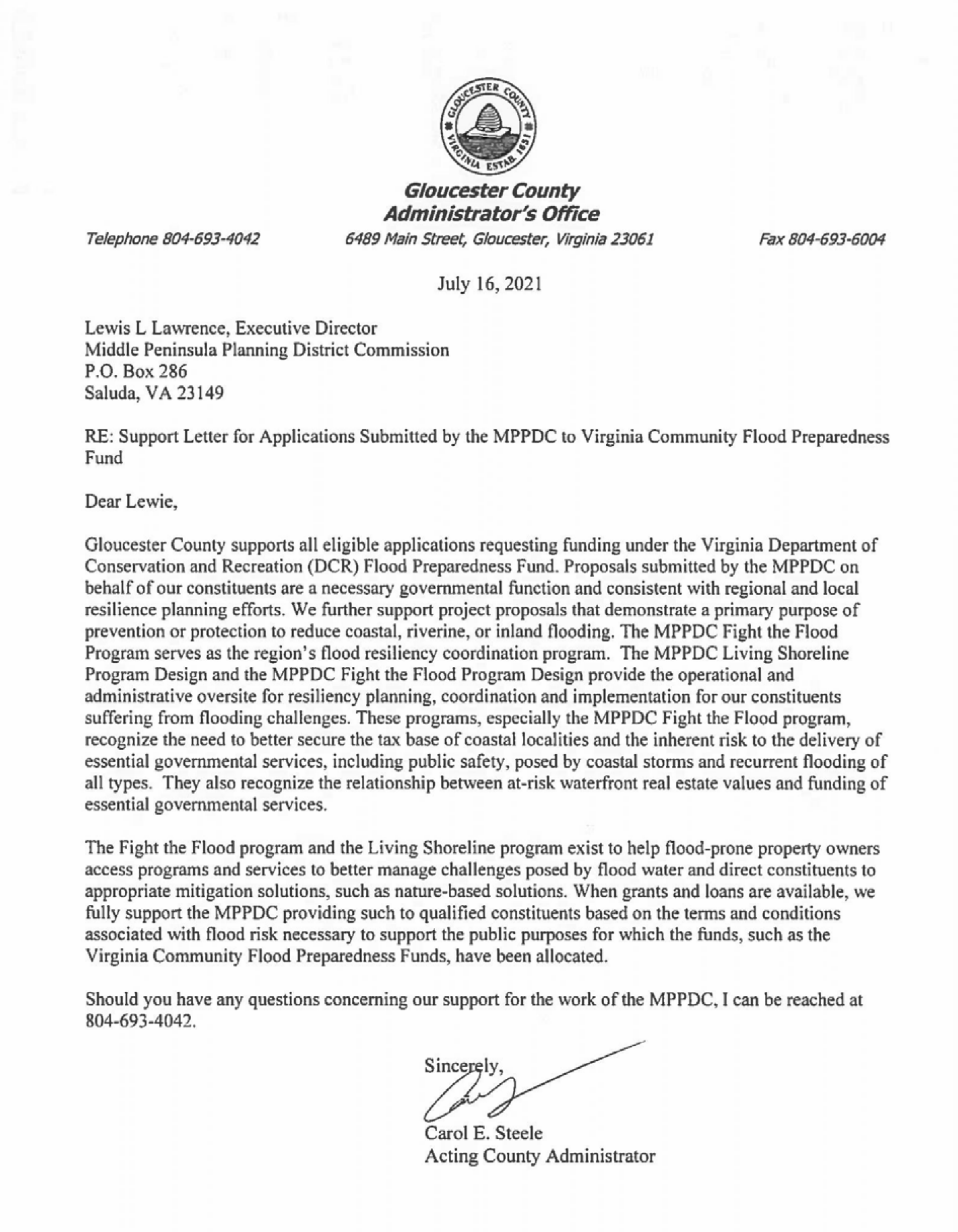
Printed Name: David N. Meeker

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

Carol E. Steele
Acting County Administrator

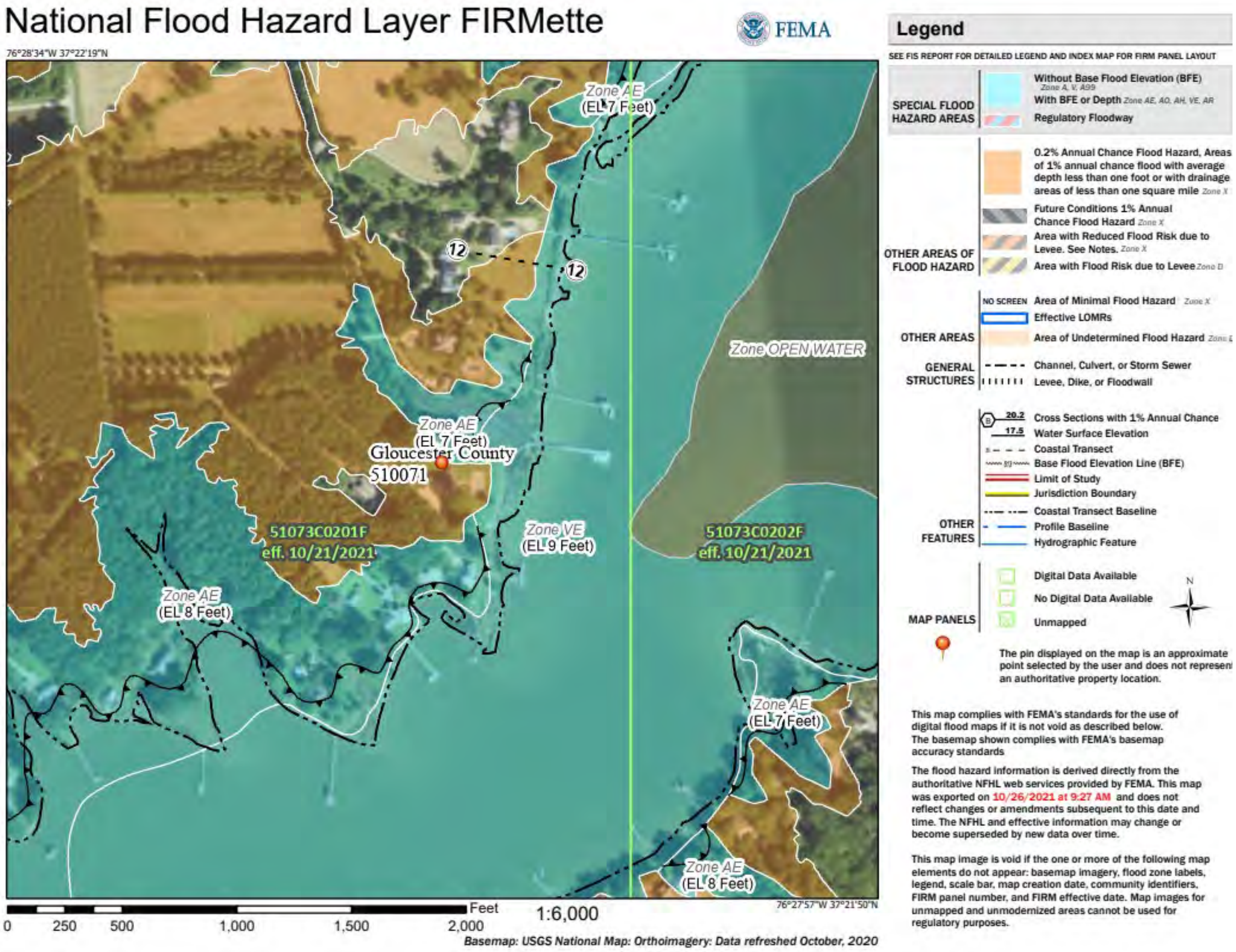
APPENDIX 2

Additional Property Photos

APPENDIX 3

Project Location FIRMette

(FIRMette #: 51073C0201F)



The pin displayed on the map is an approximate point selected by the user and does not represen an authoritative property location.

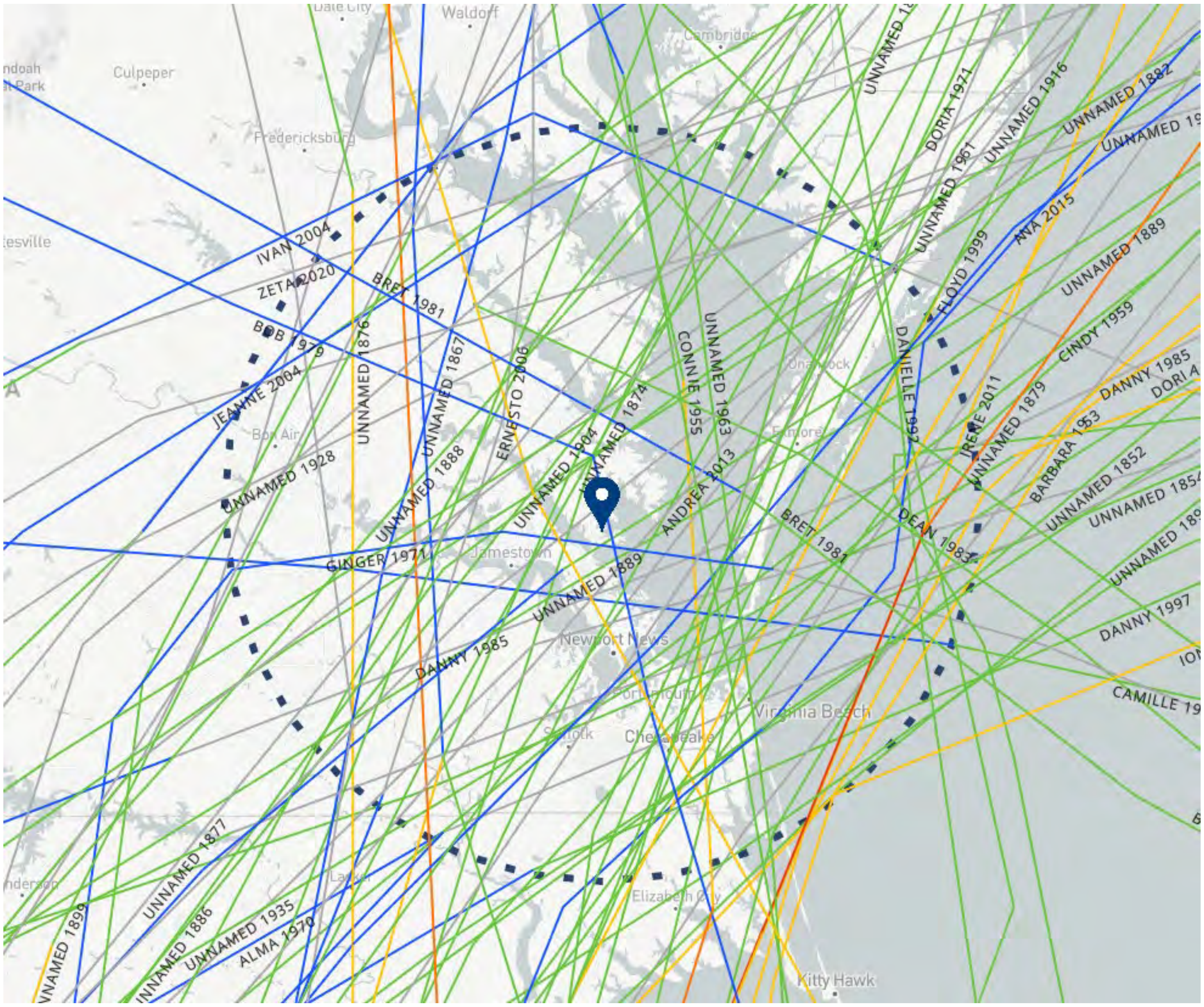
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/26/2021 at 9:27 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.36784 -76.471

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)

Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)

In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)

This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

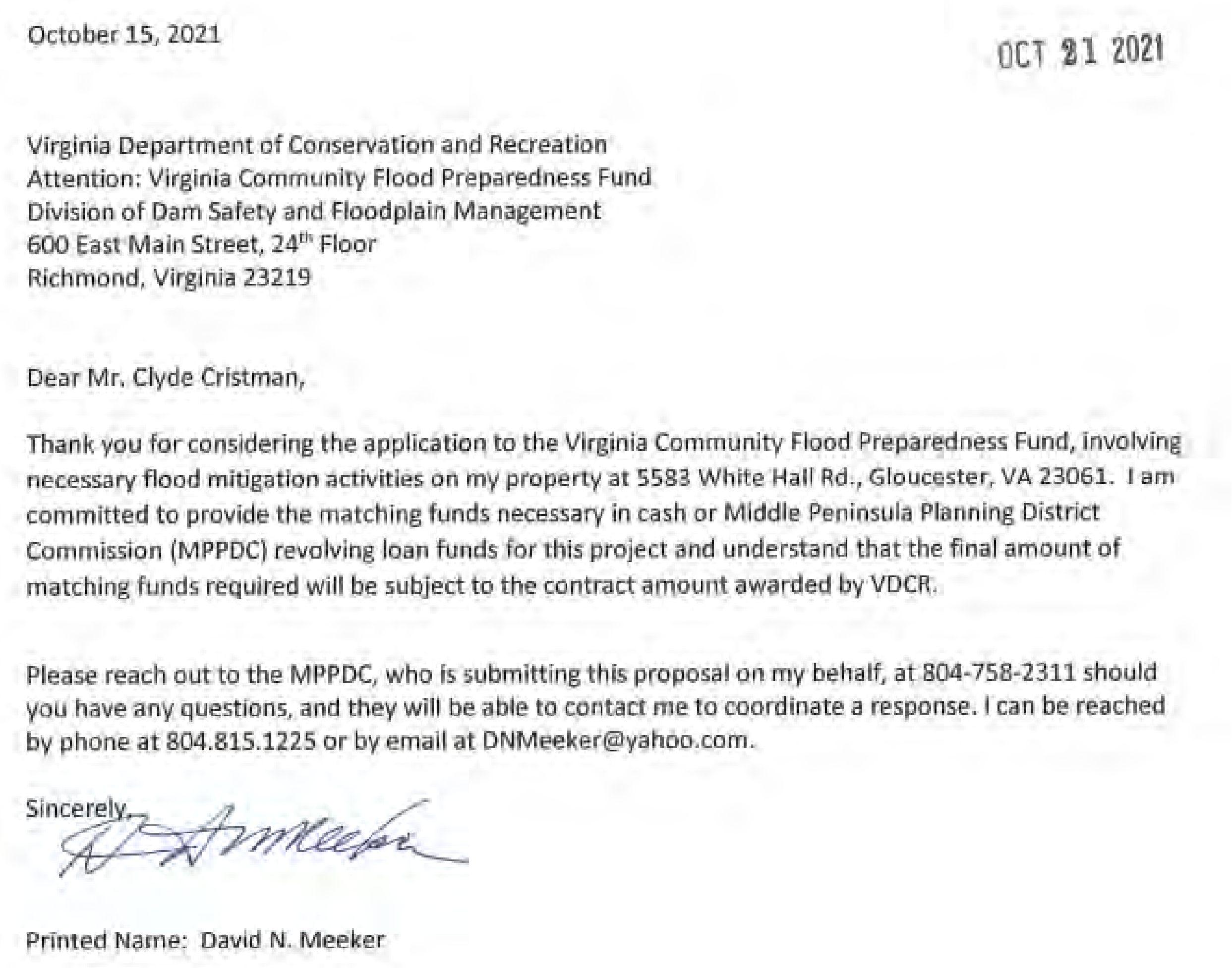
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



October 15, 2021

OCT 21 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 5583 White Hall Rd., Gloucester, VA 23061. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804.815.1225 or by email at DNMeeker@yahoo.com.

Sincerely,

Printed Name: David N. Meeker

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Ware Point Road for Morgan

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- X Stream bank restoration or stabilization.
- X Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0143F

Total Cost of Project: ________$17,399_____________________

Total Amount Requested: _____$12,180_____________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft joint permit application to reduce the impacts of storm events, flooding, and wetland loss. The property owner has been seeking a solution for over 20 years for two contiguous parcels along the North River in Gloucester County; however, has not been in a position to support the funding necessary for construction of a nature-based solution which was designed in the late 1990s. This project will revisit and modify the existing design to incorporate nature-based features which protect further flooding and erosion of the shoreline and property to the greatest extent possible. The project site needs a more comprehensive design solution to achieve an effective level of flood protection.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on two private property parcels located on Ware Point Road in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fighttheflooodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

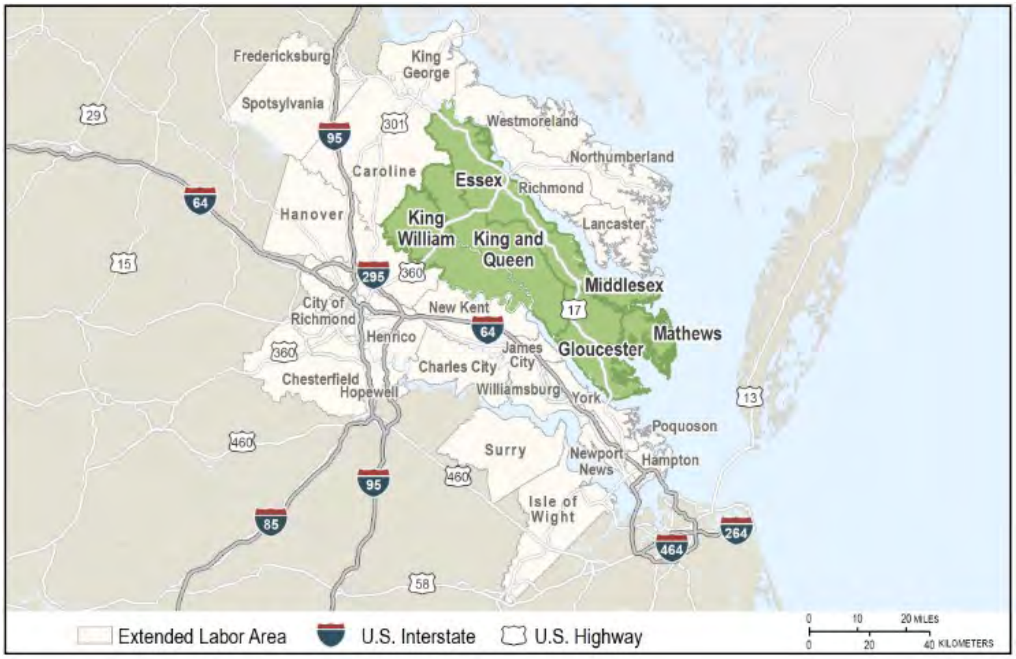
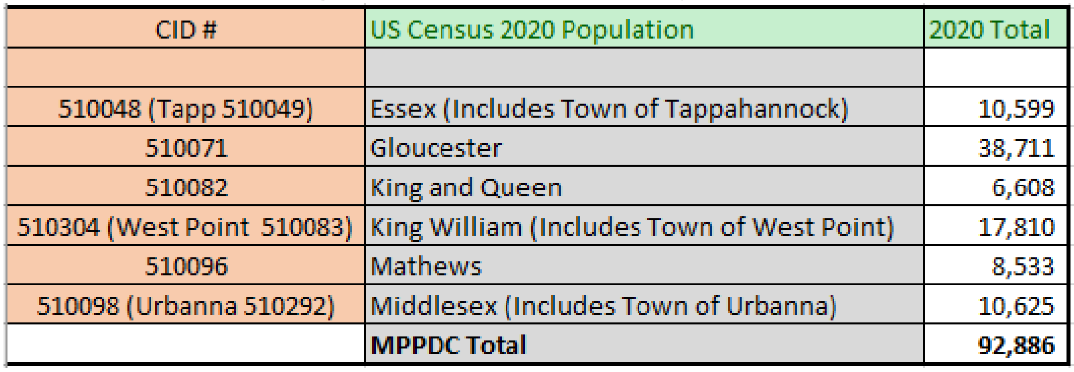


Figure 2. Middle Peninsula Population

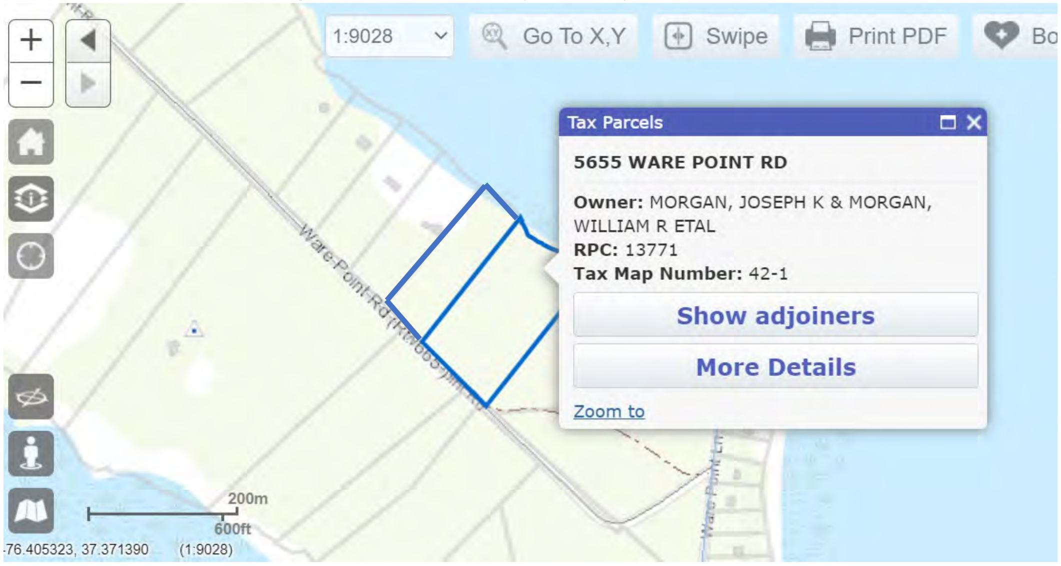


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Ware Point Road in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

Figure 4. Parcel Map of Project Location

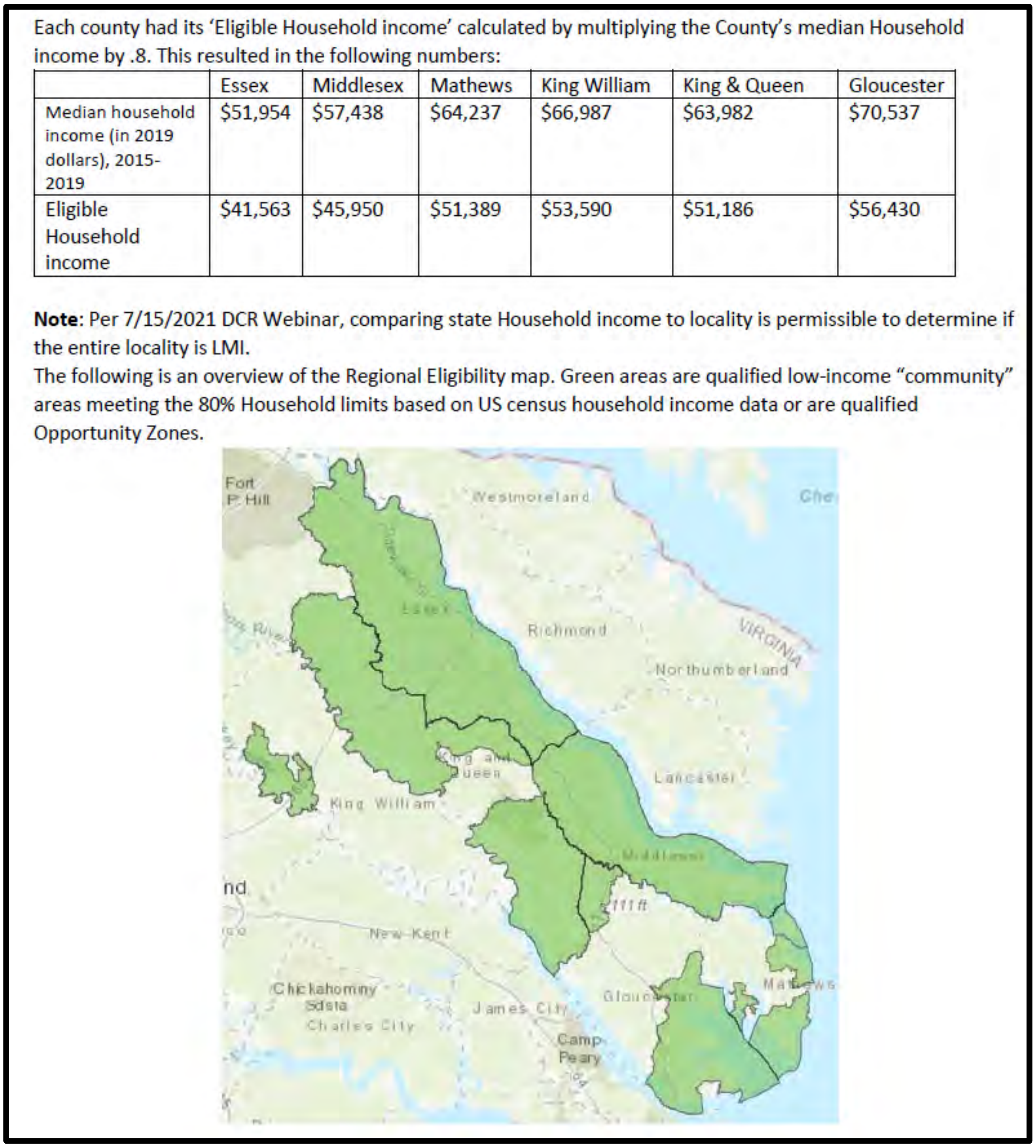


5655 WARE POINT RD

Owner: MORGAN, JOSEPH K & MORGAN, WILLIAM R ETAL
RPC: 13771
Tax Map Number: 42-1

Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area

Search result

Longitude, Latitude
-76.4127, 37.37505

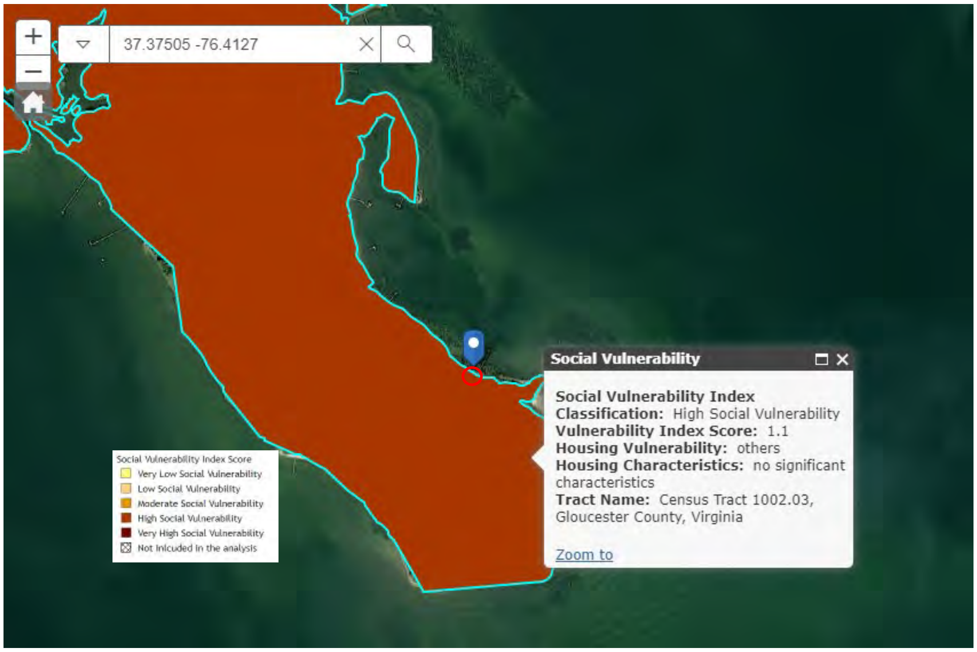
Did you mean?
37.37505, -76.4127

Show more results

Get Directions Add to Map Notes ▾

According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a high social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively low level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

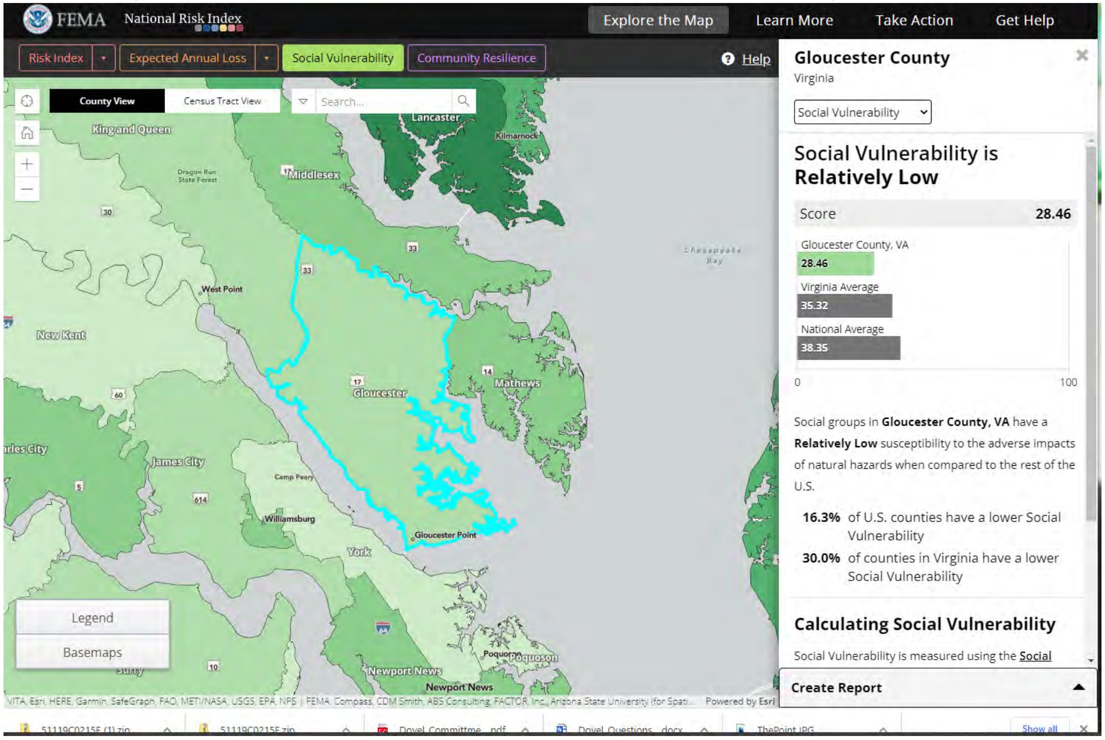


Social Vulnerability

Social Vulnerability Index Classification: High Social Vulnerability
Vulnerability Index Score: 1.1
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1002.03, Gloucester County, Virginia

Zoom to

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Gloucester County
Virginia

Social Vulnerability

Social Vulnerability is **Relatively Low**

Score 28.46

Gloucester County, VA 28.46
Virginia Average 35.32
National Average 38.35
0 100

Social groups in **Gloucester County, VA** have a **Relatively Low** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

16.3% of U.S. counties have a lower Social Vulnerability

30.0% of counties in Virginia have a lower Social Vulnerability

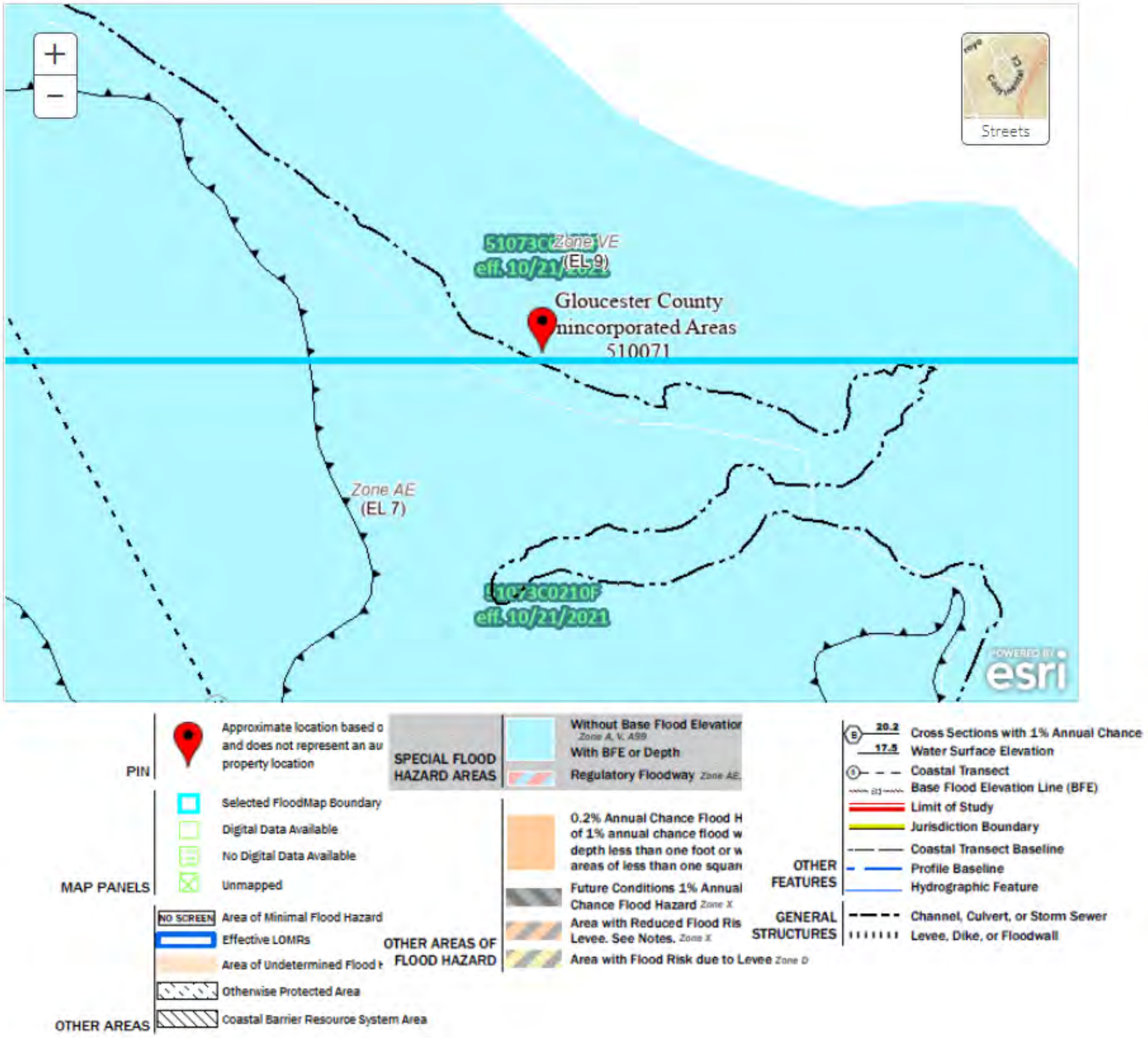
Calculating Social Vulnerability

Social Vulnerability is measured using the Social

The project is located at 5655 Ware Point Road, Gloucester, VA 23061 (-76.4127, 37.37505). The shoreline faces north-northwest and has a large fetch across the North River to Mathews County. Winter storms are particularly problematic on the shoreline. Erosion of both beach, grass, and pine trees has occurred for many years (shoreline is approximately 600 feet). Two breakwaters 60’ to 70’ in length with sand fill are believed to be an ideal natural design solution based on previous design concepts proposed over 20 years ago. A design idea was proposed in 1999 from Coastal Design and Construction; however, it did not proceed due to the property owner’s inability to cover the costs associated with construction. Recently, the property owner has had preliminary discussions with Jeff Watkins. See accompanying pictures below and in **Appendix 2**.

This site is located within the VE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 10/21/2021).

Figure 9: Map of FEMA Flood Zones

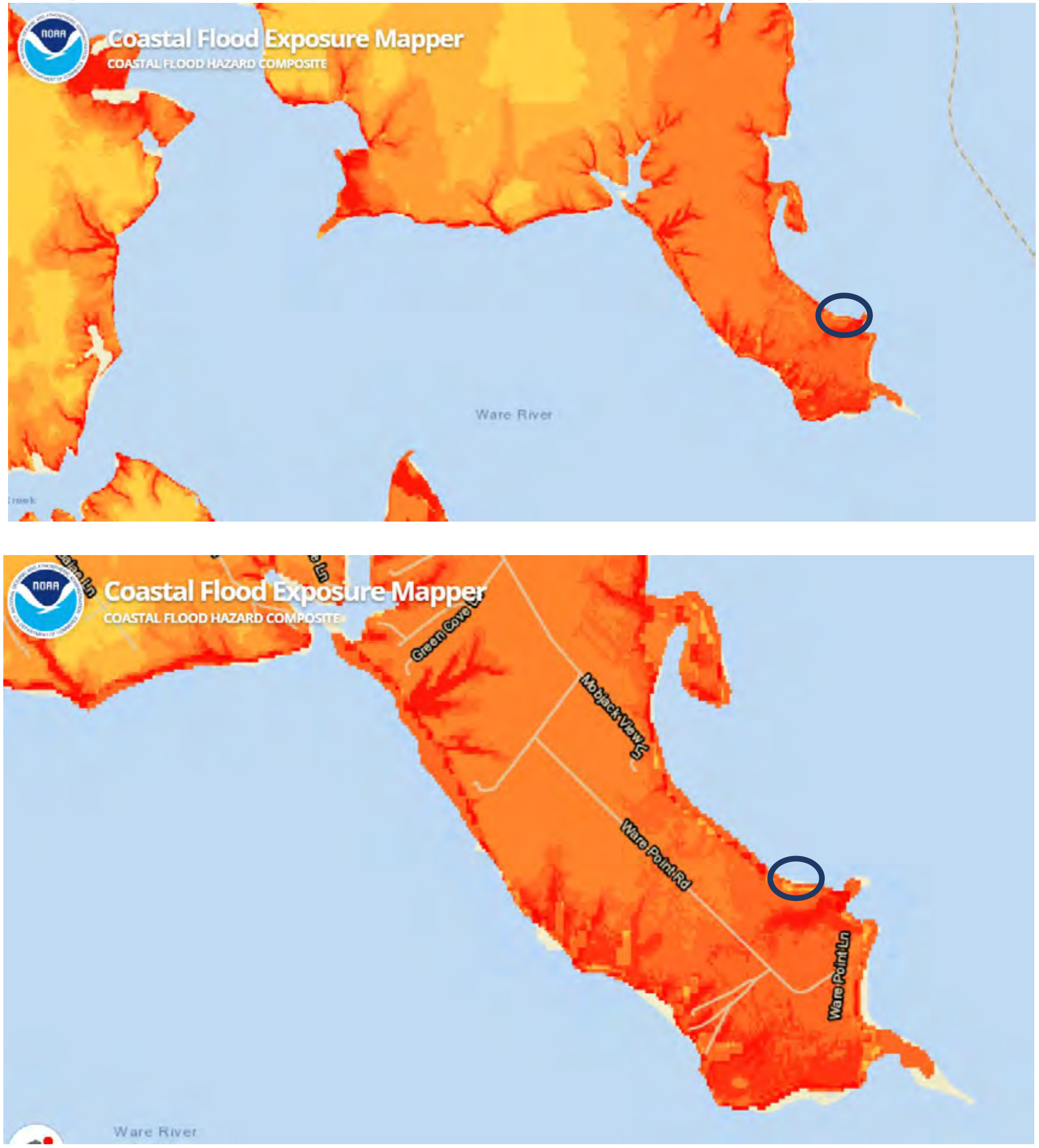


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 66,968 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 87 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5*.

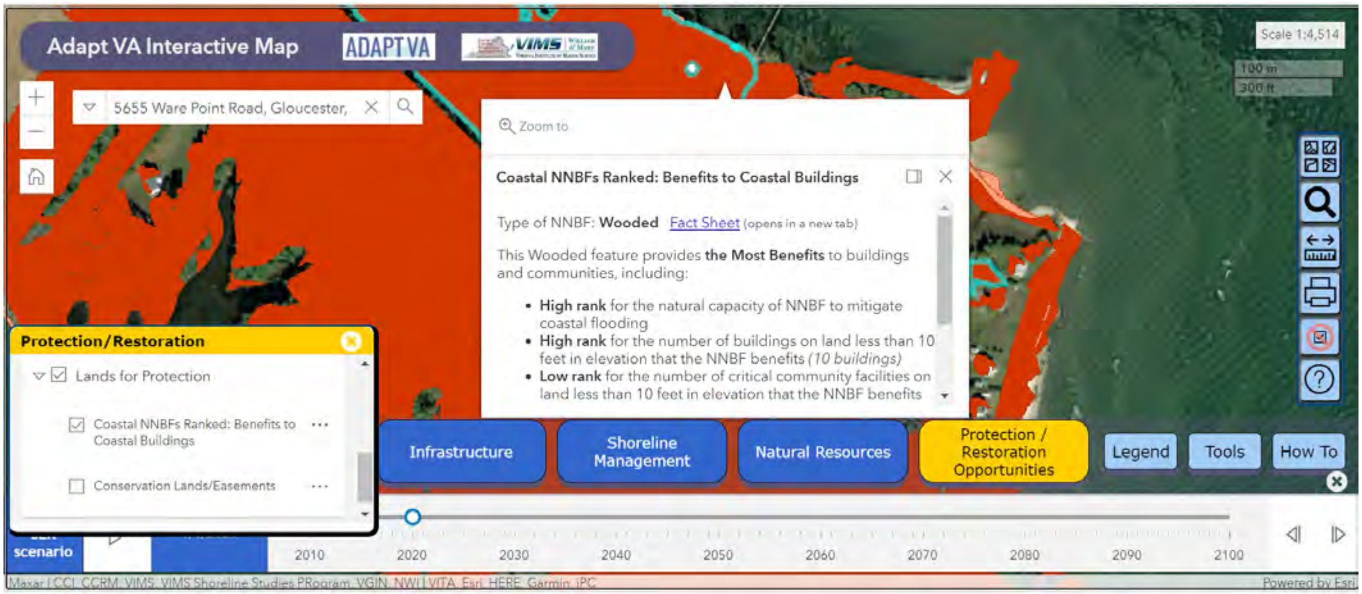
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in Figure 12. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(10 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits

Protection/Restoration

☑ Lands for Protection

☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

☐ Conservation Lands/Easements

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

***GOALS AND OBJECTIVES*.**

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the Oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Gloucester County, which is local government, public schools, and the medical community.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

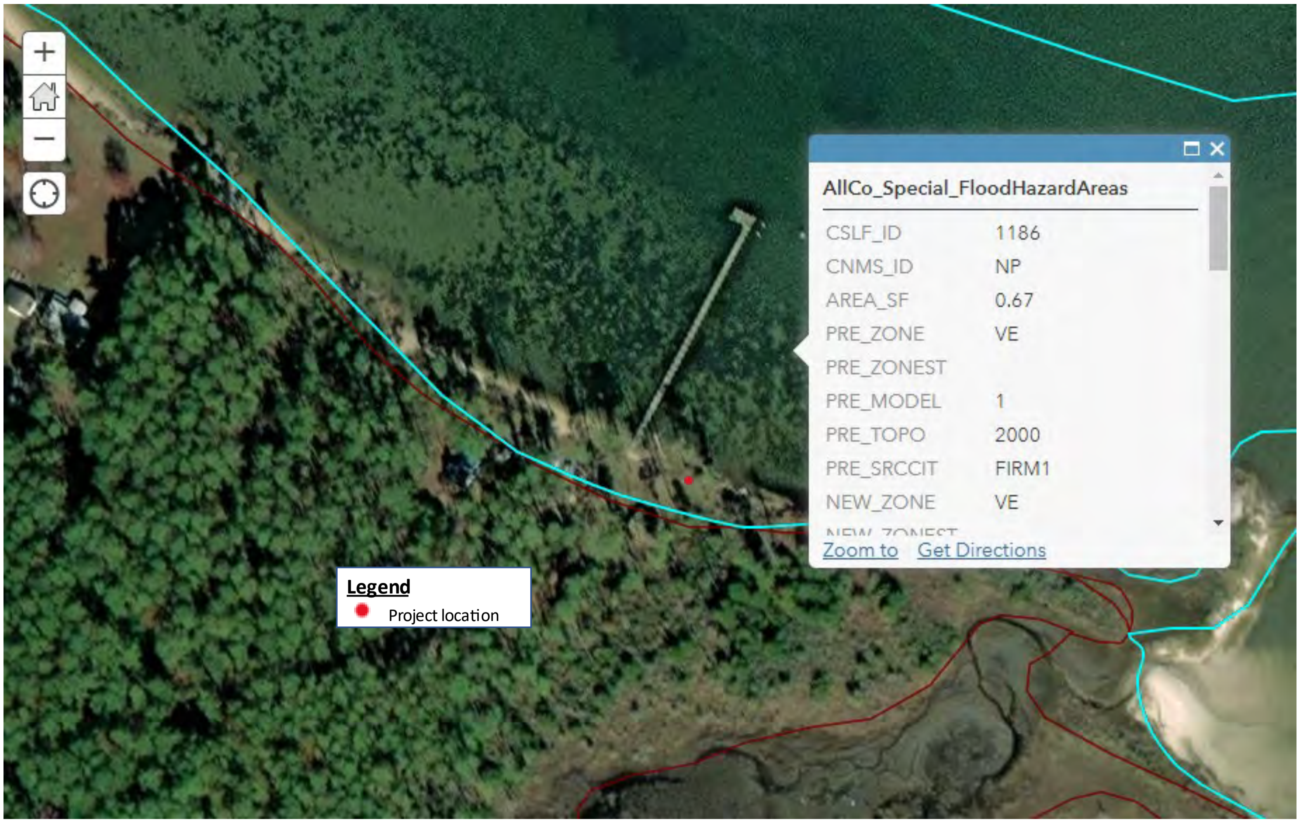
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	1186
CNMS_ID	NP
AREA_SF	0.67
PRE_ZONE	VE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	FIRM1
NEW_ZONE	VE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

<u>Long Term Planning</u>

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

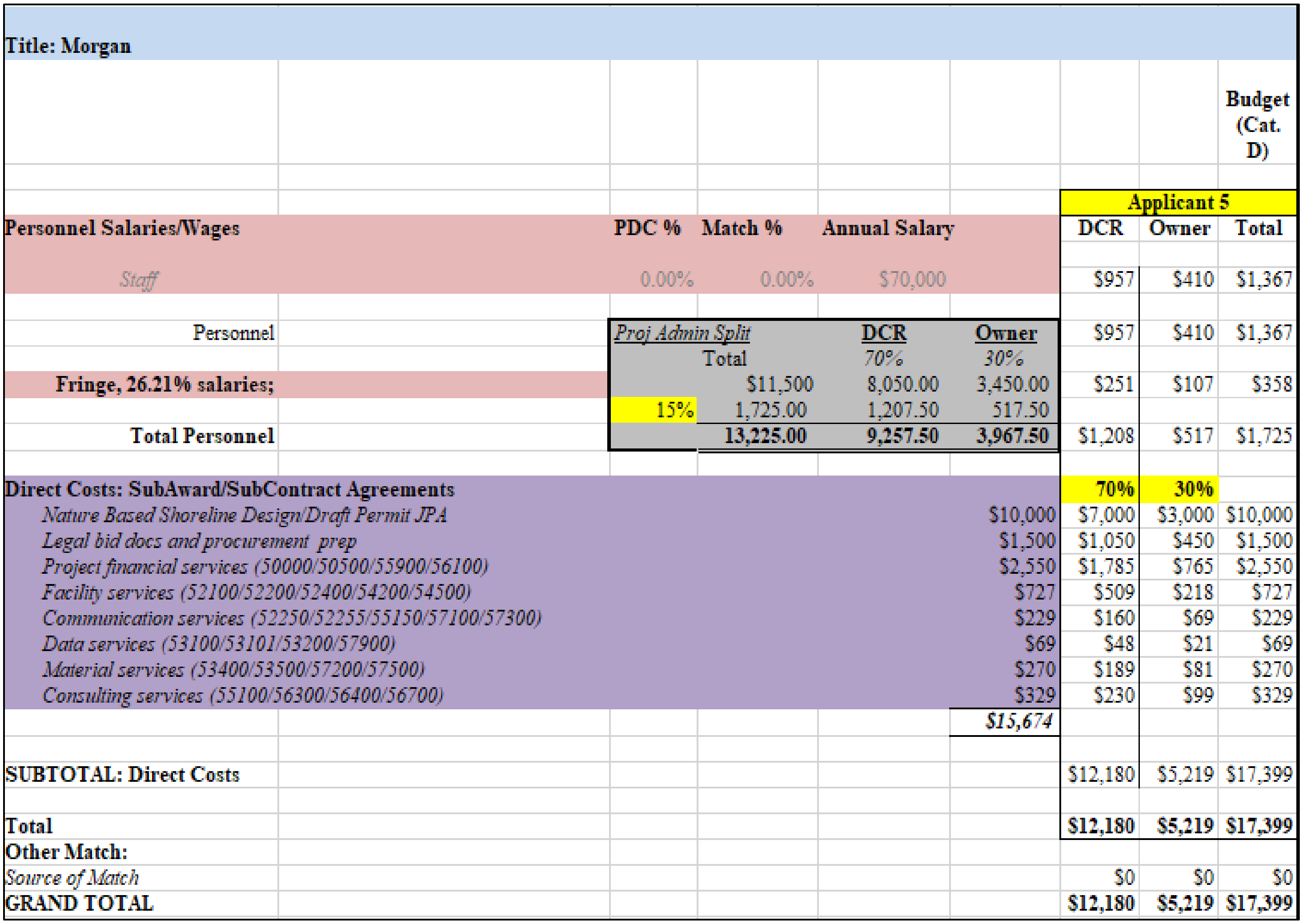
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that reside in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not reside in a low-income area, then the following does not apply. For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

The project budget is:

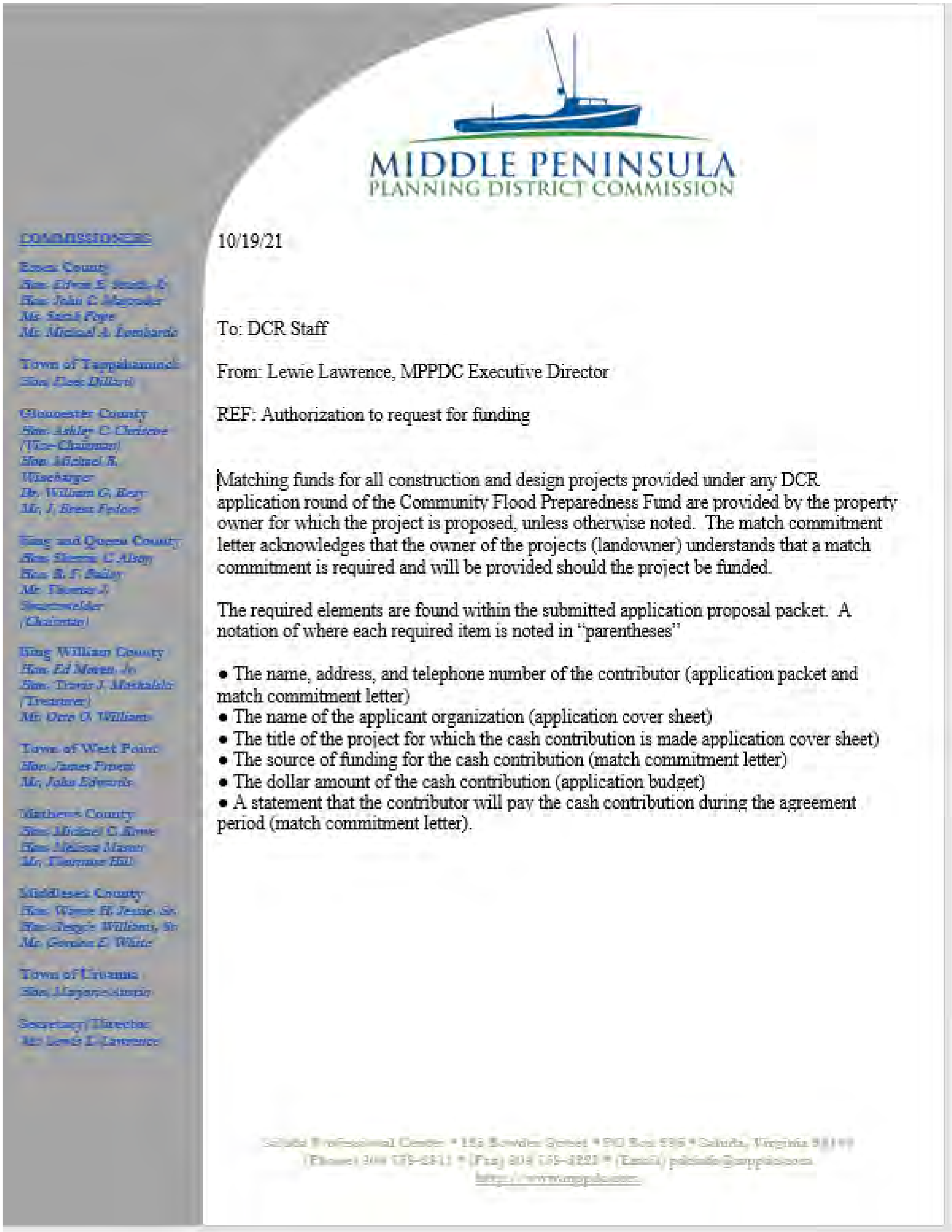
- ***Estimated total project cost: $17,399***
- ***Amount of funds requested from the Fund 12,180***



Title: Morgan								
								Budget (Cat. D)
						Applicant 5		
Personnel Salaries/Wages		PDC %	Match %	Annual Salary		DCR	Owner	Total
Staff		0.00%	0.00%	$70,000		$957	$410	$1,367
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			$11,500	8,050.00	3,450.00	$251	$107	$358
		15%	1,725.00	1,207.50	517.50			
Total Personnel			**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
Project financial services (50000/50500/55900/56100)					$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)					$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)					$229	$160	$69	$229
Data services (53100/53101/53200/57900)					$69	$48	$21	$69
Material services (53400/53500/57200/57500)					$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)					$329	$230	$99	$329
					$15,674			
SUBTOTAL: Direct Costs						$12,180	$5,219	$17,399
Total						**$12,180**	**$5,219**	**$17,399**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$12,180**	**$5,219**	**$17,399**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

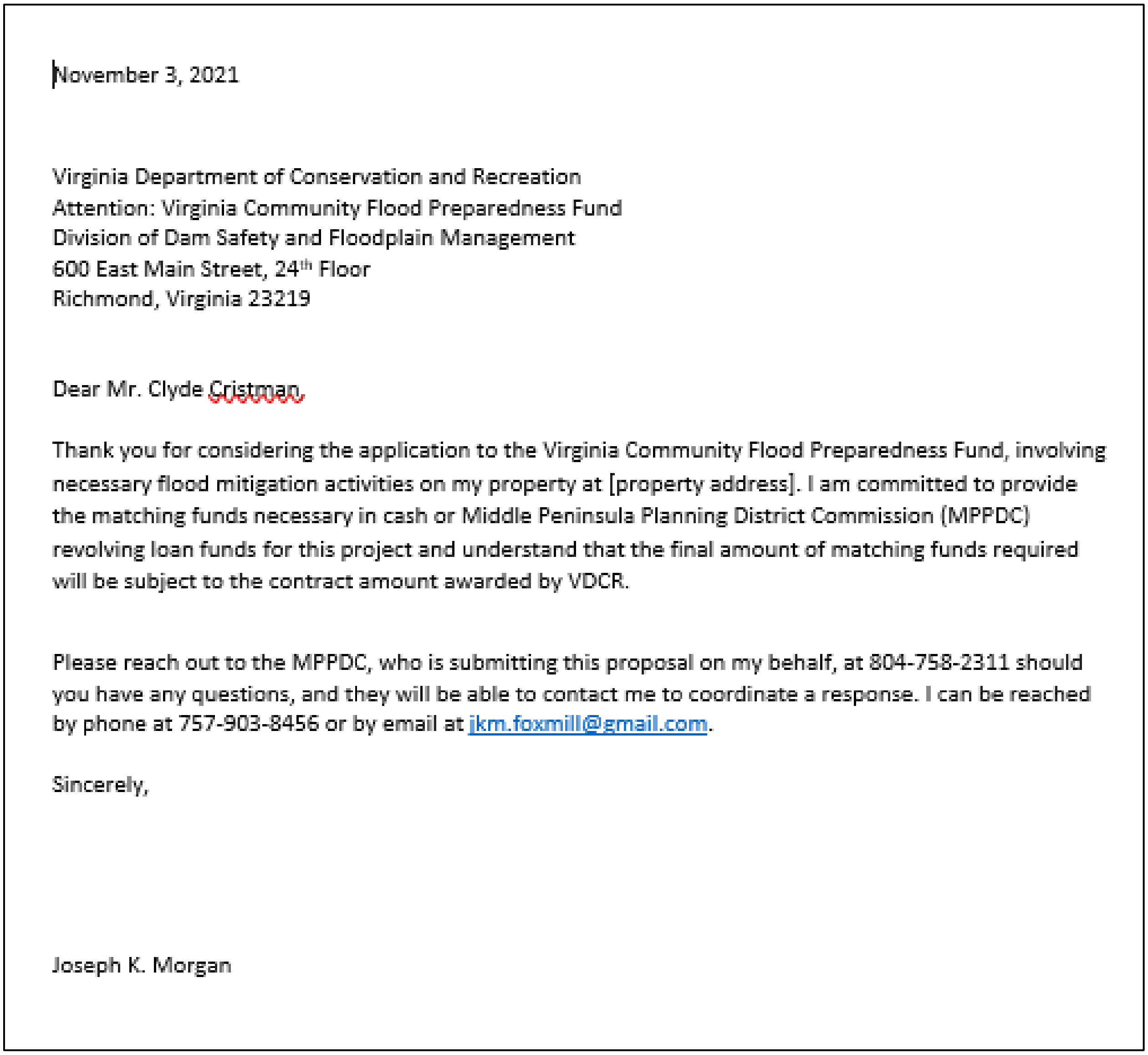
Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Signed pledge agreement from each contributing organization:



November 3, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 757-903-8456 or by email at jkm.foxmill@gmail.com.

Sincerely,

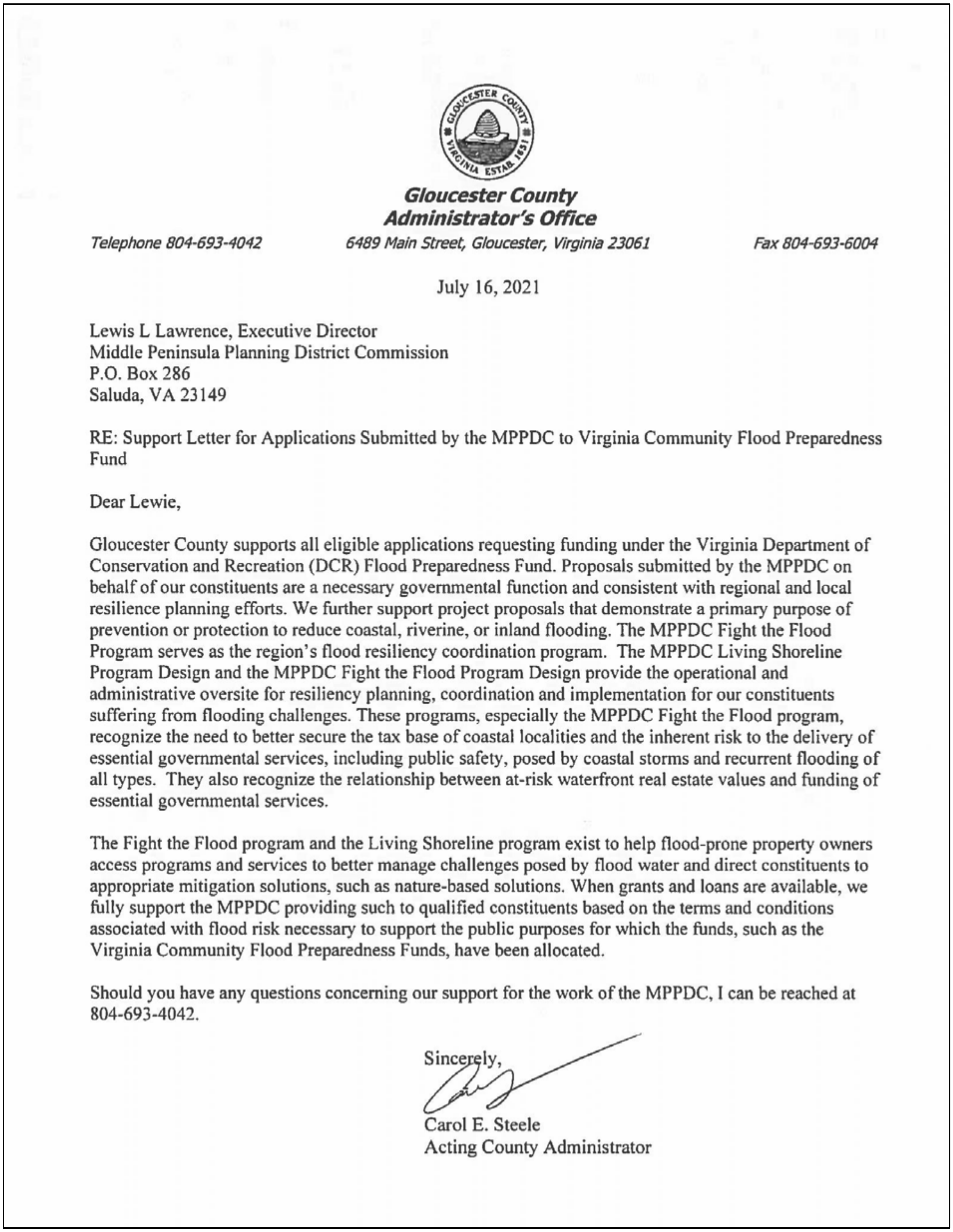
Joseph K. Morgan

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

Carol E. Steele
Acting County Administrator

APPENDIX 2

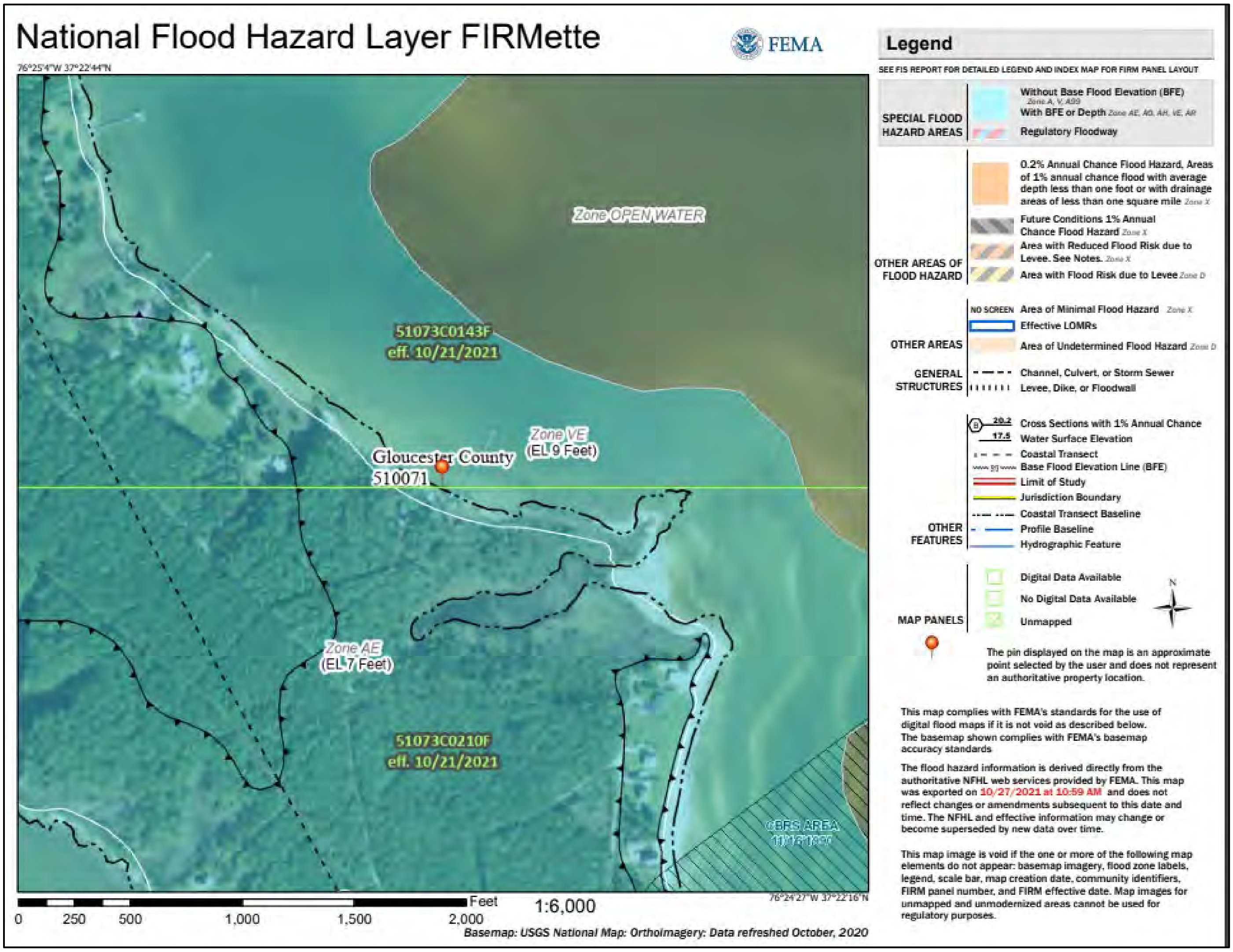
Additional Property Photos




APPENDIX 3

Project Location FIRMette

(FIRMette #: 51073C0143F)



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

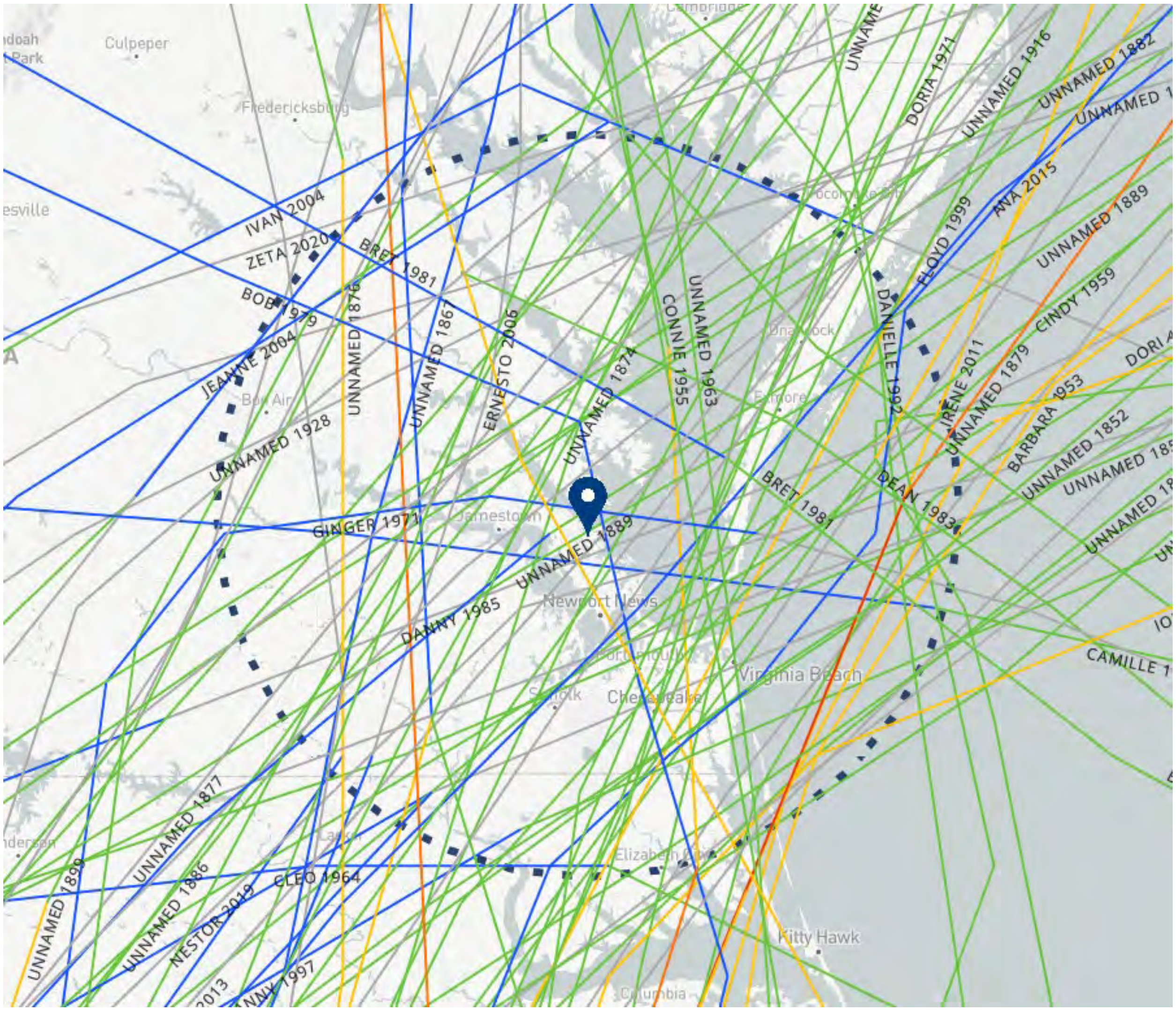
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/27/2021 at 10:59 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.26869 -76.4719

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30,	70	980	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
	1986			
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
CLEO 1964	Aug 20, 1964 to Sep 11, 1964	130	938	H4
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED	Sep 11, 1949 to Sep 14, 1949	45	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
1949				
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

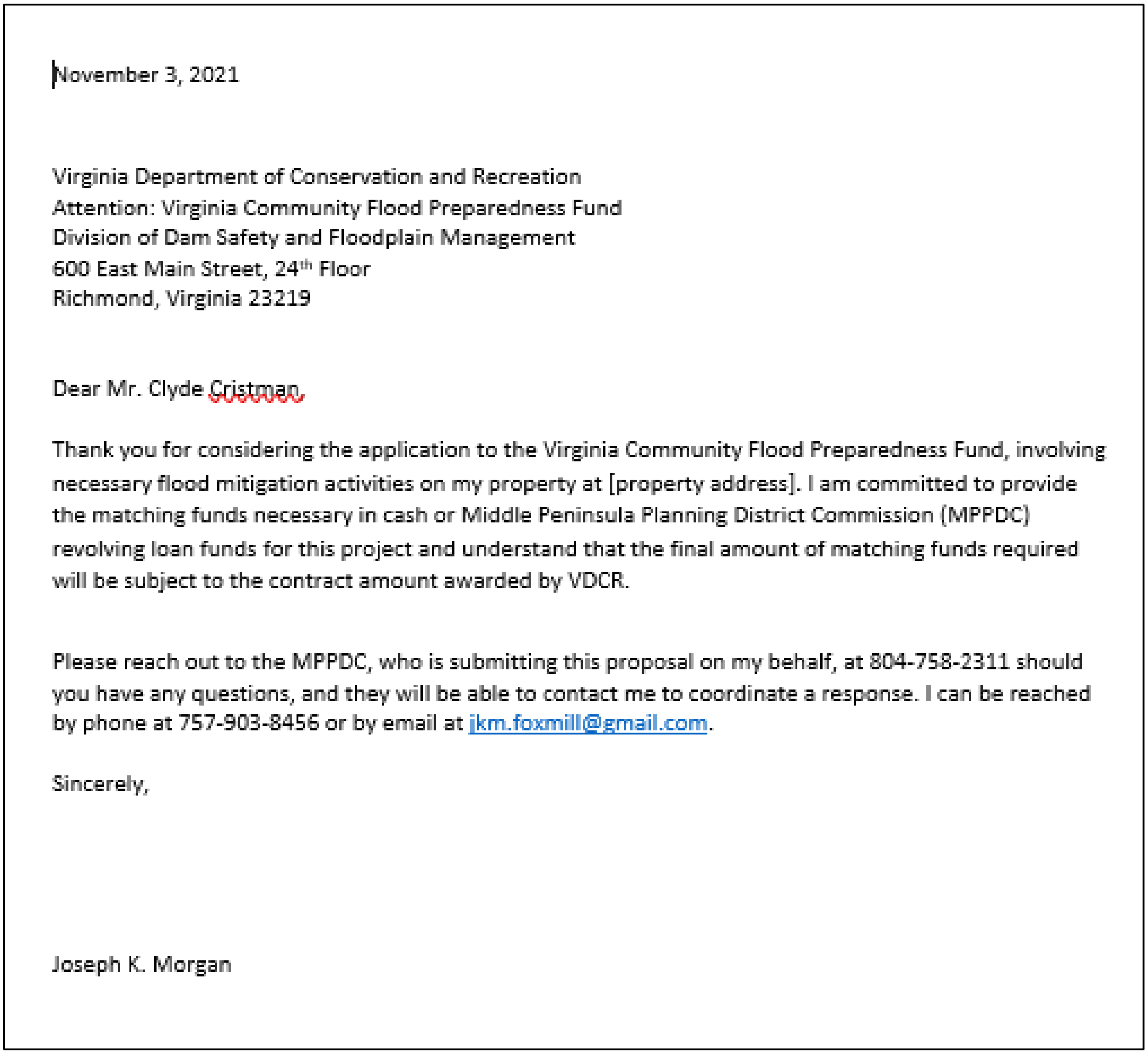
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



November 3, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 757-903-8456 or by email at jkm.foxmill@gmail.com.

Sincerely,

Joseph K. Morgan

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I.ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention Design and Legal work to Maintain Access on Griffin Road

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ____________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- X Stream bank restoration or stabilization.
- X Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): **51073C0140F**

Total Cost of Project: $16,089

Total Amount Requested: $11,263

V.SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution to prevent impacts of storm events, flooding and wetland loss to a private right of way (ROW) in Gloucester County. This project will also entail legal work associated with preparing for implementation/construction of the nature-based shoreline design as the solution may need to be implemented outside of the deeded ROW.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem-based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

The intent of the proposed project design is to incorporate flood protection measures which consider and mitigate any potential impacts to neighboring properties. However, the final designs ultimately will require approval by the permit issuing authority (Local Wetland Board on behalf of the VMRC, the Local Chesapeake Bay Preservation Act/Wetland Board on behalf of the VDEQ, and any agencies overseeing the Joint Permit Application process), and we will abide by the final design in the approved permits.

PROJECT INFORMATION.

This design proposal application will focus on utilizing a nature-based solution that incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise **is** lower cost than other nature-based infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions on a private property located at 7305 Griffin Road in Gloucester County. Additionally, as flooding issues impact the ROW at this project location, there may be a need to design a nature-based solution outside of the deed ROW. Therefore, legal services will be needed to satisfy the property owner and the applicant. This project will be a partnership between the Middle Peninsula PDC and is supported by Gloucester County. See the community support letter in **Appendix 1**.

- ***A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at**: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
    - *Please see Page 3-5, notates response to emerging flood challenges.*
- ***A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at**: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- ***A link to the Gloucester County's Comprehensive Plan can be found at:** https://www.gloucesterva.info/373/Comprehensive-Plan*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

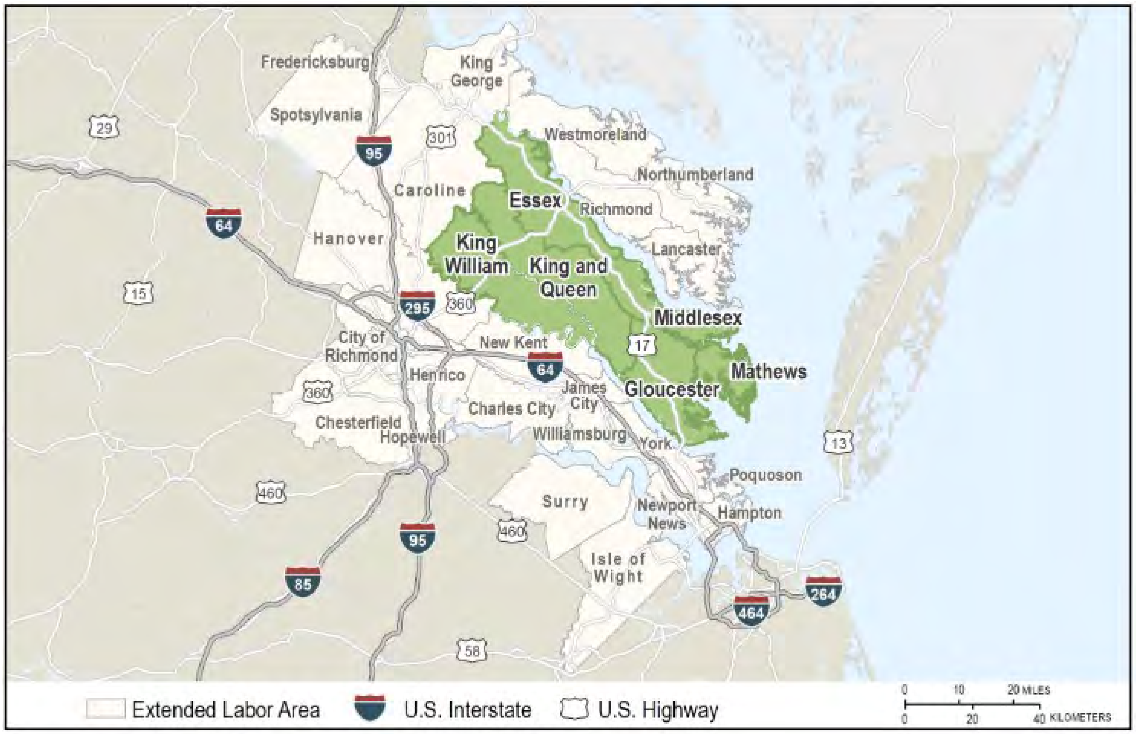
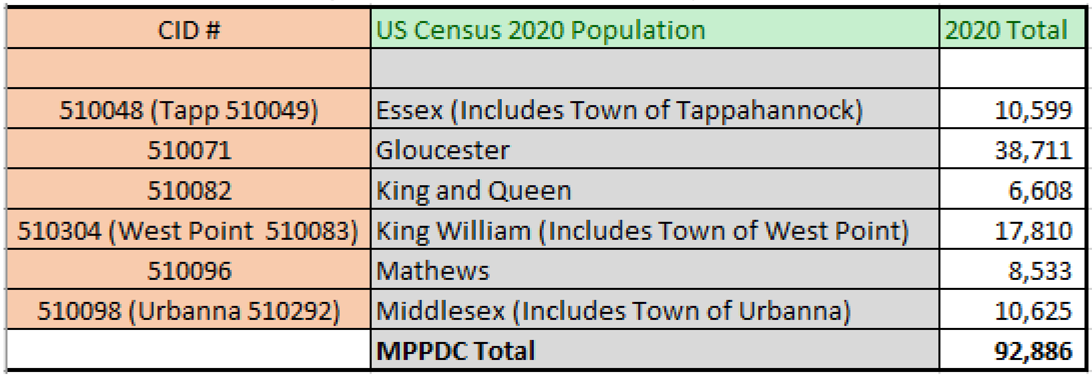


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

Figures 3 and 4 show the project location on private property at 7305 Griffin Road in Gloucester County.

Figure 3. County Map of Project Location

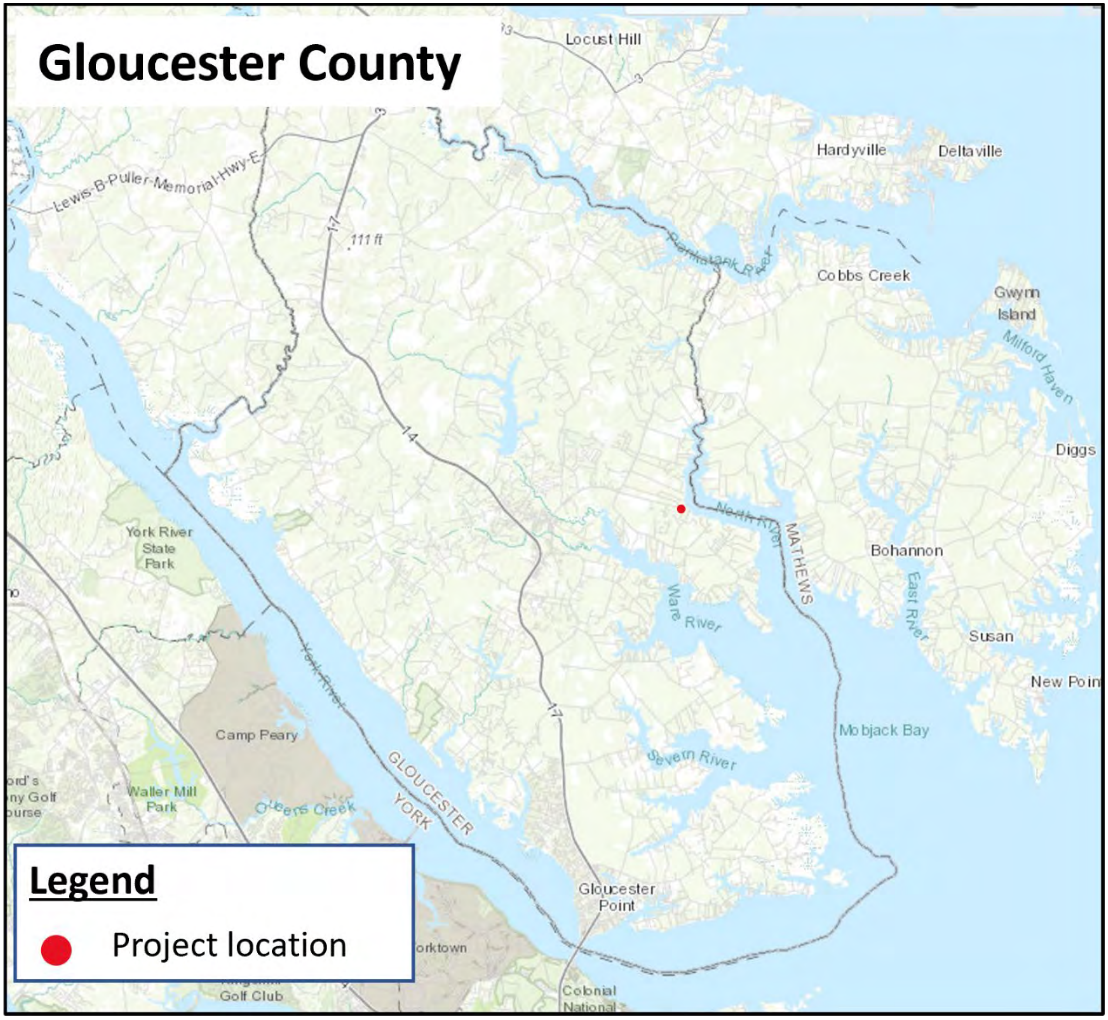
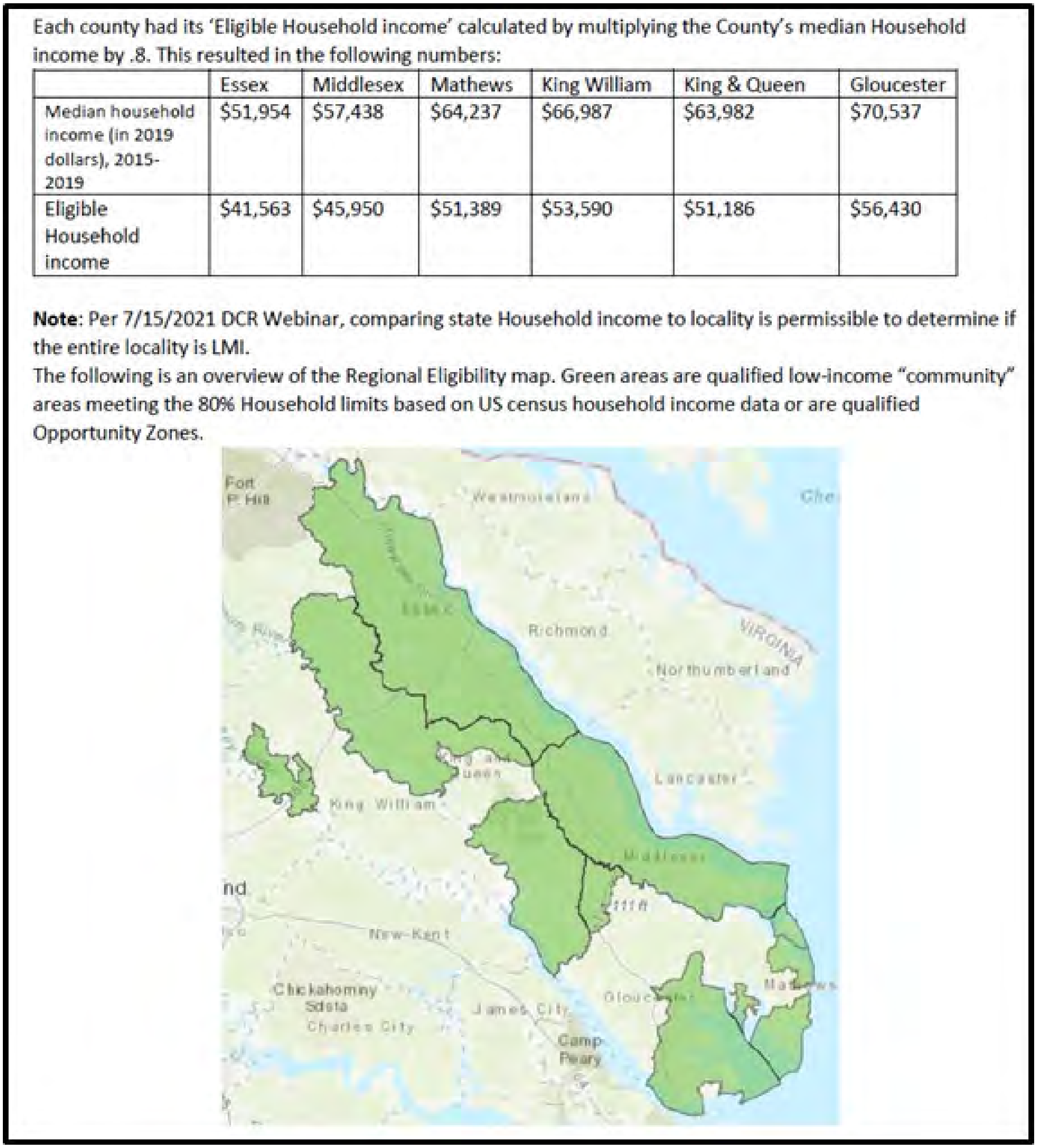


Figure 4. Parcel Map of Project Location

Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Qualifying Low Income (Green) Area in Gloucester County

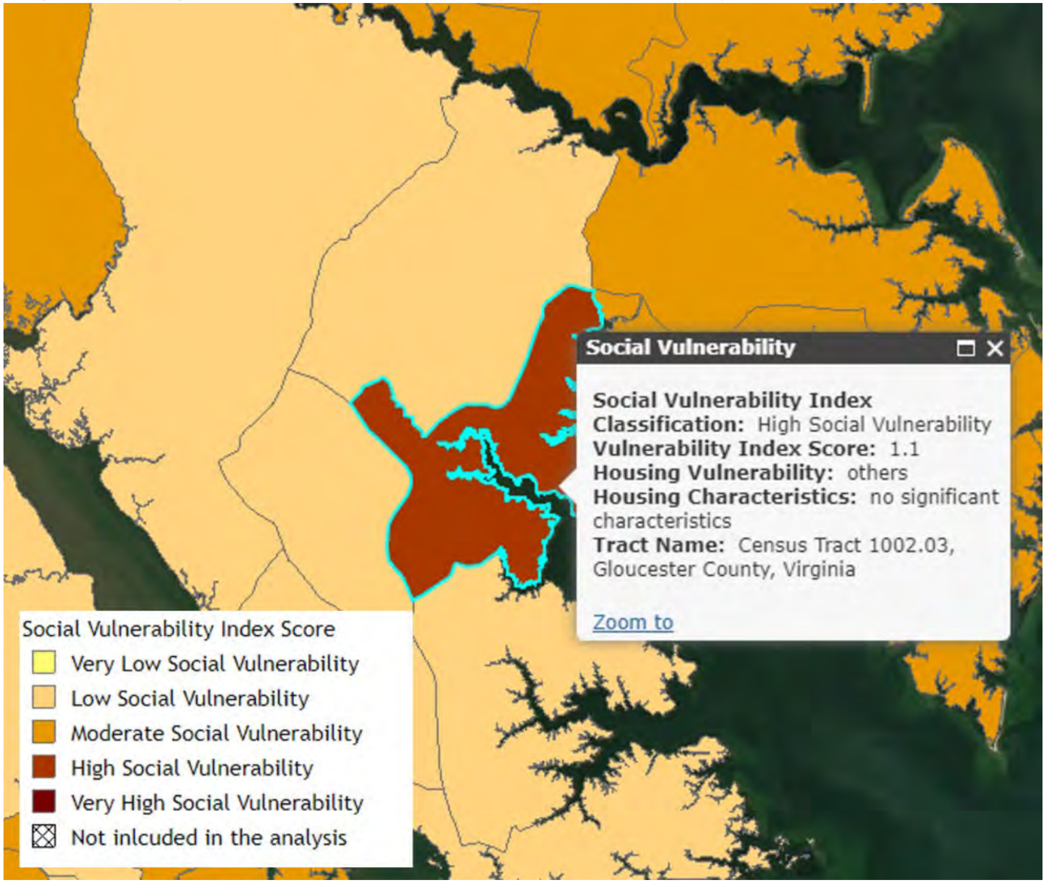
All areas denoted in Green fall below the 80% median household income threshold and serve as the "low-income community" per the guidelines

★ Project Site

Figure 6. Map of the Project Location within the Green Low-Income Area

According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a high social vulnerability score as seen in **Figure 7**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

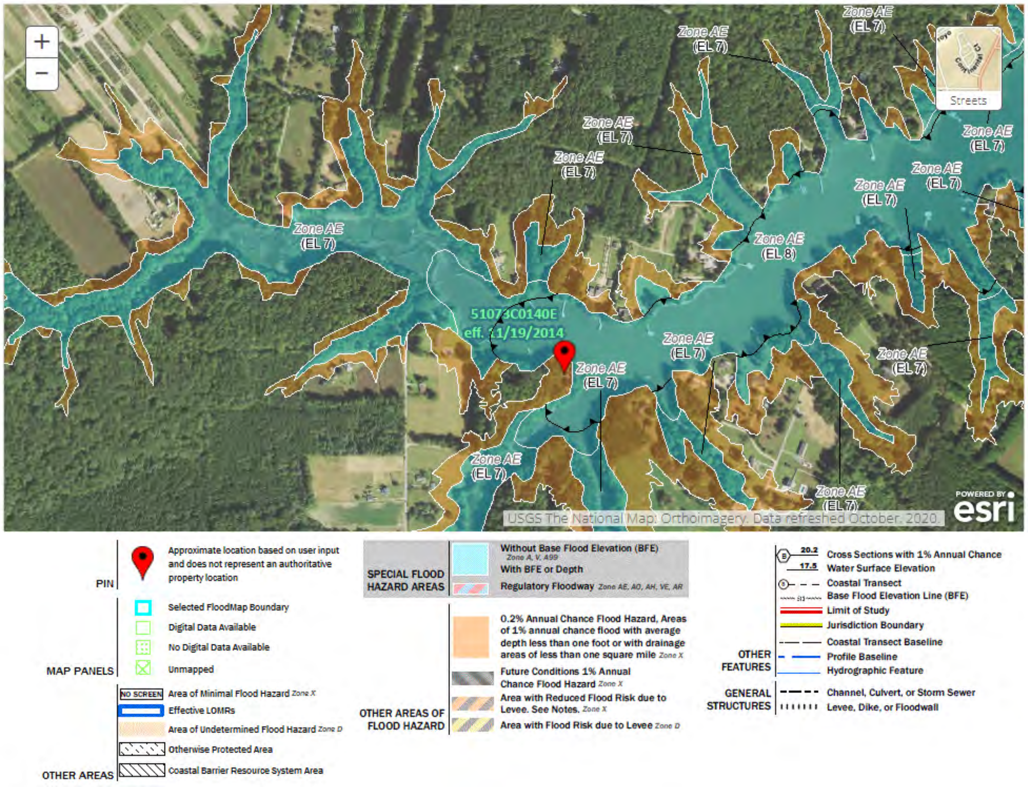


Social Vulnerability Index
Classification: High Social Vulnerability
Vulnerability Index Score: 1.1
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1002.03, Gloucester County, Virginia

The project is located at 7305 Griffin Road, Gloucester, VA 23061 (37.41339, -76.46447). Ms. Rhodes has owned the property since 1993 and has increasingly experienced more flooding inundation of her property. Ms. Rhodes has a 20 ft deeded ROW which runs parallel with Back Creek, a tributary of the North River and Mobjack Bay. Being in close proximity to Back Creek, the bank is slowly eroding and water from normal tidal and rain events is causing water to inundate her ROW. As this is occurring more frequently Ms. Rhodes explains that she is worried that the road will collapse into the creek and create a situation where her property would become inaccessible for a prolonged period of time, constituting a major problem regarding emergency situations.

This site is located within the AE flood zone as seen in **Figure 8**. Please see **Appendix 2** for the FIRMettes (last mapped 10/21/2021) and **Appendix 3** for additional property photos.

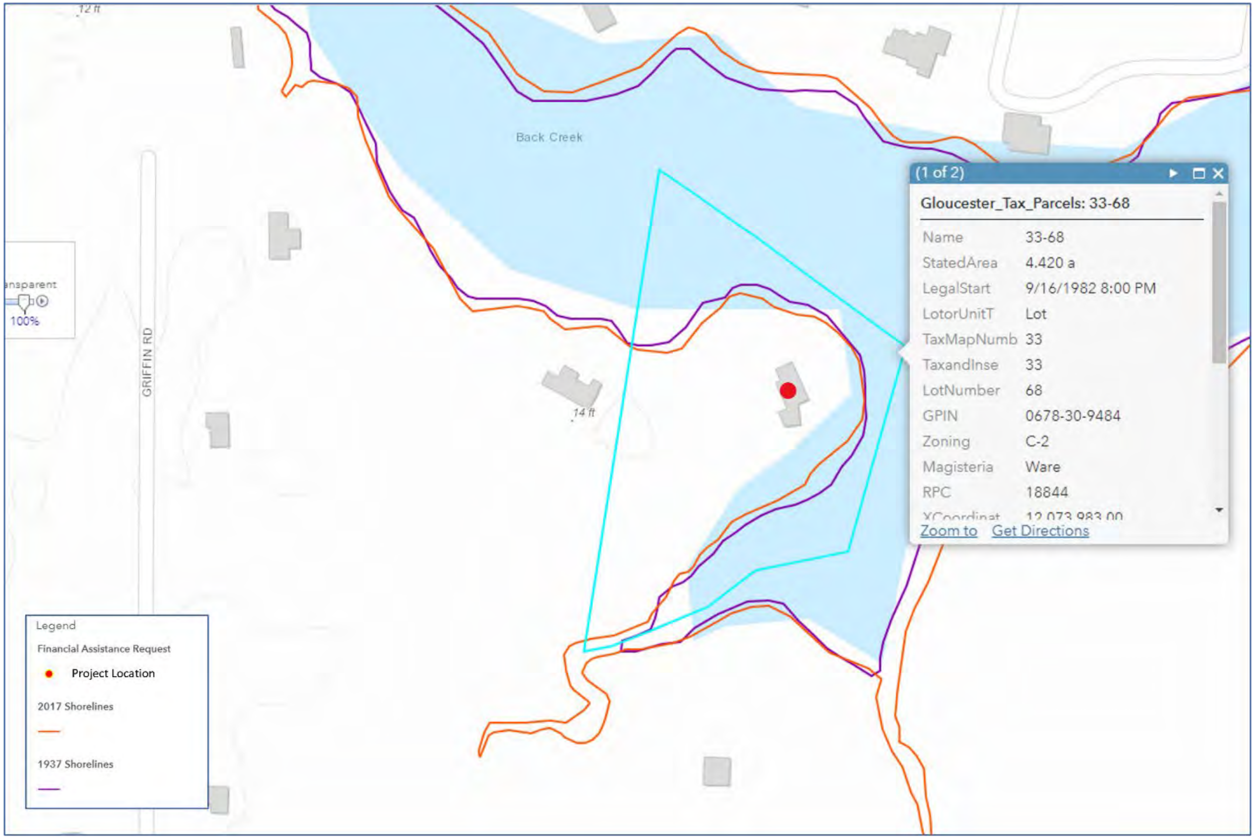
Figure 8: Map of FEMA Flood Zones of Project Location



Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of approximately 10,971.1 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 80 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 9:

Project Location and Map of the Shoreline Change between 1937 (purple) and 2017 (red).

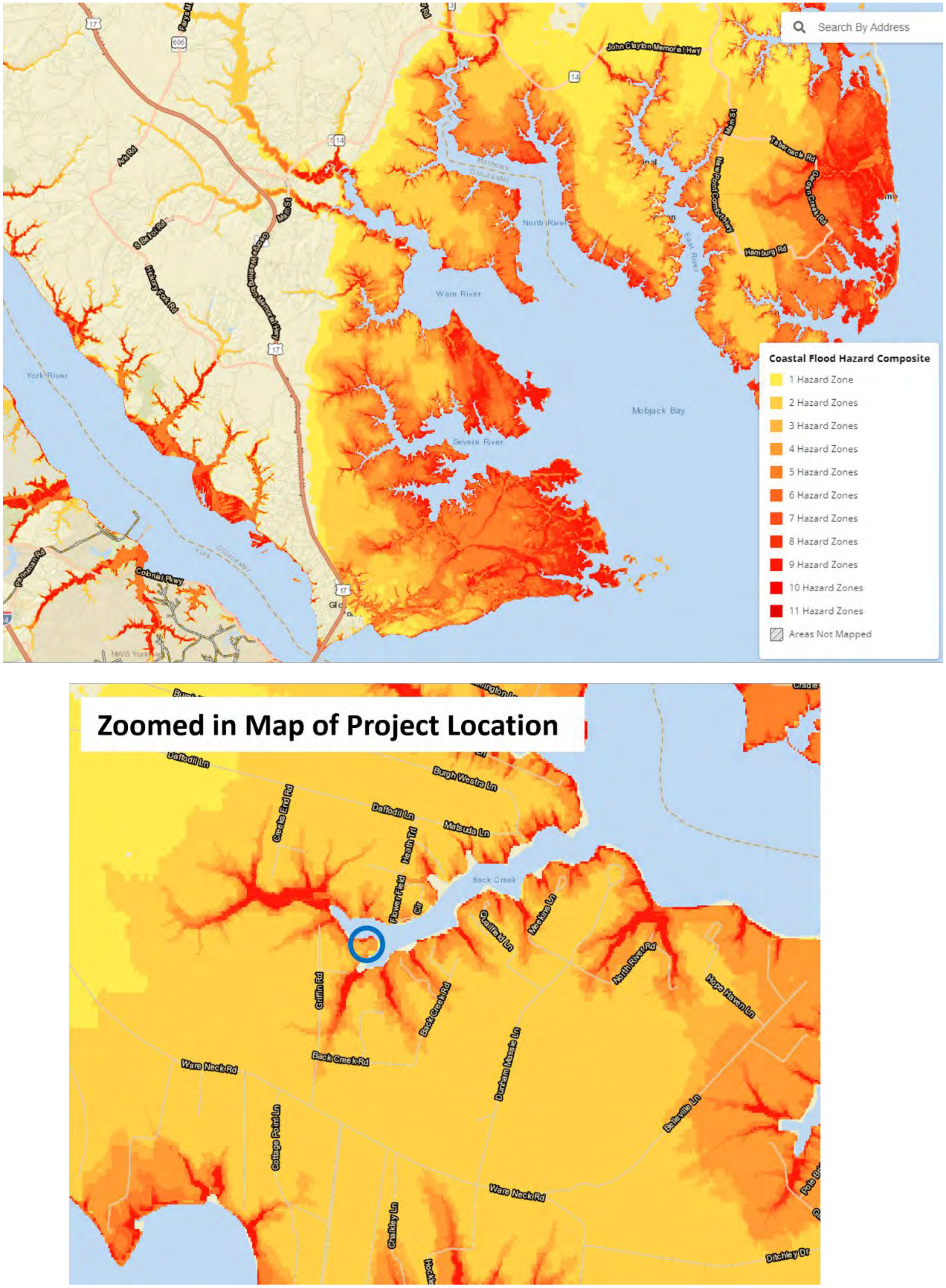


Gloucester_Tax_Parcels: 33-68

Name	33-68
StatedArea	4.420 a
LegalStart	9/16/1982 8:00 PM
LotorUnitT	Lot
TaxMapNumb	33
TaxandInse	33
LotNumber	68
GPIN	0678-30-9484
Zoning	C-2
Magisteria	Ware
RPC	18844
XCoordinat	12,073,983.00

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 10**.

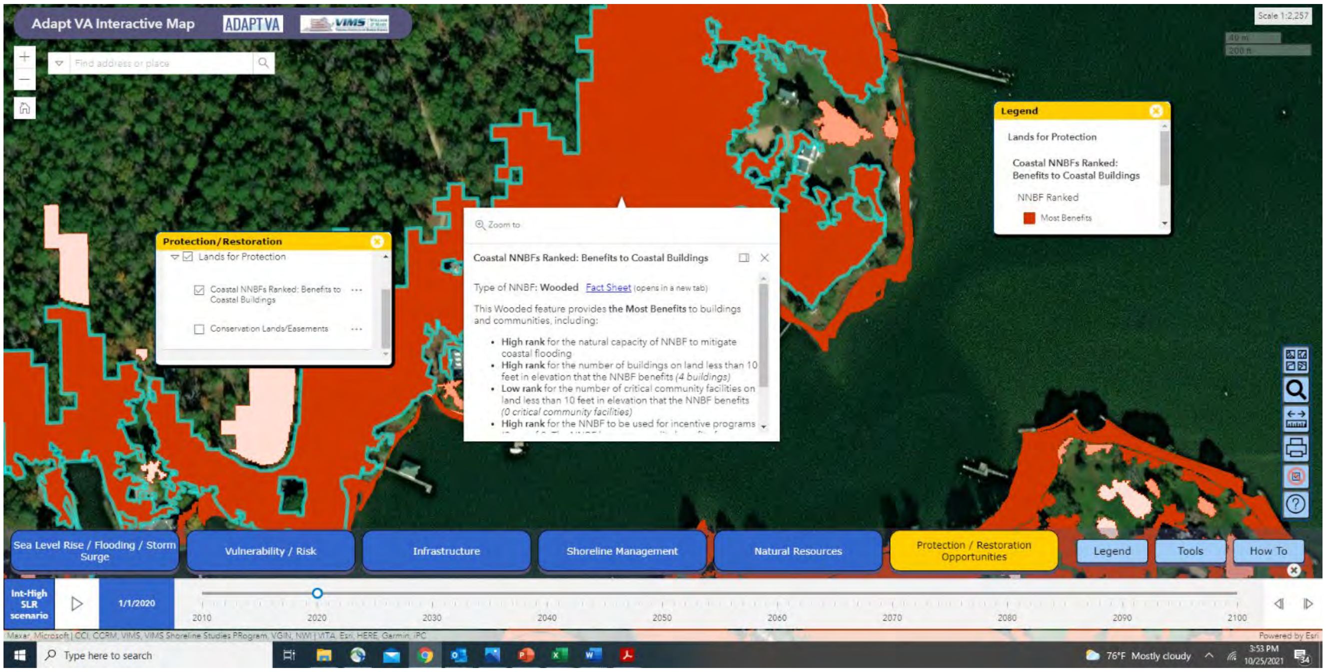
Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021).



Community Scale Benefits - The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature-based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 & 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(4 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

For more information about this project area please see:

- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
- A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA nature-based solutions are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of nature-based solutions will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

The design on this property will take into consider improving water quality with the reduction of sediment and nutrients. In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project will focus on developing designs for a nature-based solution to prevent flooding and damage to Ms. Rhodes deeded right of way. This project will also entail associated legal work to ensure that future construction is conductive and agreed to by the landowner and the applicant. Legal work will be necessary if the design to mitigate ROW flooding and erosion is outside of the 20 ft deeded ROW.

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than one year. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence January 2022 and be completed no later than December 2022, as seen in **Table 1**.

Table 1. Project Milestone Schedule

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based design solutions with contractor and property owner		X	X			
Select which nature-based solution is most appropriate		X	X			
Engage legal services if proposed design is out of the 20ft ROW		X	X	X		
Have contractor develop selected nature-based design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based design solution with property owner					X	
Engage legal services as necessary. Will need to consider design and if it's within the deeded 20ft ROW					X	X
Discuss strategies in moving forward with implementing the nature-based design solution					X	X
Provide a digital close out report and copy of the completed nature-based design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program– Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based design solution and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. **Has the applicant provided evidence of an ability to provide the required match fund?**
   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**

Yes, nature-based solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
   Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ¨No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
• Wetland restoration, floodplain restoration • Living shorelines and vegetated buffers. • Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool • Dam removal • Stream bank restoration or stabilization. • Restoration of floodplains to natural and beneficial function. • Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. Any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		92

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A

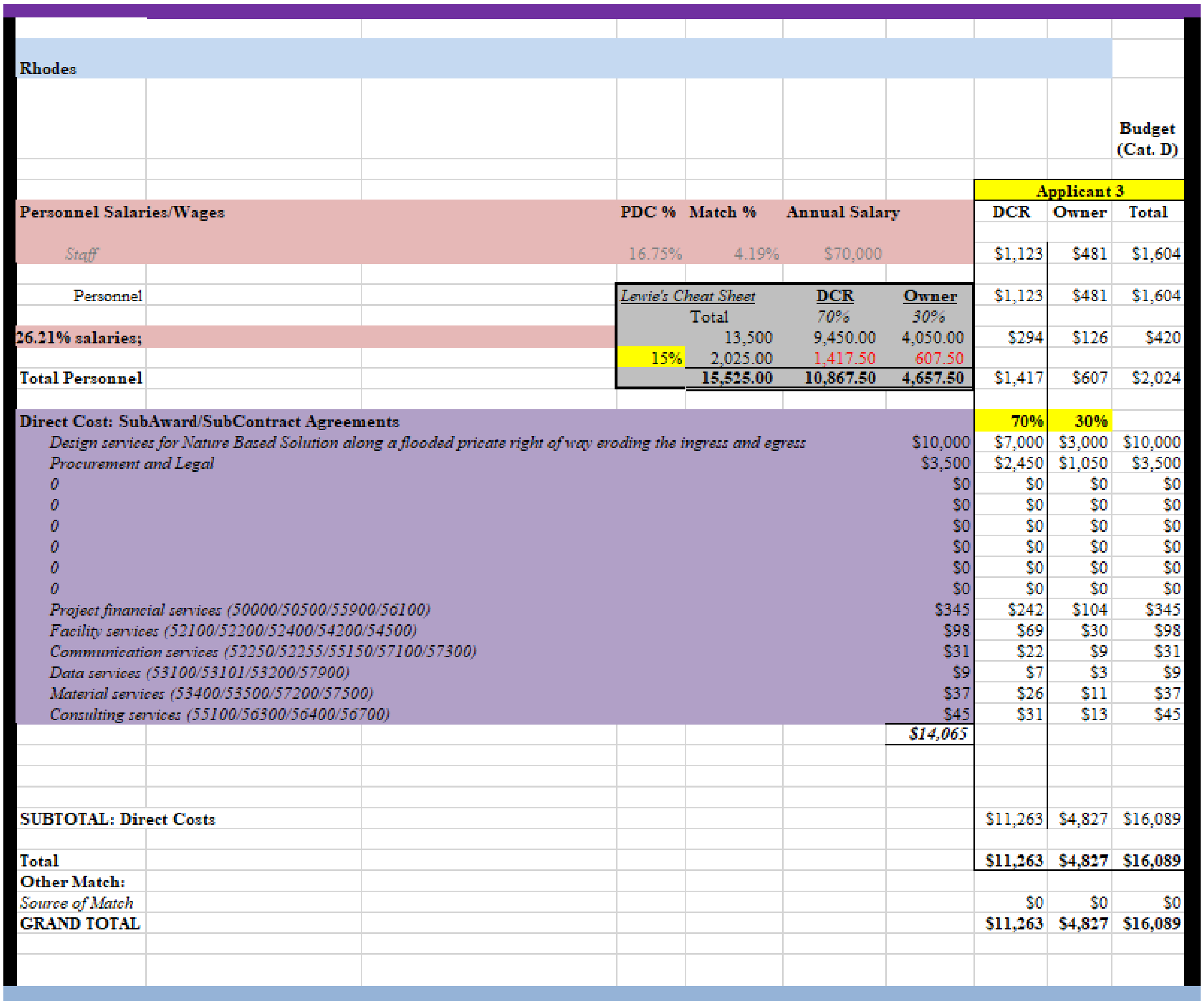
If applicant is not a town, city, or county, letters of support from affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

VI.**BUDGET NARRATIVE**

The proposed project has an estimated Total budget of $16,089

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

Budget for professional design services follows.
Total Project Cost: $16,089
DCR Request: $11,264

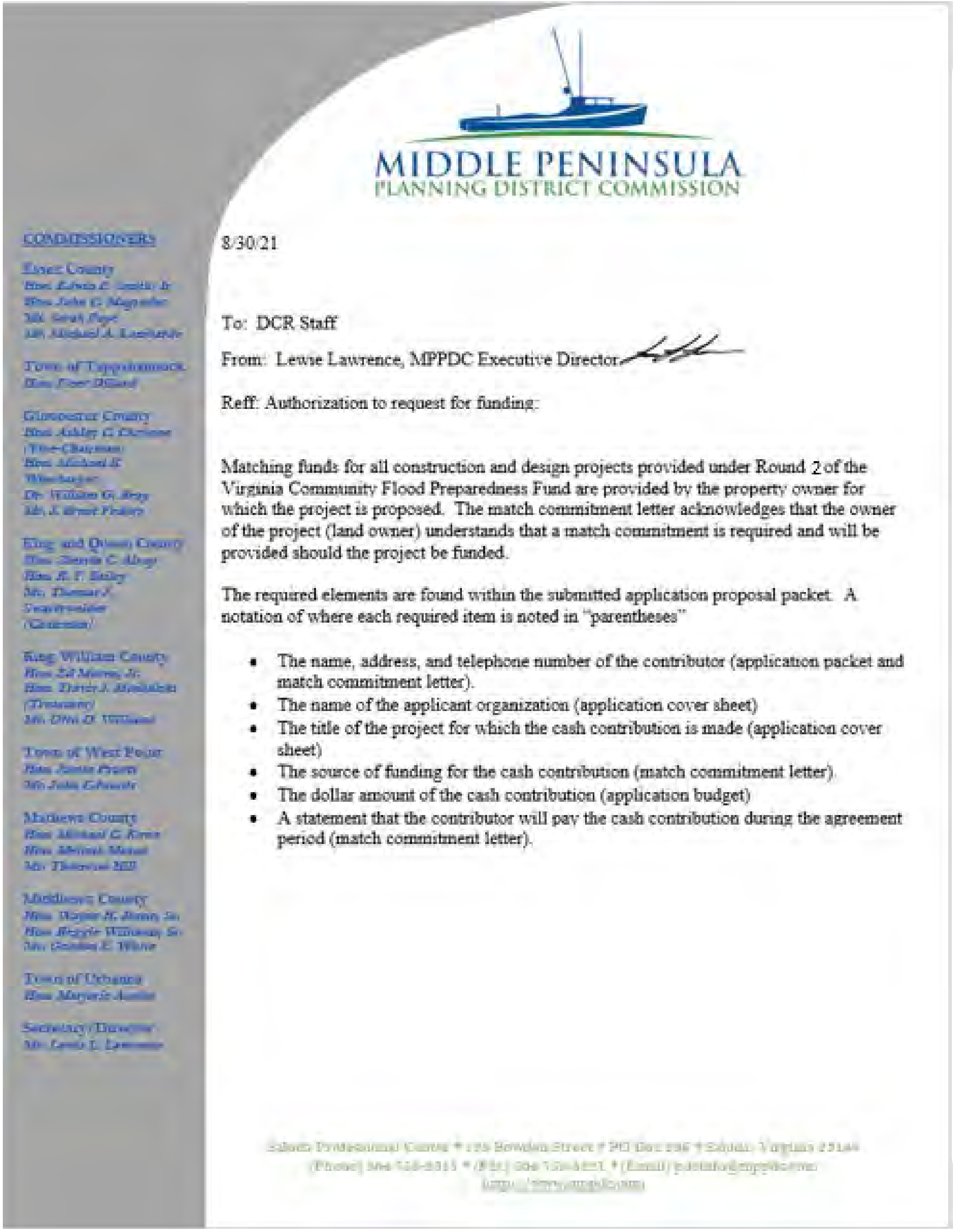


Rhodes							
							Budget (Cat. D)
					Applicant 3		
Personnel Salaries/Wages	**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	16.75%	4.19%	$70,000		$1,123	$481	$1,604
Personnel	*Lewie's Cheat Sheet*		**DCR**	**Owner**	$1,123	$481	$1,604
		Total	*70%*	*30%*			
26.21% salaries;		13,500	9,450.00	4,050.00	$294	$126	$420
	15%	2,025.00	1,417.50	607.50			
Total Personnel		**15,525.00**	**10,867.50**	**4,657.50**	$1,417	$607	$2,024
Direct Cost: SubAward/SubContract Agreements					**70%**	**30%**	
Design services for Nature Based Solution along a flooded pricate right of way eroding the ingress and egress				$10,000	$7,000	$3,000	$10,000
Procurement and Legal				$3,500	$2,450	$1,050	$3,500
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$345	$242	$104	$345
Facility services (52100/52200/52400/54200/54500)				$98	$69	$30	$98
Communication services (52250/52255/55150/57100/57300)				$31	$22	$9	$31
Data services (53100/53101/53200/57900)				$9	$7	$3	$9
Material services (53400/53500/57200/57500)				$37	$26	$11	$37
Consulting services (55100/56300/56400/56700)				$45	$31	$13	$45
				$14,065			
SUBTOTAL: Direct Costs					$11,263	$4,827	$16,089
Total					**$11,263**	**$4,827**	**$16,089**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$11,263**	**$4,827**	**$16,089**

Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 2 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

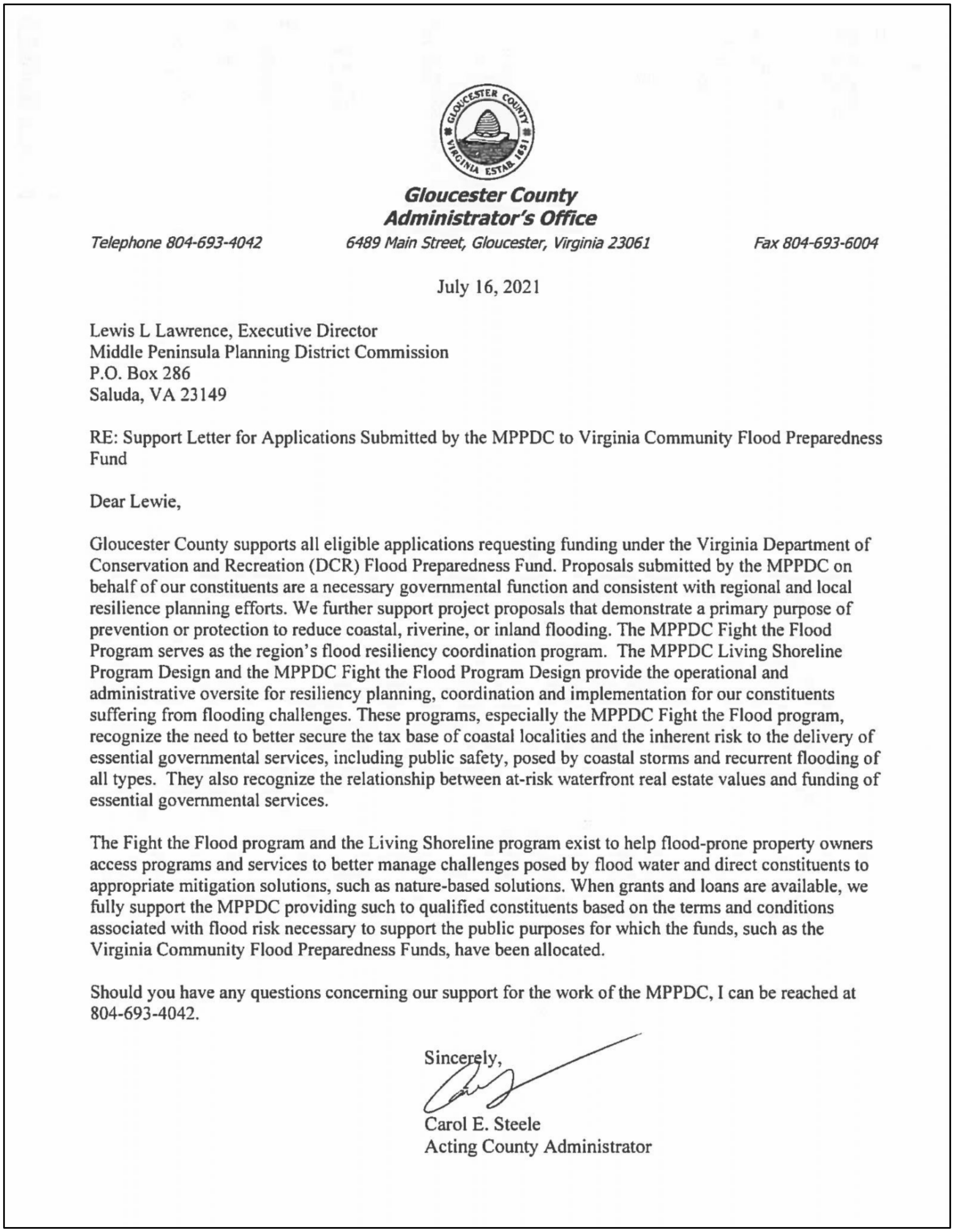
- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

VII.SUPPORTING DOCUMENTATION

þ Letters of support from all affected local government
þ Detailed map of the project area(s)
þ FIRMette of the project area(s)
þ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

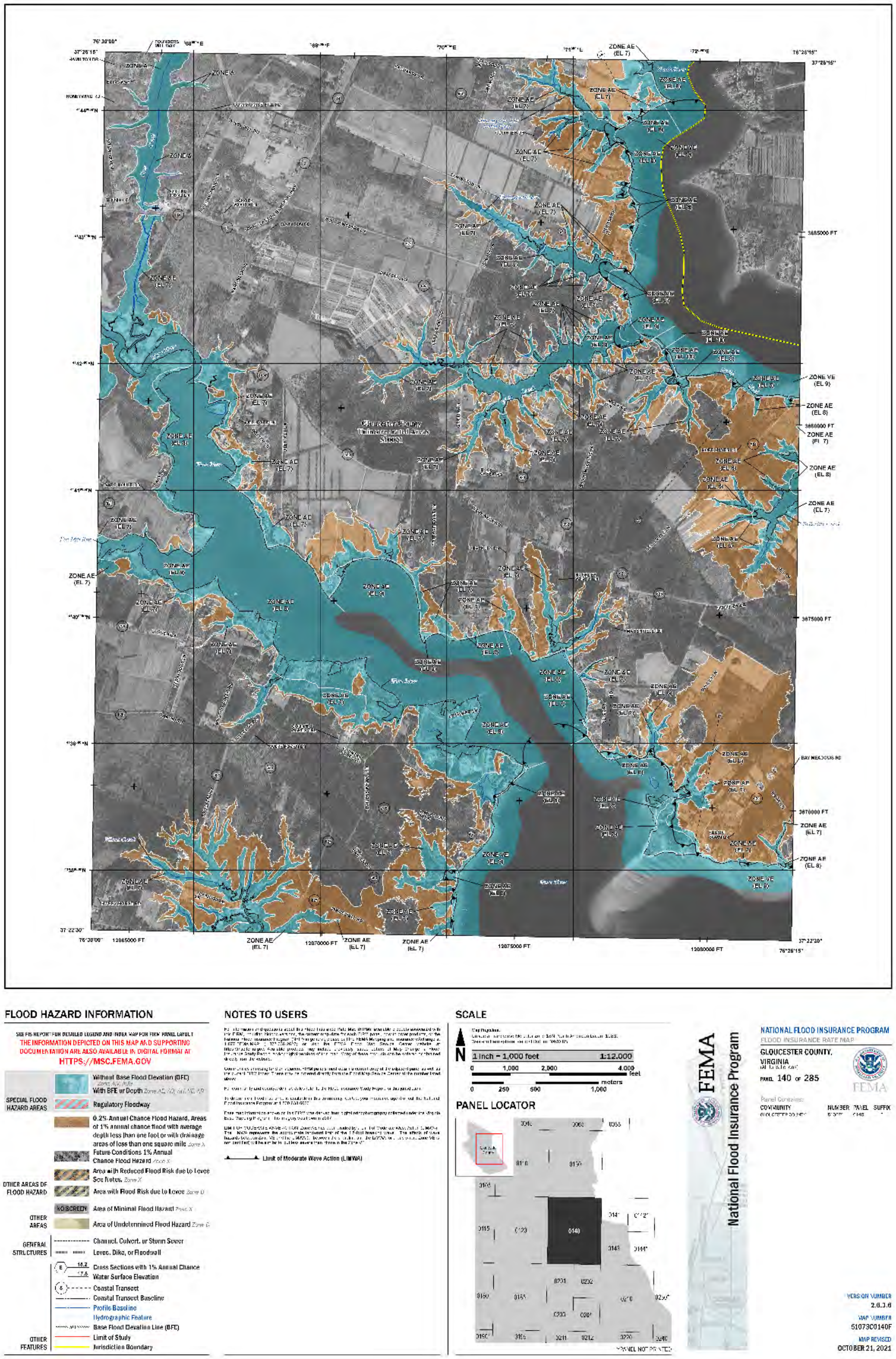
Sincerely,

Carol E. Steele
Acting County Administrator

APPENDIX 2

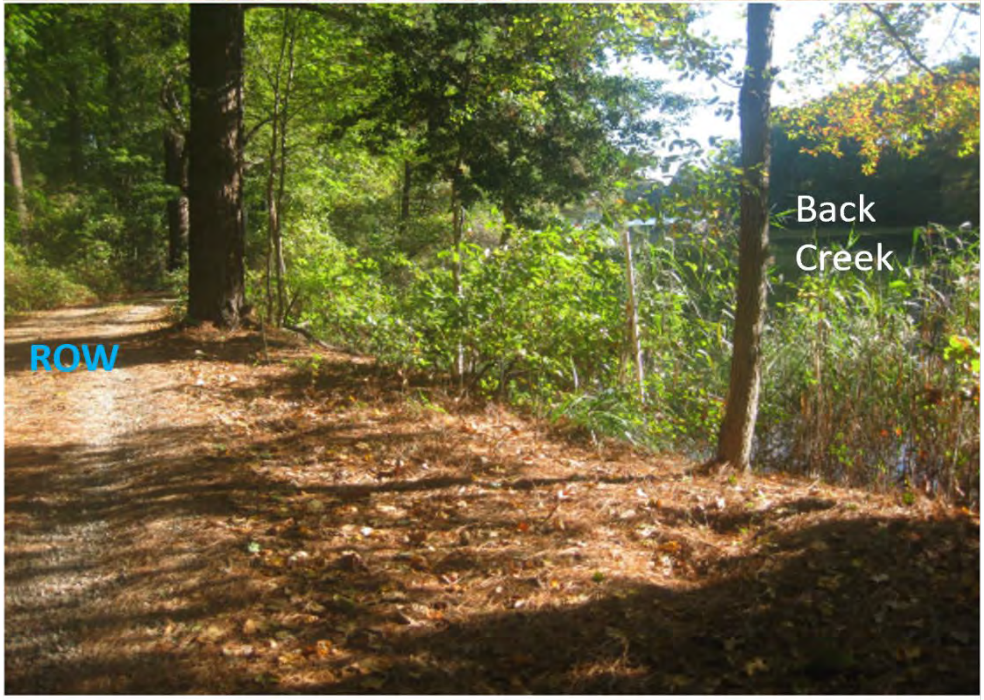
Project Location FIRMette

(FIRMette #: 51073C0140F/ Effective Date: 10/21/2021)



APPENDIX 3
Additional Property Photos

These photos show the location of the ROW and the proximity to Back Creek. The ROW runs parallel to the creek and experiences frequent flooding. These photos of the ROW on a "good" day.



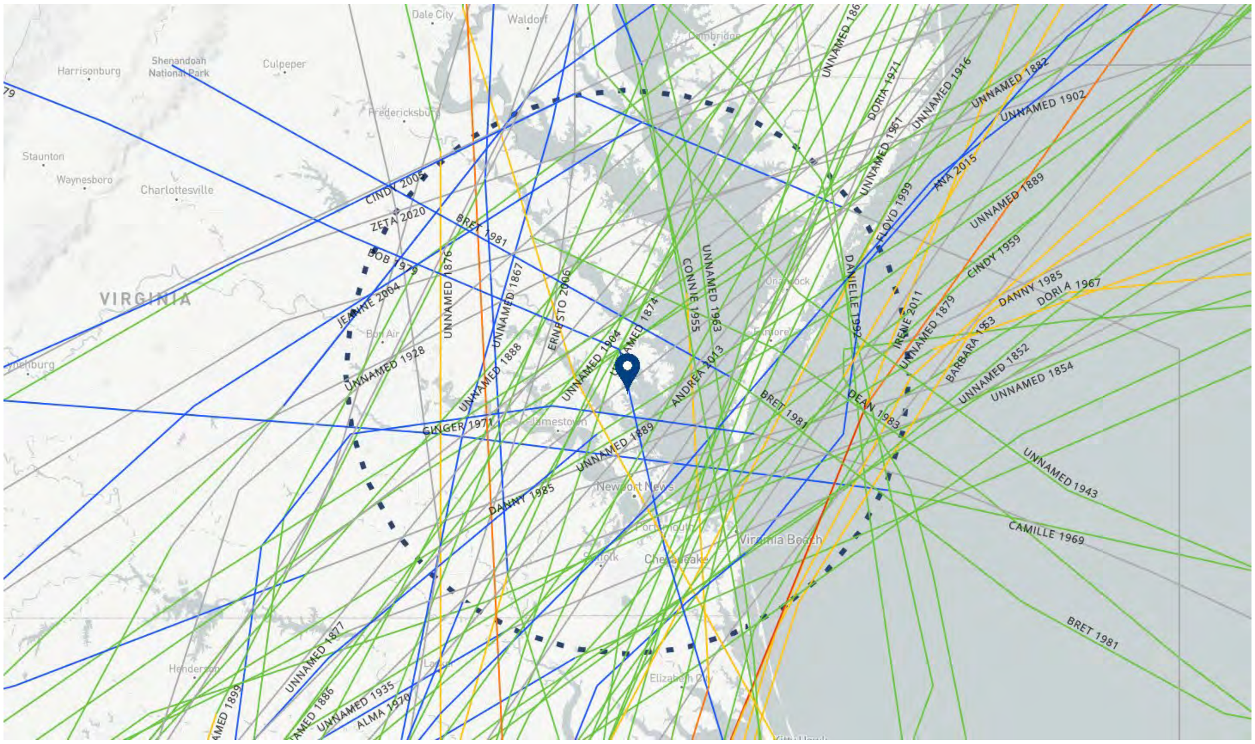

Back
Creek


Back
Creek
ROW

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location

Hurricane List



Search Filter Criteria

Location: 37.41339, -76.46447

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS

MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1

GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS

UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS

UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines

over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6
Match Commitment Letter

October 19, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities at 7305 Griffin Rd Gloucester, VA. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804-832-2226 or by email at martha@vims.edu .

Sincerely,
Martha Rhodes
Martha Rhodes

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Bowditch Shoreline Design** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

Issue #2

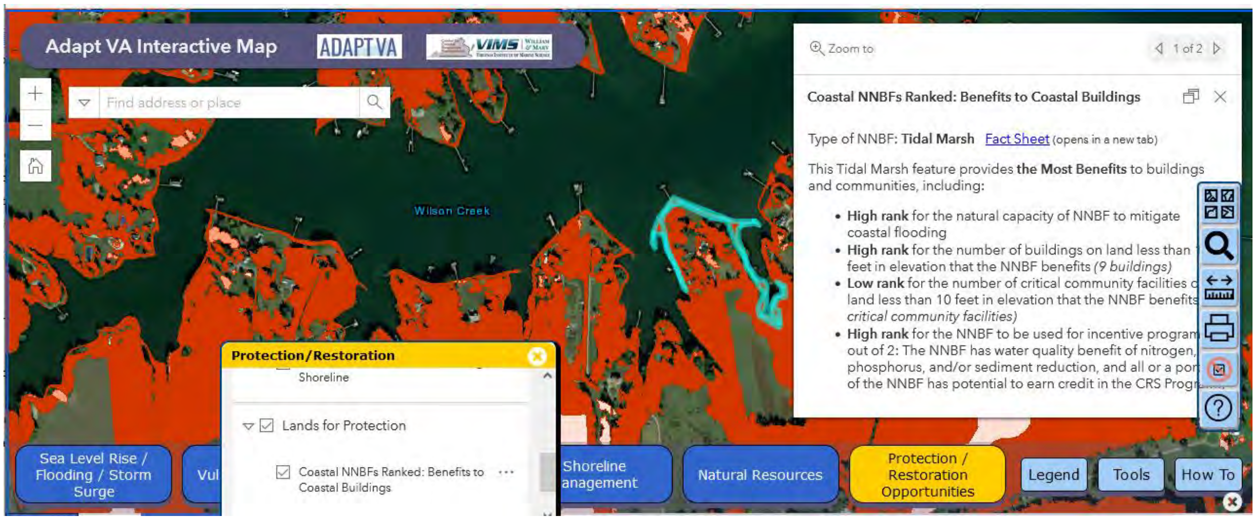
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

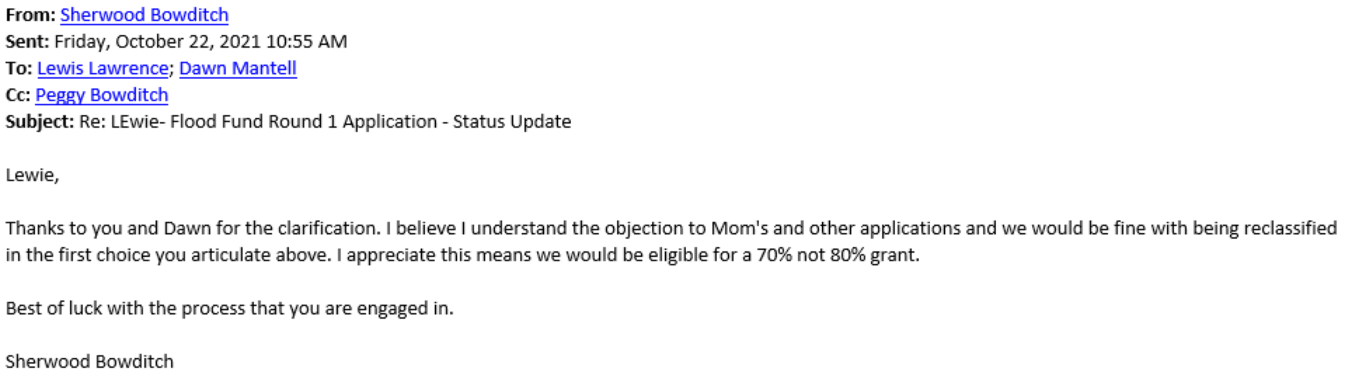
Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(9 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Prog

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



From: Sherwood Bowditch
Sent: Friday, October 22, 2021 10:55 AM
To: Lewis Lawrence; Dawn Mantell
Cc: Peggy Bowditch
Subject: Re: LEwie- Flood Fund Round 1 Application - Status Update

Lewie,

Thanks to you and Dawn for the clarification. I believe I understand the objection to Mom's and other applications and we would be fine with being reclassified in the first choice you articulate above. I appreciate this means we would be eligible for a 70% not 80% grant.

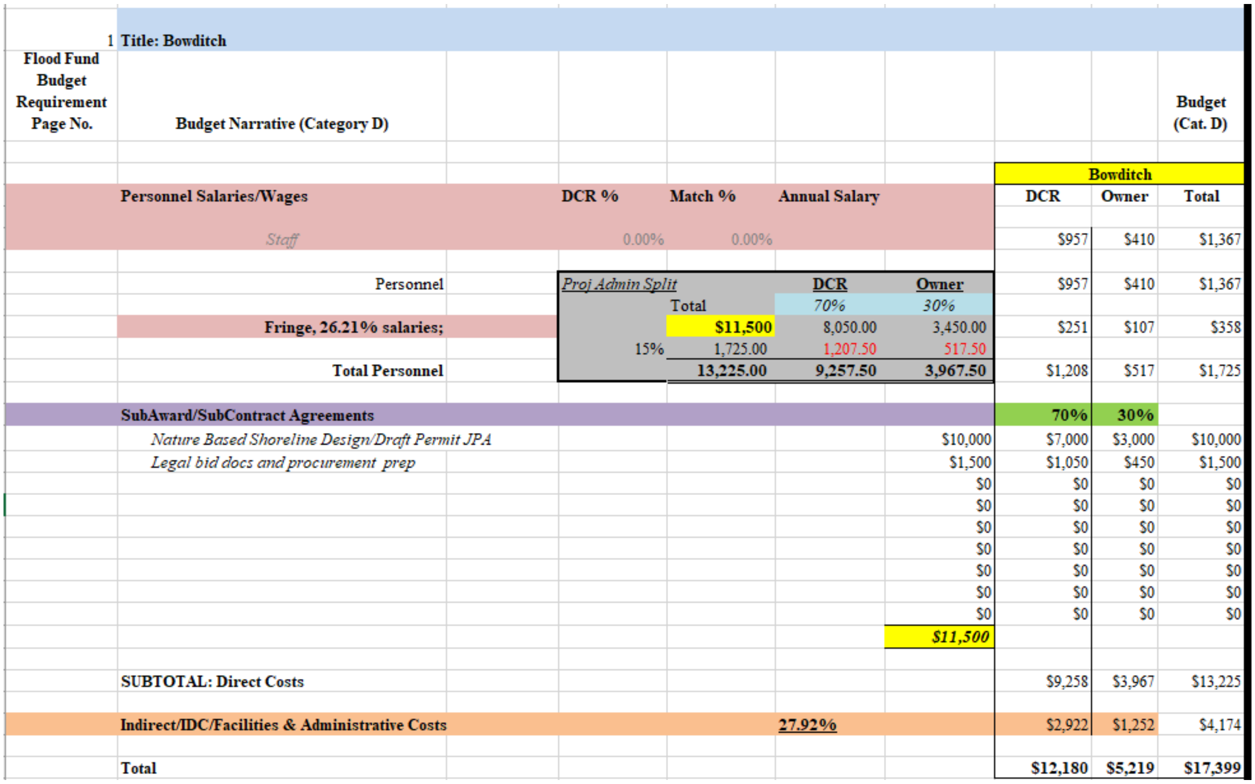
Best of luck with the process that you are engaged in.

Sherwood Bowditch

Amended Budget Request

Amended Budget Request

DCR Funding:	$12,180
Owner:	$ 5,219
Total	$17,399



1	**Title: Bowditch**								
Flood Fund Budget Requirement Page No.	**Budget Narrative (Category D)**								**Budget (Cat. D)**
							Bowditch		
	Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
	Staff		0.00%	0.00%			$957	$410	$1,367
	Personnel		*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
				Total	*70%*	*30%*			
	Fringe, 26.21% salaries;			**$11,500**	8,050.00	3,450.00	$251	$107	$358
			15%	1,725.00	1,207.50	517.50			
	Total Personnel			**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
	SubAward/SubContract Agreements						**70%**	**30%**	
	Nature Based Shoreline Design/Draft Permit JPA					$10,000	$7,000	$3,000	$10,000
	Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$11,500			
	SUBTOTAL: Direct Costs						$9,258	$3,967	$13,225
	Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$2,922	$1,252	$4,174
	Total						**$12,180**	**$5,219**	**$17,399**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Robins Neck Road

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ____
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- **þ** Wetland restoration.
- ☑ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☑ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? þ Yes ¨ No

Is Project Located in a Special Flood Hazard Area? þ Yes ¨ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0201E

Total Cost of Project: ___$17,309______________________________

Total Amount Requested: __$13,846___________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding and wetland loss.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought to be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional

purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located at 8303 Robins Neck Road in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, notates response to emerging flood challenges.*
- *A link to the Middle Peninsula PDC’s All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - *Please see Section 4 (page 25), which includes historical hazard data within*

the region.

- *A link to the Gloucester County's Comprehensive Plan can be found at:* *https://www.gloucesterva.info/373/Comprehensive-Plan*.

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

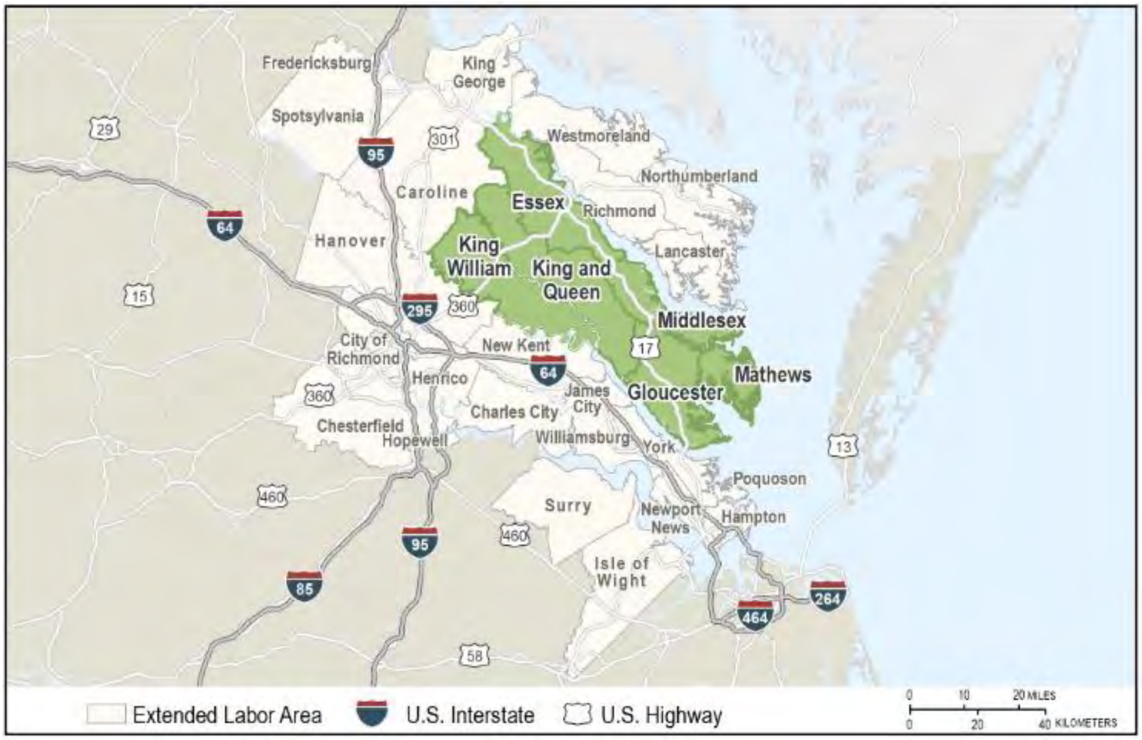
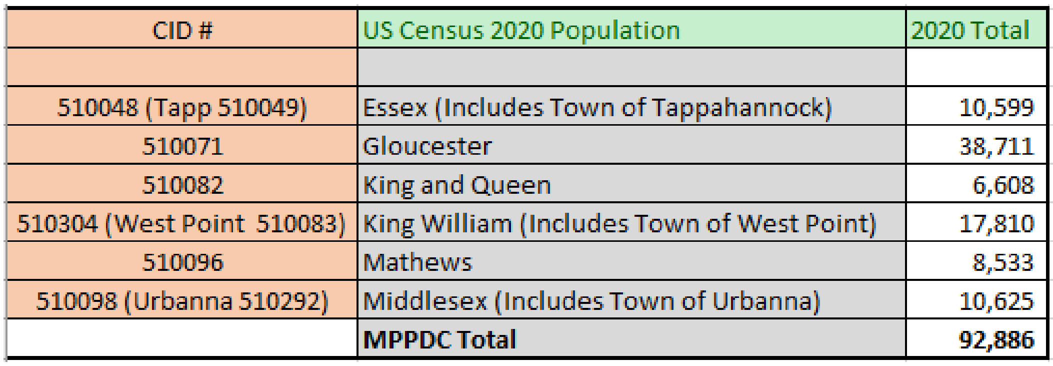


Figure 2. Middle Peninsula Population

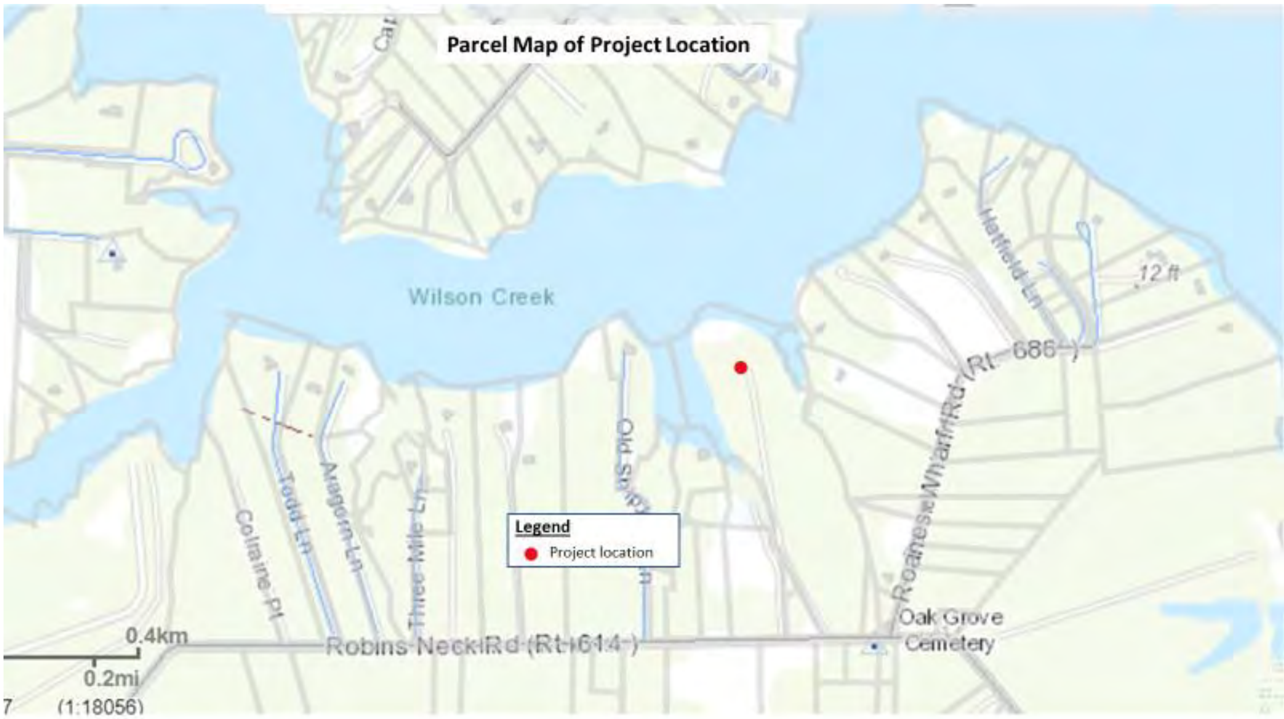


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature-based shoreline protection solution on one private property on Robins Neck Road in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

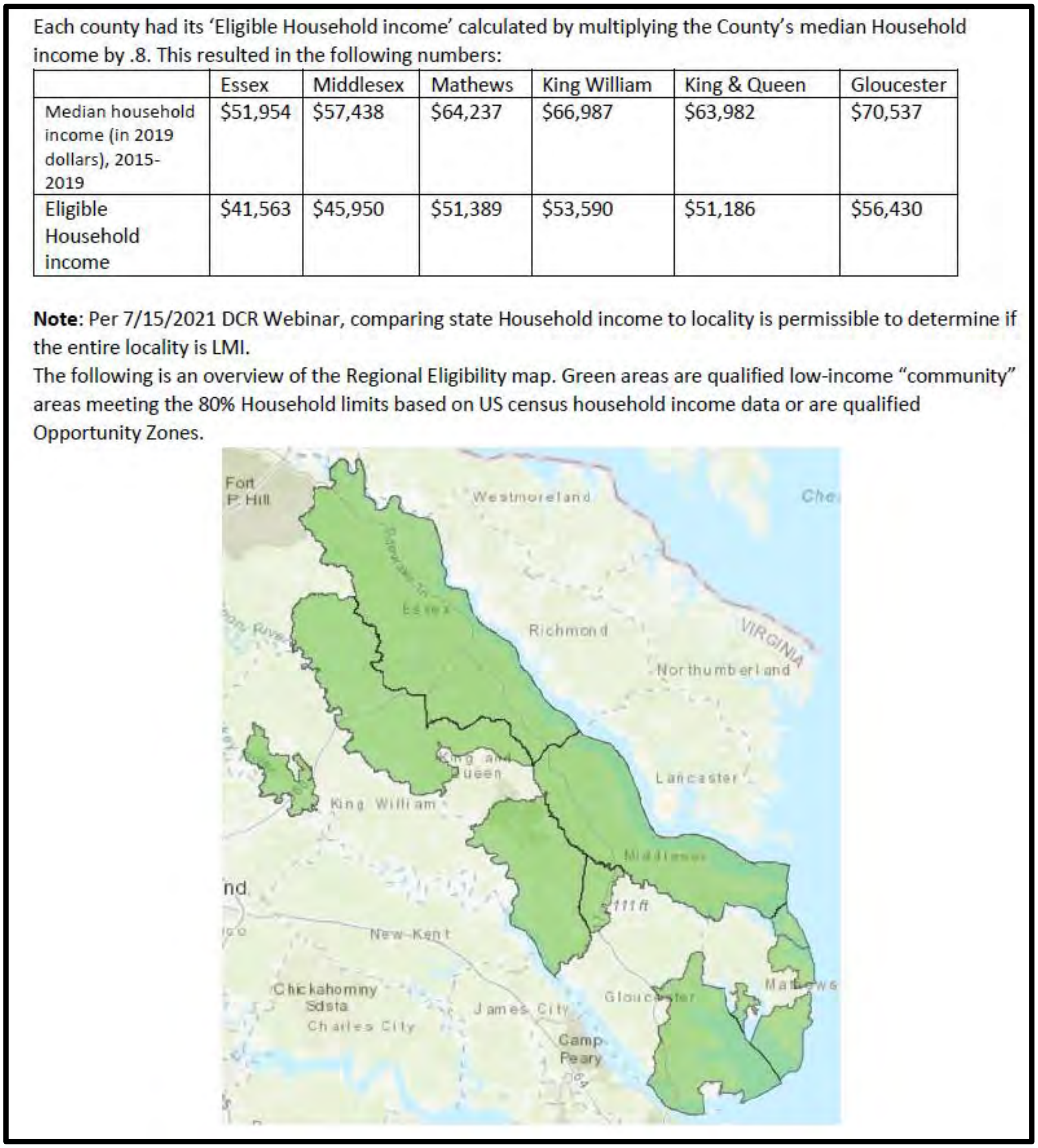
Figure 4. Parcel Map of Project Location



Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

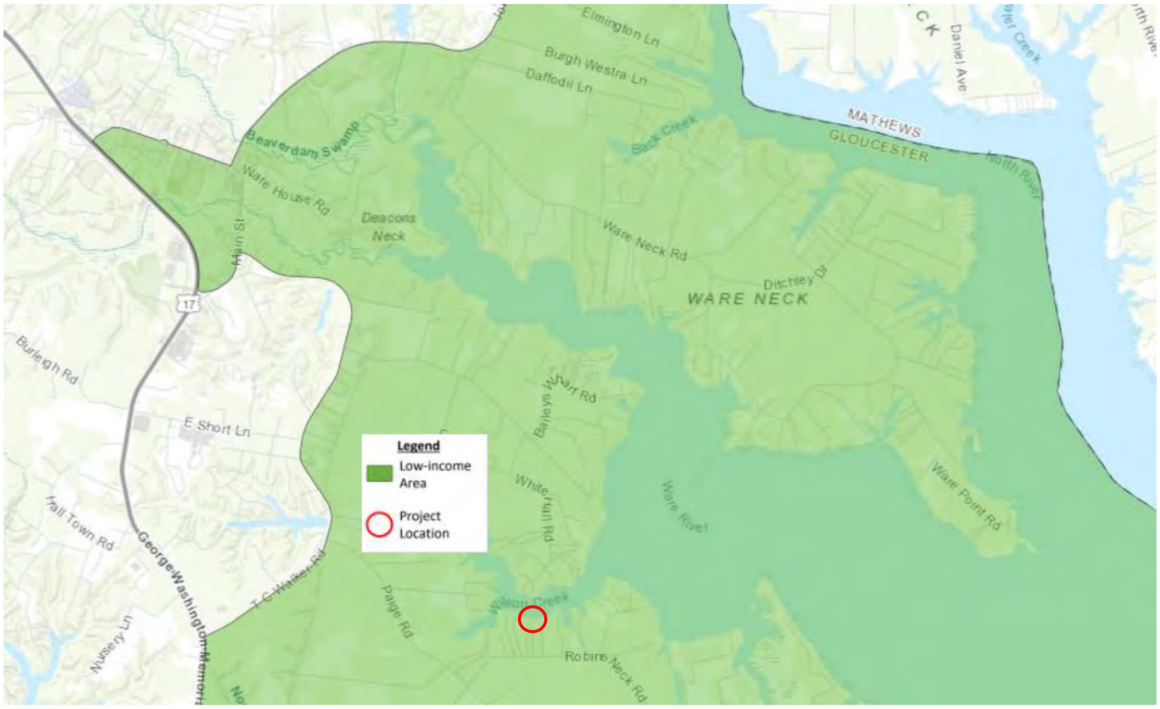
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

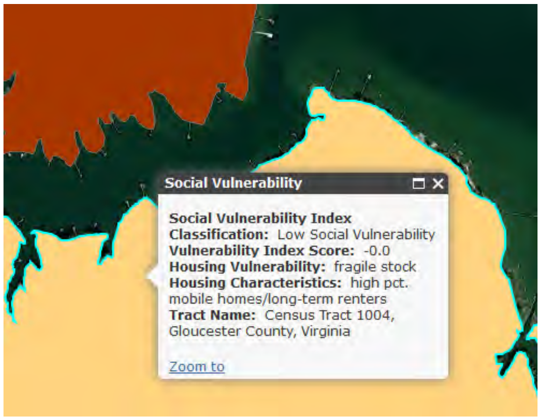
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a low social vulnerability score as seen in **Figure 7.** Which appears to conflict with the low income area designation, but with mobile homes and renters?

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

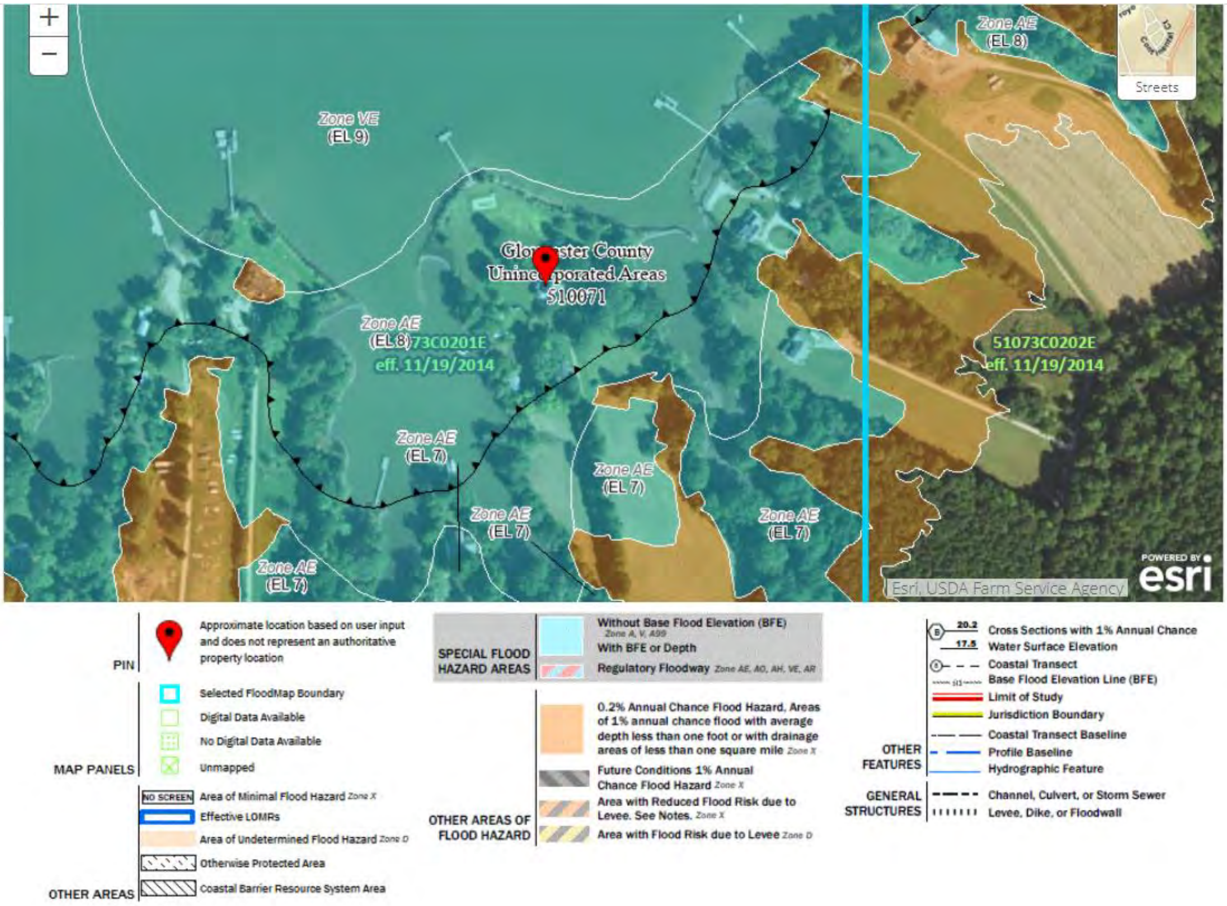


Social Vulnerability Index
Classification: Low Social Vulnerability
Vulnerability Index Score: -0.0
Housing Vulnerability: fragile stock
Housing Characteristics: high pct. mobile homes/long-term renters
Tract Name: Census Tract 1004, Gloucester County, Virginia

The project is located at 8303 Robins Neck Road, Gloucester VA 23061 (-76.47147898, 37.36228999). The property was purchased in 1972 by the current owner who has witnessed significant changes due to erosion. There is a lovely marsh grass area of 30 feet running from the land down a gentle slope into the creek. It serves as a great habitat for oysters, crabs, and eels. As children, the sons would fetch oysters but can no longer do so as adults. The northwest tip running southeast began to lose marsh grass in the 2000 timeframe, and that area has now expended to roughly 100 yards on the northeast facing of the property. A lot of marsh grass has been lost both in low and high lying areas. A few years ago, the property owners put down oyster shell grounds as a breakwater to provide a natural solution; unfortunately, it easily washed away as the scalable amount required was not feasible. Sea level has also risen to the point where it could not keep up. The natural habitat is being lost at an extreme rate along the quarter mile peninsula area that goes into two small coves. The property along the waterfront is also at risk from three large trees falling into the water; that is, two cedars and a pecan. They have been replacing lost trees with cypress trees to help absorb some of the water that is overly saturating the ground. If more continue to fall, it will negatively impact the pecan grove and daffodil garden.

This site is located within the AE flood zone as seen in **Figure 8**. Please see **Appendix 2** for the FIRMettes (last mapped 11/19/2014) and **Appendix 3** for additional property photos.

Figure 8: Map of FEMA Flood Zones of Project Location

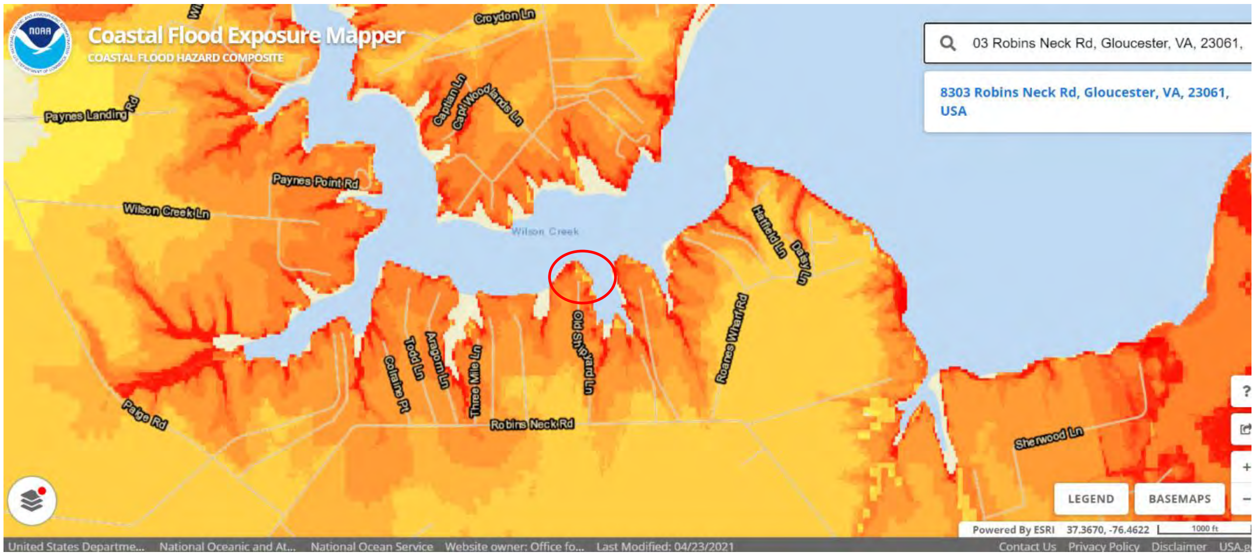


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 86 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

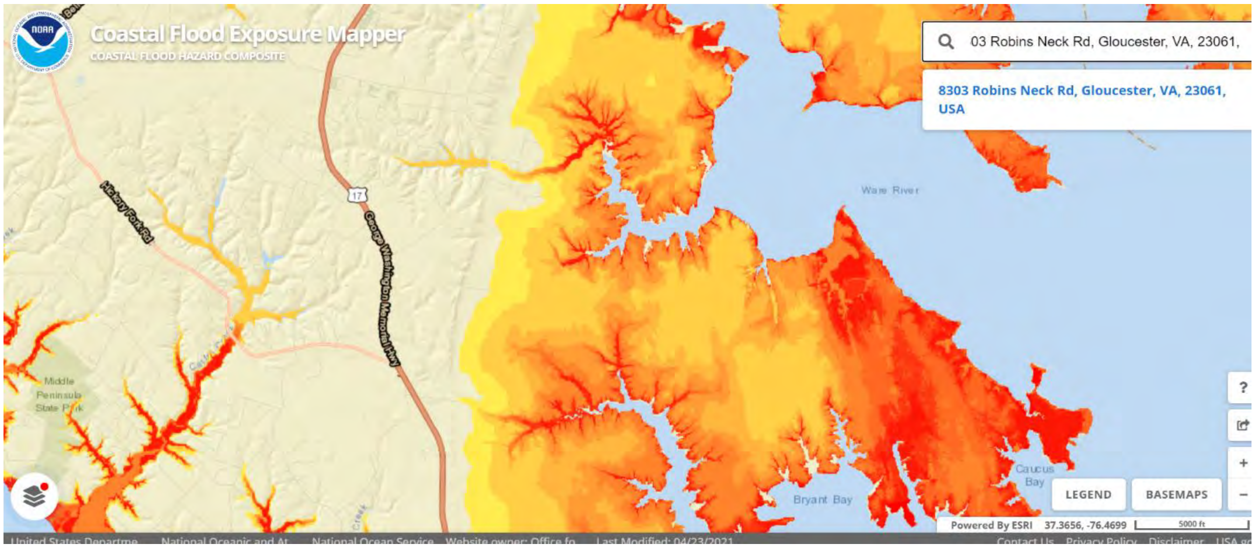
Figure 9. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 10.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)


03 Robins Neck Rd, Gloucester, VA, 23061,

8303 Robins Neck Rd, Gloucester, VA, 23061, USA



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at:* [*https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)
- *A link to Gloucester County's current floodplain ordinance can be found at:* [*http://gloucestercounty-va.elaws.us/code/coor_ch8.5*](http://gloucestercounty-va.elaws.us/code/coor_ch8.5)

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

***GOALS AND OBJECTIVES*.**

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022, as seen in Table 1.

Table 1. Project Milestone Schedule

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine member jurisdictions including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ¨No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

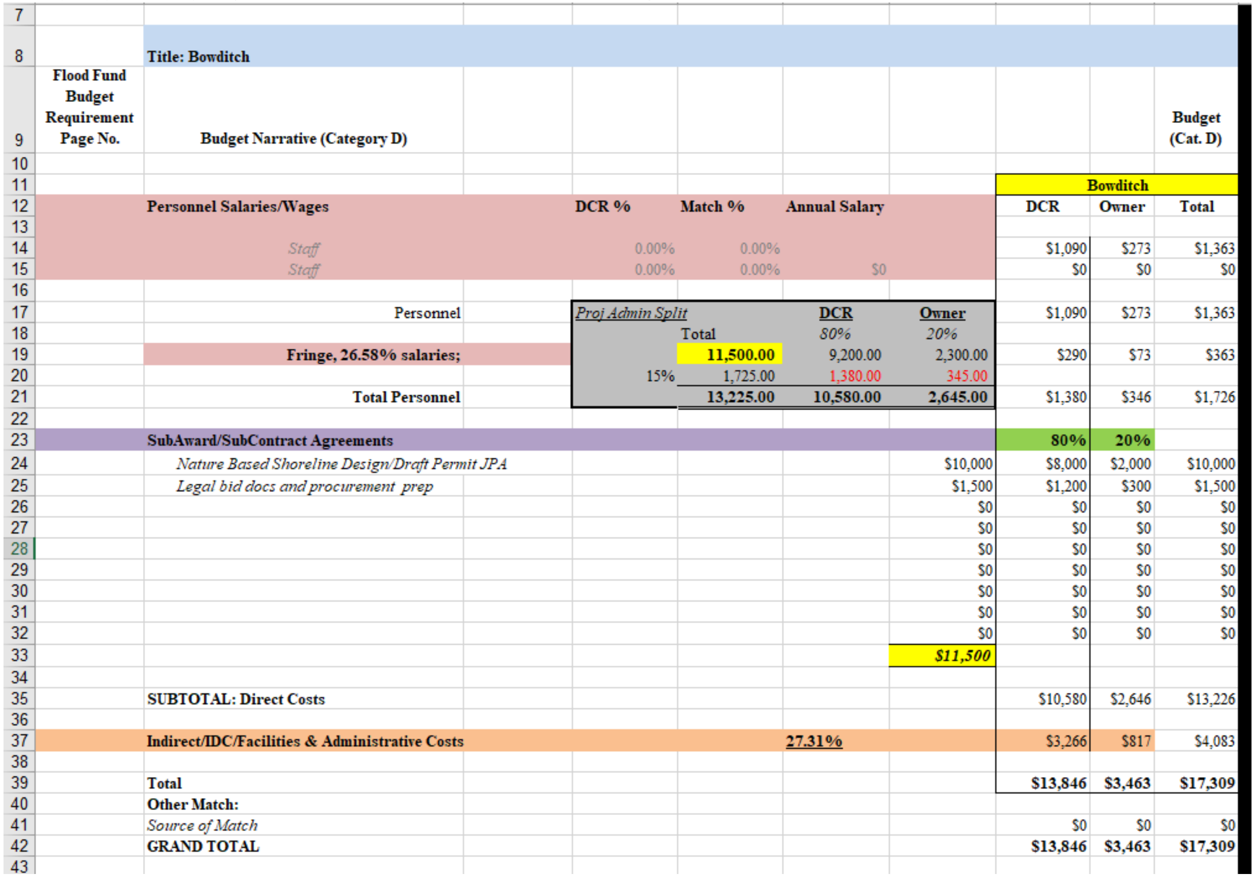
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		75

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	þYes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	þYes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	þYes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	þYes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	þYes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	þYes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	þYes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	þYes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	þYes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	þYes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	þYes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	þYes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $17,309

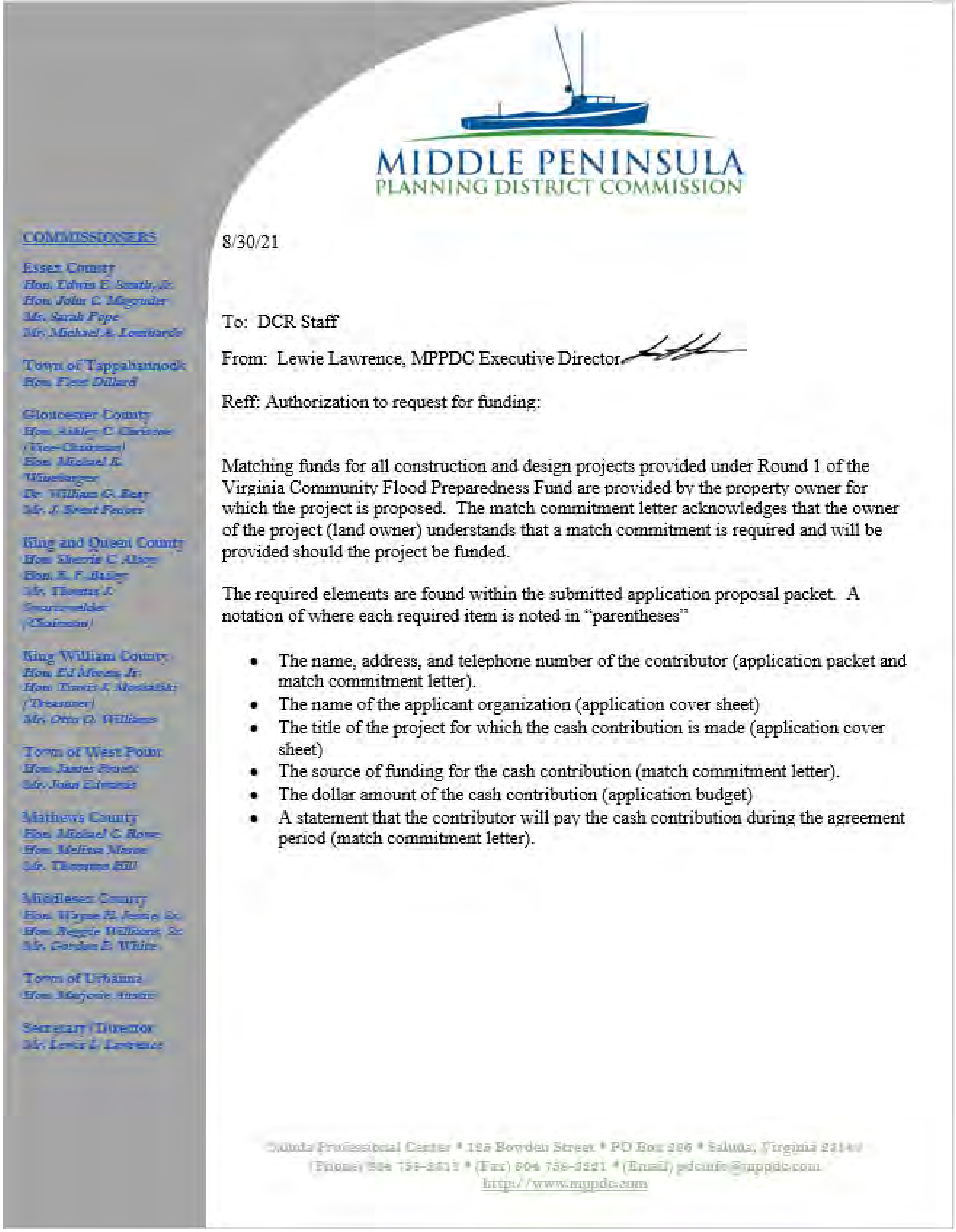


7										
8		**Title: Bowditch**								
9	**Flood Fund Budget Requirement Page No.**	**Budget Narrative (Category D)**								**Budget (Cat. D)**
10										
11								**Bowditch**		
12		**Personnel Salaries/Wages**		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
13										
14		*Staff*		0.00%	0.00%			$1,090	$273	$1,363
15		*Staff*		0.00%	0.00%	$0		$0	$0	$0
16										
17		Personnel		*Proj Admin Split*		**DCR**	**Owner**	$1,090	$273	$1,363
18					Total	*80%*	*20%*			
19		**Fringe, 26.58% salaries;**			**11,500.00**	9,200.00	2,300.00	$290	$73	$363
20				15%	1,725.00	1,380.00	345.00			
21		**Total Personnel**			**13,225.00**	**10,580.00**	**2,645.00**	$1,380	$346	$1,726
22										
23		**SubAward/SubContract Agreements**						**80%**	**20%**	
24		*Nature Based Shoreline Design/Draft Permit JPA*					$10,000	$8,000	$2,000	$10,000
25		*Legal bid docs and procurement prep*					$1,500	$1,200	$300	$1,500
26							$0	$0	$0	$0
27							$0	$0	$0	$0
28							$0	$0	$0	$0
29							$0	$0	$0	$0
30							$0	$0	$0	$0
31							$0	$0	$0	$0
32							$0	$0	$0	$0
33							***$11,500***			
34										
35		**SUBTOTAL: Direct Costs**						$10,580	$2,646	$13,226
36										
37		**Indirect/IDC/Facilities & Administrative Costs**				**27.31%**		$3,266	$817	$4,083
38										
39		**Total**						**$13,846**	**$3,463**	**$17,309**
40		**Other Match:**								
41		*Source of Match*						$0	$0	$0
42		**GRAND TOTAL**						**$13,846**	**$3,463**	**$17,309**
43										

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professionals who do shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

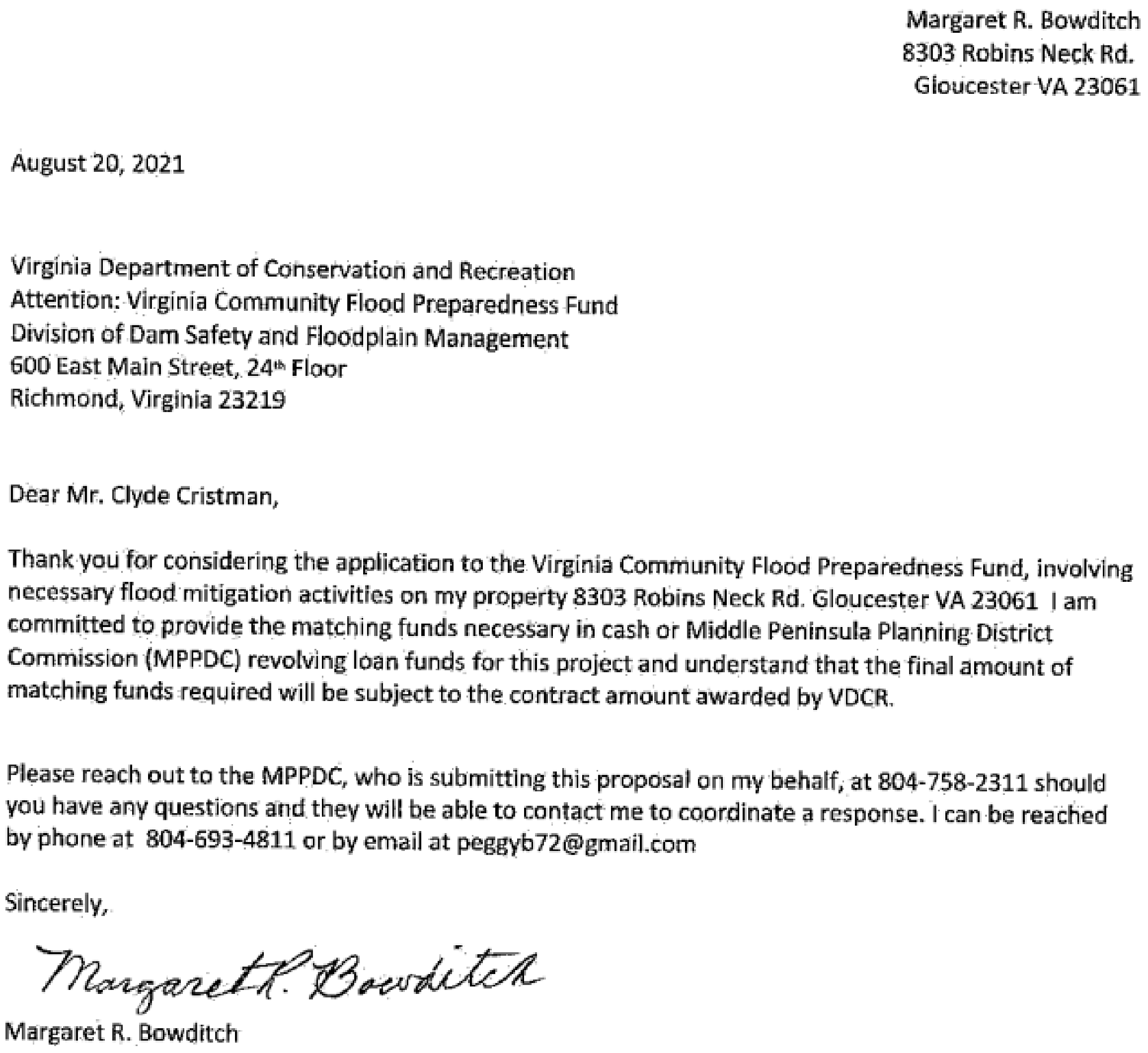
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



Margaret R. Bowditch
8303 Robins Neck Rd.
Gloucester VA 23061

August 20, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property 8303 Robins Neck Rd. Gloucester VA 23061 I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-693-4811 or by email at peggyb72@gmail.com

Sincerely,

Margaret R. Bowditch

Margaret R. Bowditch

Also see appendix 6

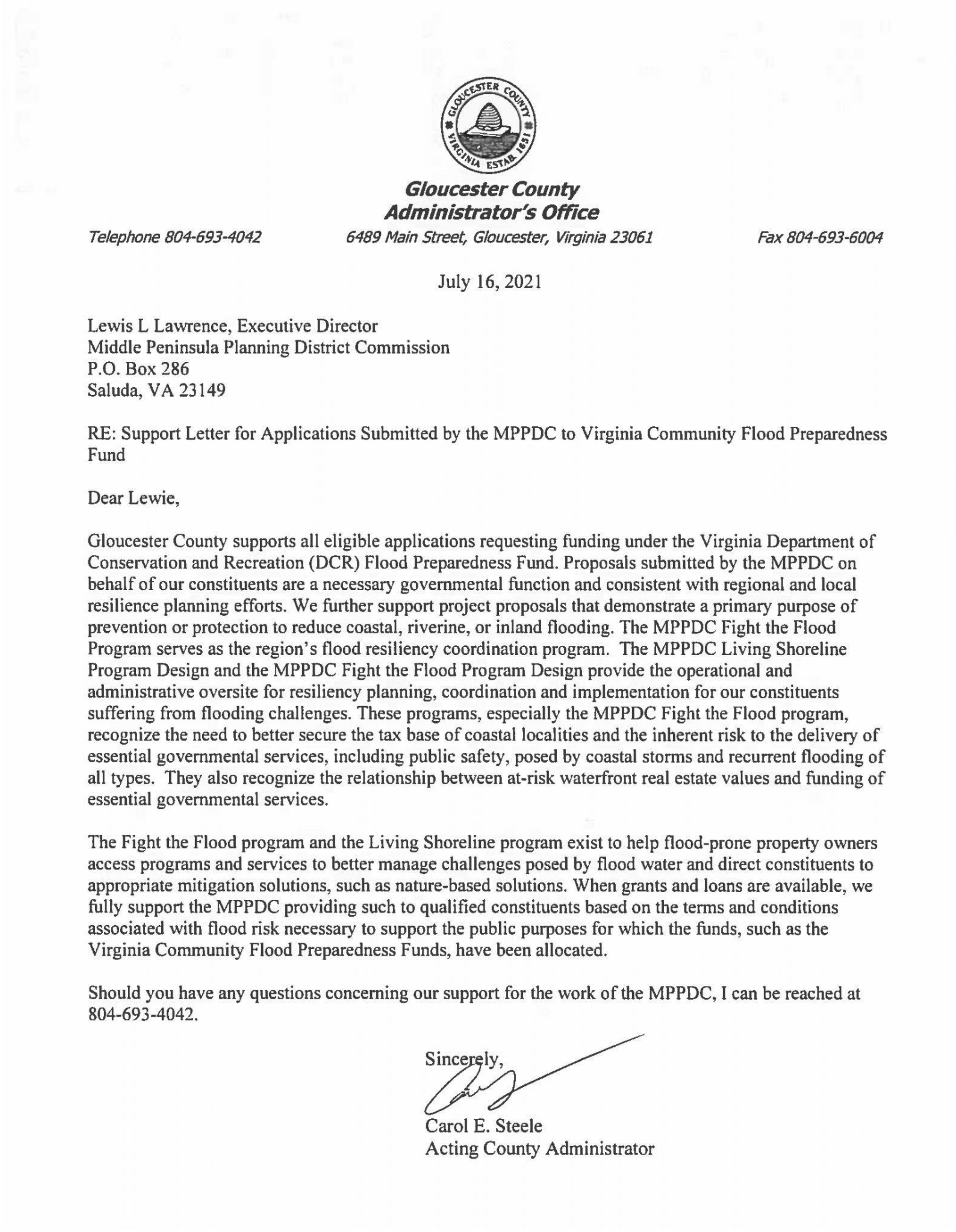
IV. SUPPORTING DOCUMENTATION

þ Letters of support from all affected local government
þ Detailed map of the project area(s)
þ FIRMette of the project area(s)
þ Historic flood damage data and/or images

Cont to next page

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

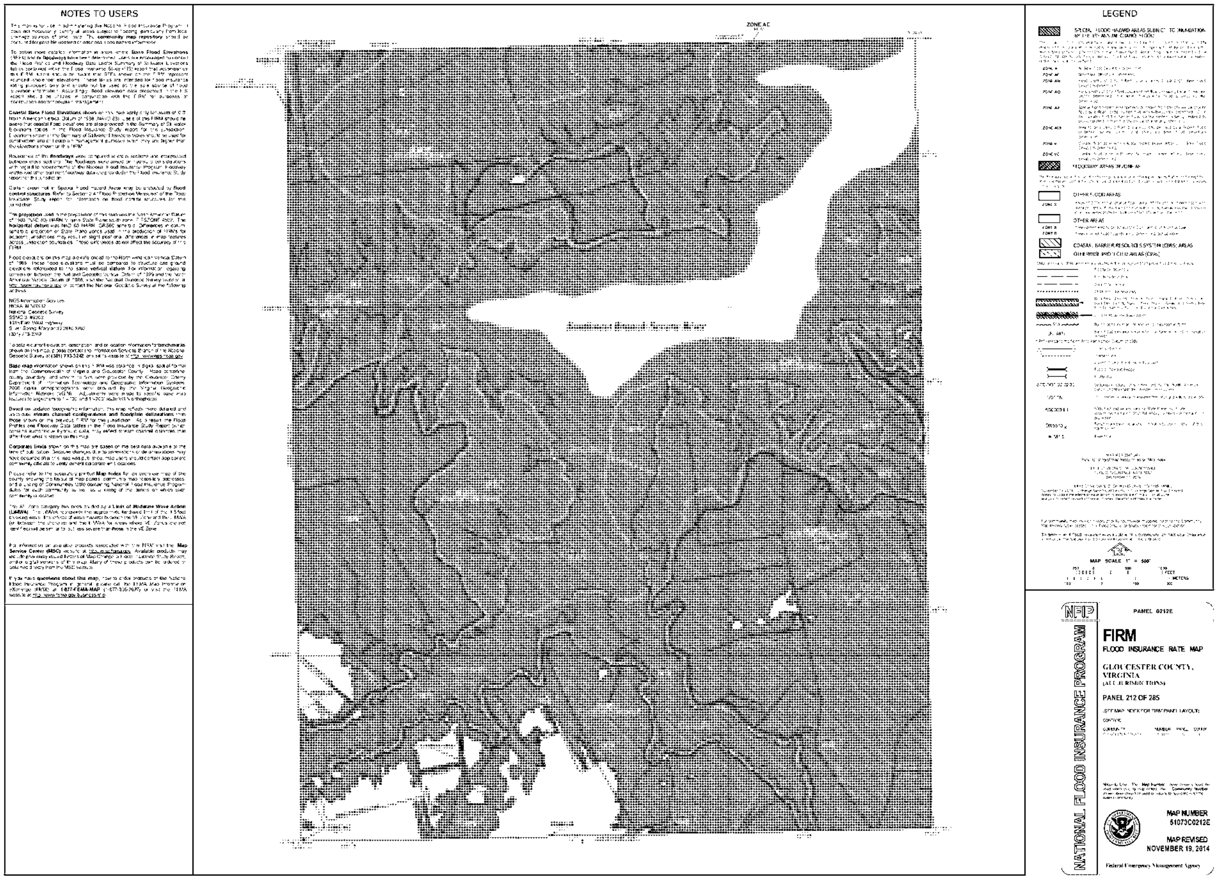
Sincerely,

Carol E. Steele
Acting County Administrator

APPENDIX 2

Project Location FIRMette

(FIRMette #: 51073C0212E/ Effective Date: 11/19/2014)

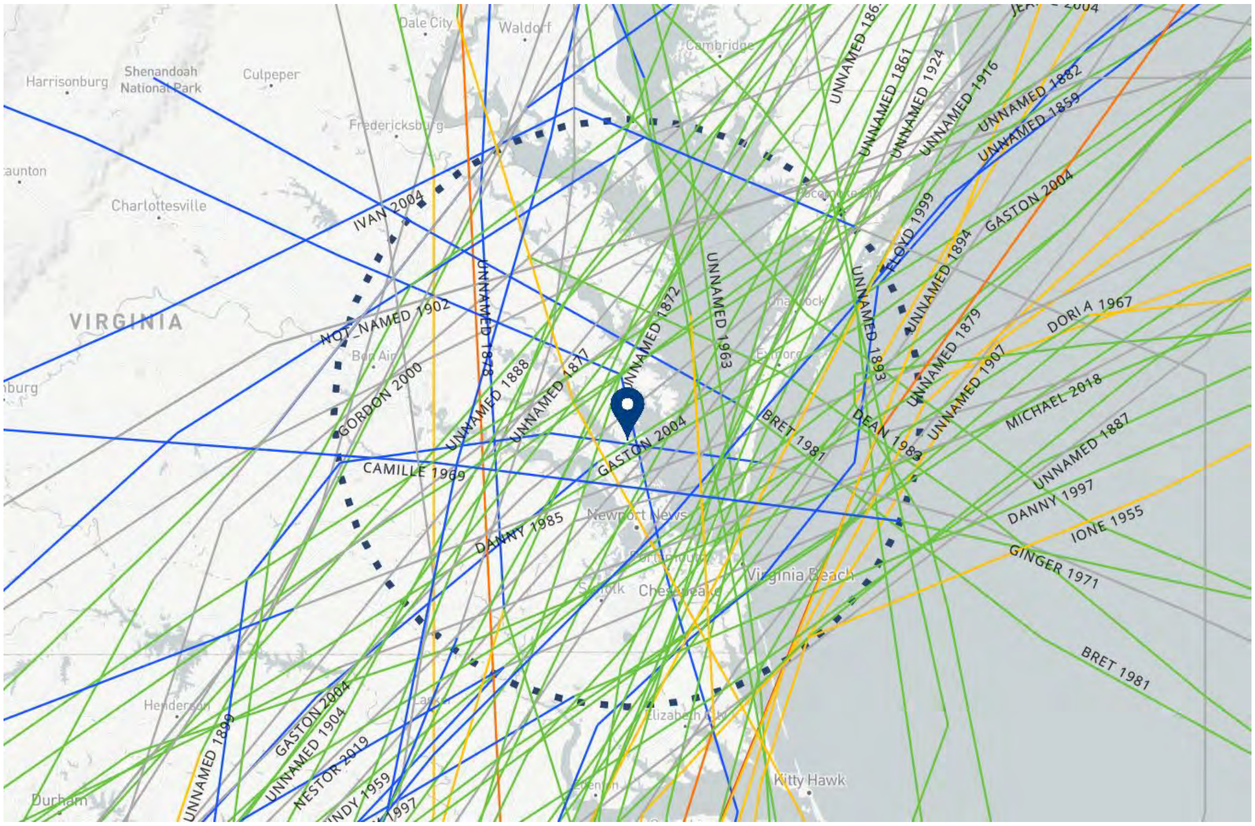


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.36228999, -76.47147898

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1

NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29,	105	950	H3

	2004			
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27,	70	984	H1

	1997			
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05,	95	959	H2

	1971			
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul	65	995	H1

	12, 1959			
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep	160	892	H5

	10, 1935			
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May	40	990	TS

	18, 1916			
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS

UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep	90	975	H2

	11, 1881			
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26,	35	-1	TS

	1864			
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12,	110	938	H3

	1854			
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

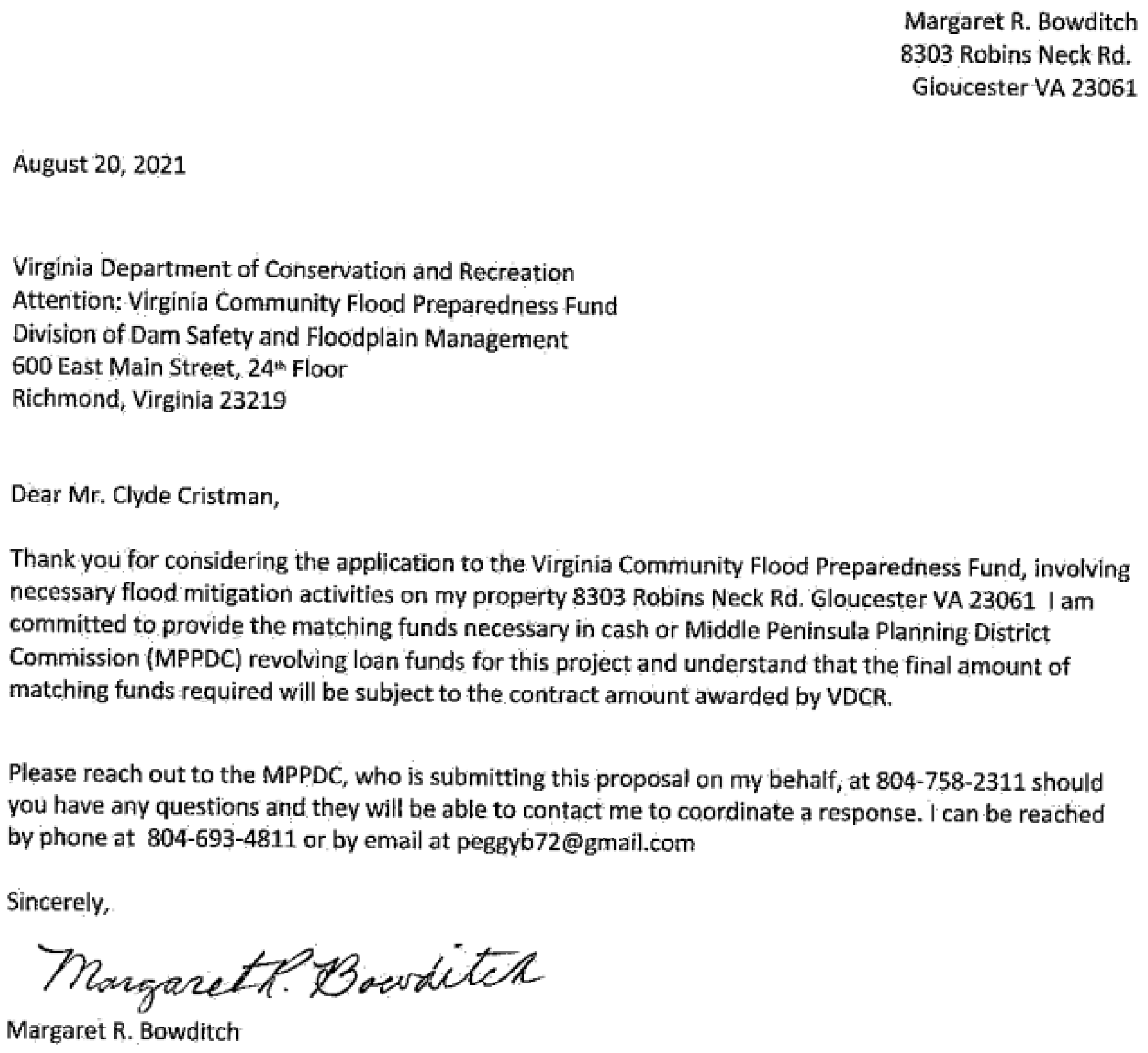
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



Margaret R. Bowditch
8303 Robins Neck Rd.
Gloucester VA 23061

August 20, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property 8303 Robins Neck Rd. Gloucester VA 23061 I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-693-4811 or by email at peggyb72@gmail.com

Sincerely,

Margaret R. Bowditch

Margaret R. Bowditch

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Childress Shoreline Design** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

Issue #2

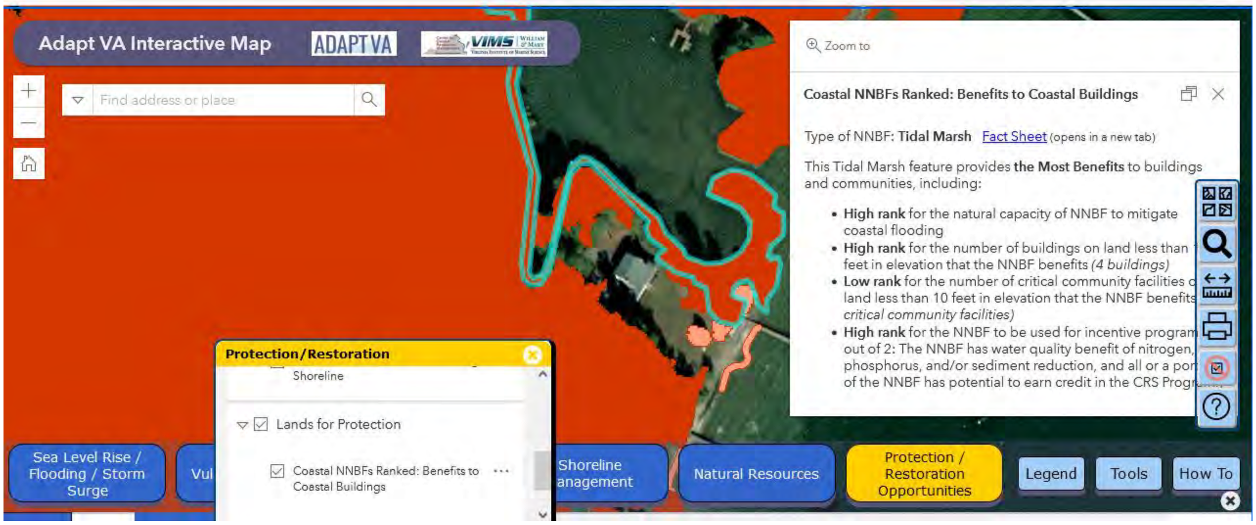
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

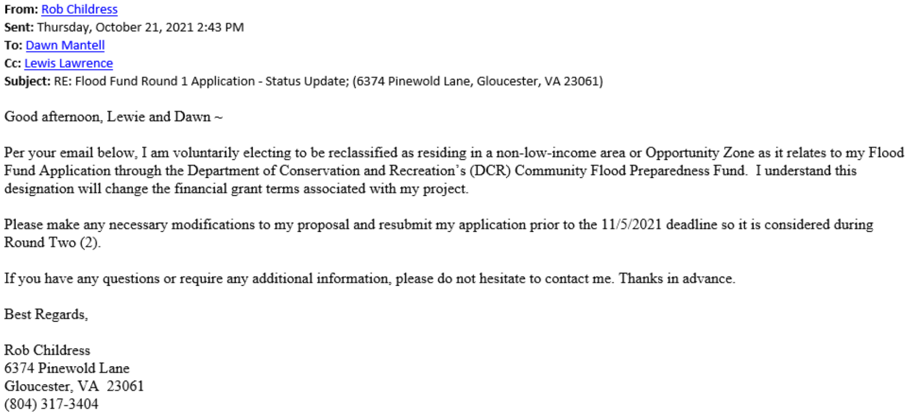
Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(4 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Prog

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



From: Rob Childress
Sent: Thursday, October 21, 2021 2:43 PM
To: Dawn Mantell
Cc: Lewis Lawrence
Subject: RE: Flood Fund Round 1 Application - Status Update; (6374 Pinewold Lane, Gloucester, VA 23061)

Good afternoon, Lewie and Dawn ~

Per your email below, I am voluntarily electing to be reclassified as residing in a non-low-income area or Opportunity Zone as it relates to my Flood Fund Application through the Department of Conservation and Recreation's (DCR) Community Flood Preparedness Fund. I understand this designation will change the financial grant terms associated with my project.

Please make any necessary modifications to my proposal and resubmit my application prior to the 11/5/2021 deadline so it is considered during Round Two (2).

If you have any questions or require any additional information, please do not hesitate to contact me. Thanks in advance.

Best Regards,

Rob Childress
6374 Pinewold Lane
Gloucester, VA 23061
(804) 317-3404

Amended Budget Request

DCR Funding:	$ 4,765
Owner:	$ 2,042
Total	$ 6,807

						Childress		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$374	$160	$535
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$374	$160	$534
			Total	*70%*	*30%*			
e, 26.21% salaries;			**4,500**	3,150.00	1,350.00	$98	$42	$140
		15%	675.00	472.50	202.50			
Total Personnel			**5,175.00**	**3,622.50**	**1,552.50**	$472	$202	$674
SubAward/SubContract Agreements						**70%**	**30%**	
Ready Reef	*Turn key design and JPA permit ready for submission*				$3,000	$2,100	$900	$3,000
	Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$4,500			
SUBTOTAL: Direct Costs						$3,622	$1,552	$5,174
Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$1,143	$490	$1,633
Total						**$4,765**	**$2,042**	**$6,807**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$4,765**	**$2,042**	**$6,807**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Pinewold Lane

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ____
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☑ Wetland restoration.
- ☑ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☑ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE/AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0140E

Total Cost of Project: ___$6,773_______________________________

Total Amount Requested: _$5,418____________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding and wetland loss.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional

purposes, such as decreasing flood risk or improving water quality. These interventions can be completely "green" (i.e., consisting of only ecosystem elements) or "hybrid" (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located at 6374 Pinewold Lane in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, notates response to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - *Please see Section 4 (page 25), which includes historical hazard data within*

the region.

- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

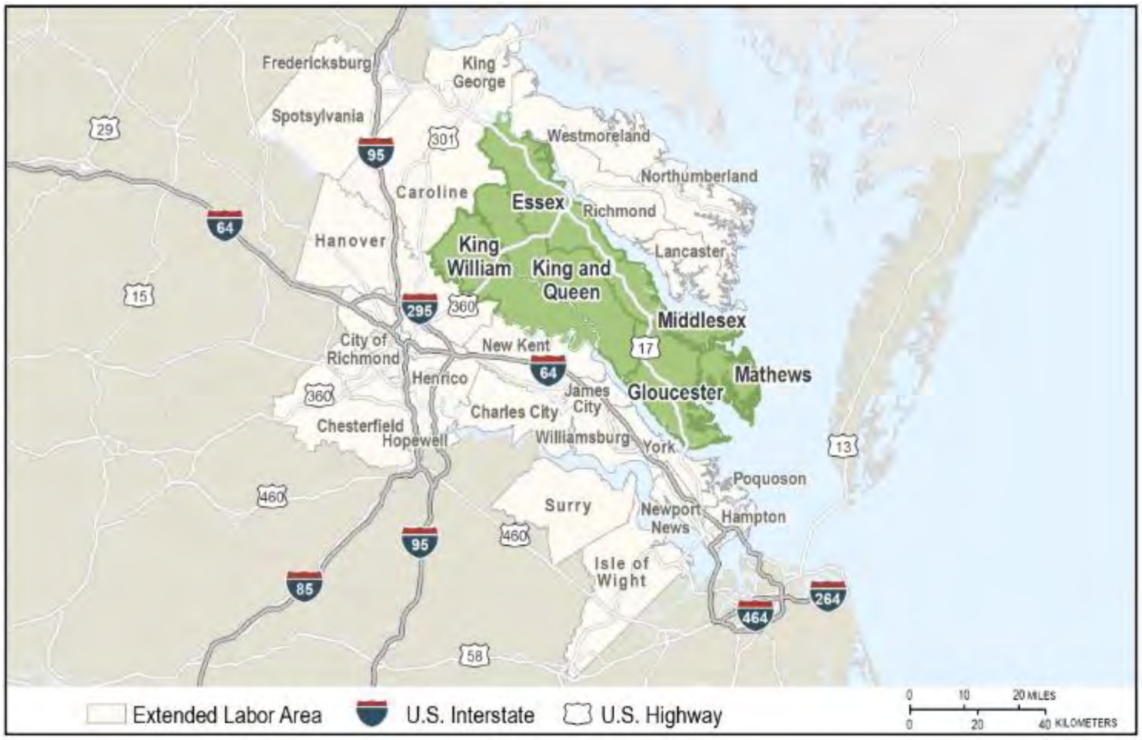
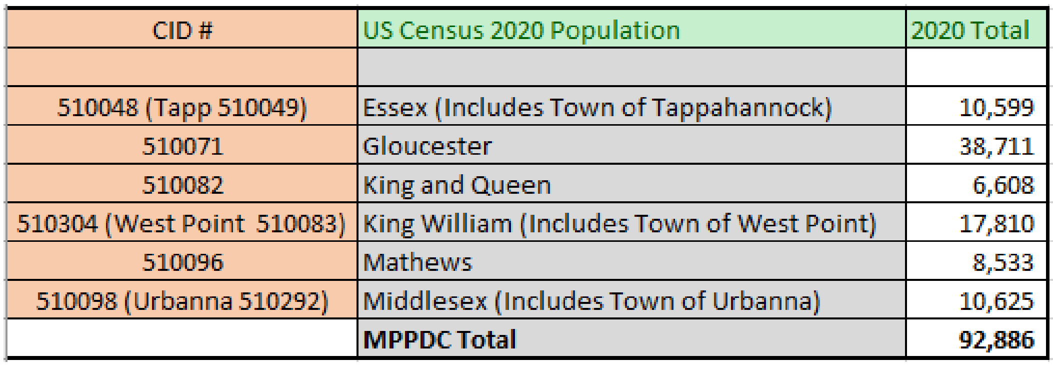


Figure 2. Middle Peninsula Population

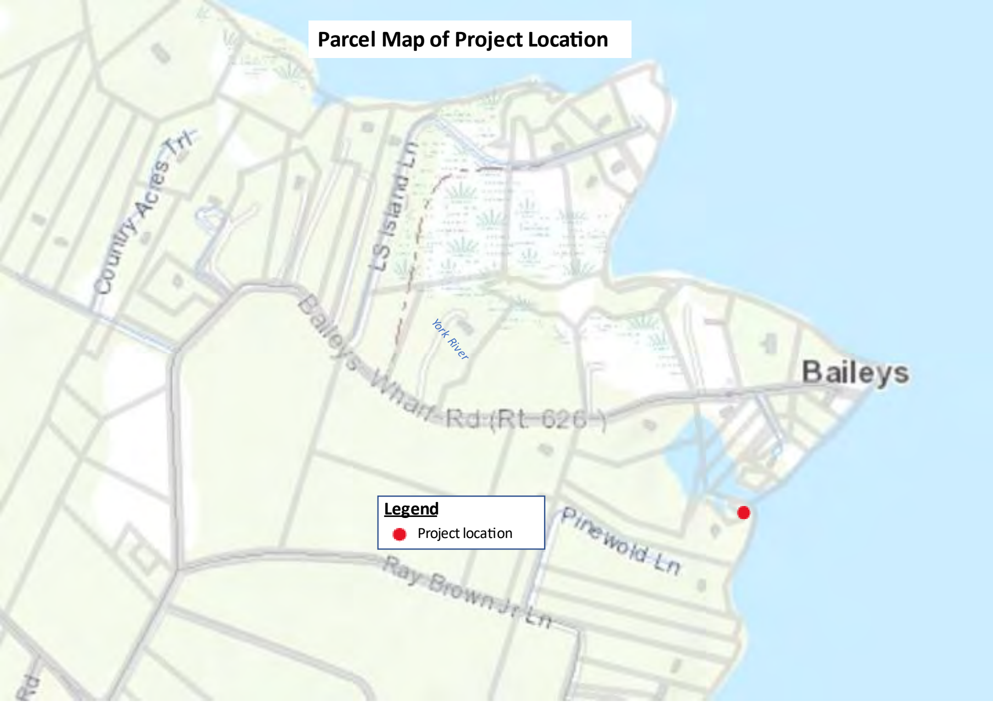


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Pinewold Lane in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

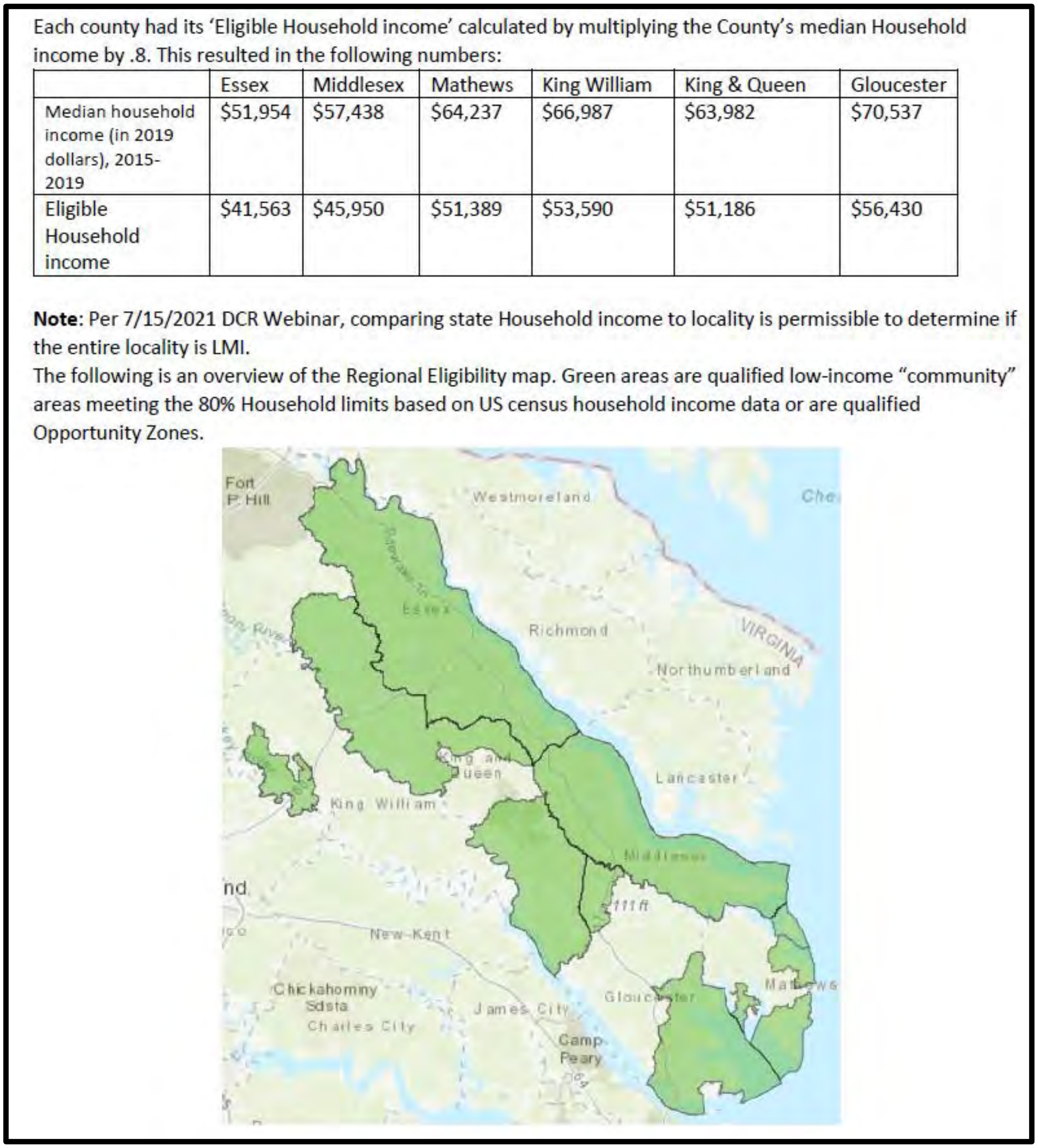
Figure 4. Parcel Map of Project Location



Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

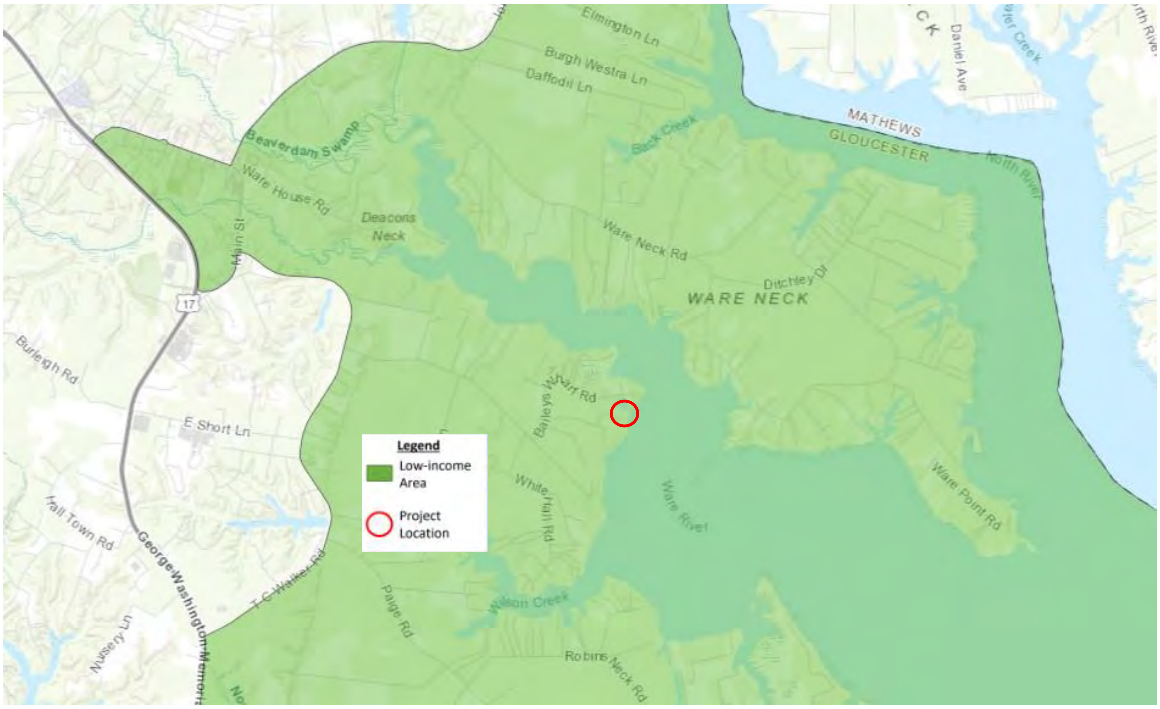
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

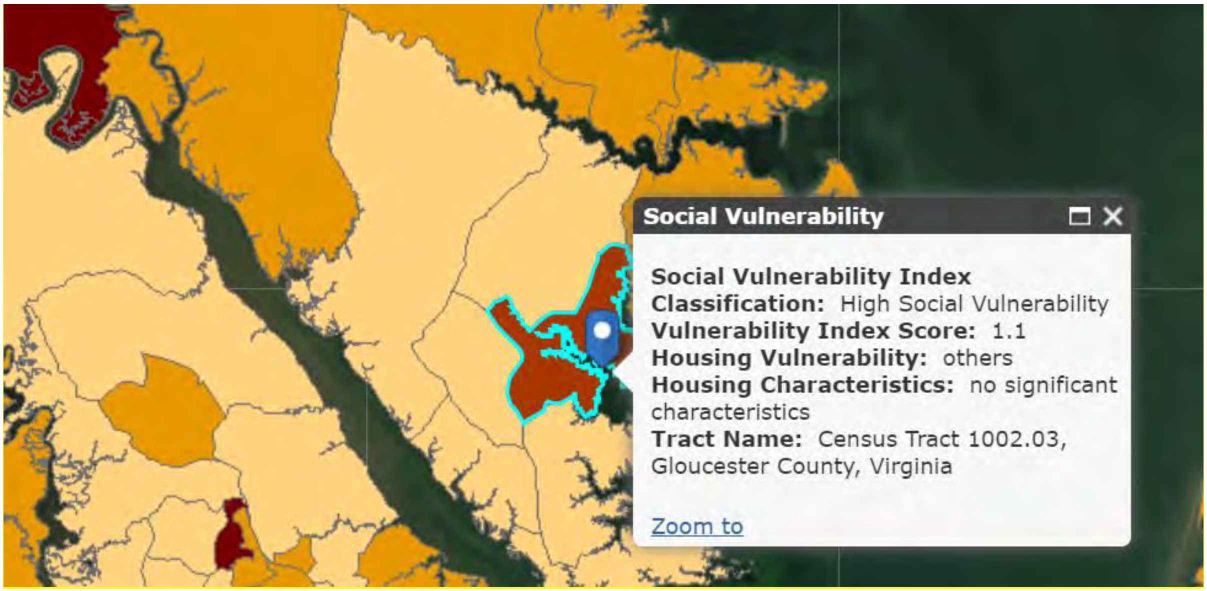
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a high social vulnerability score as seen in **Figure 7.**

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability

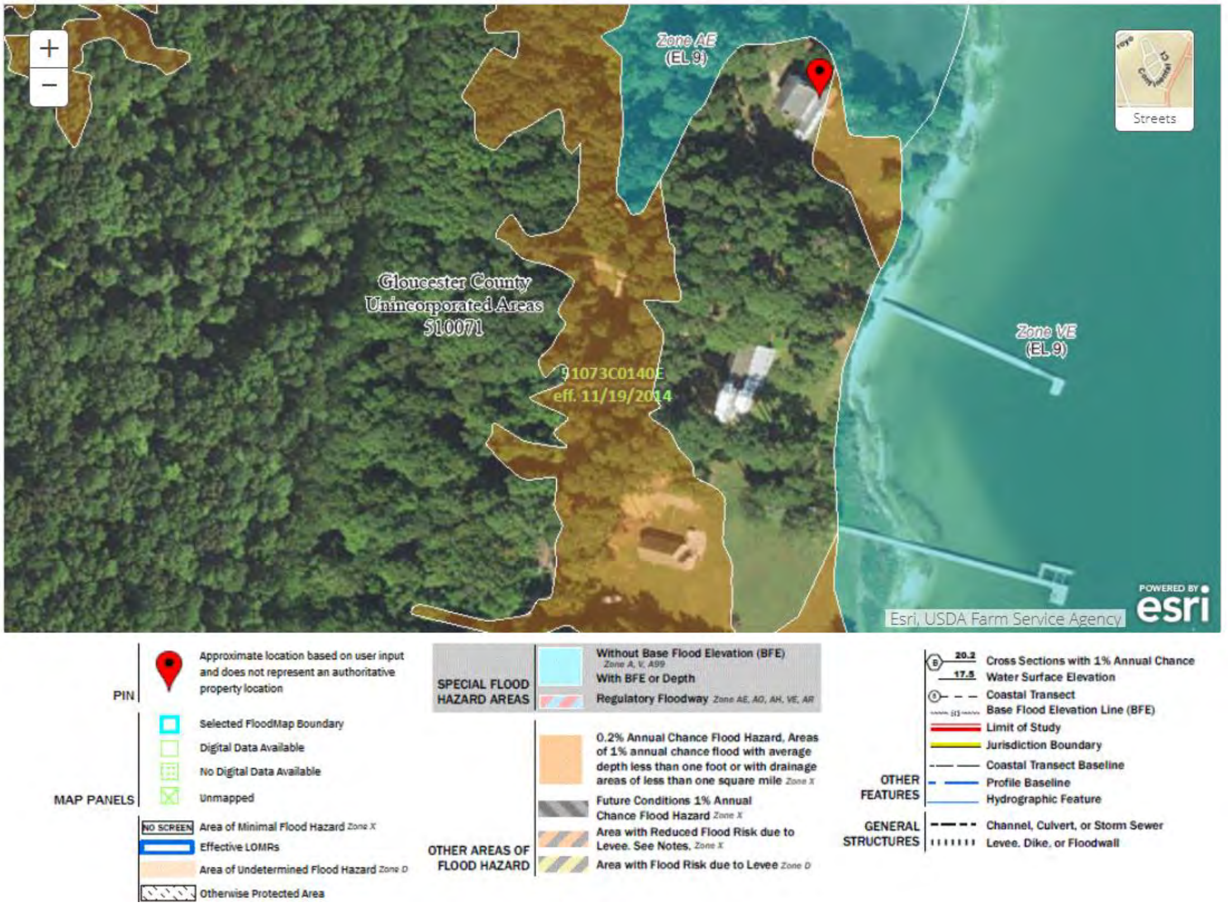
Social Vulnerability Index
Classification: High Social Vulnerability
Vulnerability Index Score: 1.1
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1002.03, Gloucester County, Virginia

Zoom to

The project is located at 6374 Pinewold Lane, Gloucester, VA 23061 (-76.464651 37.38443799). When the property was purchased, there was about 200 feet of riprap along part of the property. Because of the recent mild storm, the riprap is beginning to fail. As the waves overtake it, it has led to erosion problems, and this will only continue to worsen with sea level rise. Another 200 feet of the property has a beach area where there is significant loss of marsh grasses due to the wave energy coming off a Cape Charles (there is an open 30 mile shot between the property across the bay to Cape Charles). Additionally, the slope of the beach area is not angled correctly to protect the marsh grass, causing even more loss. There is an adjoining cove to the property, which results in additional erosion problems. During high tide, there is an extra four feet of water on the cove, which undercuts the bank and over saturates the ground. This destabilized the ground and causes many trees to fall in or near the waterfront. See the following pictures for more details.

This site is located within the VE and AE flood zone as seen in **Figure 8**. Please see **Appendix 2** for the FIRMettes (last mapped 11/19/2014) and **Appendix 3** for additional property photos.

Figure 8: Map of FEMA Flood Zones of Project Location

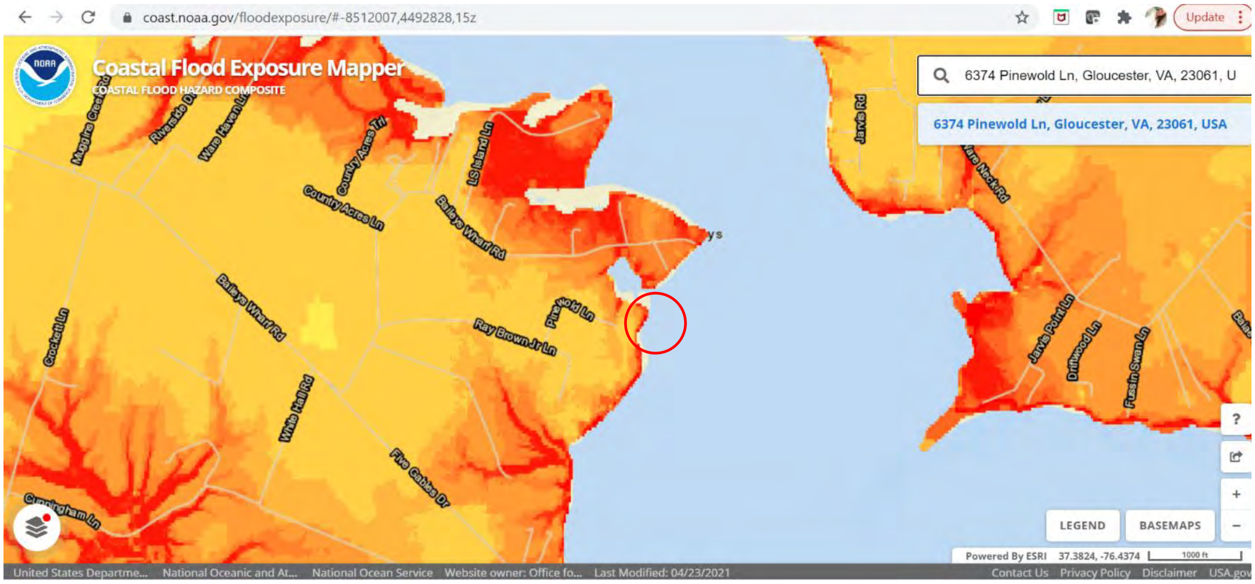


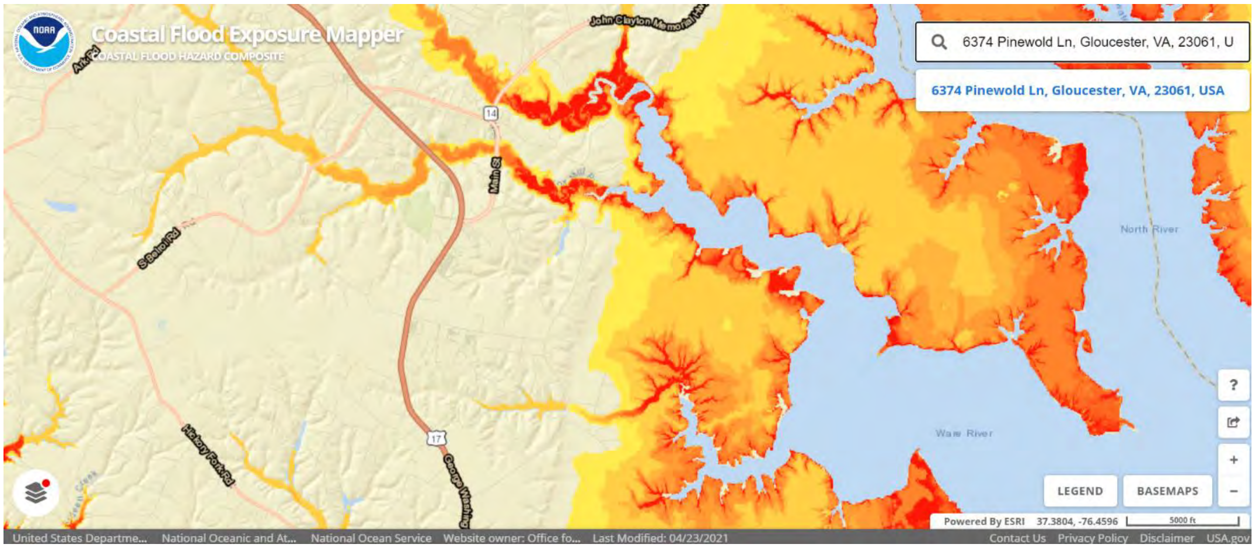
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 83 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 9. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 10.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)





6374 Pinewold Ln, Gloucester, VA, 23061, U

6374 Pinewold Ln, Gloucester, VA, 23061, USA

For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5*

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022, as seen in Table 1.

Table 1. Project Milestone Schedule

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		87

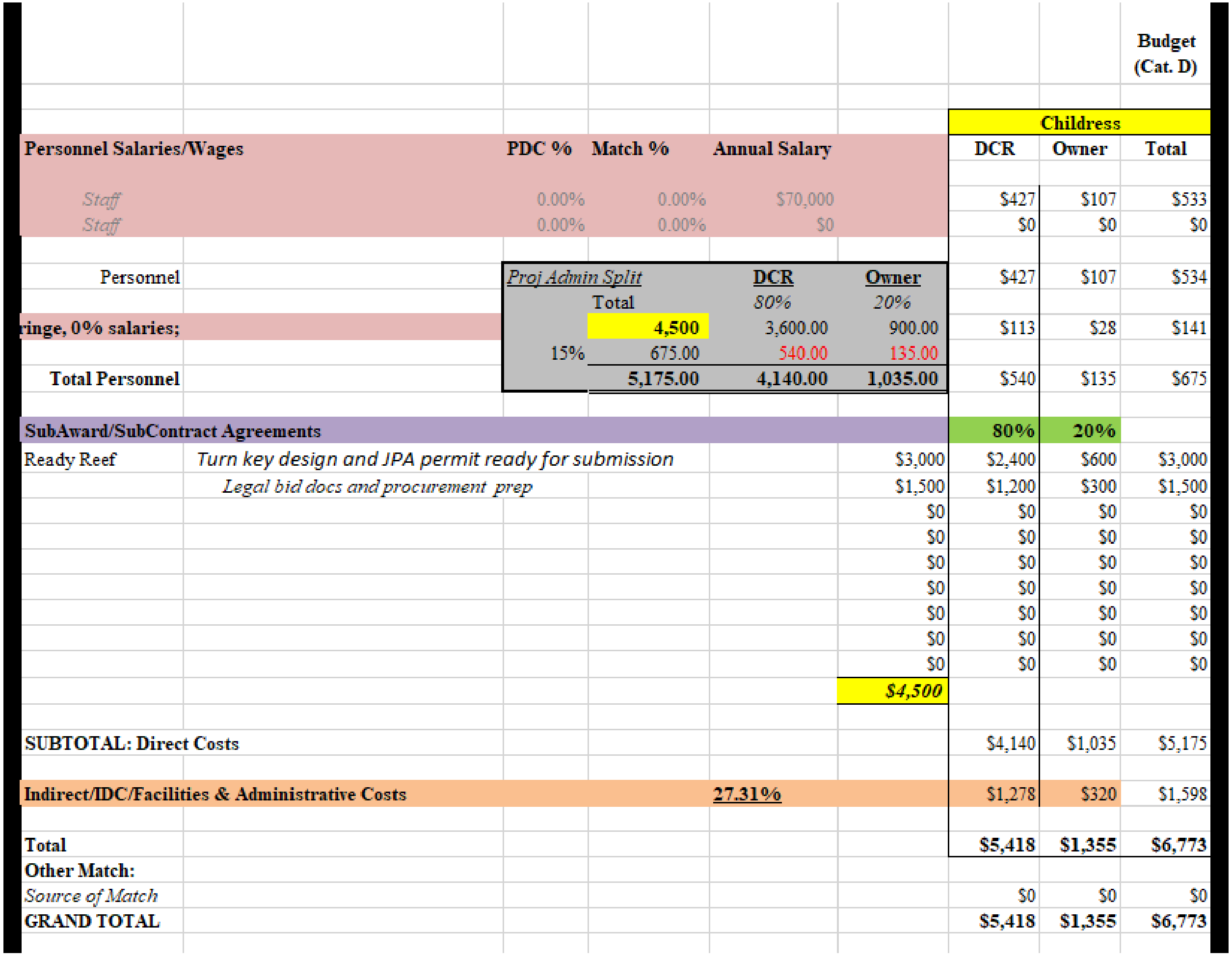
SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $6,773

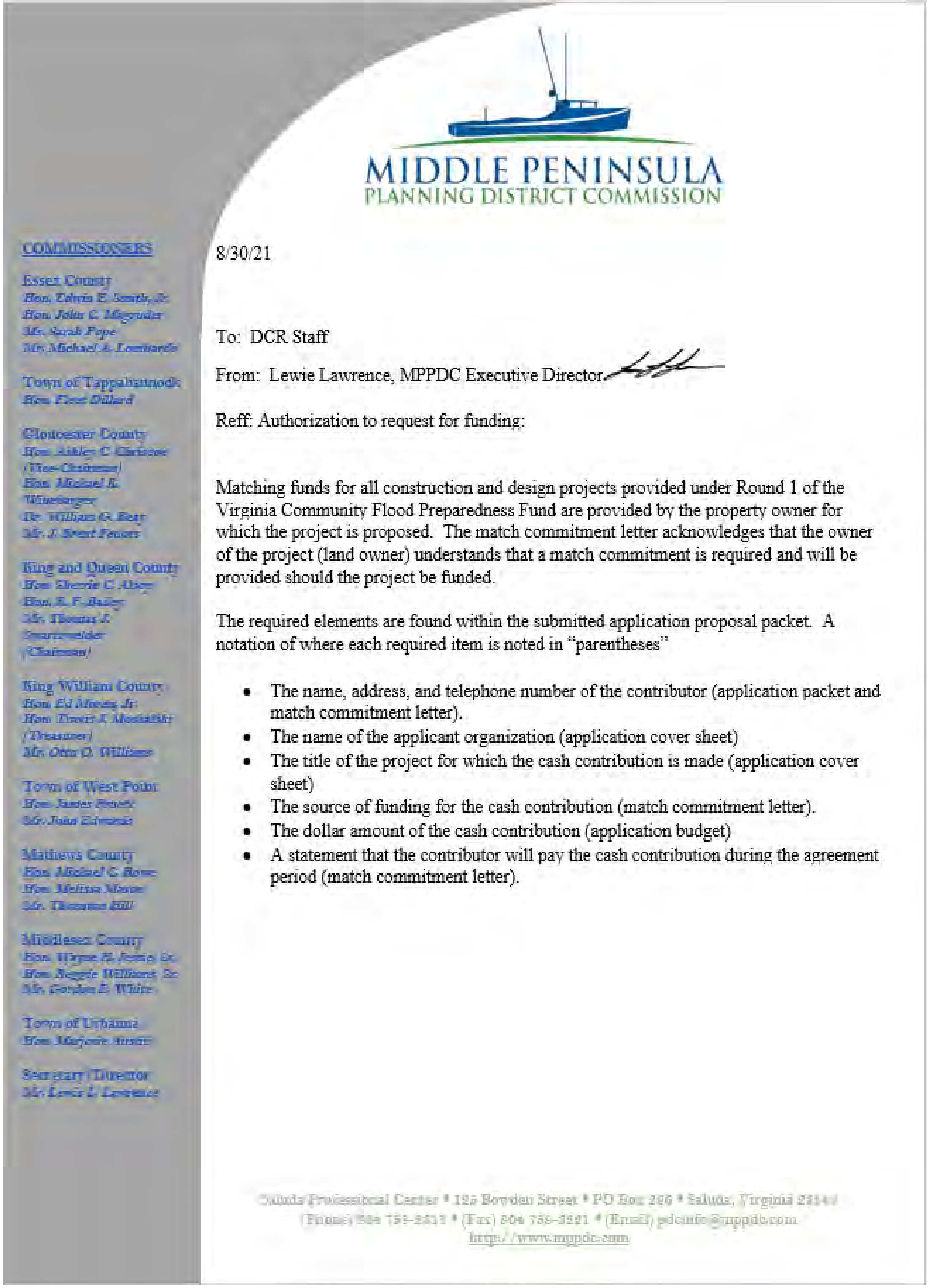


								Budget (Cat. D)
						Childress		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$427	$107	$533
Staff		0.00%	0.00%	$0		$0	$0	$0
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$427	$107	$534
			Total	*80%*	*20%*			
ringe, 0% salaries;			**4,500**	3,600.00	900.00	$113	$28	$141
		15%	675.00	540.00	135.00			
Total Personnel			**5,175.00**	**4,140.00**	**1,035.00**	$540	$135	$675
SubAward/SubContract Agreements						**80%**	**20%**	
Ready Reef	*Turn key design and JPA permit ready for submission*				$3,000	$2,400	$600	$3,000
	Legal bid docs and procurement prep				$1,500	$1,200	$300	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$4,500			
SUBTOTAL: Direct Costs						$4,140	$1,035	$5,175
Indirect/IDC/Facilities & Administrative Costs				**27.31%**		$1,278	$320	$1,598
Total						**$5,418**	**$1,355**	**$6,773**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$5,418**	**$1,355**	**$6,773**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

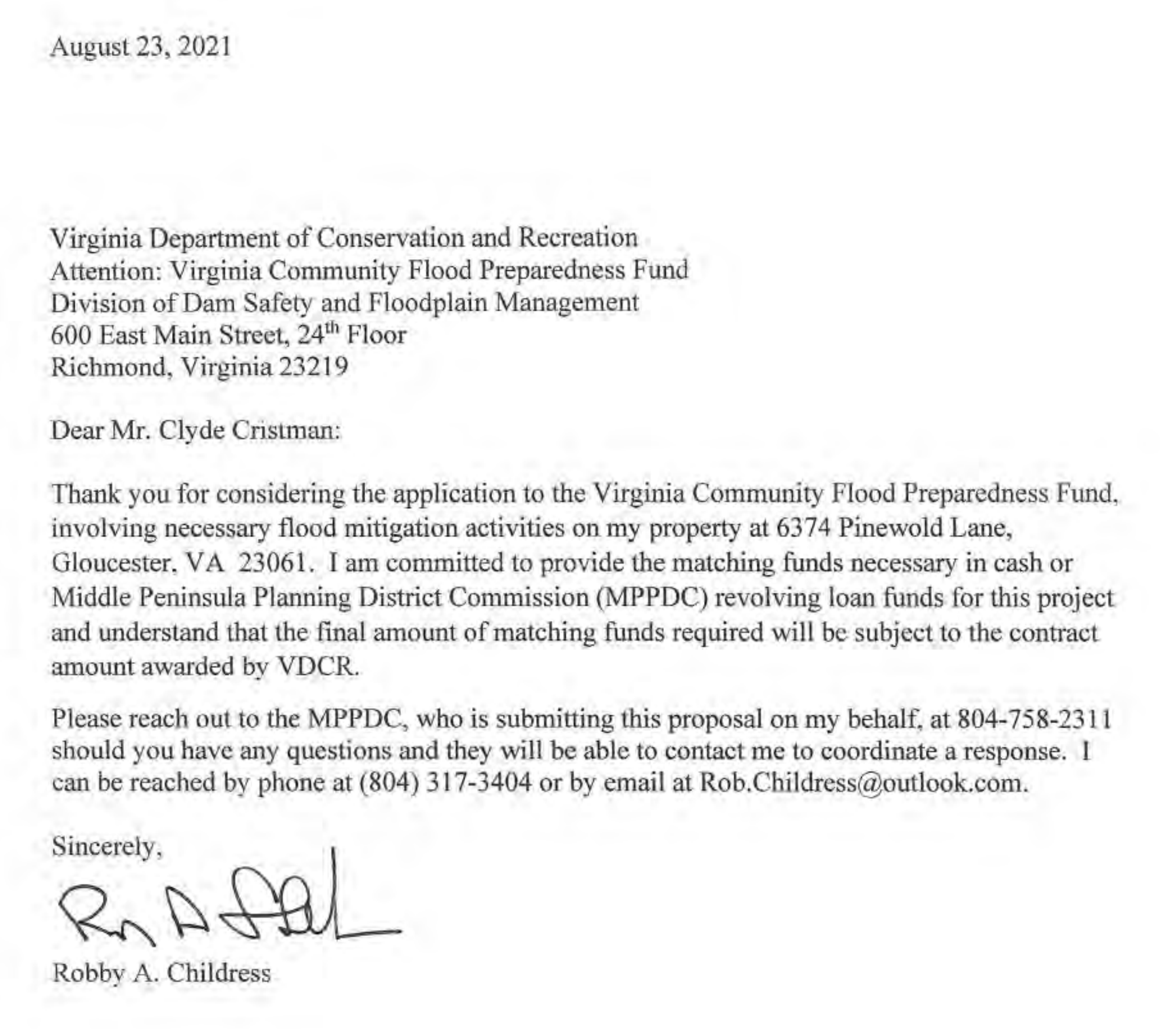
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



August 23, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman:

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 6374 Pinewold Lane, Gloucester, VA 23061. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at (804) 317-3404 or by email at Rob.Childress@outlook.com.

Sincerely,

Robby A. Childress

Also appendix 6

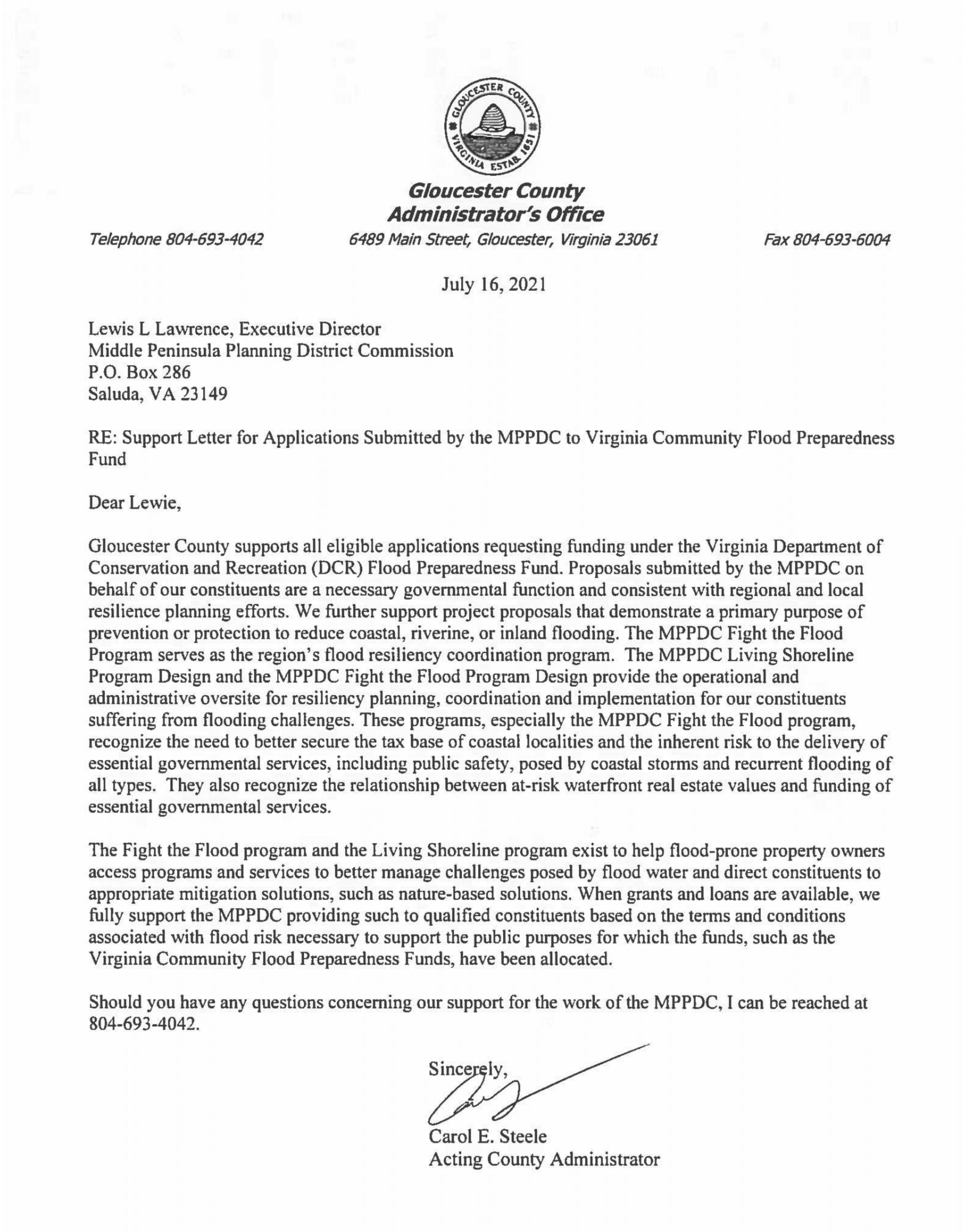
IV. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

Cont next page

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office

Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

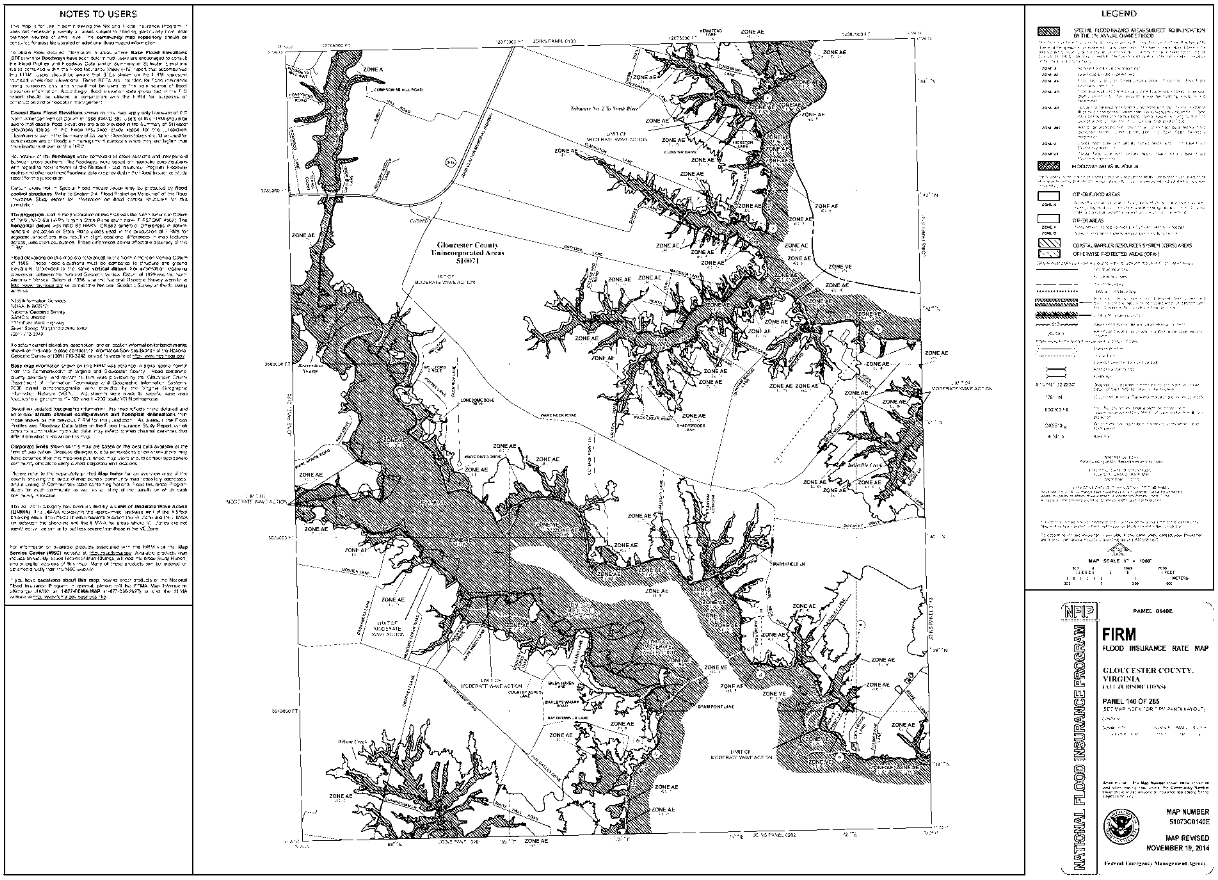
Sincerely,

Carol E. Steele
Acting County Administrator

APPENDIX 2

Project Location FIRMette

(FIRMette #: 51073C0140E / Effective Date: 11/19/2014)

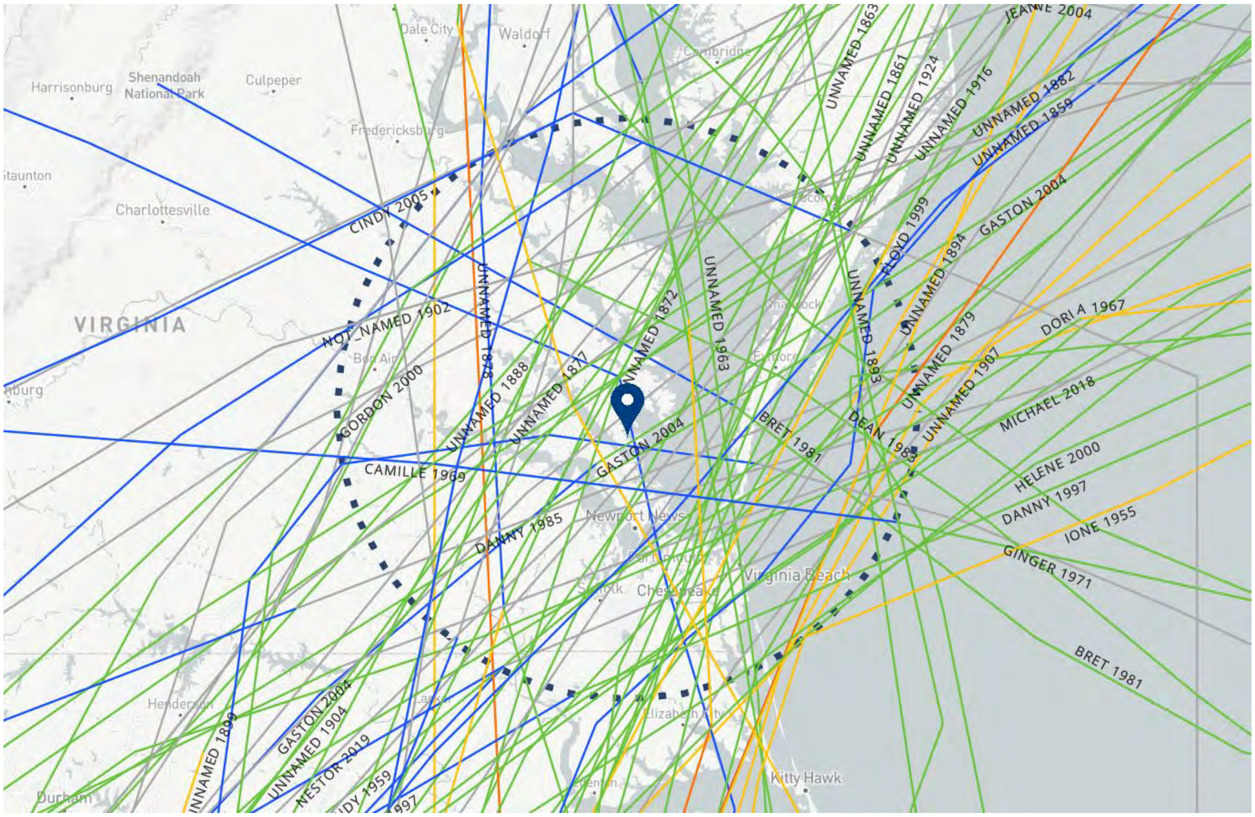


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.38443799, -76.464651

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1

NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11,	65	991	H1

	2005			
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19,	135	921	H4

	1999			
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16,	65	986	H1

	1979			
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug	60	976	TS

	07, 1960			
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02,	55	997	TS

	1943			
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep	45	-1	TS

	07, 1916			
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3

UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep	90	975	H2

	11, 1881			
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26,	35	-1	TS

	1864			
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12,	110	938	H3

	1854			
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

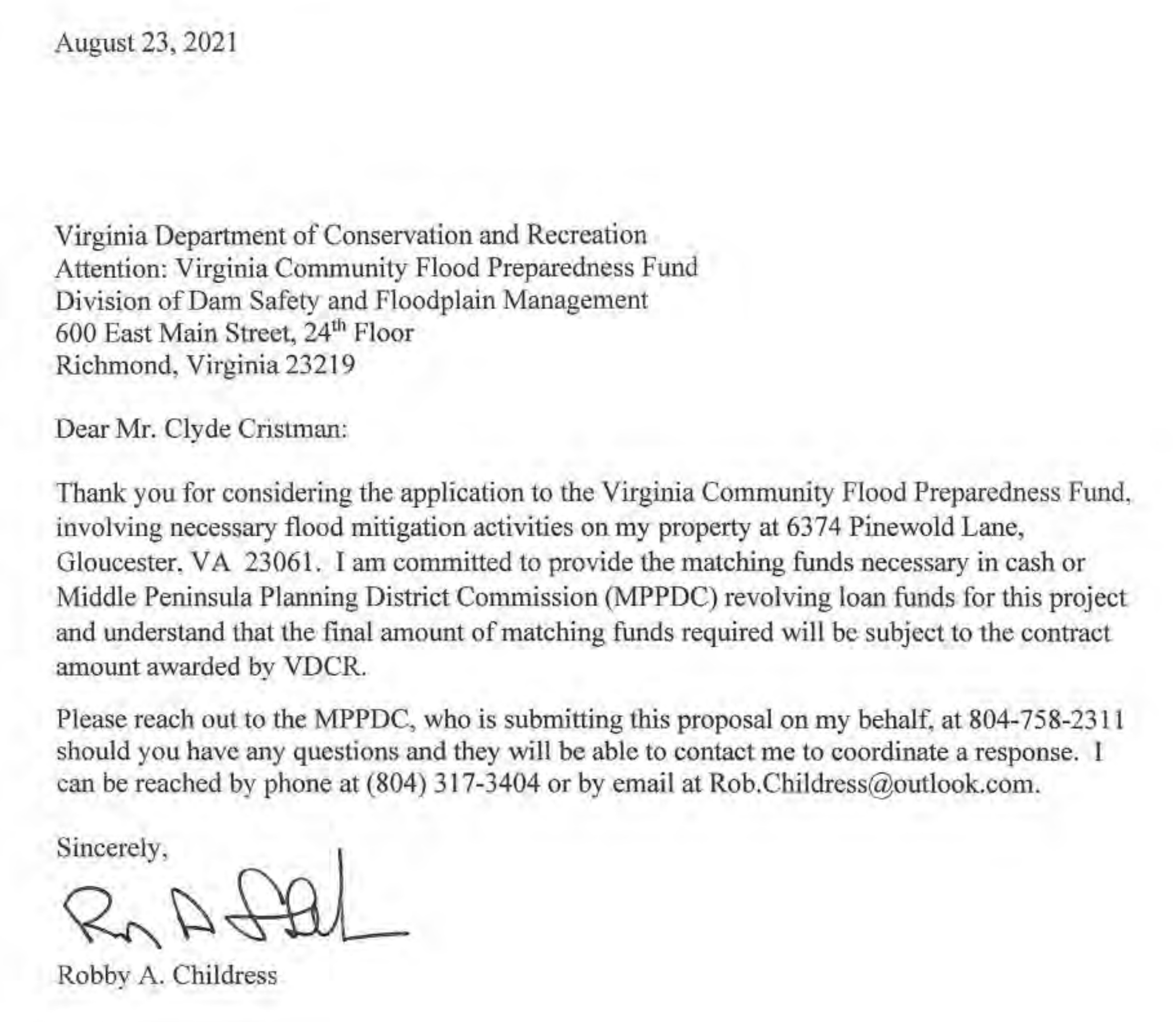
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



August 23, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman:

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 6374 Pinewold Lane, Gloucester, VA 23061. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at (804) 317-3404 or by email at Rob.Childress@outlook.com.

Sincerely,

Robby A. Childress

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Jones Shoreline Design** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As reported multiple times to DCR staff, the Jones application is not included in a low-income area nor is it in an opportunity zone. MPPDC does not know why this application is being held up and the applicant can't voluntarily elect out of something they are not included in to start with.

Issue #2

DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

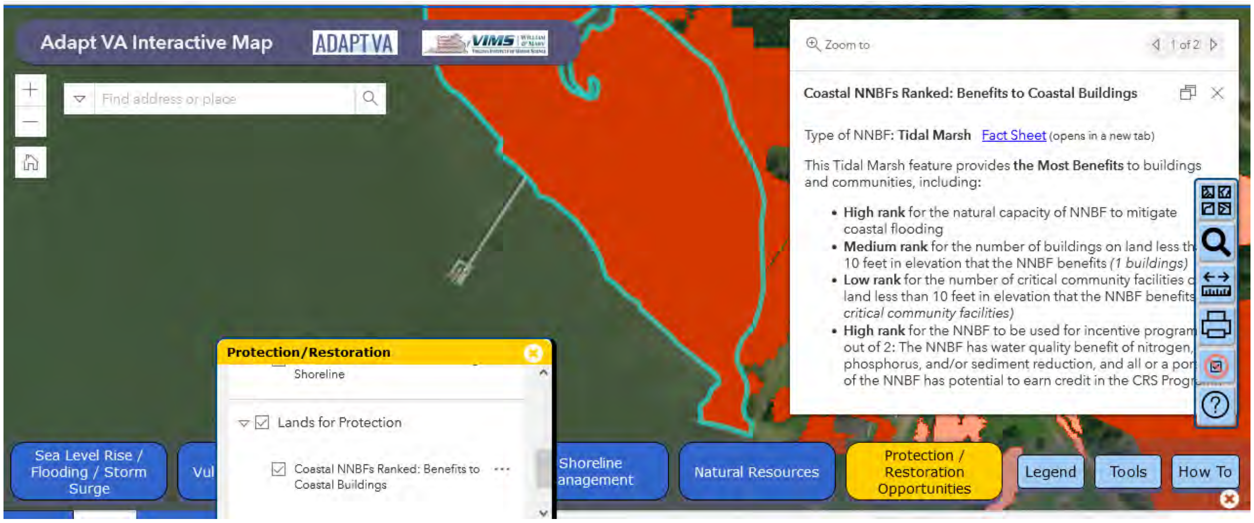
Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection.   All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Medium rank** for the number of buildings on land less th 10 feet in elevation that the NNBF benefits *(1 buildings)*
- **Low rank** for the number of critical community facilities o land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the

Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

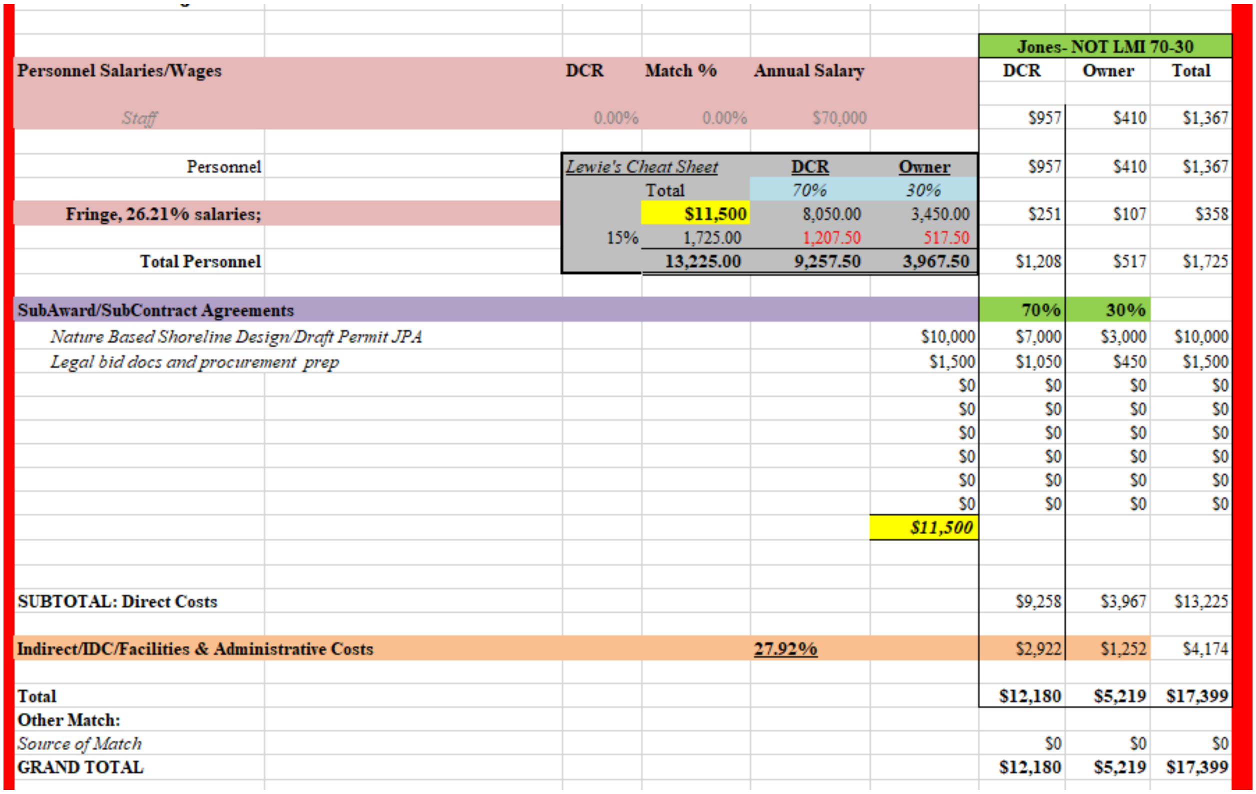
Applicant Voluntarily Selection:

The applicant was never included in a low-income area or an opportunity zone. The applicant cannot voluntarily opt out of something they were never included in. MPPDC staff does not understand why this application has issue with low income or opportunity zones?

Amended Budget Request

DCR Funding:	$ 12,180
Owner:	$ 5,219
Total	$ 17,399

Full updated budget follows



						Jones- NOT LMI 70-30		
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$957	$410	$1,367
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$957	$410	$1,367
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			**$11,500**	8,050.00	3,450.00	$251	$107	$358
		15%	1,725.00	1,207.50	517.50			
Total Personnel			**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$11,500			
SUBTOTAL: Direct Costs						$9,258	$3,967	$13,225
Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$2,922	$1,252	$4,174
Total						**$12,180**	**$5,219**	**$17,399**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$12,180**	**$5,219**	**$17,399**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Briggs Cove Road

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X___

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☑ Wetland restoration.
- ☑ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☑ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE/AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0180E

Total Cost of Project: ____$17,309____________________________

Total Amount Requested: __$12,116__________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding and wetland loss.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional

purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal design application requests a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located at 3678 Briggs Cove Road in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, notates response to emerging flood challenges.*
- *A link to the Middle Peninsula PDC’s All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - *Please see Section 4 (page 25), which includes historical hazard data within*

the region.

- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

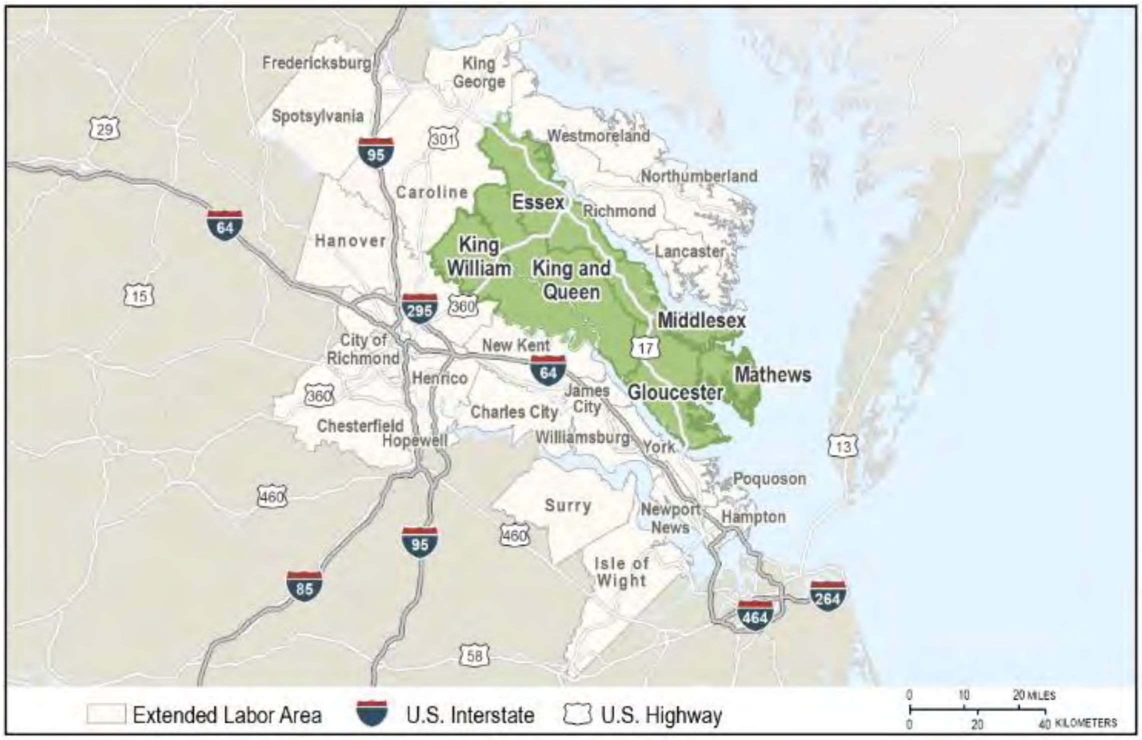
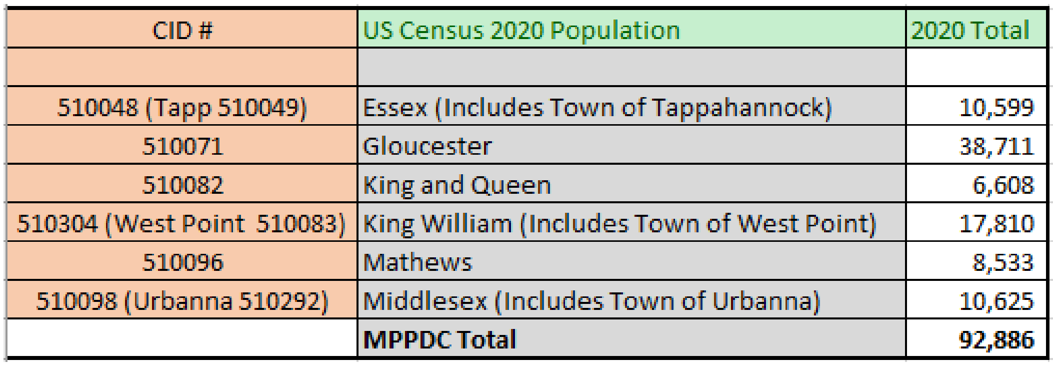


Figure 2. Middle Peninsula Population

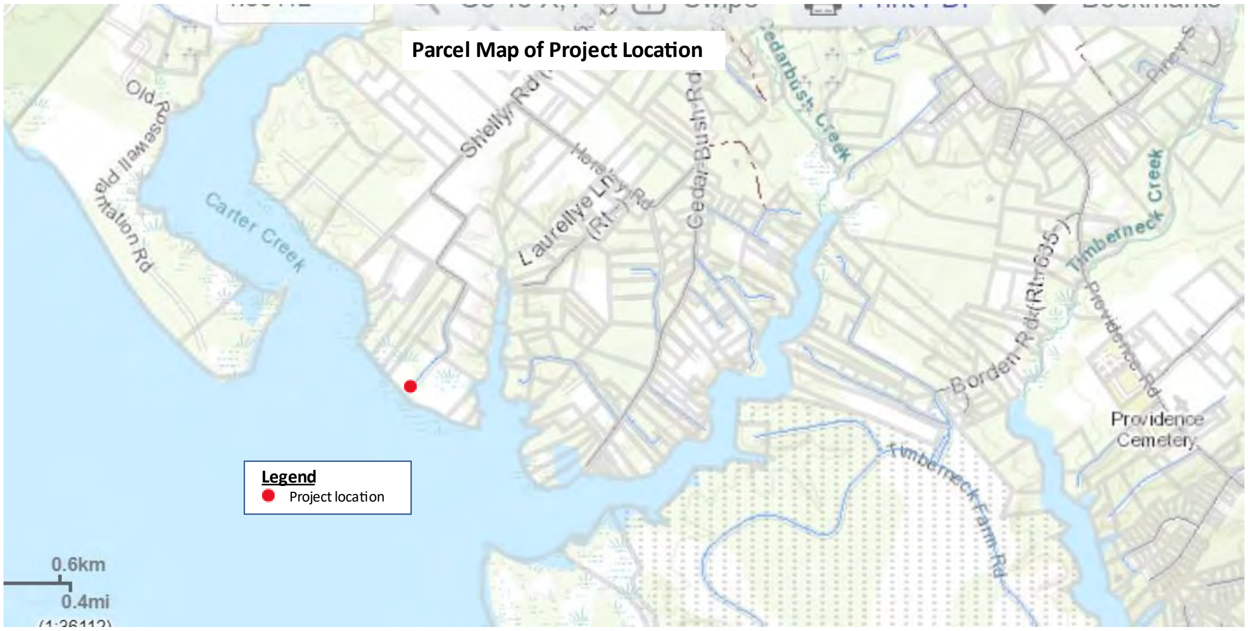


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Friends Road in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

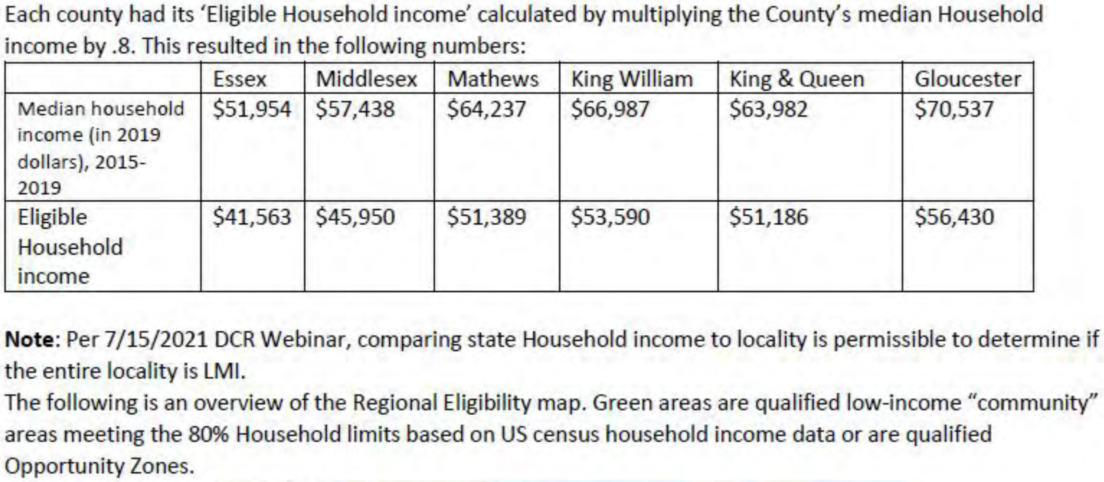
Figure 4. Parcel Map of Project Location



Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones. **This project falls outside of the low income comm**

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

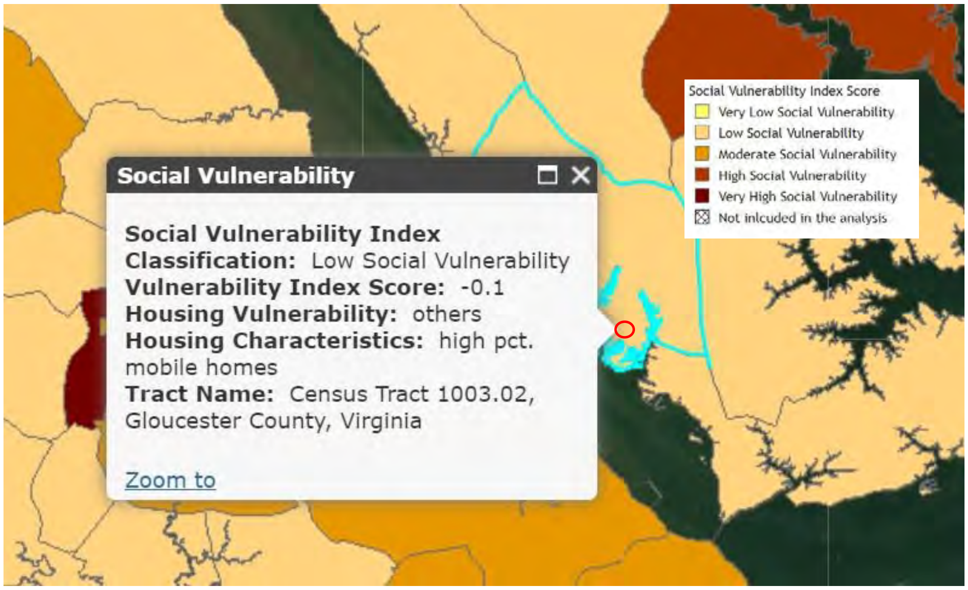
The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. **This shows that the project location is not shaded green and is, therefore, not within the low-income area community.**

Figure 6. Map of the Project Location within the Green Low-Income Area

According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a low social vulnerability score as seen in **Figure 7.**

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



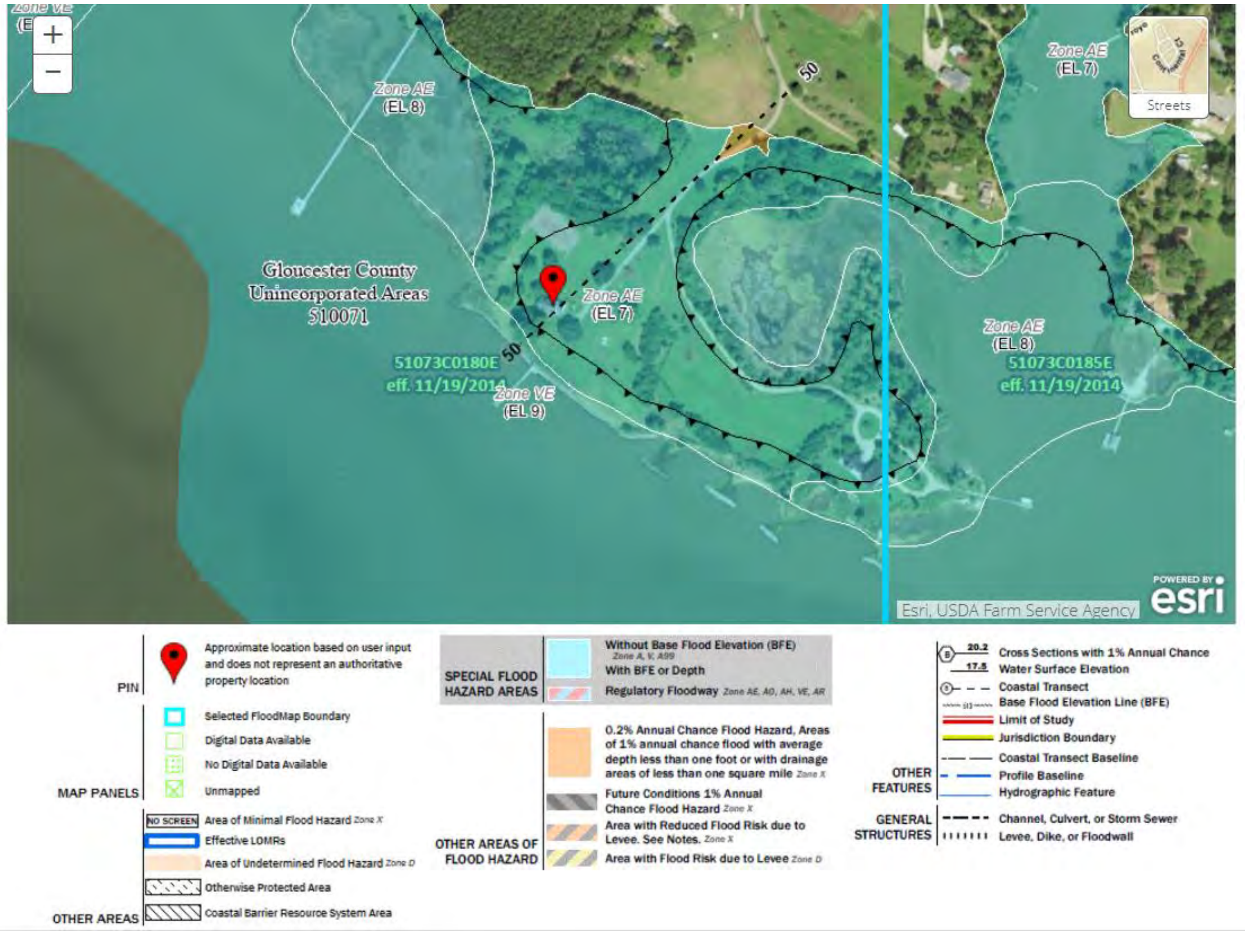
Social Vulnerability

Social Vulnerability Index Classification: Low Social Vulnerability
Vulnerability Index Score: -0.1
Housing Vulnerability: others
Housing Characteristics: high pct. mobile homes
Tract Name: Census Tract 1003.02, Gloucester County, Virginia

The project is located at 3678 Briggs Cove Road, Hayes, VA 23072 (-76.56530701, 37.31466699). It was acquired in 1964 by the property owner's parents and then was inherited upon their passing. The approximate 300 feet of shoreline have seen the challenges over the years with erosion and now it is occurring at an exponential rate. The hard marsh is also rapidly disappearing. There have been a number of mitigation efforts put into place over the years. It started with a installing a bulkhead and followed with building oyster beds. Has a far dock on the far side of the property. That, too, is being threatened.

This site is located within the VE/AE flood zone as seen in **Figure 8**. Please see **Appendix 2** for the FIRMettes (last mapped 11/19/2014) and **Appendix 3** for additional property photos.

Figure 8: Map of FEMA Flood Zones of Project Location

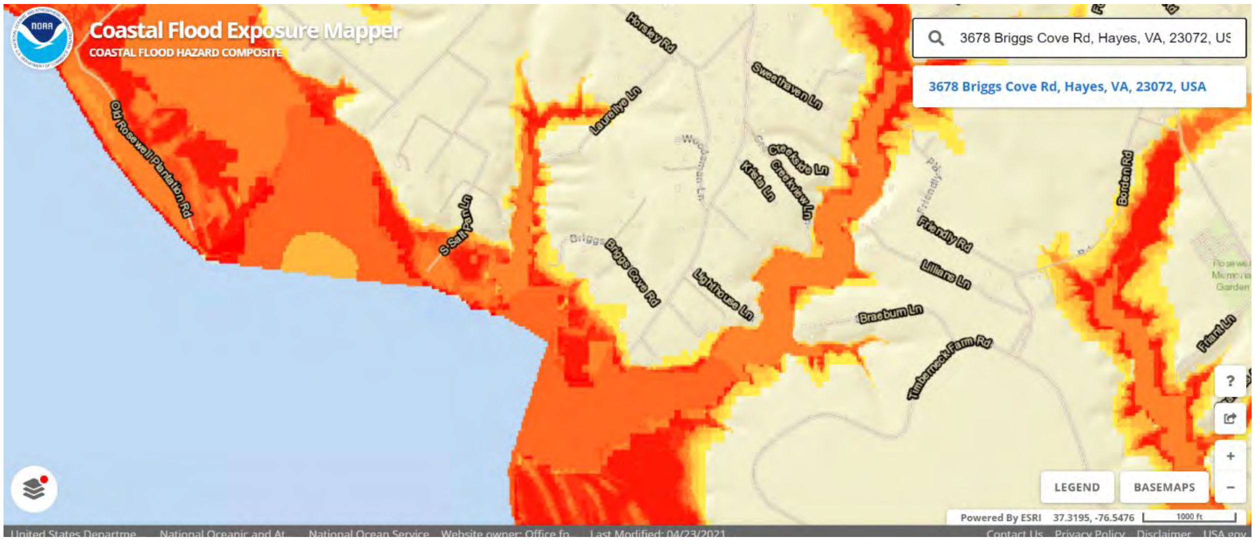


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 84 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 9. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017

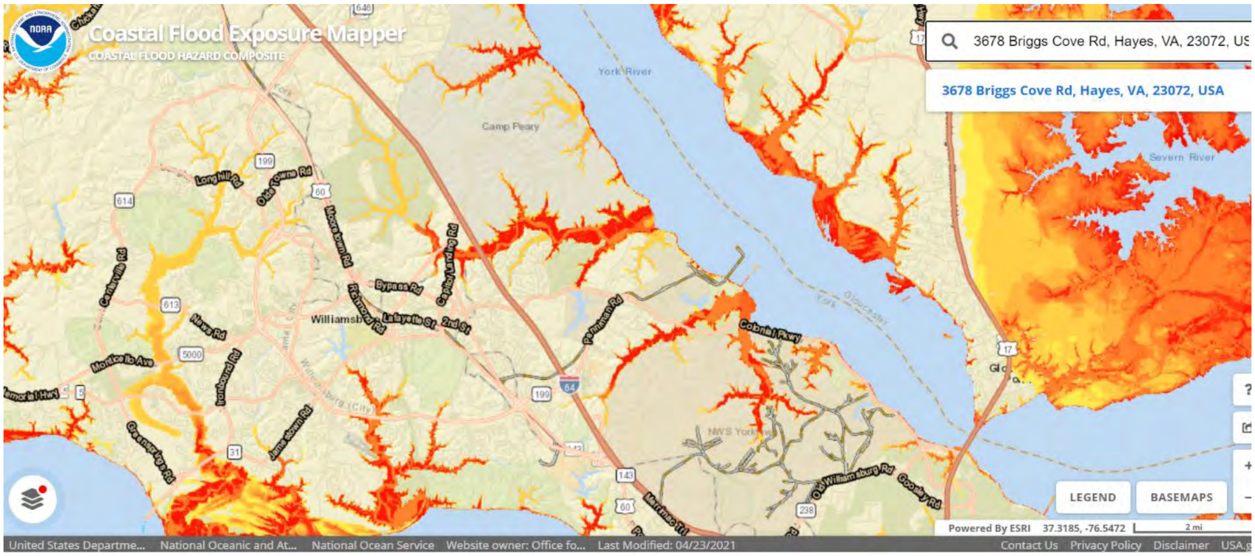
Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 10.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



3678 Briggs Cove Rd, Hayes, VA, 23072, US

3678 Briggs Cove Rd, Hayes, VA, 23072, USA



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5*

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

***GOALS AND OBJECTIVES*.**

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022, as seen in Table 1.

Table 1. Project Milestone Schedule

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		65

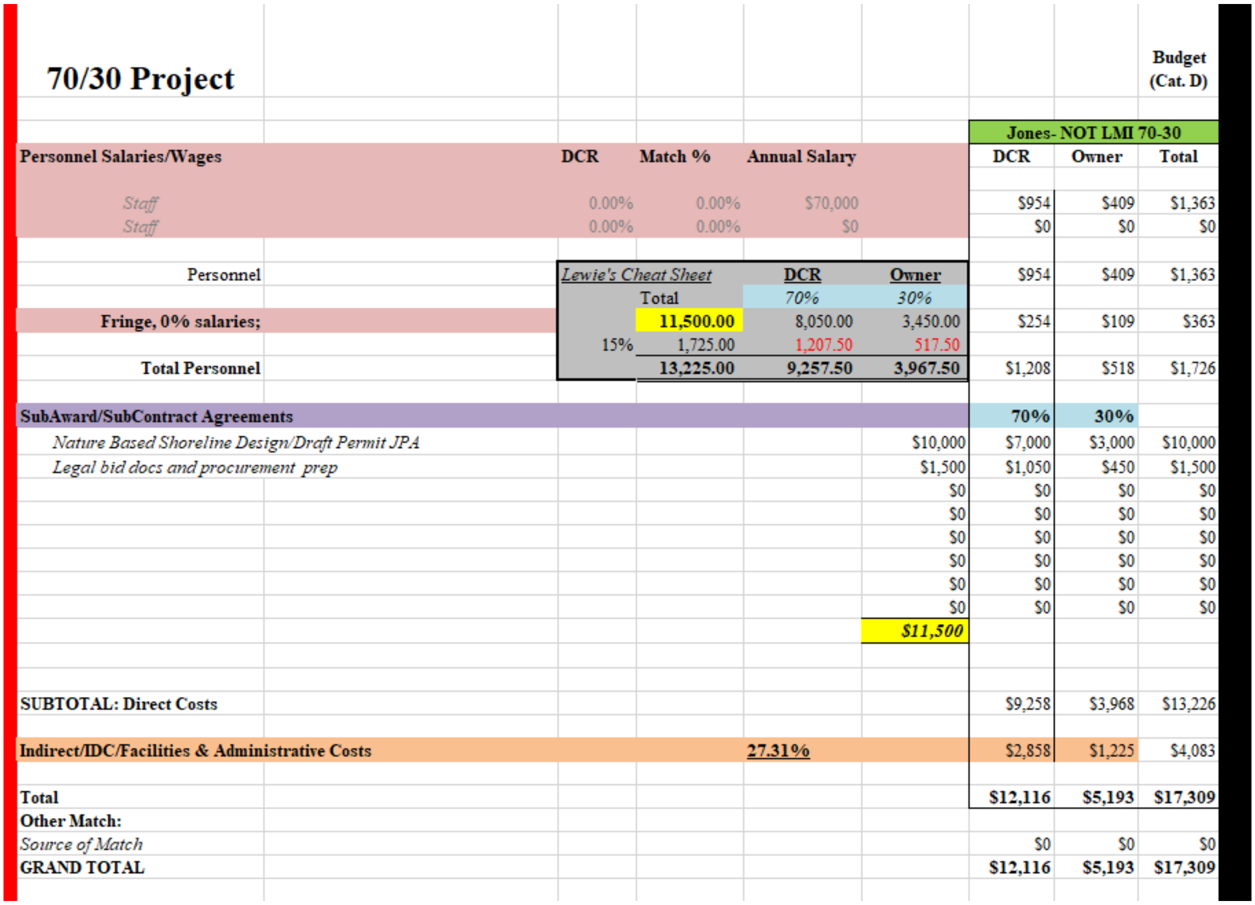
SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $17,309

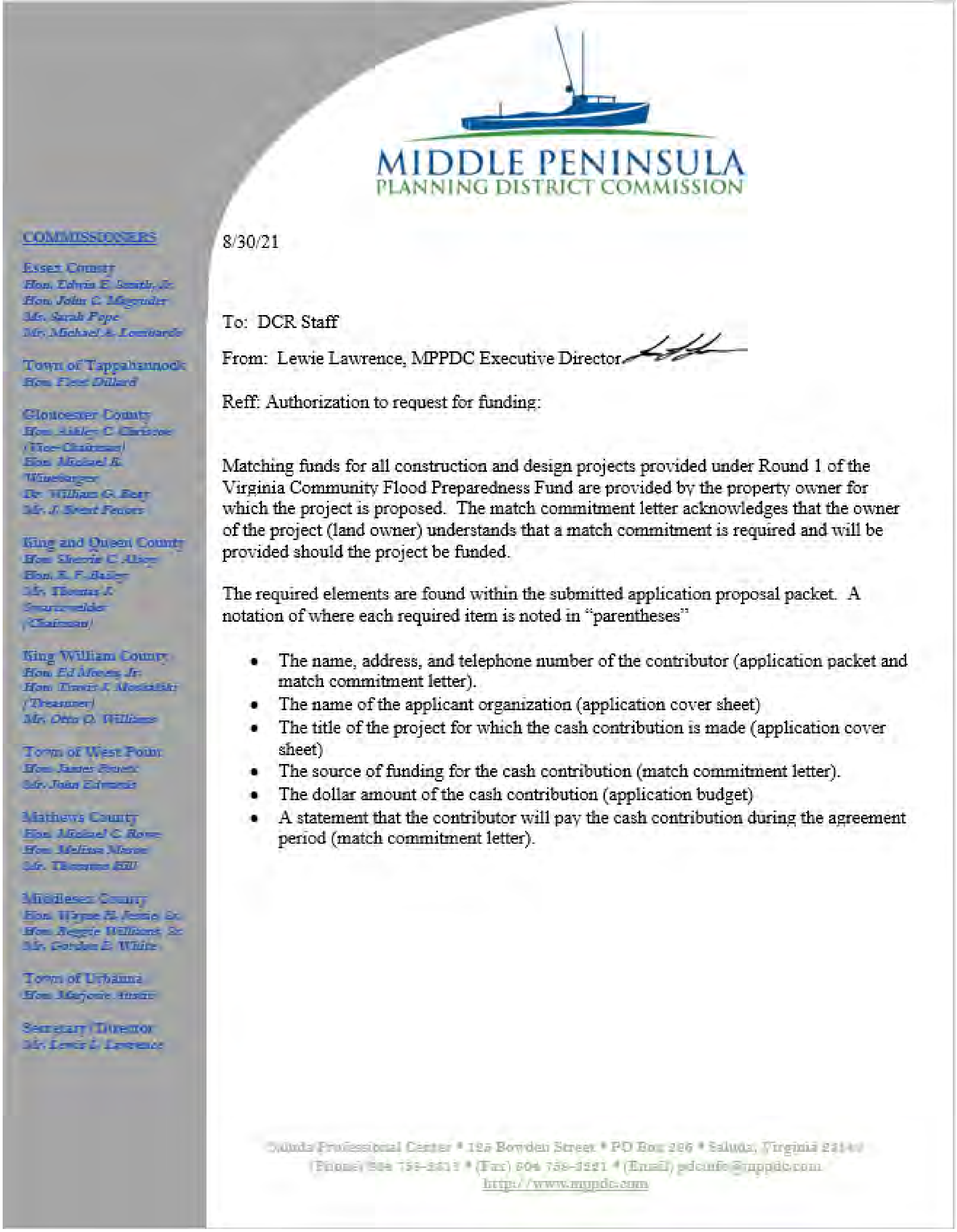


70/30 Project							Budget (Cat. D)
					Jones- NOT LMI 70-30		
Personnel Salaries/Wages	**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	0.00%	0.00%	$70,000		$954	$409	$1,363
Staff	0.00%	0.00%	$0		$0	$0	$0
Personnel	*Lewie's Cheat Sheet*		**DCR**	**Owner**	$954	$409	$1,363
		Total	*70%*	*30%*			
Fringe, 0% salaries;		**11,500.00**	8,050.00	3,450.00	$254	$109	$363
	15%	1,725.00	1,207.50	517.50			
Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$518	$1,726
SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$11,500			
SUBTOTAL: Direct Costs					$9,258	$3,968	$13,226
Indirect/IDC/Facilities & Administrative Costs			**27.31%**		$2,858	$1,225	$4,083
Total					**$12,116**	**$5,193**	**$17,309**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,116**	**$5,193**	**$17,309**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe
(Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
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Mr. Thomas J. Swartzwelder
(Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski
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Mr. Otto O. Williams

Town of West Point
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Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

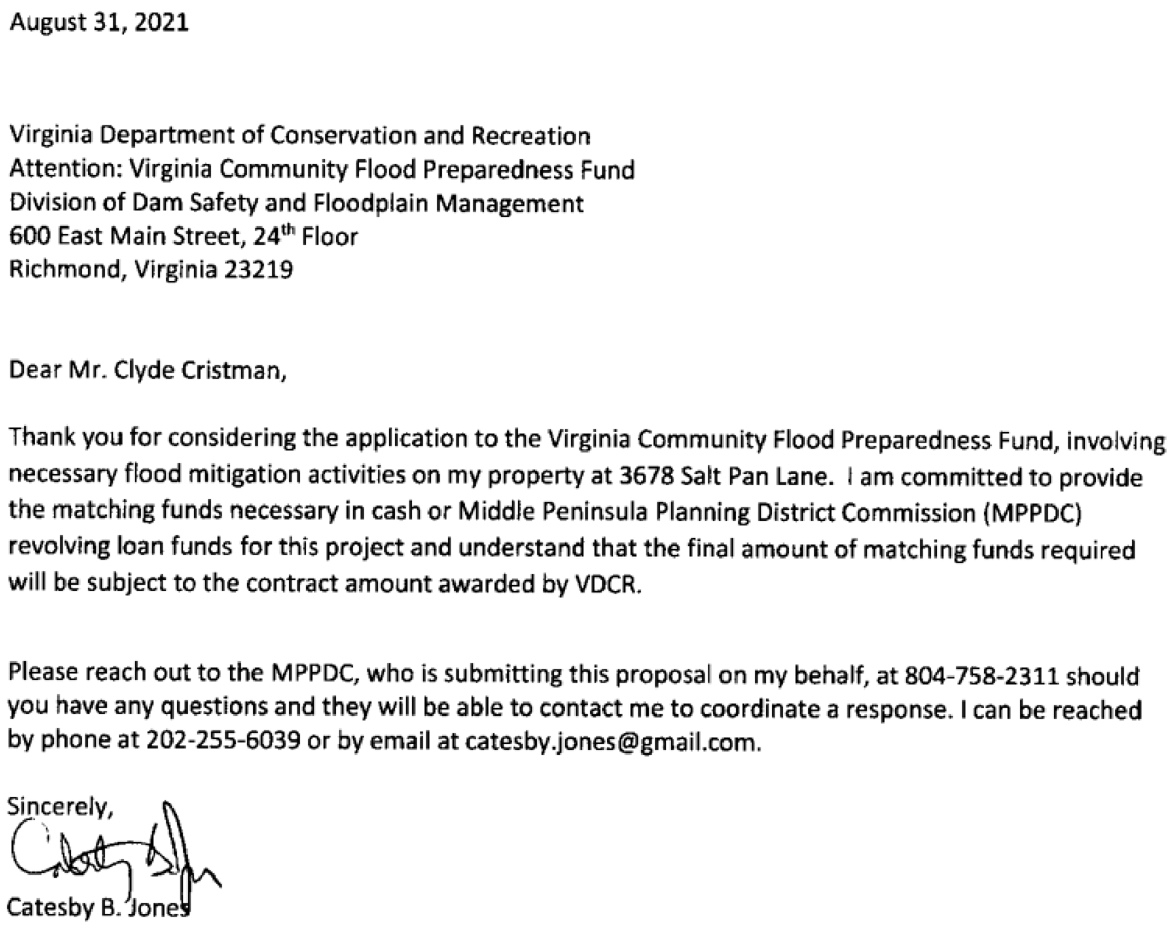
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



August 31, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 3678 Salt Pan Lane. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 202-255-6039 or by email at catesby.jones@gmail.com.

Sincerely,

Catesby B. Jones

See also appendix 6

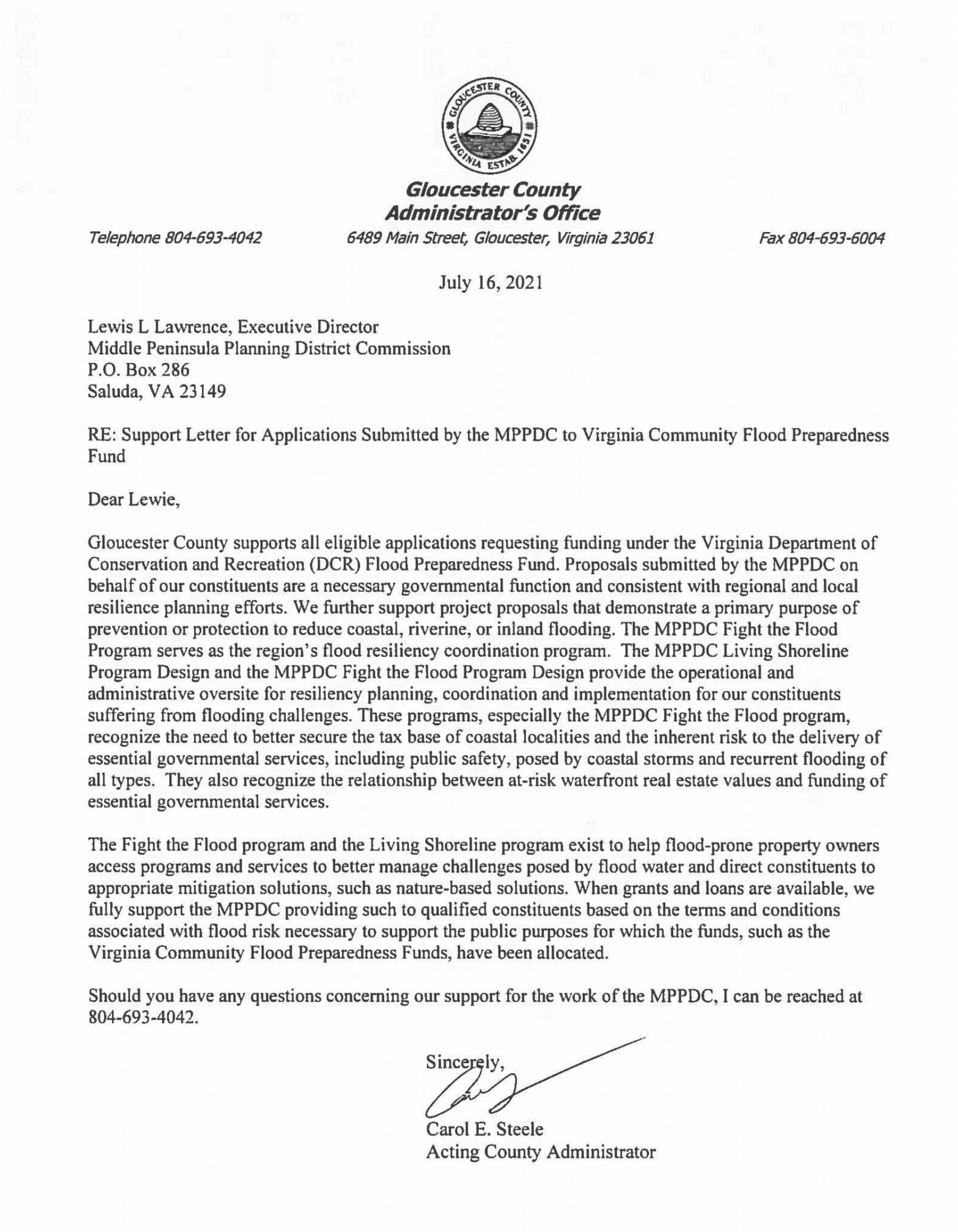
IV. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

Cont next page

APPENDIX 1

Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

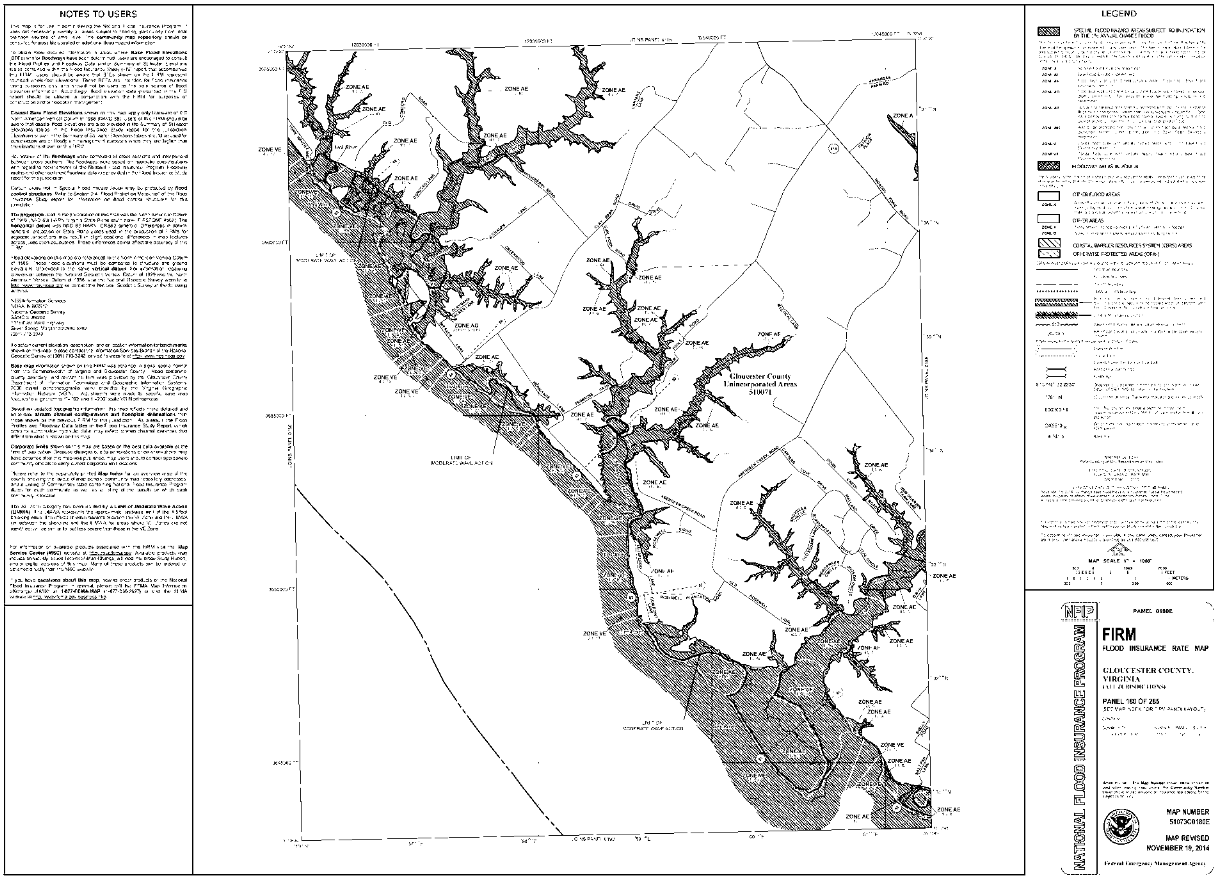
Sincerely,

Carol E. Steele
Acting County Administrator

APPENDIX 2

Project Location FIRMette

(FIRMette #: 51073C0180E / Effective Date: 11/19/2014)

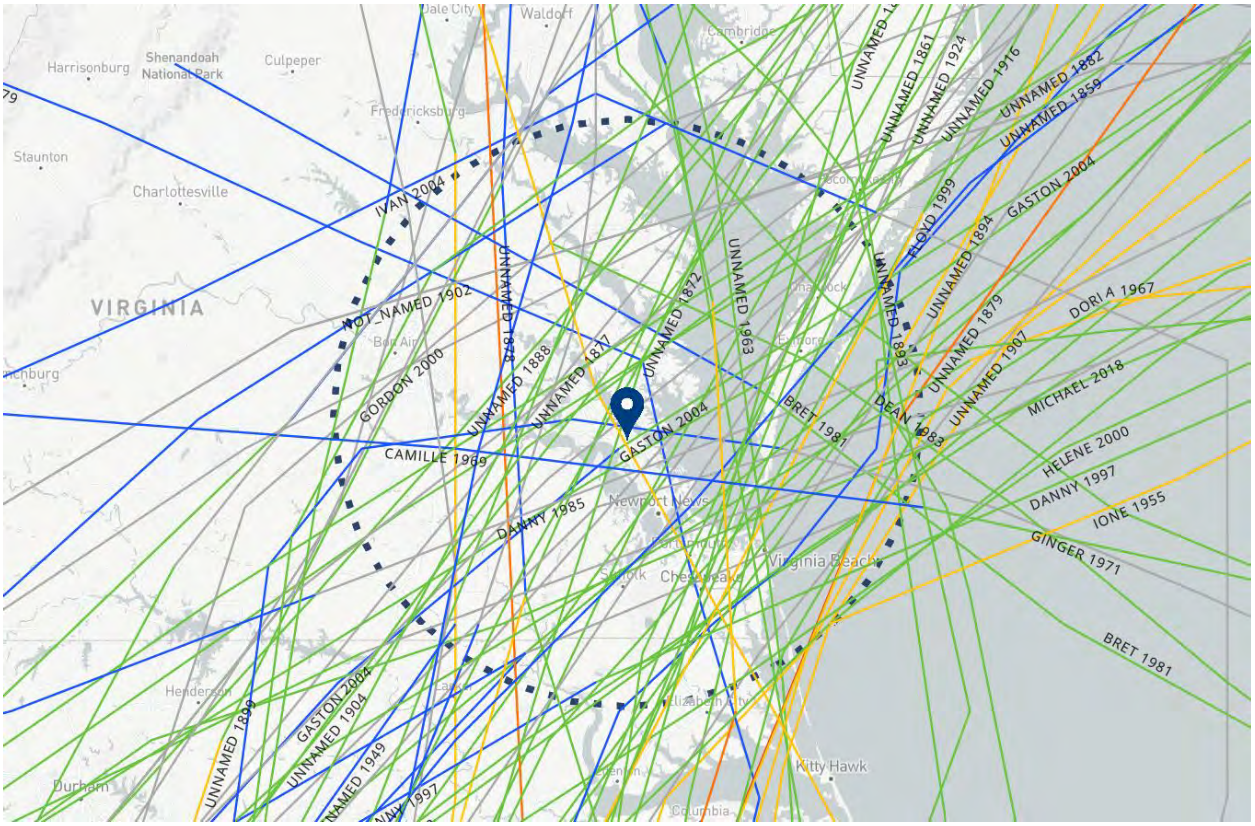


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.31466699, -76.56530701

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1

NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29,	105	950	H3

	2004			
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27,	70	984	H1

	1997			
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05,	95	959	H2

	1971			
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul	65	995	H1

	12, 1959			
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1949	Sep 11, 1949 to Sep 14, 1949	45	-1	TS
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02,	55	997	TS

	1943			
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep	45	-1	TS

	07, 1916			
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3

UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep	110	949	H3

	13, 1882			
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18,	45	-1	TS

	1867			
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14,	65	-1	H1

	1854			
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter

August 31, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 3678 Salt Pan Lane. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 202-255-6039 or by email at catesby.jones@gmail.com.

Sincerely,

Catesby B. Jones

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Lawrence Shoreline Design** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

Issue #2

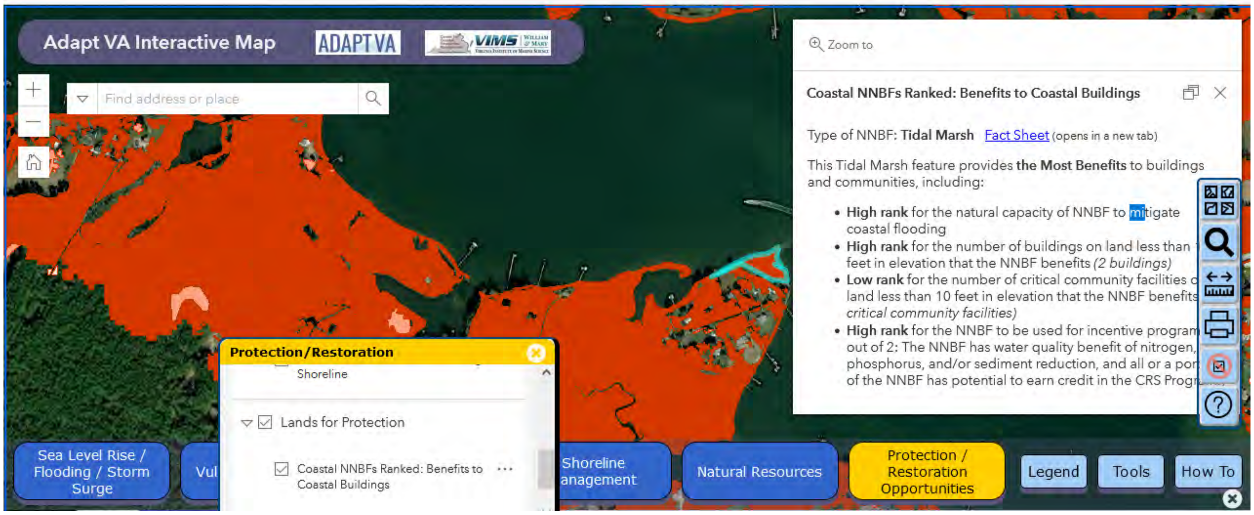
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

Coastal NNBFs Ranked: Benefits to Coastal Buildings

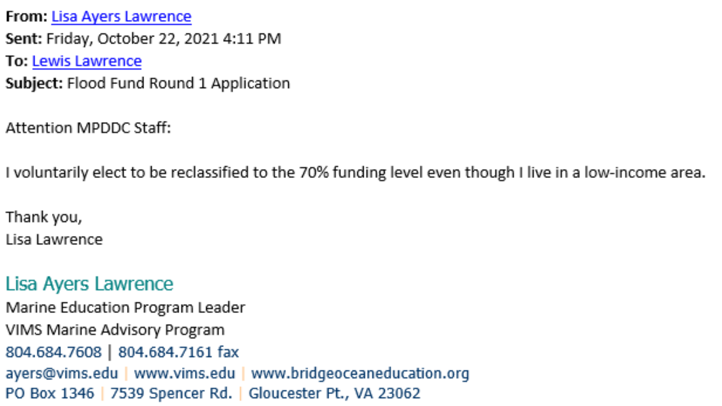
Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(2 buildings)*
- **Low rank** for the number of critical community facilities o land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



From: Lisa Ayers Lawrence
Sent: Friday, October 22, 2021 4:11 PM
To: Lewis Lawrence
Subject: Flood Fund Round 1 Application

Attention MPDDC Staff:

I voluntarily elect to be reclassified to the 70% funding level even though I live in a low-income area.

Thank you,
Lisa Lawrence

Lisa Ayers Lawrence
Marine Education Program Leader
VIMS Marine Advisory Program
804.684.7608 | 804.684.7161 fax
ayers@vims.edu | www.vims.edu | www.bridgeoceaneducation.org
PO Box 1346 | 7539 Spencer Rd. | Gloucester Pt., VA 23062

Amended Budget Request

DCR Funding:	$6,885
Owner:	$ 2,951
Total	$9,836

Flood Fund Budget Requirement Page No.	Budget Narrative (Category D)								Budget (Cat. D)
							Lawrecne		
	Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
	Staff		0.00%	0.00%			$541	$232	$773
	Personnel		*Proj Admin Split*		**DCR**	**Owner**	$541	$232	$773
				Total	*70%*	*30%*			
	Fringe, 26.21% salaries;			$6,500	4,550.00	1,950.00	$142	$61	$203
			15%	975.00	682.50	292.50			
	Total Personnel			7,475.00	5,232.50	2,242.50	$683	$293	$976
	SubAward/SubContract Agreements						**70%**	**30%**	
NARTX	*Design and permitting (JPA) for $5000 for projects on low-mid energy shorelines that are <500 lf.*					$5,000	$3,500	$1,500	$5,000
	Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$0	$0	$0	$0
						$6,500			
	SUBTOTAL: Direct Costs						$5,233	$2,243	$7,476
	Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$1,652	$708	$2,360
	Total						**$6,885**	**$2,951**	**$9,836**
	Other Match:								
	Source of Match						$0	$0	$0
	GRAND TOTAL						**$6,885**	**$2,951**	**$9,836**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for L's Island Road

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ____
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☑ Wetland restoration.
- ☑ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☑ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0140E

Total Cost of Project: ___$9,783_____________________________

Total Amount Requested: __$7,826__________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding and wetland loss.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional

purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a **NATRX** nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, **NATRX is** lower cost than other nature based infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions for a **NATRX** based living shoreline on a private property located at 6688 L’s Island Lane in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at:* *https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
    - *Please see Page 3-5, notates response to emerging flood challenges.*
- *A link to the Middle Peninsula PDC’s All Hazards Mitigation Plan (2016) can be found at:* *https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - *Please see Section 4 (page 25), which includes historical hazard data within*

the region.

- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

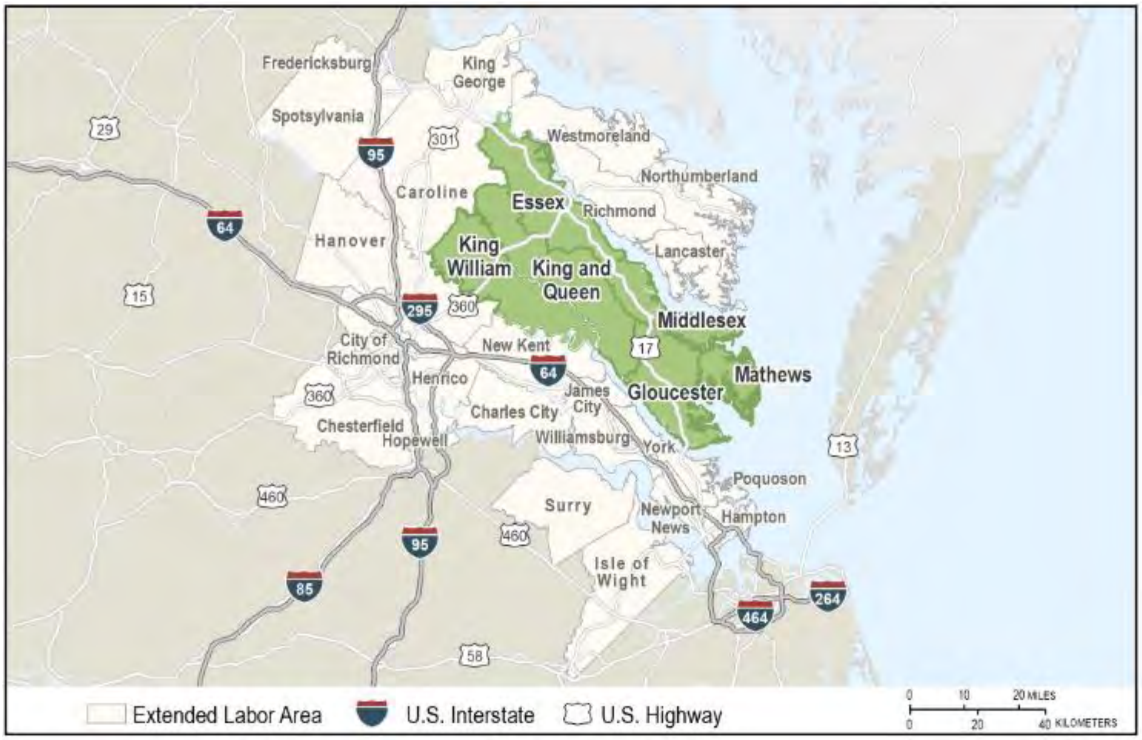
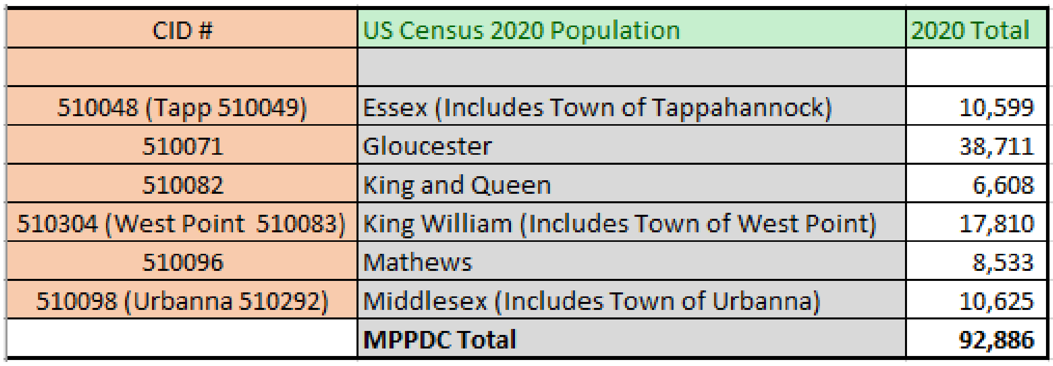


Figure 2. Middle Peninsula Population

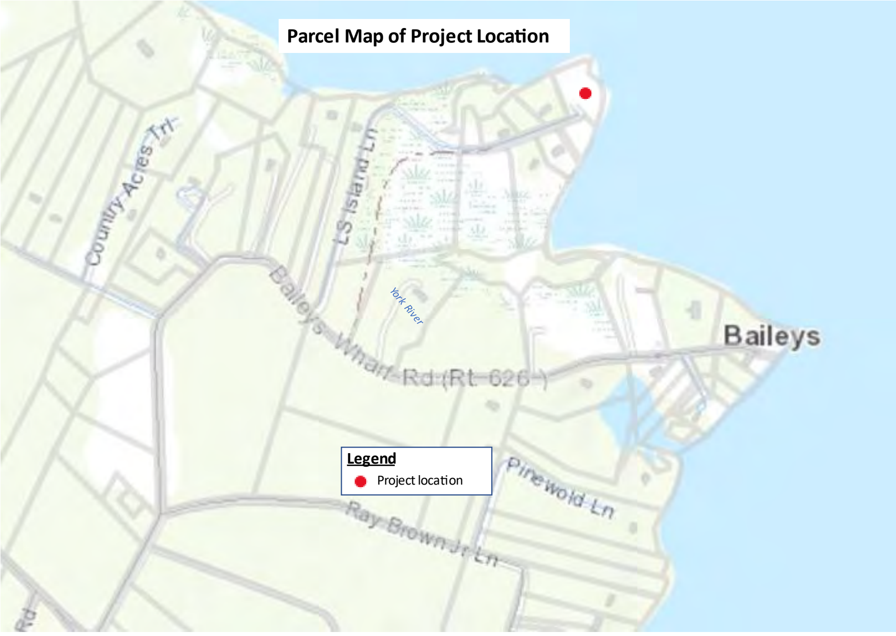


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on L’s Island Lane in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

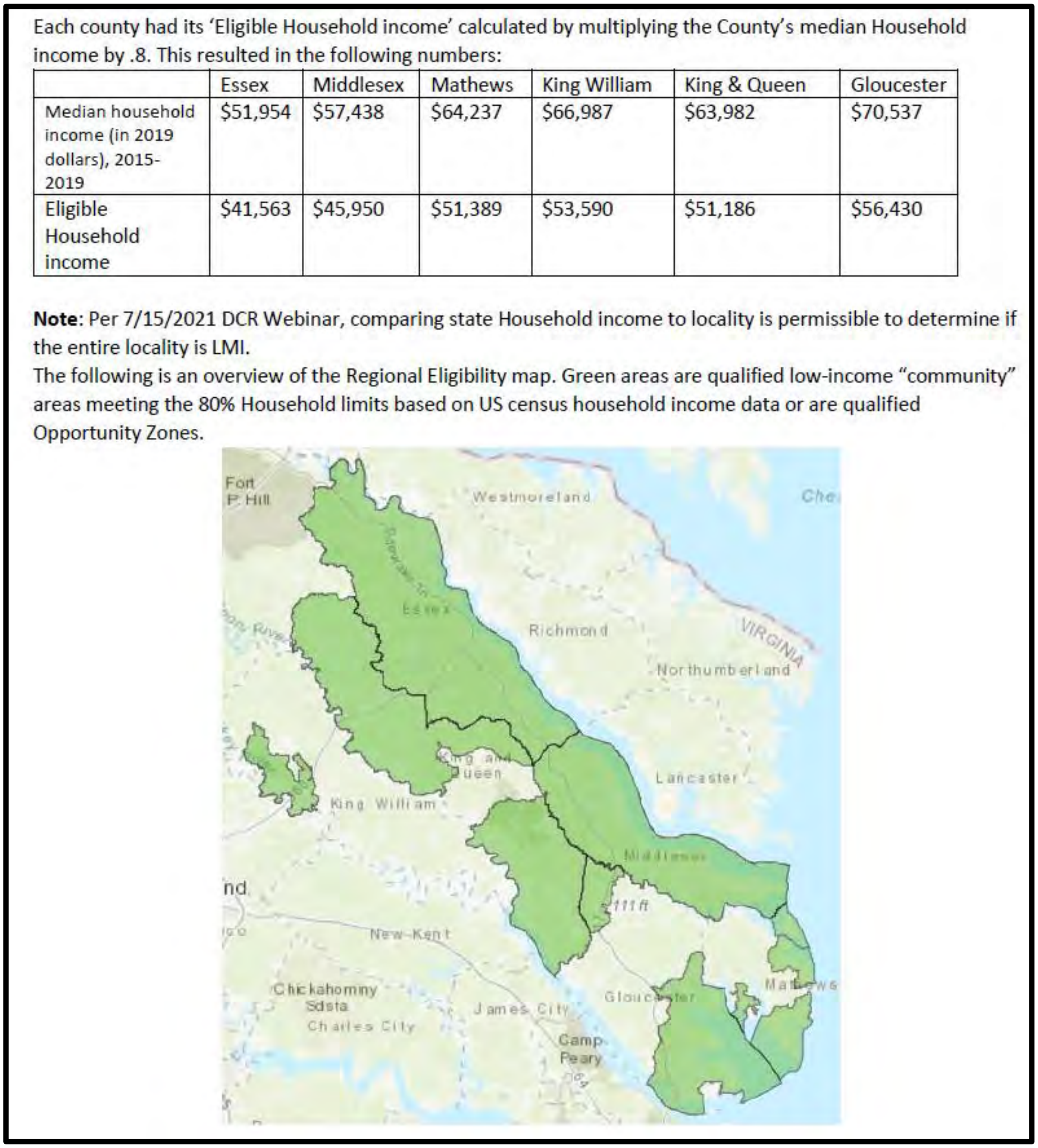
Figure 4. Parcel Map of Project Location



Gloucester County is located at the southern tip of Virginia’s Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County’s population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

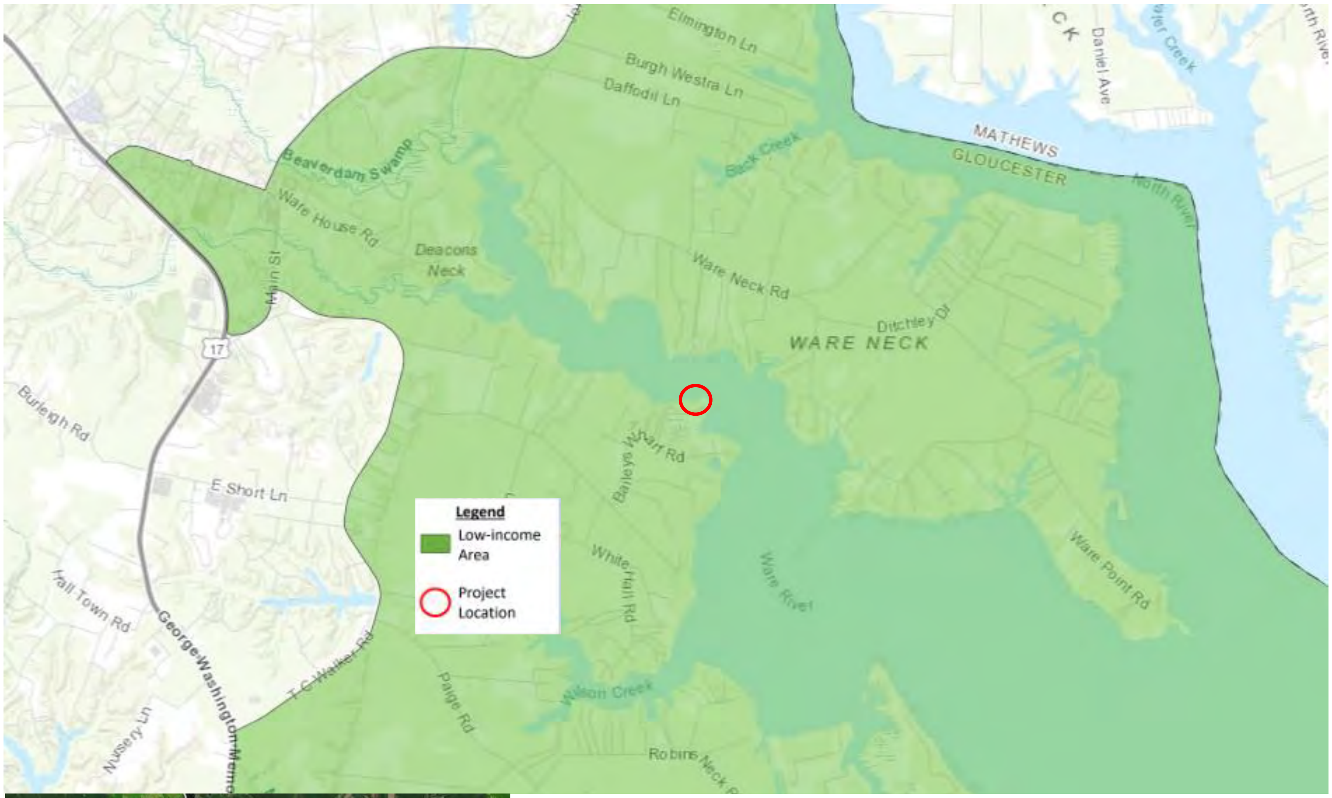
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



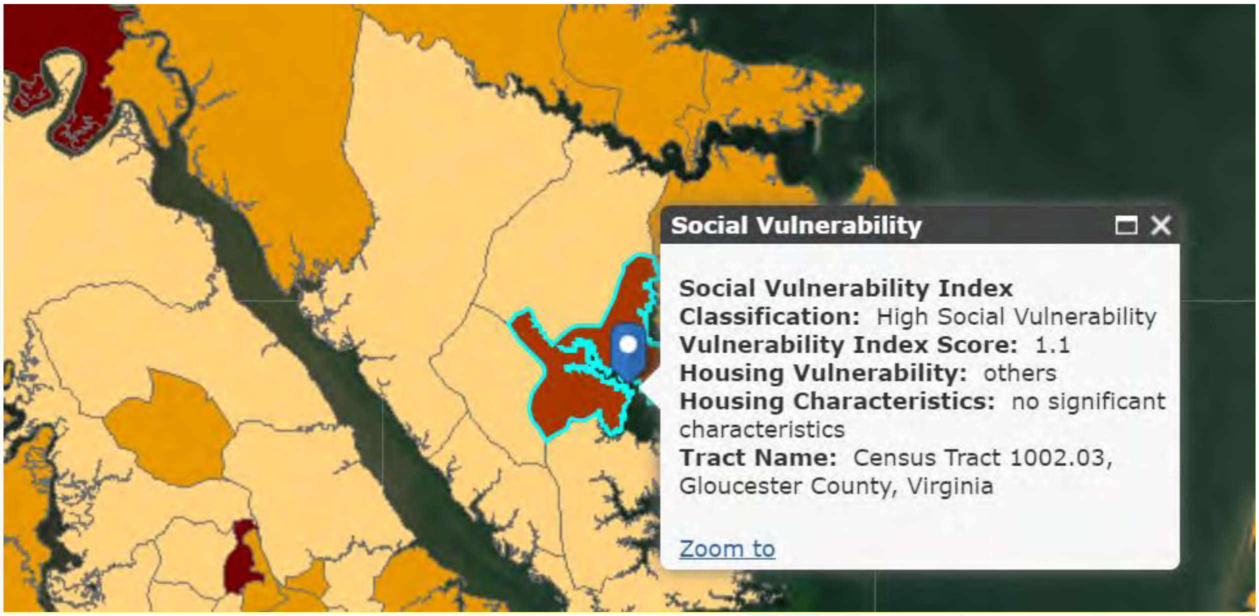
Qualifying Low Income Community (Green) in Gloucester County

All areas denoted in Green fall below the 80% median household income threshold and serve as the “low income “community” per the guidelines

★ Project Site

According to the VDAPT Virginia’s Social Vulnerability Index Score, this project location has a high social vulnerability score as seen in **Figure 7**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability

Social Vulnerability Index
Classification: High Social Vulnerability
Vulnerability Index Score: 1.1
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1002.03, Gloucester County, Virginia

Zoom to

The project is located at 6688 L's Island Lane, Gloucester, VA 23062 (37.391264, -76.46599697). This property has been in the Lawrence family since the 1880's, with five generations considering the island like areas their "home place." The street name is, therefore, appropriately labeled L's Island Lane. The property was also home to a family owned and operated oyster company from the 1880's until the 1960's when the seafood industry collapsed. Because of the longevity of this family's legacy, they have been able to provide countless witness to storm after storm literally and figuratively "chewing up" the shoreline, grain by grain. Losing (**in excess of 15,000 sq ft of tidal wetlands lost per VIMS**) protecting the remaining wetlands are very important which serve as nature-based buffer for storm protection that protects uplands existing structures and outbuildings but also the 1880 built home itself.

The loss history for this property is significant. Most recently, FEMA recorded a loss of approximately $136,000 in 2003 for Hurricane Isabel in 2003. Prior to that and pre-FEMA Flood Insurance Program, the property sustained significant damage from the Ash Wednesday Storm of 1962 and the Great Storm of 1933 for New Point Comfort Chesapeake Bay.

This site is located within the AE flood zone as seen in **Figure 8**. Please see **Appendix 2** for the FIRMettes (last mapped 11/19/2014) and **Appendix 3** for additional property photos.

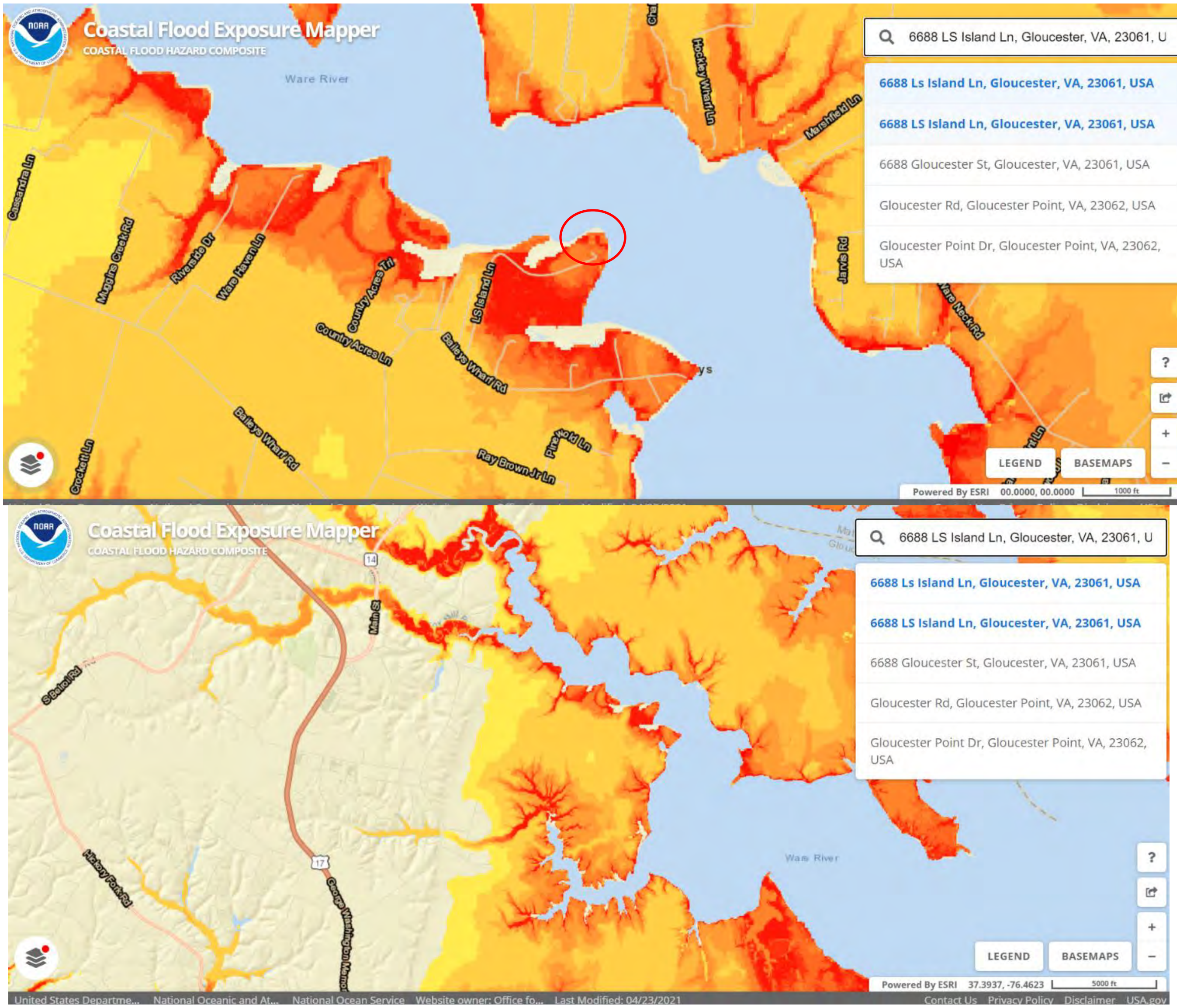
Figure 8: Map of FEMA Flood Zones of Project Location

Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 9. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 10.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



6688 LS Island Ln, Gloucester, VA, 23061, U

that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

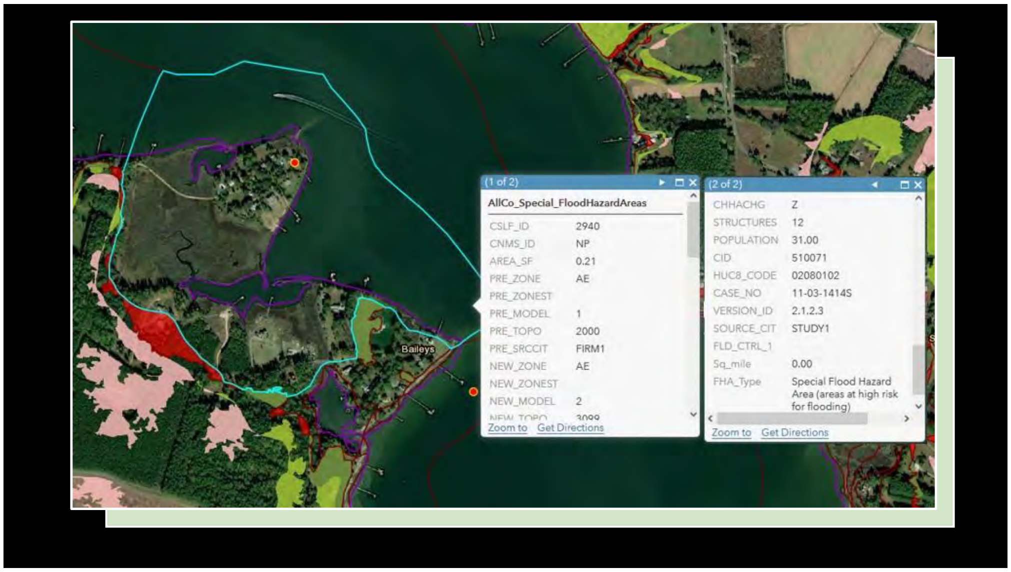
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based solution in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area seen in Figure 11.

Figure 11. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	2940
CNMS_ID	NP
AREA_SF	0.21
PRE_ZONE	AE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	FIRM1
NEW_ZONE	AE
NEW_ZONEST	
NEW_MODEL	2
NEW_TOPO	3099

CHHACHG	Z
STRUCTURES	12
POPULATION	31.00
CID	510071
HUC8_CODE	02080102
CASE_NO	11-03-1414S
VERSION_ID	2.1.2.3
SOURCE_CIT	STUDY1
FLD_CTRL_1	
Sq_mile	0.00
FHA_Type	Special Flood Hazard Area (areas at high risk for flooding)

Over 15,000 square feet of tidal wetlands has been lost in excess or approximately 1/3 of an acre as seen in Figures 12-13.

Figure 12. Project Area Combined Tidal Wetlands Loss

Purple Line 1937 VIMS Shoreline

15,487 Sq Feet of tidal wetlands has been lost or in excess of 1/3 of an acre of lost tidal wetlands.

Figure 13. Project Area Combined Tidal Wetlands Loss

11,158.5 Sq Feet

11,158 Sq feet tidal wetlands lost due to erosion and storm surge

4,329.5 Sq Feet

4,329 Sq feet tidal wetlands lost due to erosion and storm surge

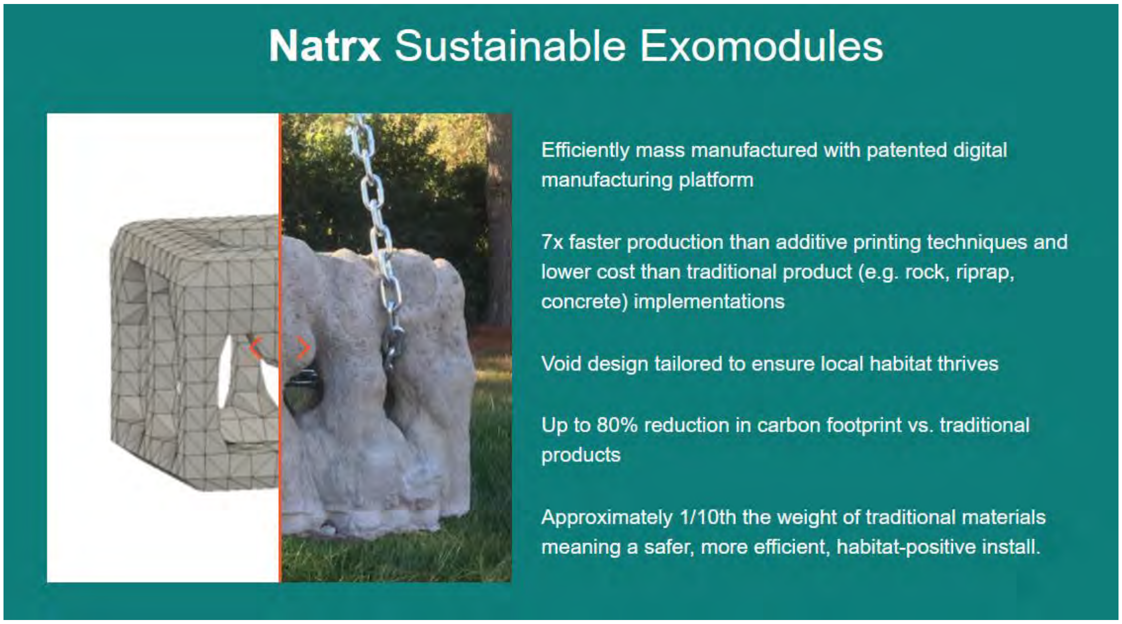
The proposed design solution will utilize NATRX living shoreline, up to 338 linear feet, as seen in Figure 14. Project site requires the use of (or will use) eXomodules, a nature-based shoreline protection solution, which are manufactured using a proprietary manufacturing system developed by Natrx. The eXomodules consist of nature based shoreline protection solution developed by Natrx. The eXomodules can be modified to suite the projects physical and environmental goals, such as size of structure, void space, surface area, and other physical attributes. The proprietary manufacturing system allows for the modification of design without the production of molds, which allows a new design to be produced immediately. This gives more flexibility and freedom for the designer to meet project specific goals. The structures can be manufactured in a variety of sizes that range from 1'x1'x1' to 3'x3'x3'.

Figure 14. Proposed NATRX Solution Idea

104.1 Feet

234.9 Feet

NATRX Living Shoreline Design Solution
Proposed for up to 338 Linear Feet



Natrx Sustainable Exomodules

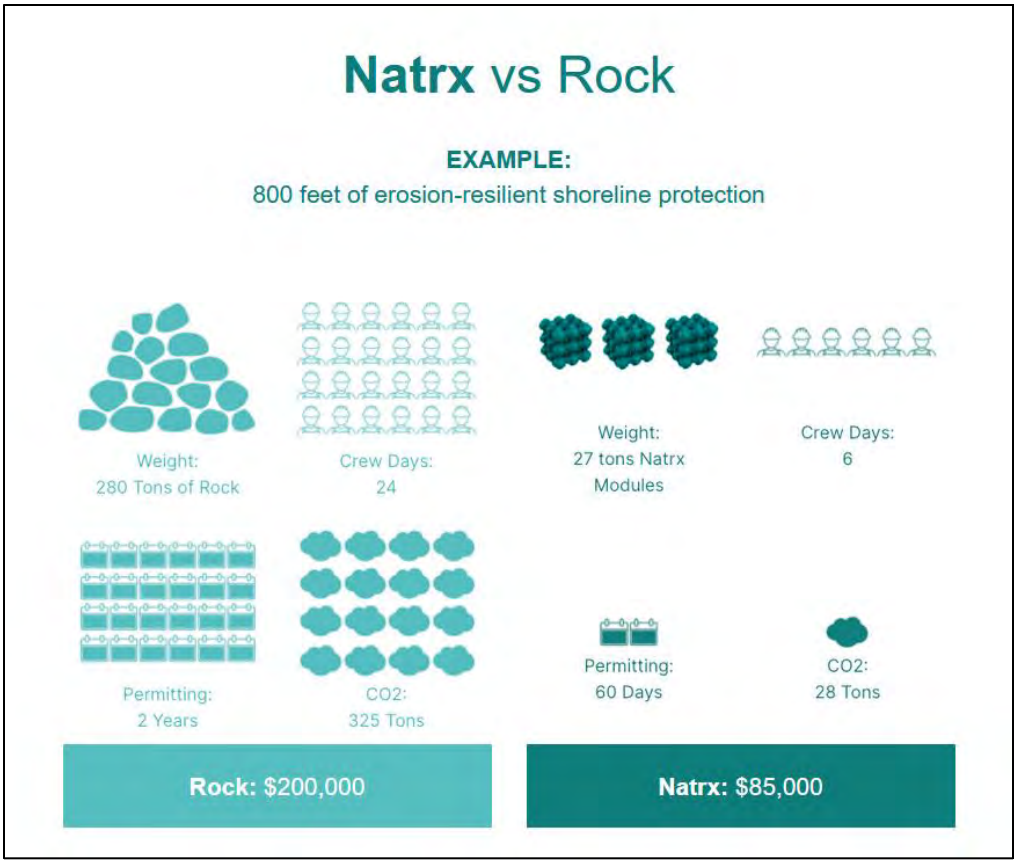
Efficiently mass manufactured with patented digital manufacturing platform

7x faster production than additive printing techniques and lower cost than traditional product (e.g. rock, riprap, concrete) implementations

Void design tailored to ensure local habitat thrives

Up to 80% reduction in carbon footprint vs. traditional products

Approximately 1/10th the weight of traditional materials meaning a safer, more efficient, habitat-positive install.



Natrx vs Rock

EXAMPLE:
800 feet of erosion-resilient shoreline protection

Weight:
280 Tons of Rock

Crew Days:
24

Weight:
27 tons Natrx
Modules

Crew Days:
6

Permitting:
2 Years

CO2:
325 Tons

Permitting:
60 Days

CO2:
28 Tons

Rock: $200,000

Natrx: $85,000

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022, as seen in Table 1.

Table 1. Project Milestone Schedule

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based design solutions with contractor and property owner		X	X			
Select which nature-based solution is most appropriate		X	X			
Have contractor develop selected nature-based design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based design solution					X	X
Provide a digital close out report and copy of the completed nature-based design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based design solution and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	

No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index]		

Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		87

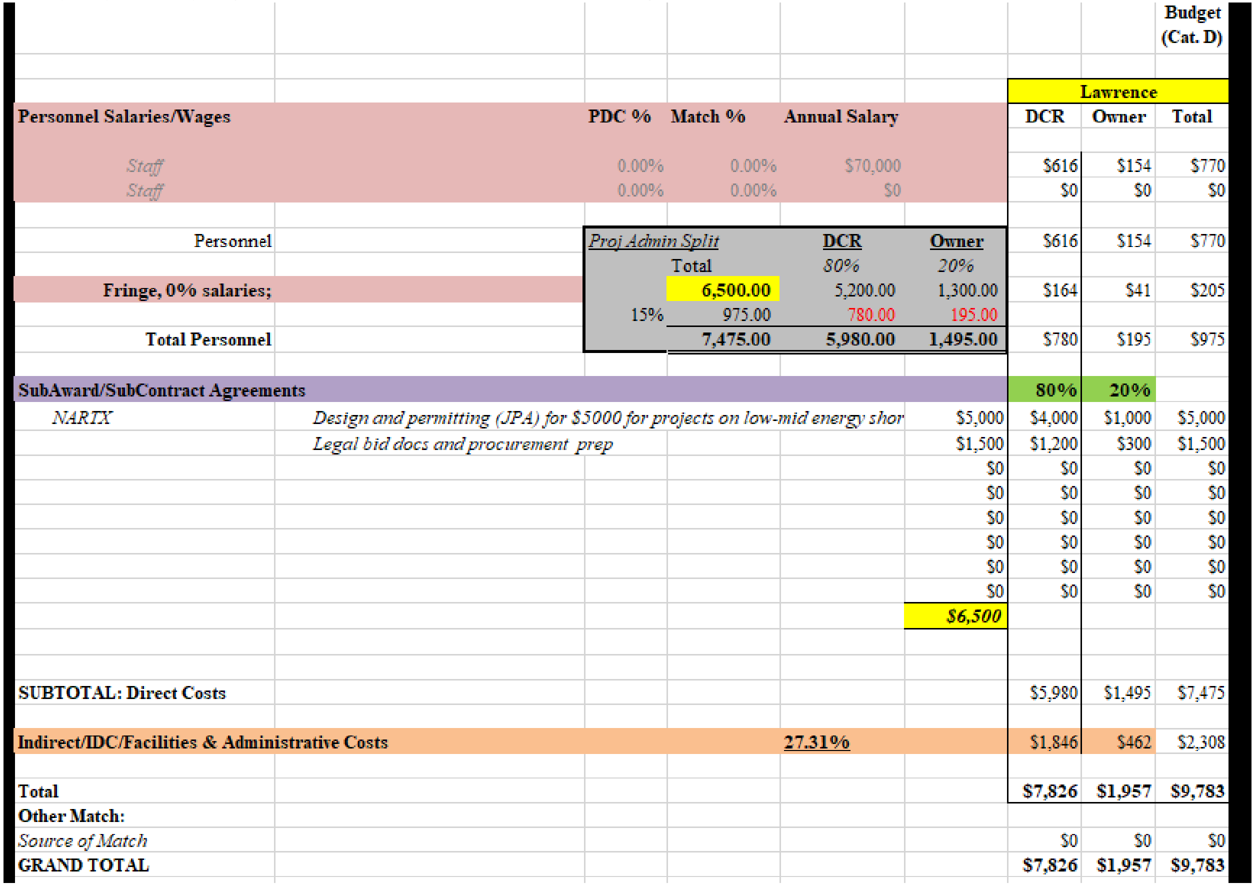
SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $9,783

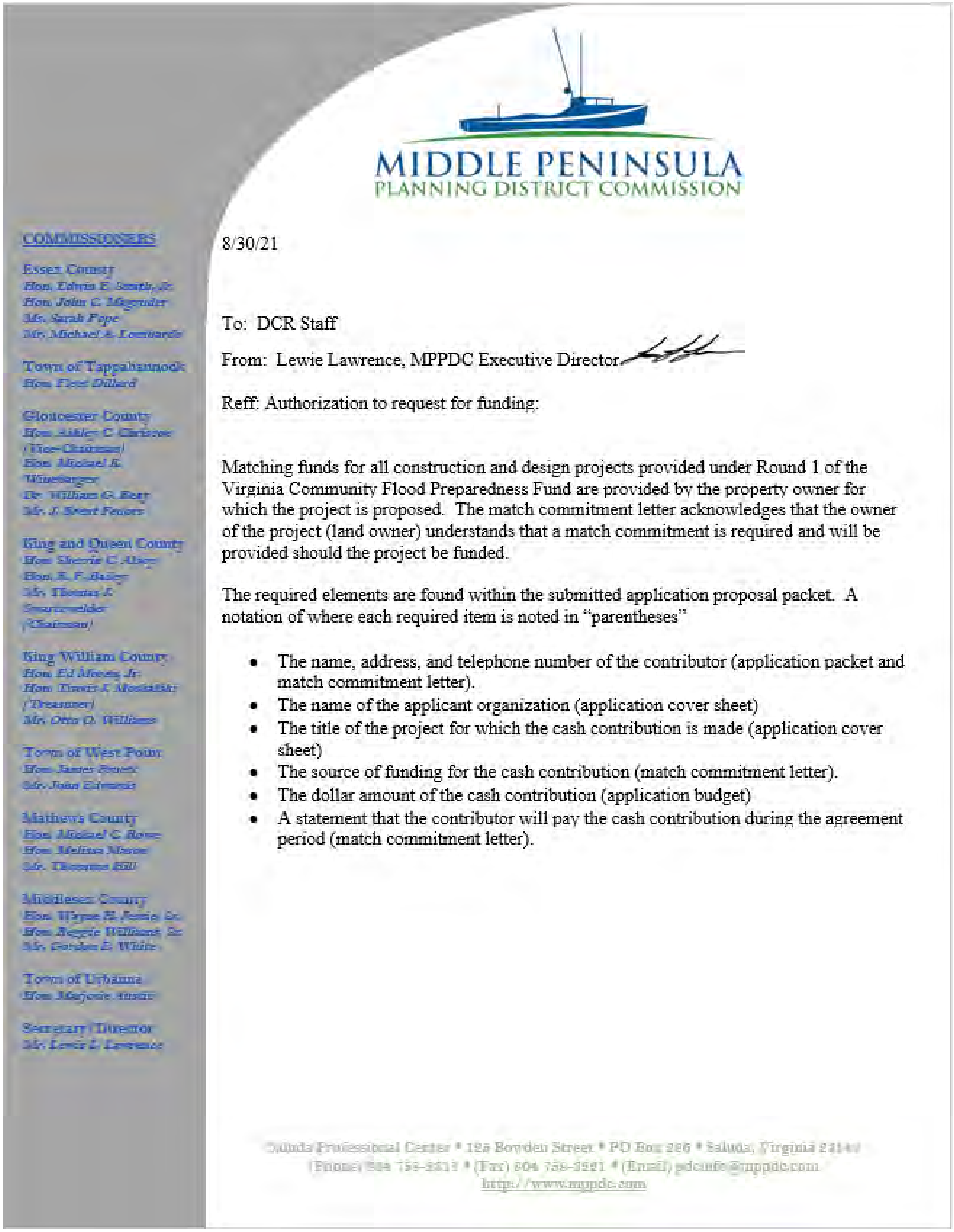


								Budget (Cat. D)
						Lawrence		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$616	$154	$770
Staff		0.00%	0.00%	$0		$0	$0	$0
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$616	$154	$770
			Total	*80%*	*20%*			
Fringe, 0% salaries;			**6,500.00**	5,200.00	1,300.00	$164	$41	$205
		15%	975.00	780.00	195.00			
Total Personnel			**7,475.00**	**5,980.00**	**1,495.00**	$780	$195	$975
SubAward/SubContract Agreements						**80%**	**20%**	
NARTX	*Design and permitting (JPA) for $5000 for projects on low-mid energy shor*				$5,000	$4,000	$1,000	$5,000
	Legal bid docs and procurement prep				$1,500	$1,200	$300	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$6,500			
SUBTOTAL: Direct Costs						$5,980	$1,495	$7,475
Indirect/IDC/Facilities & Administrative Costs				**27.31%**		$1,846	$462	$2,308
Total						**$7,826**	**$1,957**	**$9,783**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$7,826**	**$1,957**	**$9,783**

Cost estimates for Natrx shoreline nature-based design and draft joint permit application development was based on estimates provided by Natrx design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe (Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrie C. Alsop
Hon. R. F. Bailey
Mr. Thomas J. Swartzwelder (Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski (Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

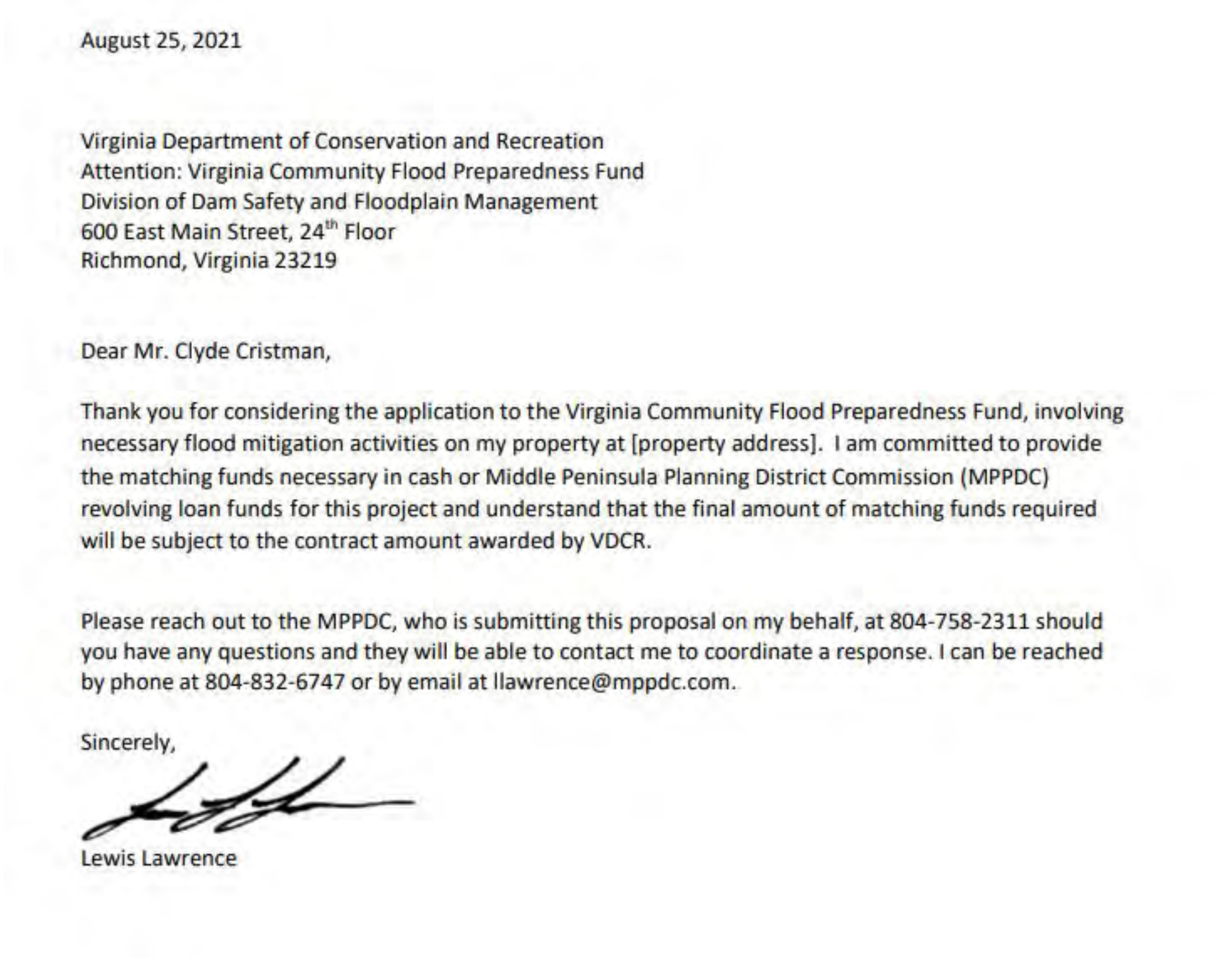
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



August 25, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-832-6747 or by email at llawrence@mppdc.com.

Sincerely,

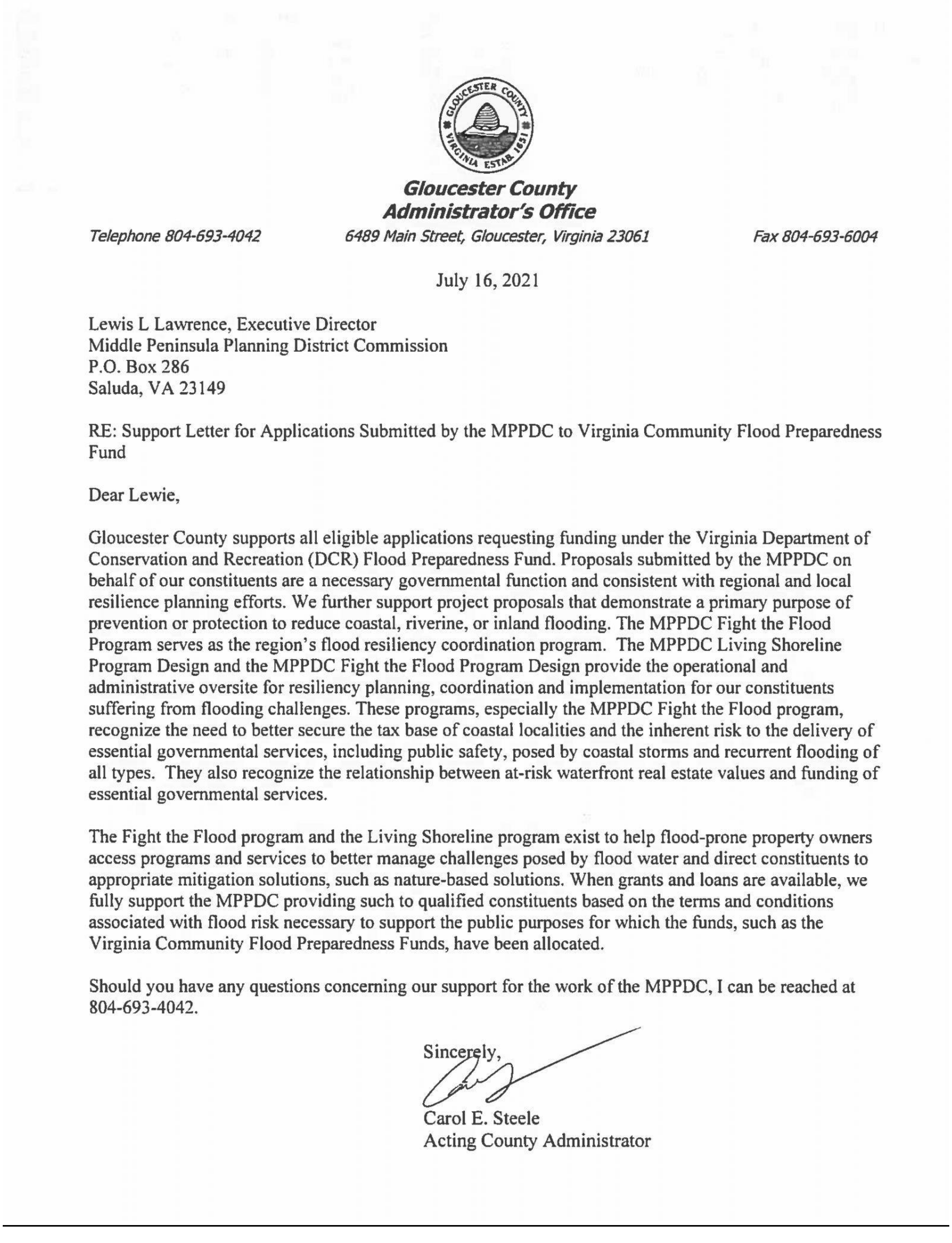
Lewis Lawrence

See also appendix 6

IV. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

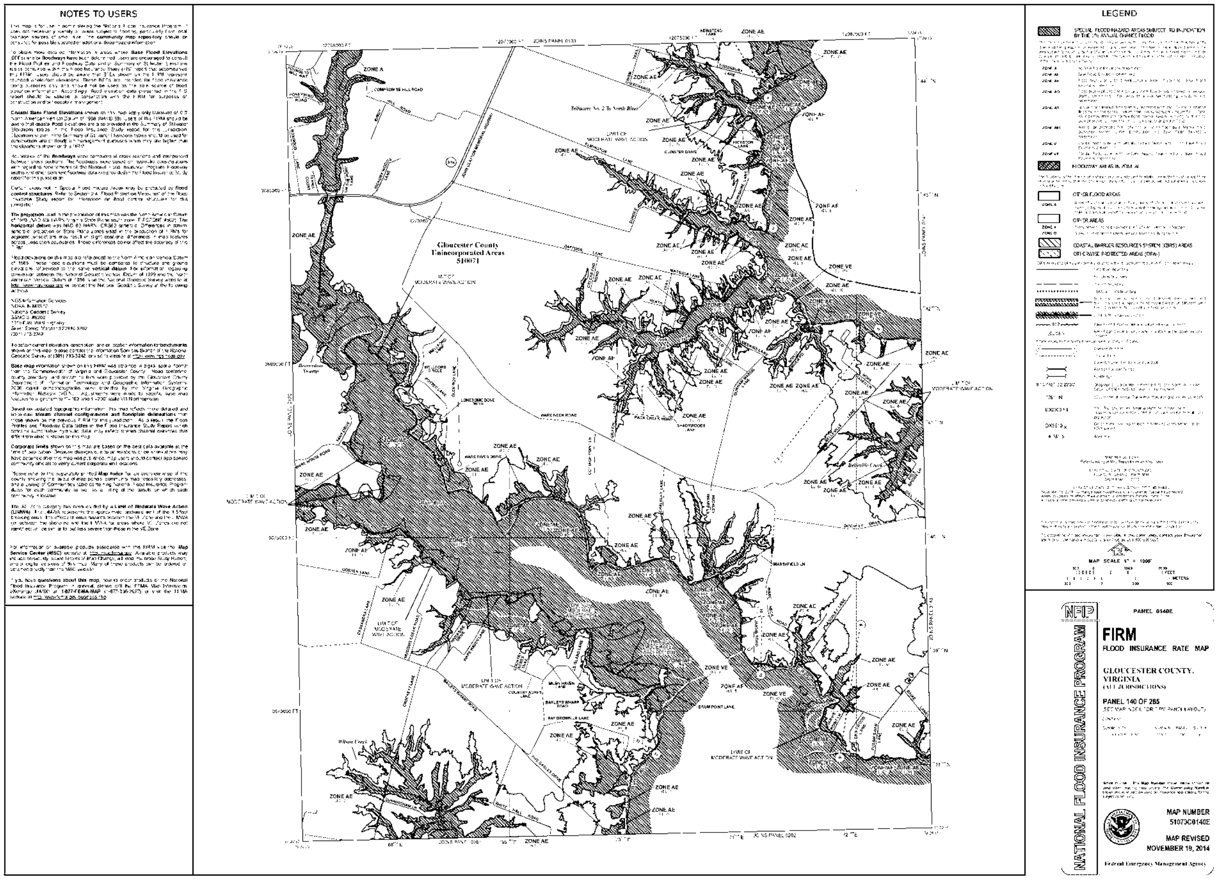
Carol E. Steele
Acting County Administrator

Community Support Letter

APPENDIX 2

Project Location FIRMette

(FIRMette #: 51073C0140E / Effective Date: 11/19/2014)

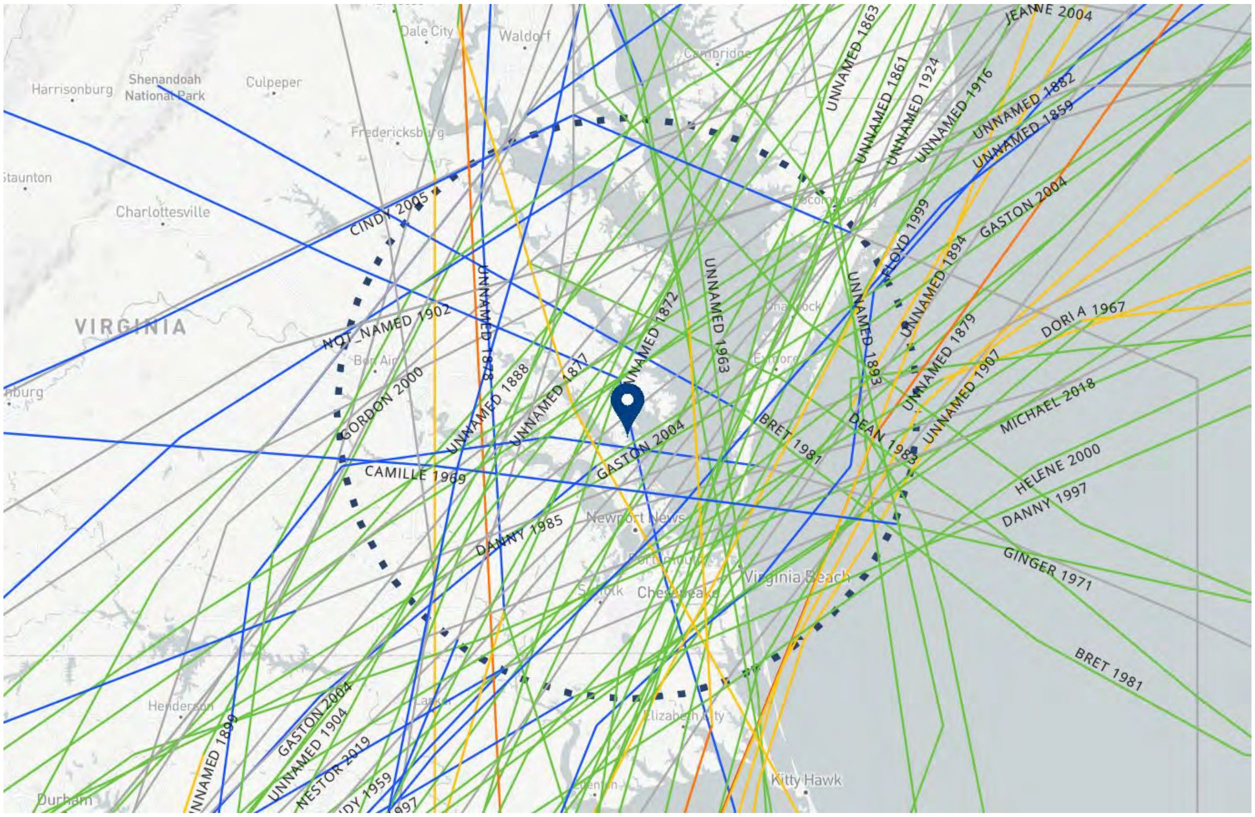


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.391264, -76.46599697

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	**DATE RANGE**	**MAX WIND SPEED**	**MIN PRESSURE**	**MAX CATEGORY**
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to	65	991	H1

	Jul 11, 2005			
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS

CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15,	55	995	TS

	1961			
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4

UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04,	95	-1	H2

	1899			
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2

UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21,	50	-1	TS

	1856			
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)
In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)

In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)

This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)

Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter

August 25, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-832-6747 or by email at llawrence@mppdc.com.

Sincerely,

Lewis Lawrence

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Roddy Shoreline Design** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

Issue #2

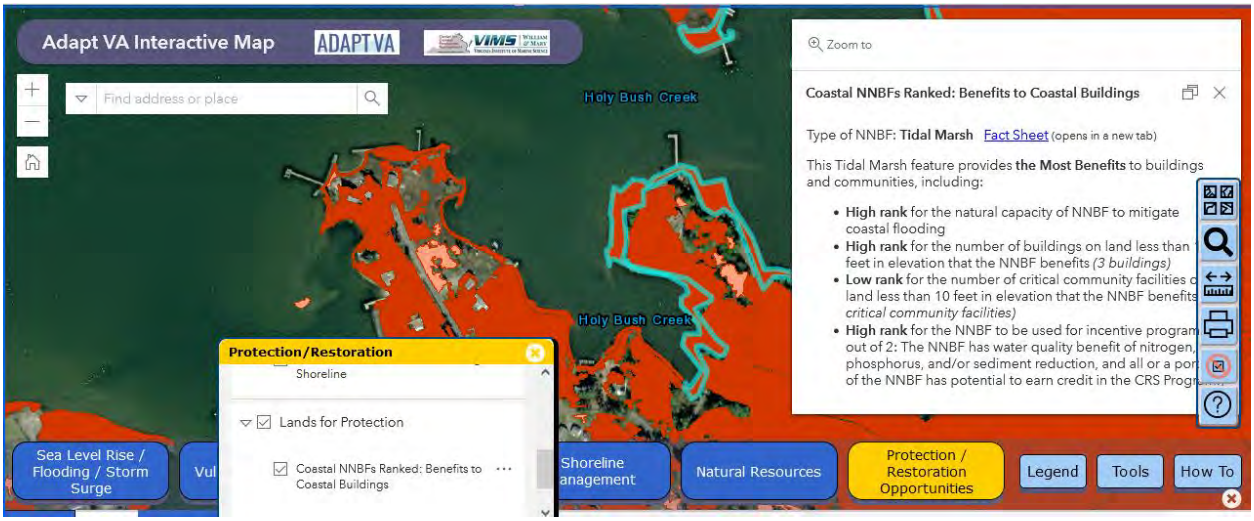
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(3 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

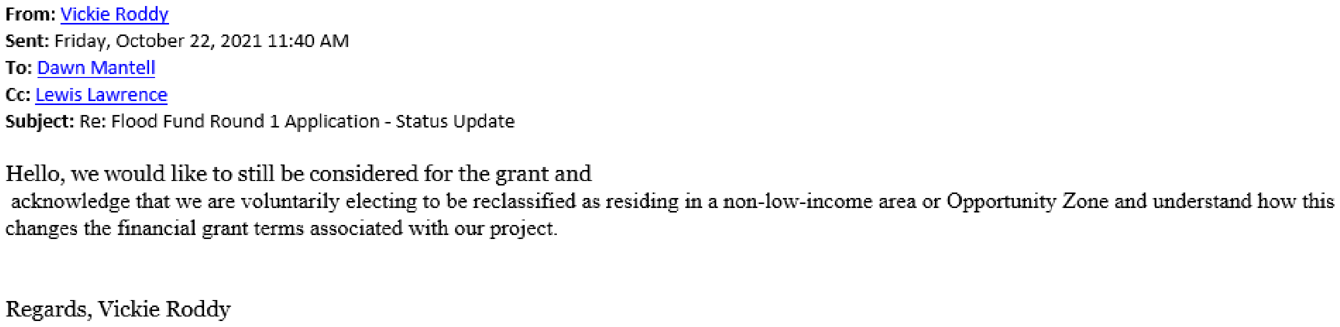
Shoreline

☑ Lands for Protection

☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



From: Vickie Roddy
Sent: Friday, October 22, 2021 11:40 AM
To: Dawn Mantell
Cc: Lewis Lawrence
Subject: Re: Flood Fund Round 1 Application - Status Update

Hello, we would like to still be considered for the grant and acknowledge that we are voluntarily electing to be reclassified as residing in a non-low-income area or Opportunity Zone and understand how this changes the financial grant terms associated with our project.

Regards, Vickie Roddy

Amended Budget Request

DCR Funding:	$ 12,180
Owner:	$ 5,219
Total	$ 17,399

						Roddy	
Personnel Salaries/Wages	**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	0.00%	0.00%	$0		$957	$410	$1,367
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		$11,500	8,050.00	3,450.00	$251	$107	$358
	15%	1,725.00	1,207.50	517.50			
Total Personnel		13,225.00	9,257.50	3,967.50	$1,208	$517	$1,725
SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$11,500			
SUBTOTAL: Direct Costs					$9,258	$3,967	$13,225
Indirect/IDC/Facilities & Administrative Costs			**27.92%**		$2,922	$1,252	$4,174
Total					**$12,180**	**$5,219**	**$17,399**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,180**	**$5,219**	**$17,399**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Friends Road

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ________________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☑ Wetland restoration.
- ☑ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☑ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0212E

Total Cost of Project: __$17,309______________________________

Total Amount Requested: __$13,846_________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding and wetland loss

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal design application requests a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located at 3261 Friends Road in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, notates response to emerging flood challenges.*
- *A link to the Middle Peninsula PDC’s All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*

- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

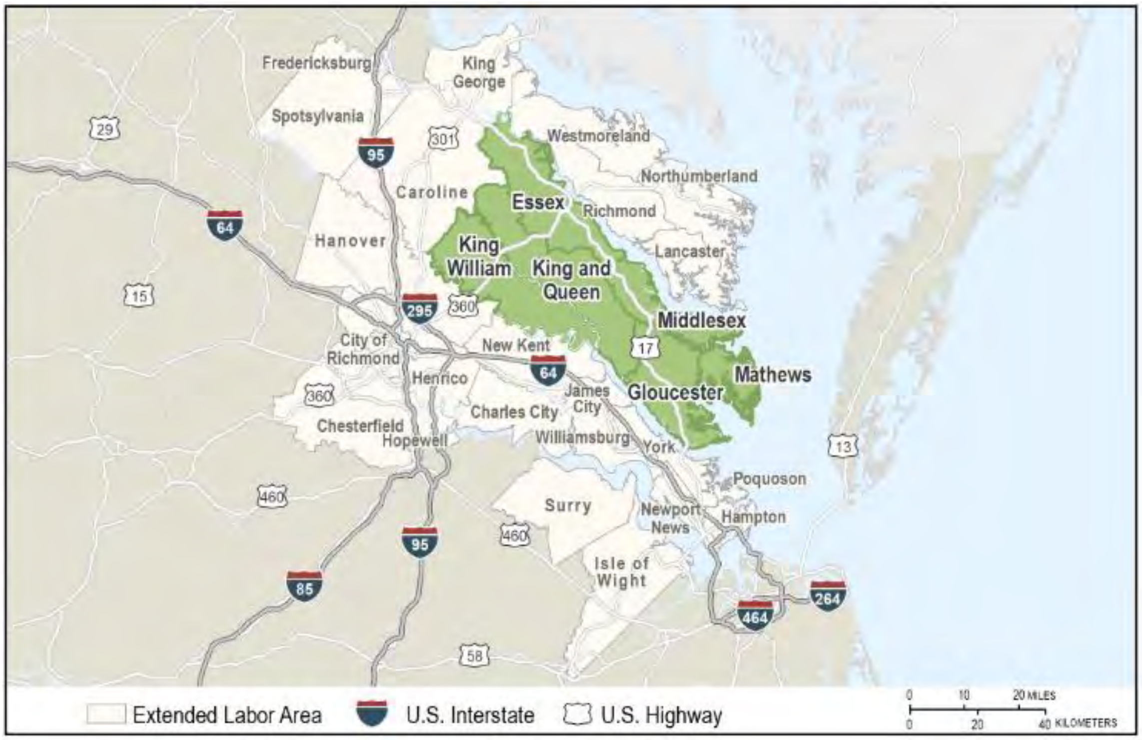
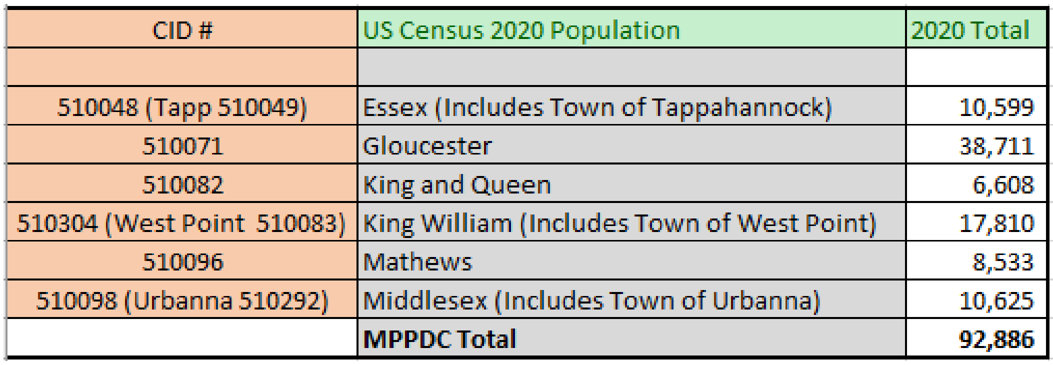


Figure 2. Middle Peninsula Population

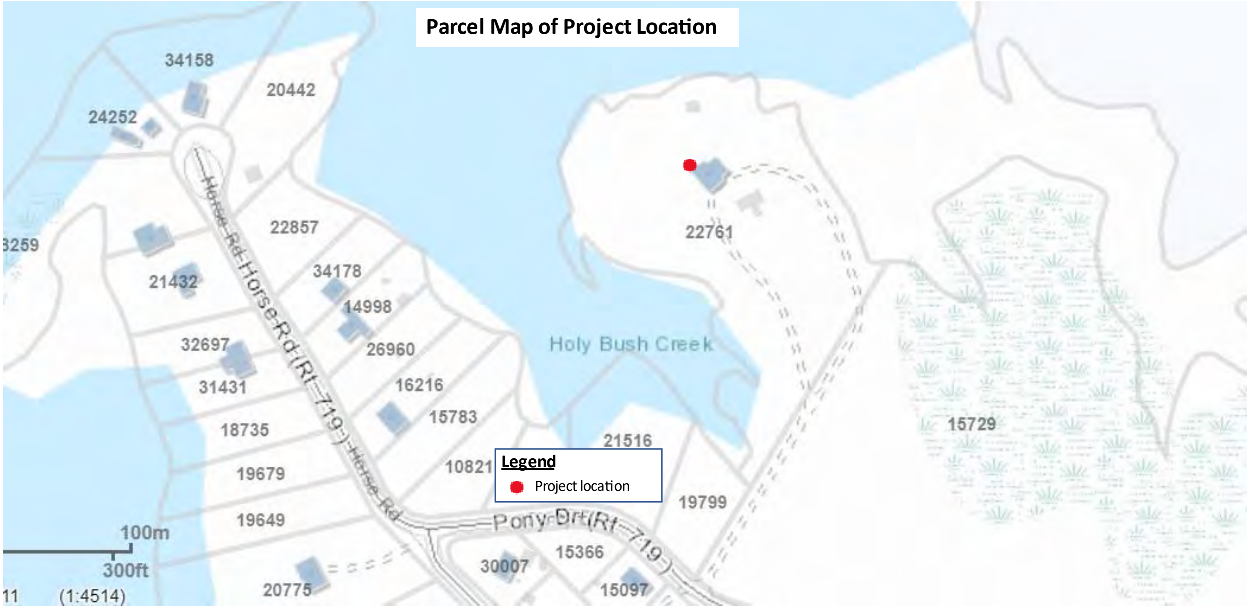


CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Friends Road in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

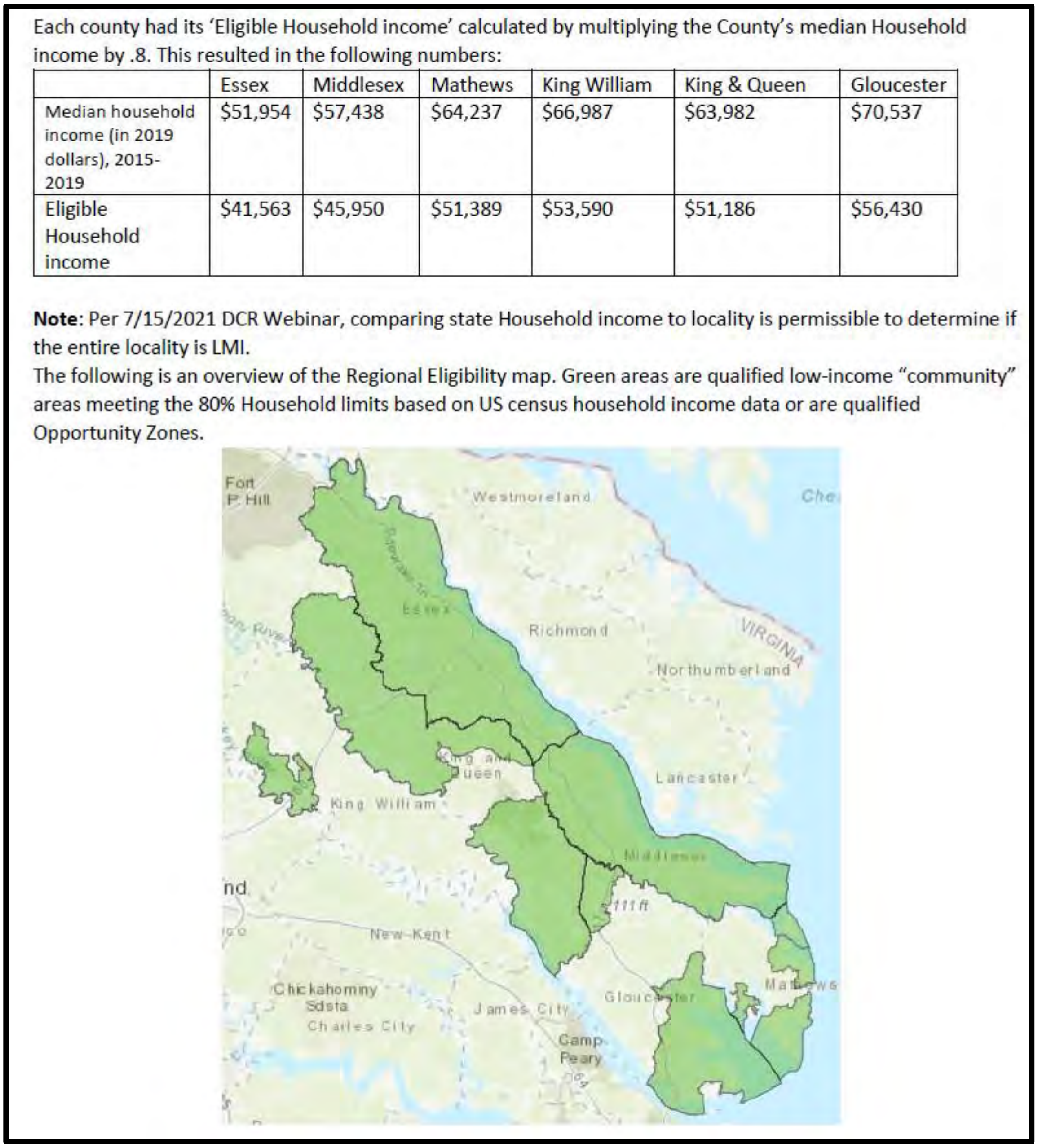
Figure 4. Parcel Map of Project Location



Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

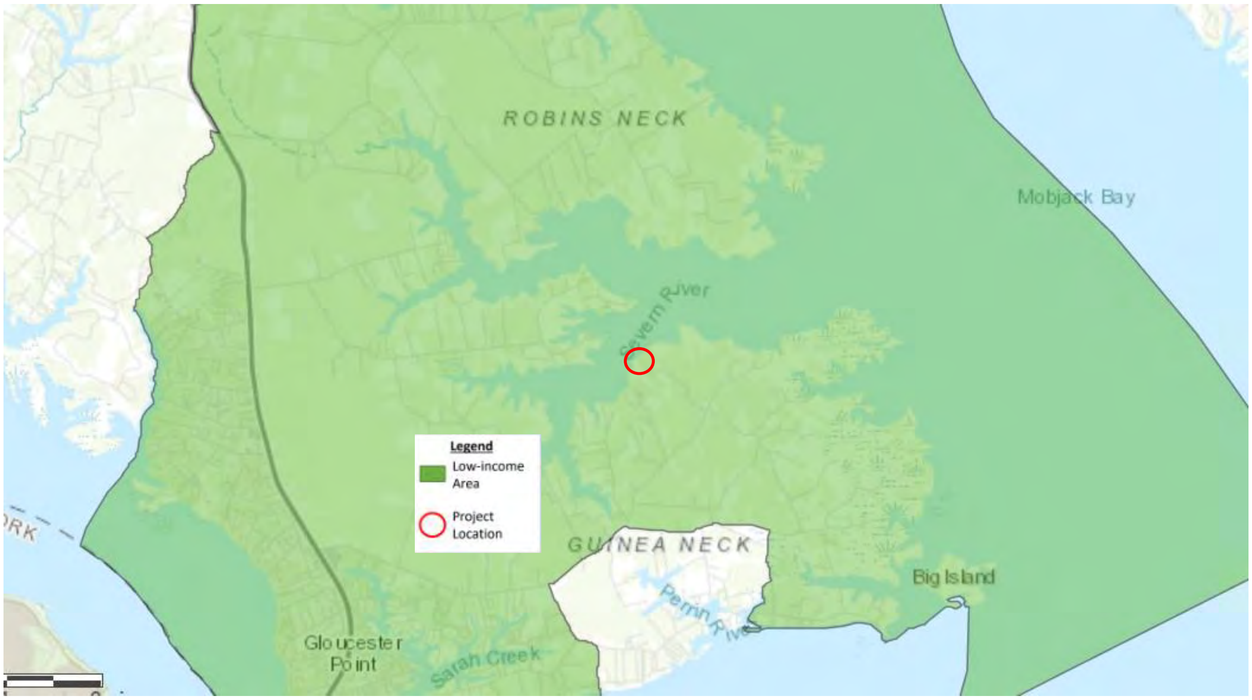
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a low social vulnerability score as seen in **Figure 7.** This designation is at odds with the known social economic conditions found in this part of Gloucester. It's a low-income community with subsistence watermen.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

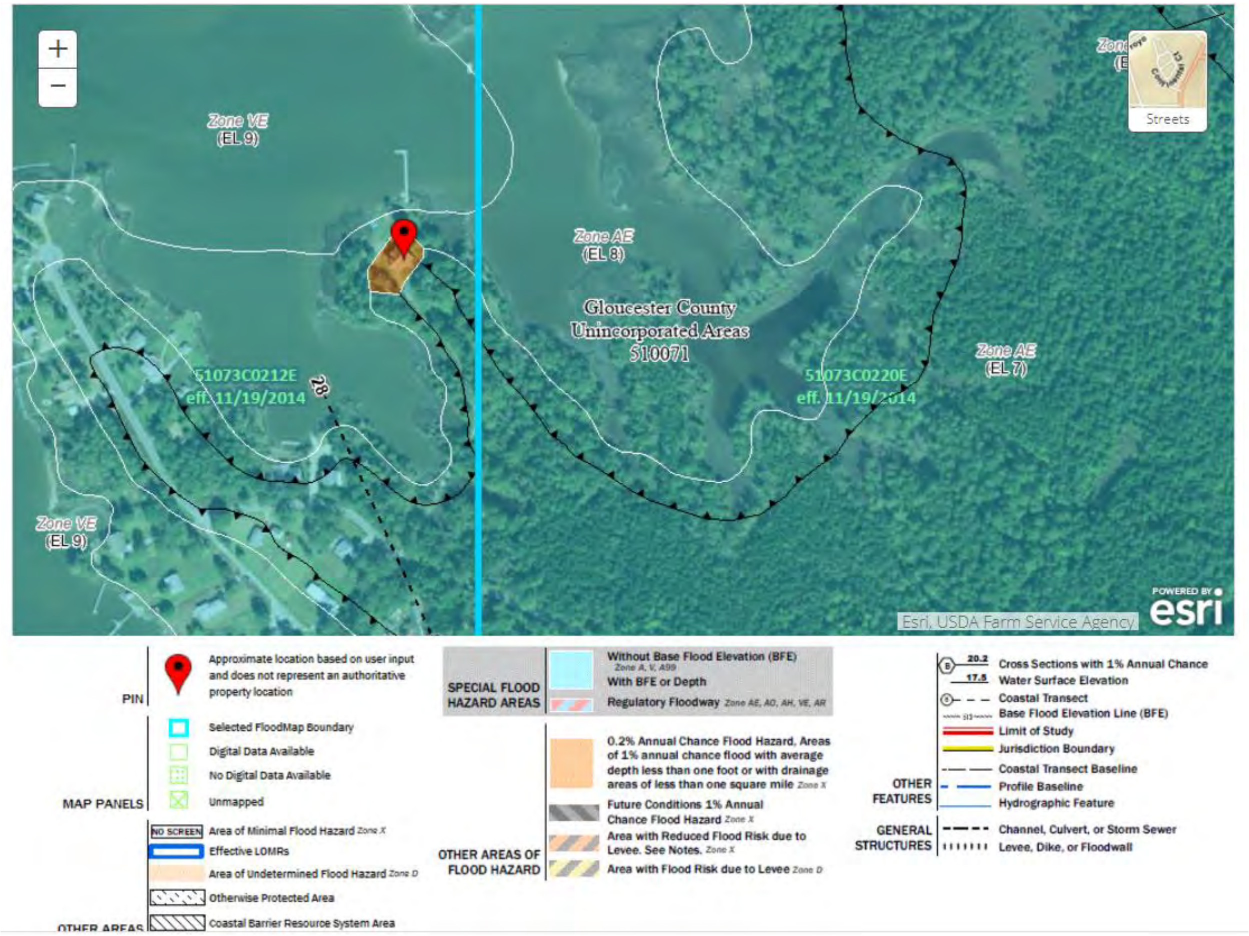
Social Vulnerability Index
Classification: Low Social Vulnerability
Vulnerability Index Score: -0.1
Housing Vulnerability: others
Housing Characteristics: high pct. mobile homes
Tract Name: Census Tract 1005, Gloucester County, Virginia

The project is located at 3261 Friends Road, Hayes, VA 23072 (-76.43813896, 37.30078199). It is situated on a small peninsula with natural grass all around except where the dock is. There is a 20x20 foot gazebo by the water's edge that is grandfathered into the property that needs to be protected as well as a small "crab shack." Unfortunately, the erosion over the past several years has been severe and there is only about two feet of solid shoreline.

Additionally, there is a small road that runs from the county road (Friends Road/Pony Road) down what is locally called the “causeway” to the main part of the peninsula where the house is located. There is considerable erosion surrounding a drainage ditch that goes horizontally from the main body of water, under the road, to the “marshy” water on the opposite side. Plus, many trees have blown over the past few years along the roadway so they've lost that natural barrier and the roots have pulled up portions of the road. The homeowners are concerned about the road washing away at this point which would prevent access to the house.

This site is located within the AE flood zone as seen in **Figure 8**. Please see **Appendix 2** for the FIRMettes (last mapped 11/19/2014) and **Appendix 3** for additional property photos.

Figure 8: Map of FEMA Flood Zones of Project Location

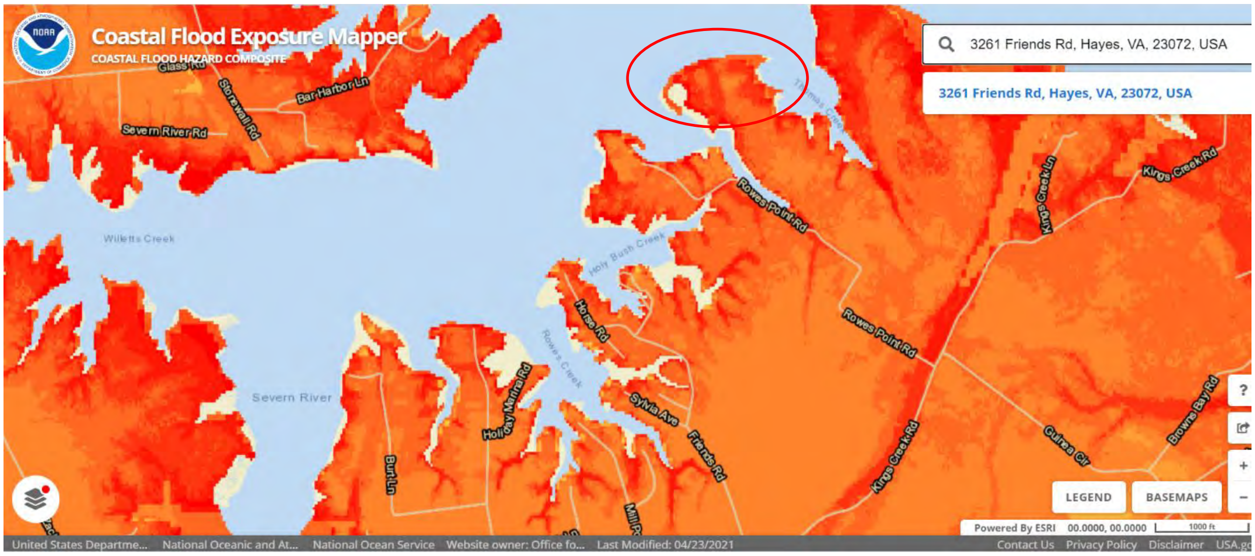


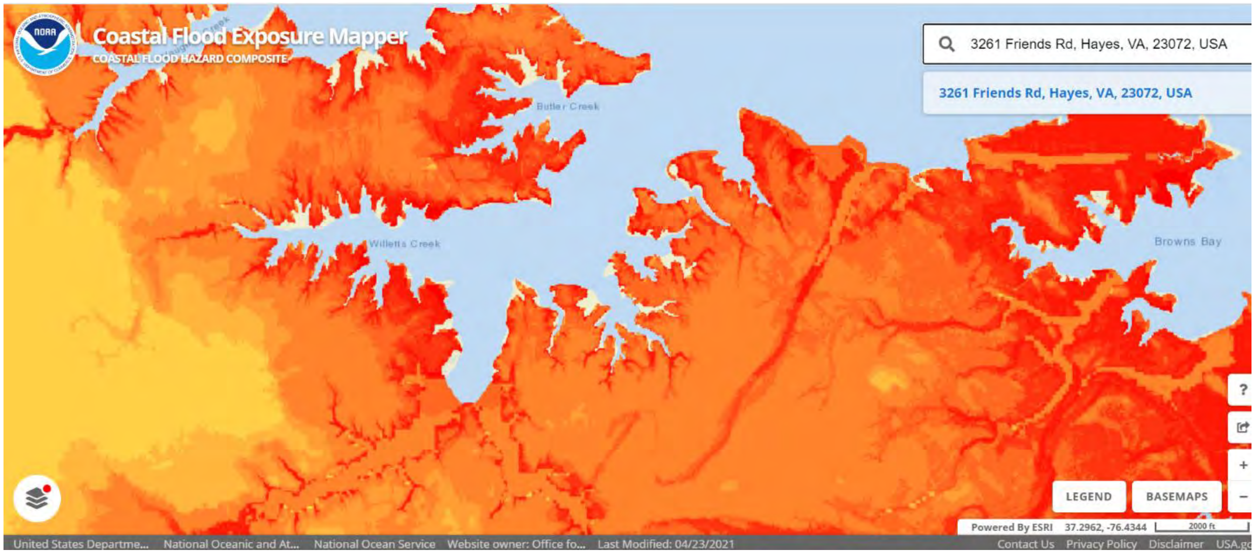
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 86 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 9. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 10.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)





For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5*

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

***GOALS AND OBJECTIVES*.**

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022, as seen in Table 1.

Table 1. Project Milestone Schedule

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		75

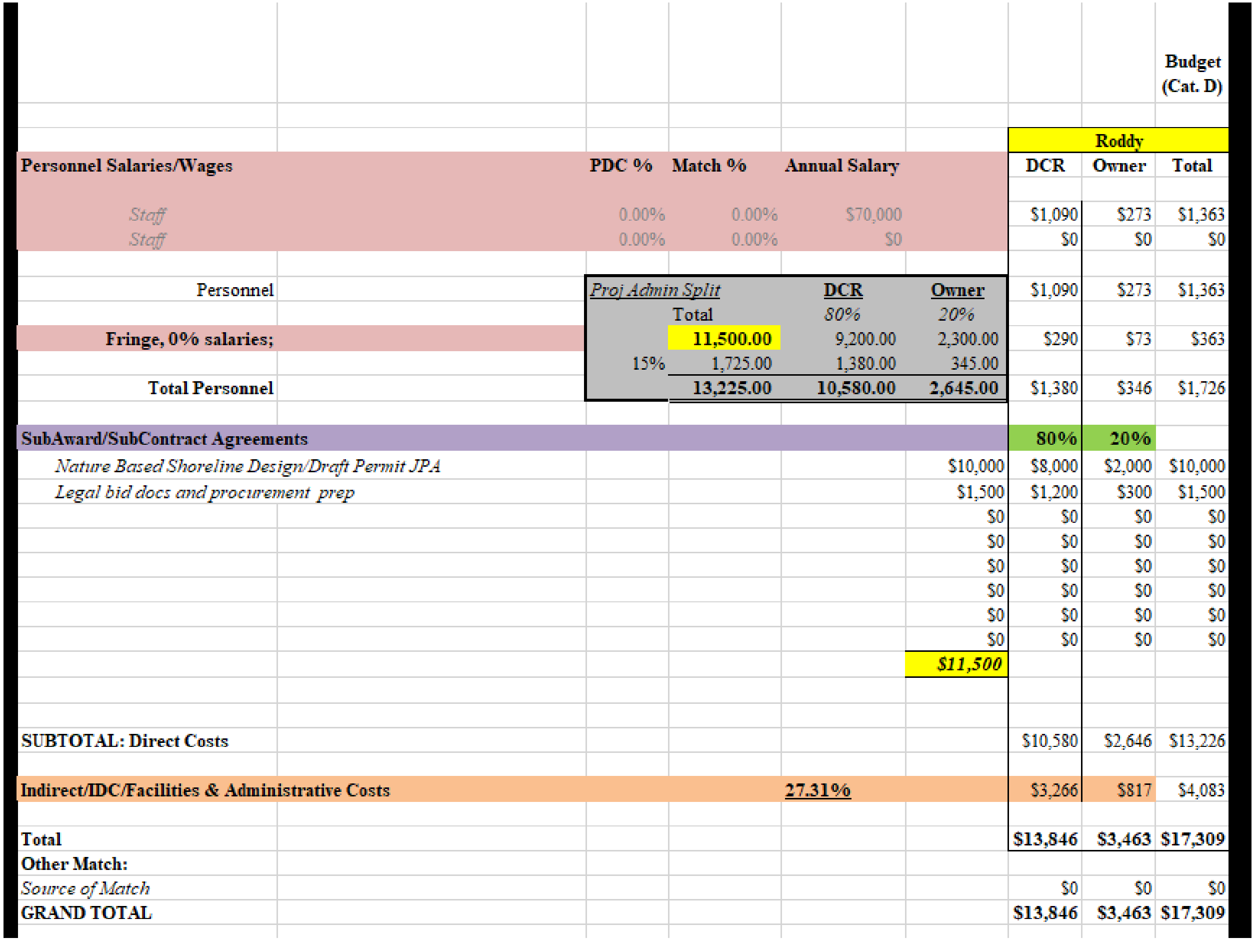
SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA’s Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $17,309

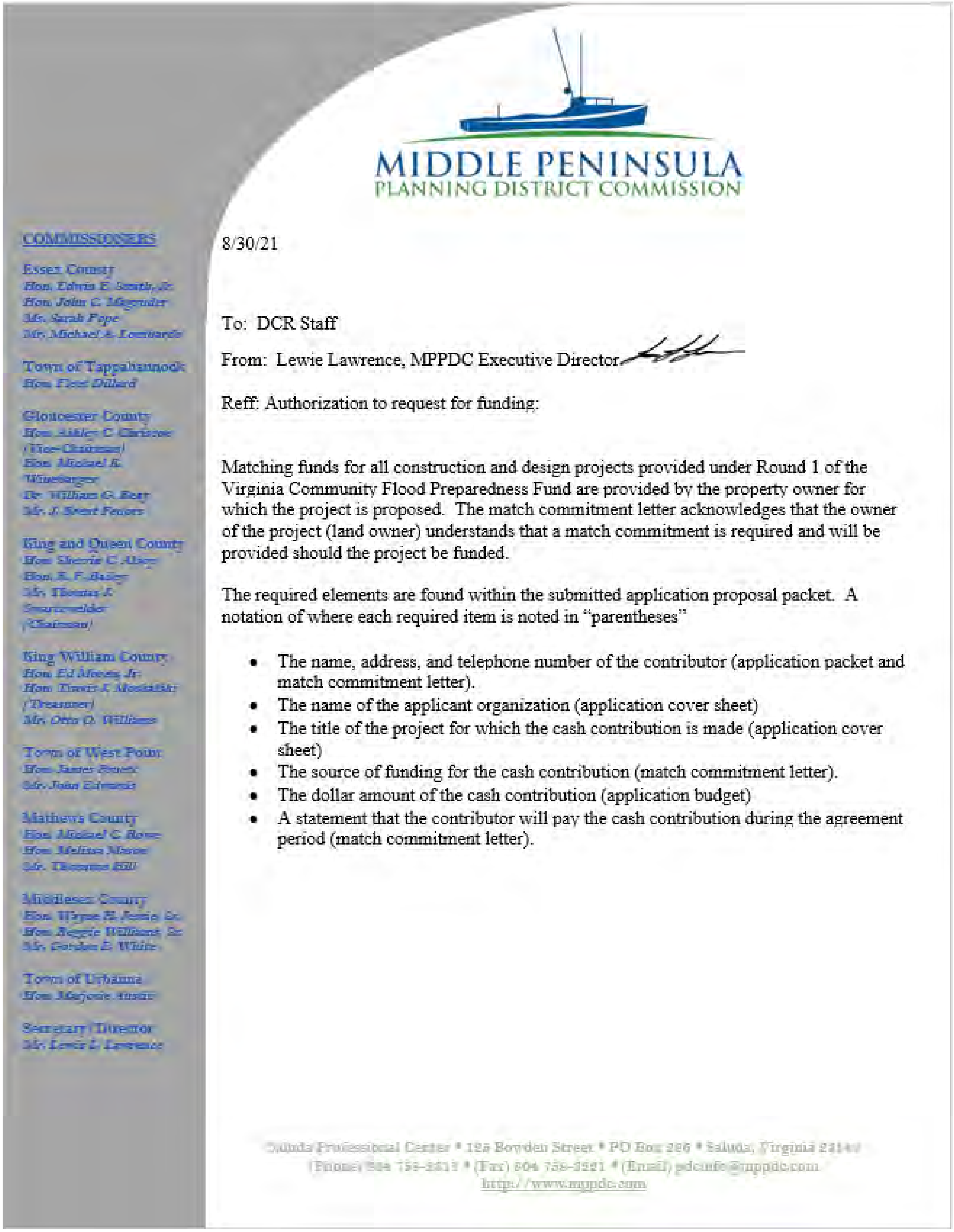


								Budget (Cat. D)
						Roddy		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$1,090	$273	$1,363
Staff		0.00%	0.00%	$0		$0	$0	$0
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$1,090	$273	$1,363
			Total	*80%*	*20%*			
Fringe, 0% salaries;			**11,500.00**	9,200.00	2,300.00	$290	$73	$363
		15%	1,725.00	1,380.00	345.00			
Total Personnel			**13,225.00**	**10,580.00**	**2,645.00**	$1,380	$346	$1,726
SubAward/SubContract Agreements						**80%**	**20%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$8,000	$2,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,200	$300	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$11,500			
SUBTOTAL: Direct Costs						$10,580	$2,646	$13,226
Indirect/IDC/Facilities & Administrative Costs				**27.31%**		$3,266	$817	$4,083
Total						**$13,846**	**$3,463**	**$17,309**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$13,846**	**$3,463**	**$17,309**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding:*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

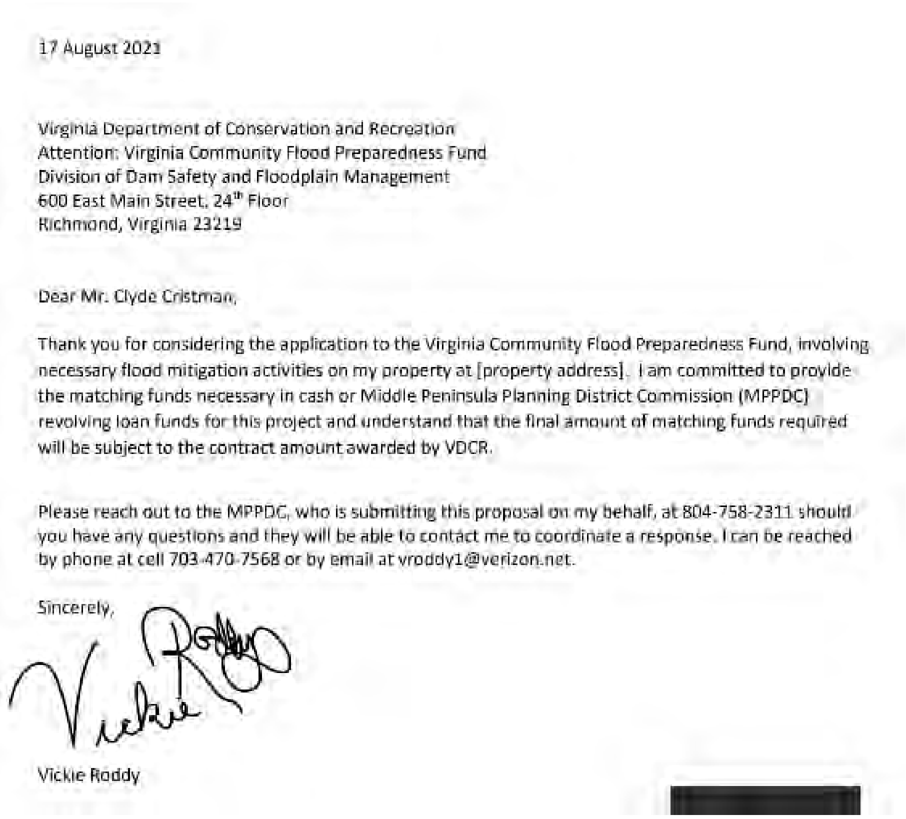
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



17 August 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at cell 703-470-7568 or by email at vroddy1@verizon.net.

Sincerely,

Vickie Roddy

Vickie Roddy

[redacted]

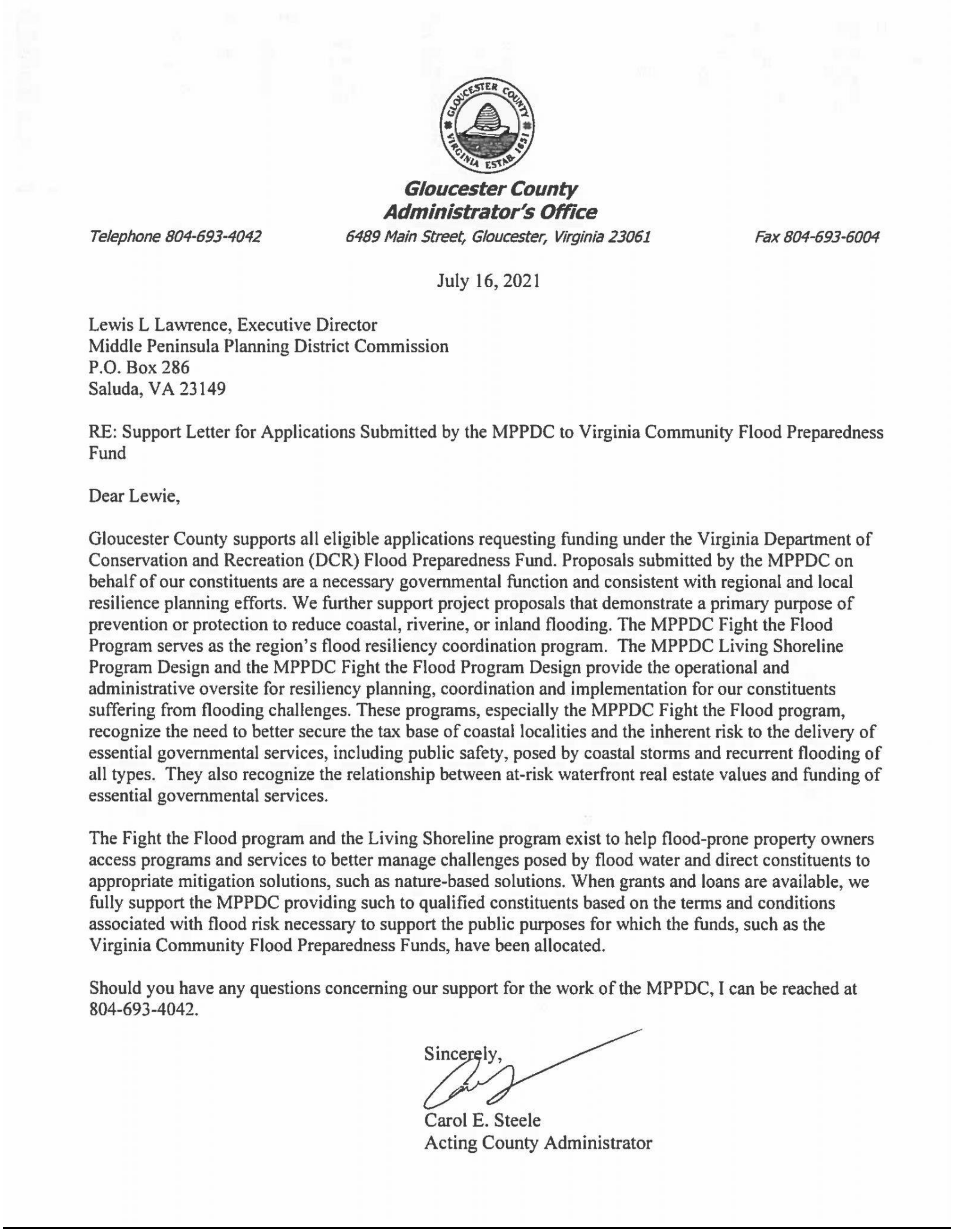
See also appendix6

IV. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

Cont next page

APPENDIX 1



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

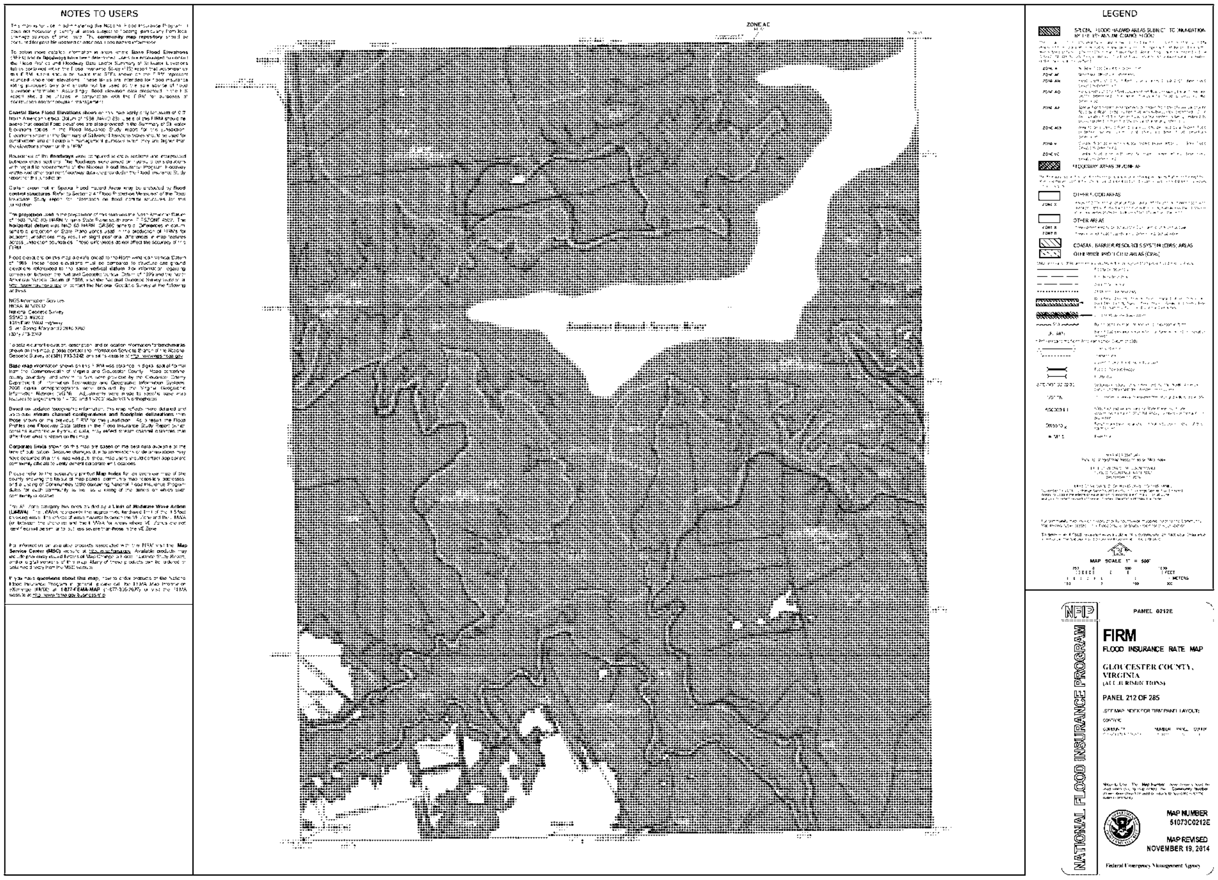
Carol E. Steele
Acting County Administrator

Community Support Letter

APPENDIX 2

Project Location FIRMette

(FIRMette #: 51073C0212E/ Effective Date: 11/19/2014)

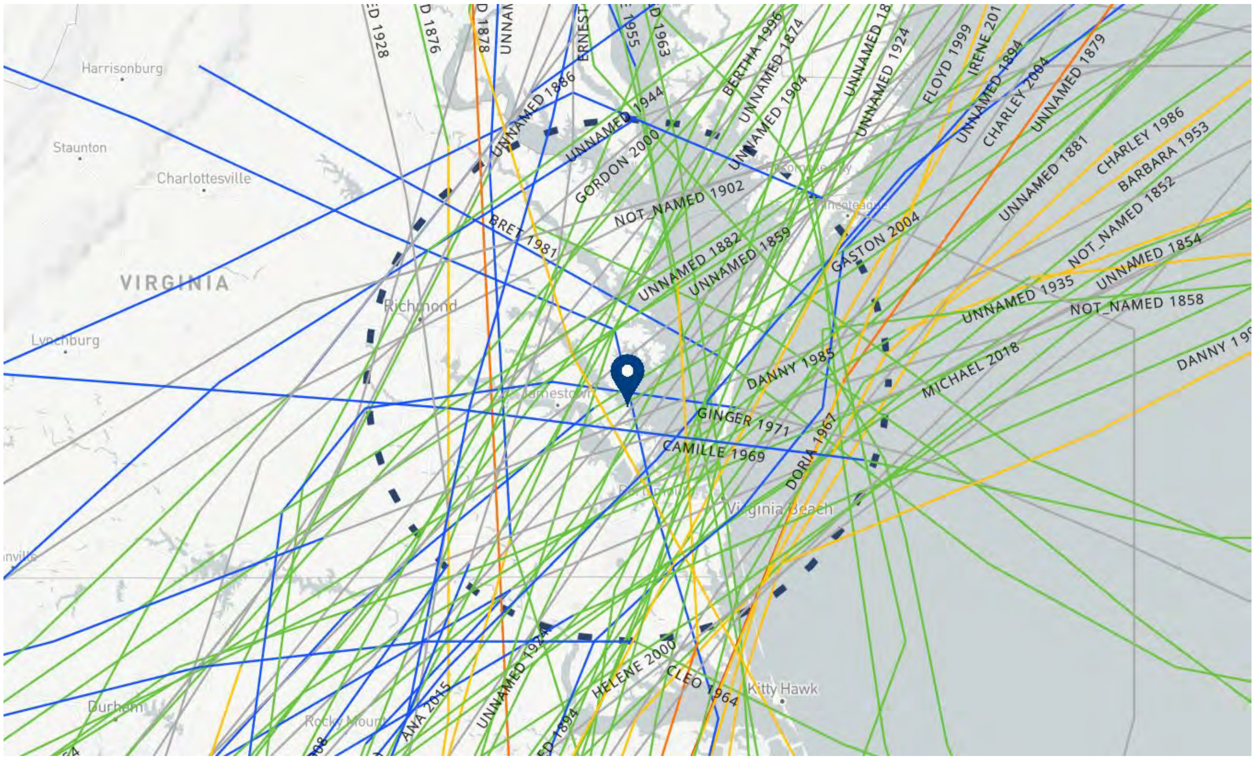


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.30078199, -76.43813896

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05,	75	987	H1

	2020			
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004	105	950	H3

	to Sep 29, 2004			
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul	70	984	H1

	27, 1997			
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05,	95	959	H2

	1971			
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
CLEO 1964	Aug 20, 1964 to Sep 11, 1964	130	938	H4
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960	60	976	TS

	to Aug 07, 1960			
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1949	Sep 11, 1949 to Sep 14, 1949	45	-1	TS
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct	125	937	H4

	24, 1944			
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug	90	971	H2

	13, 1928			
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS

UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun	85	-1	H2

	24, 1886			
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1

UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS

UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)

Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)

In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)

This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)

Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public

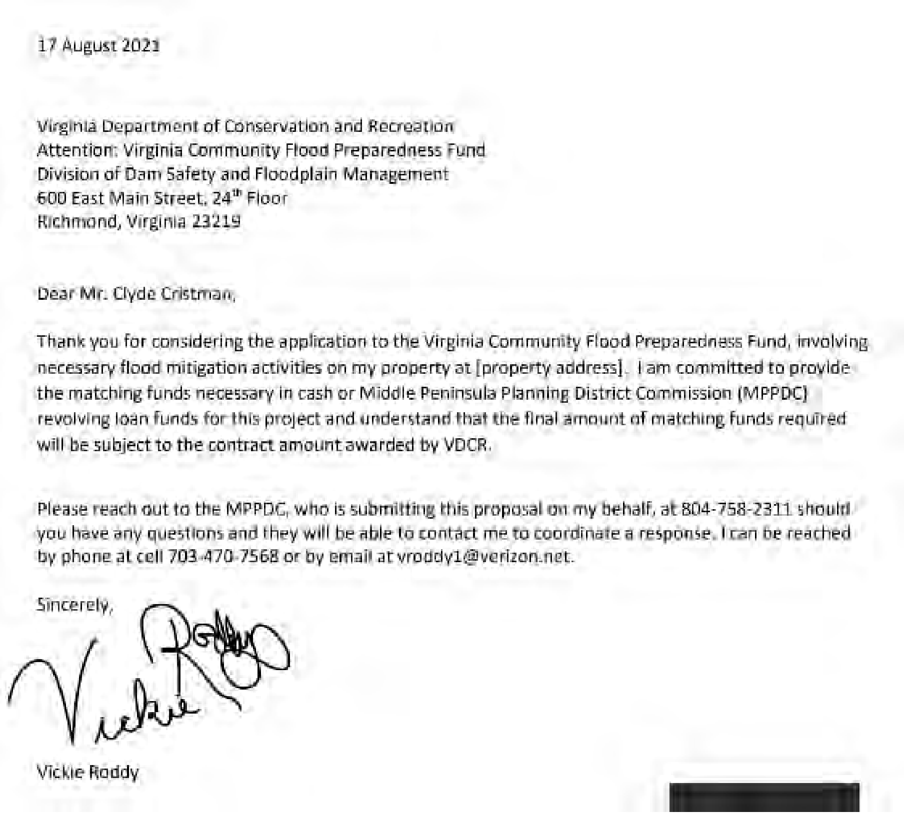
Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



17 August 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at cell 703-470-7568 or by email at vroddy1@verizon.net.

Sincerely,

Vickie Roddy

[redacted]

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe (Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J. Swartzwelder (Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski (Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Tabb** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

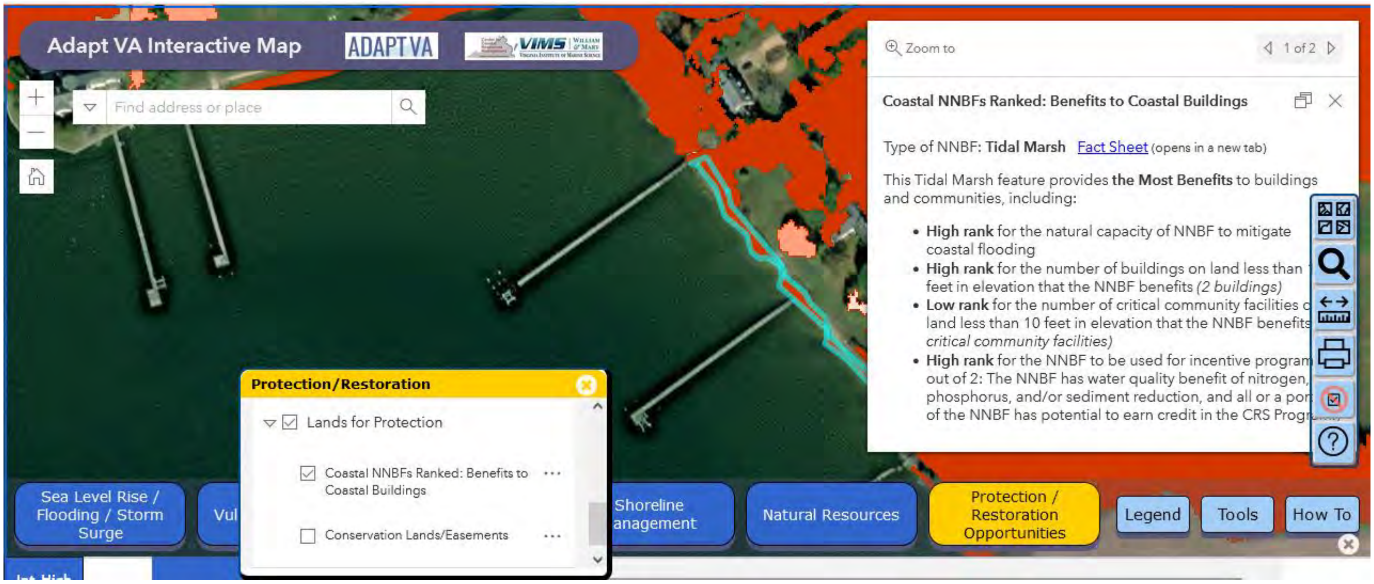
Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

Issue #2
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(2 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

Protection/Restoration

☑ Lands for Protection
  ☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings
  ☐ Conservation Lands/Easements

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:
Mrs Tab called MPPDC on 10/25 and offered to voluntarely elected to be classified as 70% when she resides in an low income area and feels she should be processed at the 80% level. She expressed dismay related to delays as she continues to lose shoreline as weeks pass.

Amended Budget Request

DCR Funding:	$ 4,765
Owner:	$ 2,042
Total	$ 6,807

						Tabb		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$374	$160	$535
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$374	$160	$534
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			**$4,500**	3,150.00	1,350.00	$98	$42	$140
		15%	675.00	472.50	202.50			
Total Personnel			**5,175.00**	**3,622.50**	**1,552.50**	$472	$202	$674
SubAward/SubContract Agreements						**70%**	**30%**	
Ready Reef	*Turn key design and JPA permit ready for submission*				$3,000	$2,100	$900	$3,000
	Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$4,500			
SUBTOTAL: Direct Costs						$3,622	$1,552	$5,174
Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$1,143	$490	$1,633
Total						**$4,765**	**$2,042**	**$6,807**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$4,765**	**$2,042**	**$6,807**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Ware Neck Road

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510071

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

that

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☑ Wetland restoration.
- ☑ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☑ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0140E

Total Cost of Project: ______$6,773__________________________

Total Amount Requested: ___$5,418_________________________

that

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional

that

purposes, such as decreasing flood risk or improving water quality. These interventions can be completely "green" (i.e., consisting of only ecosystem elements) or "hybrid" (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal application seeks a nature-based design solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal design seeks to incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located at 6102 Ware Neck Road in Gloucester County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Gloucester County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, notates response to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - *Please see Section 4 (page 25), which includes historical hazard data within*

that

the region.

- *A link to the Gloucester County's Comprehensive Plan can be found at: https://www.gloucesterva.info/373/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

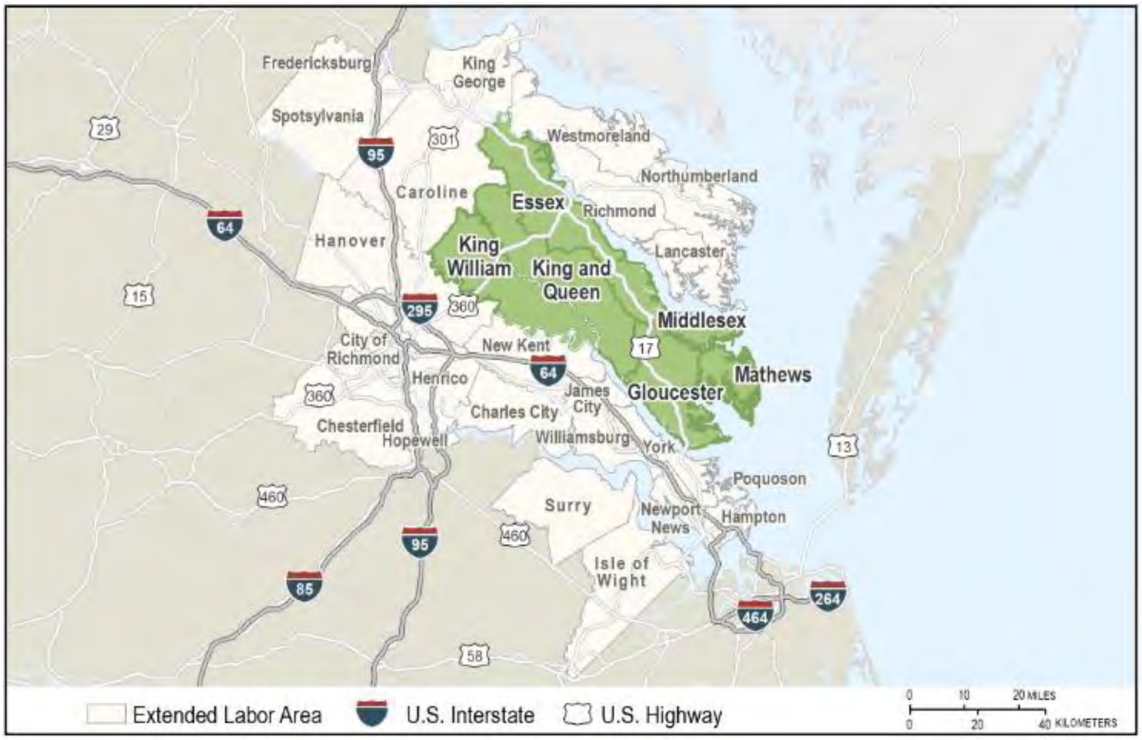
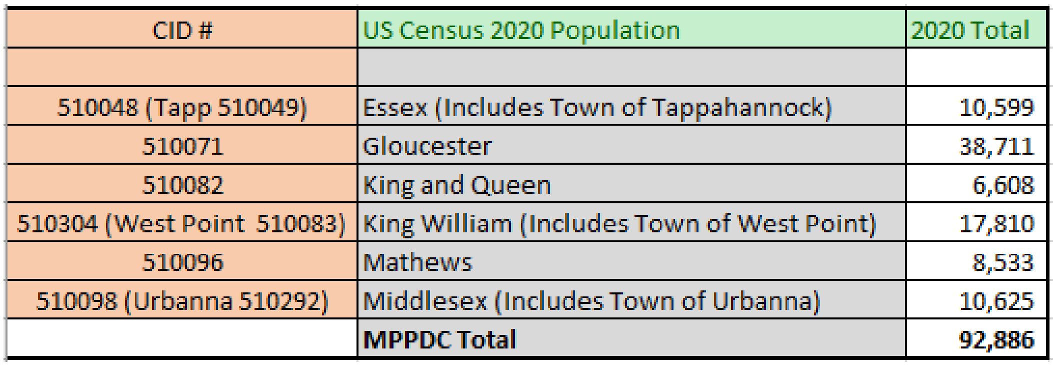


Figure 2. Middle Peninsula Population



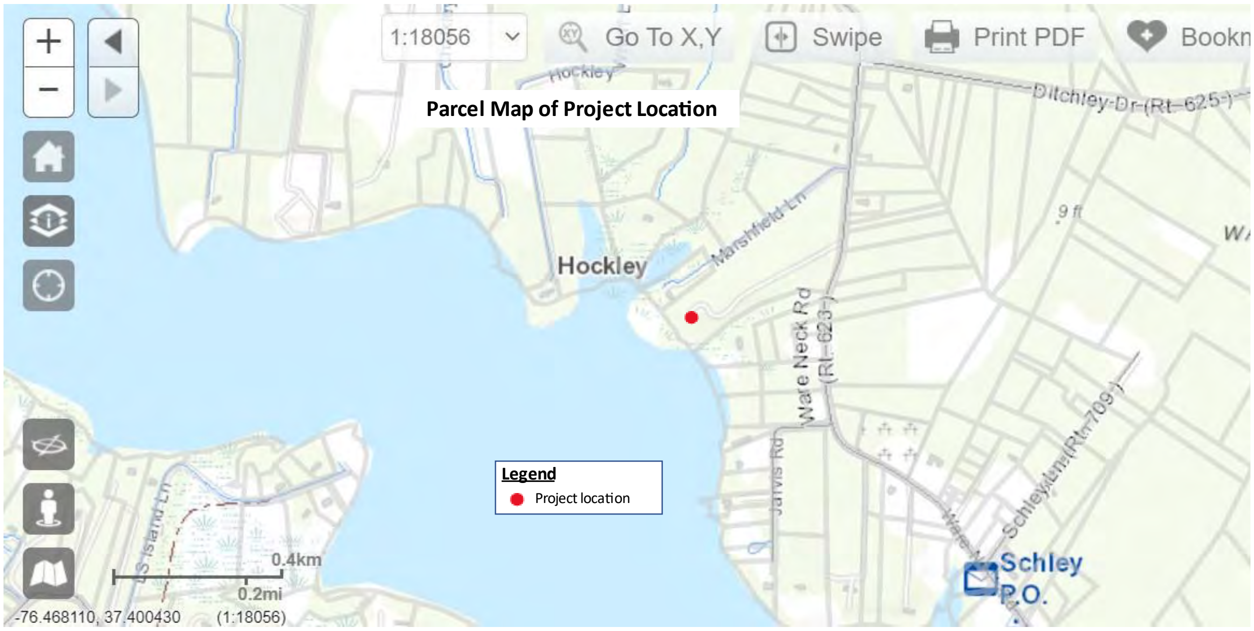
CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

that

This project proposes to install living shorelines on one private property on a private road south of Marshfield Lane in Gloucester County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Locatio

Figure 4. Parcel Map of Project Location

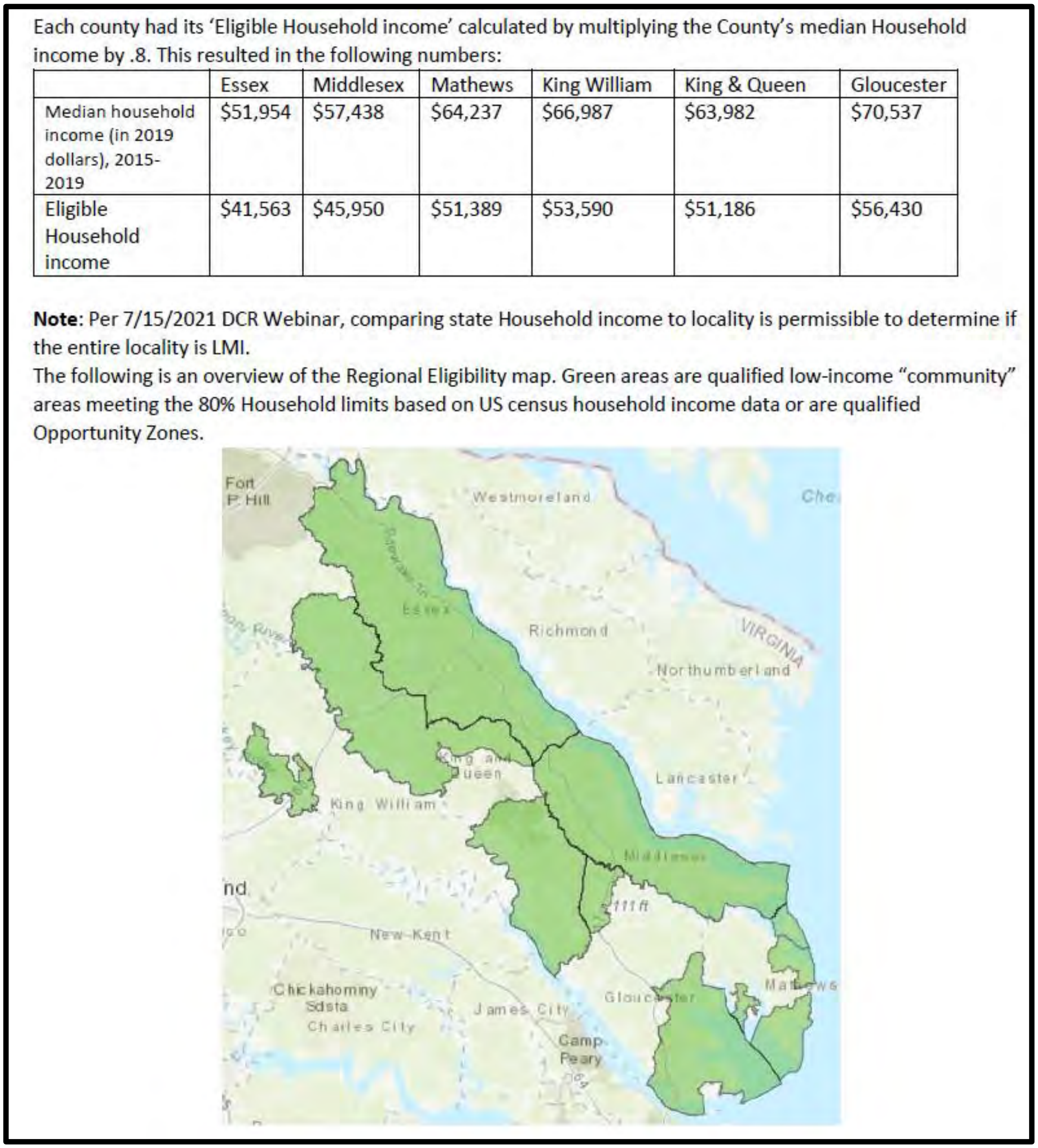


that

Gloucester County is located at the southern tip of Virginia’s Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County’s population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its ‘Eligible Household income’ calculated by multiplying the County’s median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

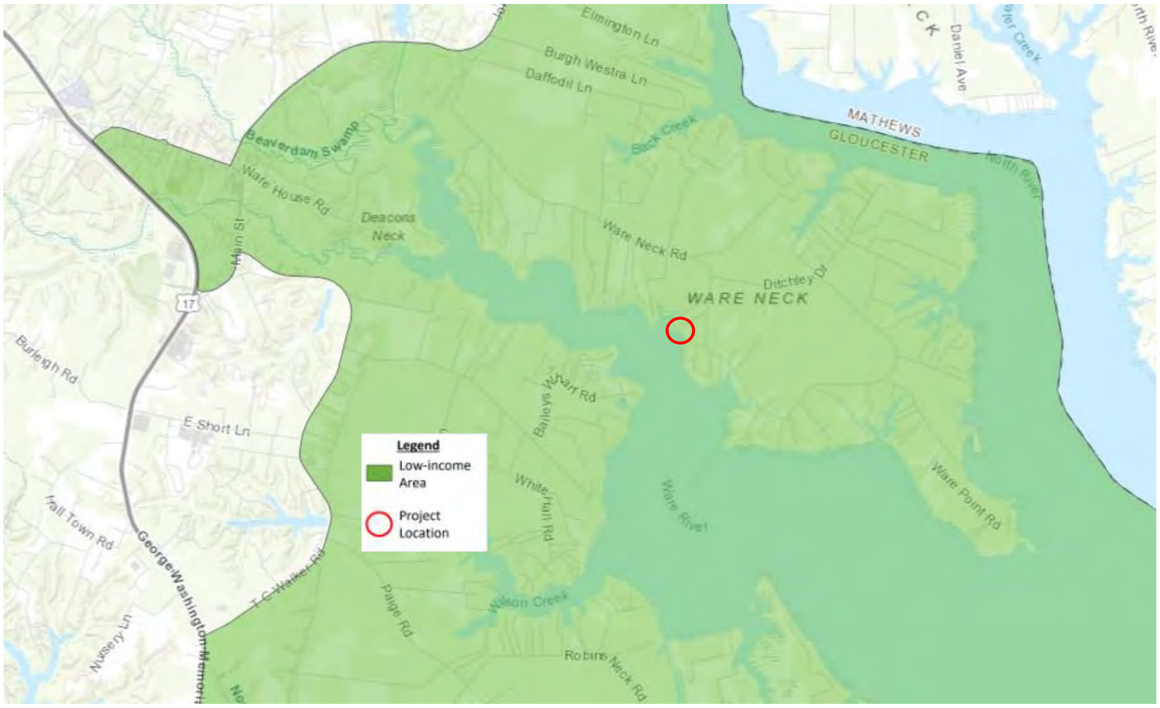
Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

that

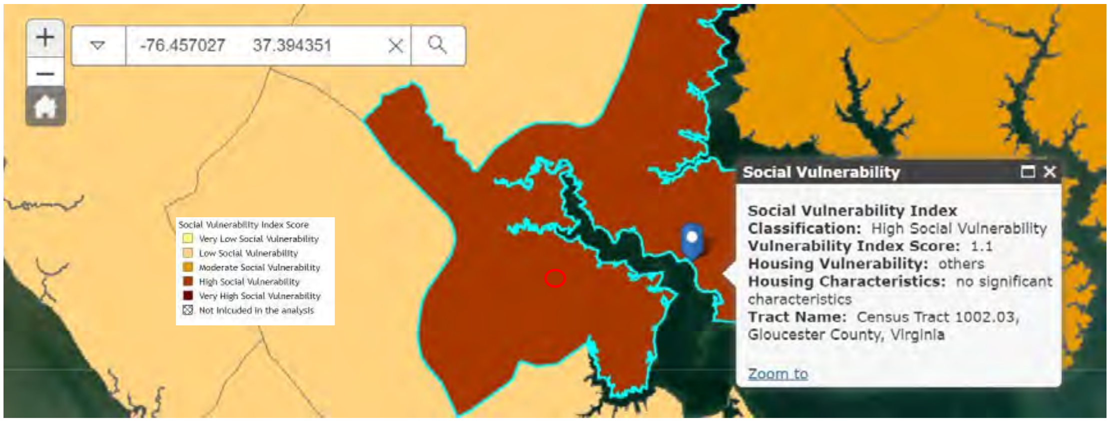
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a high social vulnerability score as seen in **Figure 7.**

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index
Classification: High Social Vulnerability
Vulnerability Index Score: 1.1
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1002.03, Gloucester County, Virginia

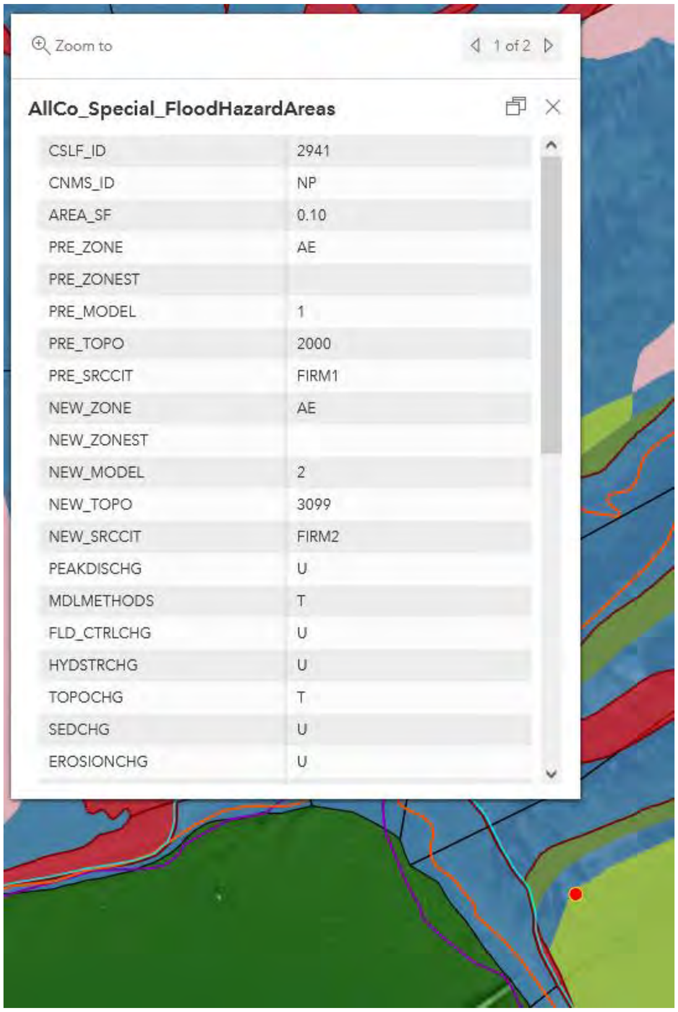
that

The project is located at 6102 Ware Neck Road, Gloucester, VA (-76.457027, 37.394351). It has about 300 feet of shoreline. The entire 7 foot high bank is being undercut at high tide and storm surge. Where there is no shading from plants on the bank, the eroded sand component supports marsh grass, but the bank still is being assaulted. Where there are shading plants, there is no marsh grass or sand accumulation. There, the bank is being severely undercut with loss of soil. Estimate 1-1.5ft loss per year, based on historical Google Earth Satellite imaging.

that

This site is located within the AE flood zone as seen in **Figure 8**. Note the red circle below in the corresponding image represents the project property location. The image for this application could not be pulled as FEMA's Map Service System is down due to the overwhelming response efforts to Hurricane Ida. The Special Flood Hazard area has been used as a proxy in its place. Please see **Appendix 2** for the FIRMettes (last mapped 11/19/2014) and **Appendix 3** for additional property photos.

Figure 8: Map of FEMA Flood Zones of Project Location



AllCo_Special_FloodHazardAreas

CSLF_ID	2941
CNMS_ID	NP
AREA_SF	0.10
PRE_ZONE	AE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	FIRM1
NEW_ZONE	AE
NEW_ZONEST	
NEW_MODEL	2
NEW_TOPO	3099
NEW_SRCCIT	FIRM2
PEAKDISCHG	U
MDLMETHODS	T
FLD_CTRLCHG	U
HYDSTRCHG	U
TOPOCHG	T
SEDCHG	U
EROSIONCHG	U

Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the photos and figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 81 storm events and provides a map with the project location. Without the flood protection

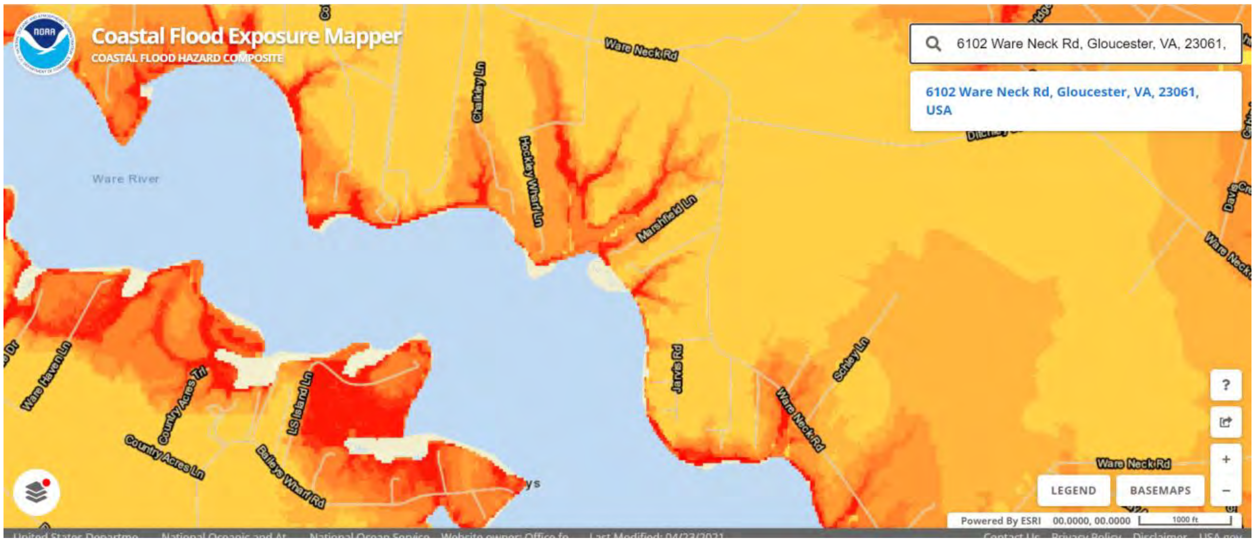
that

measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

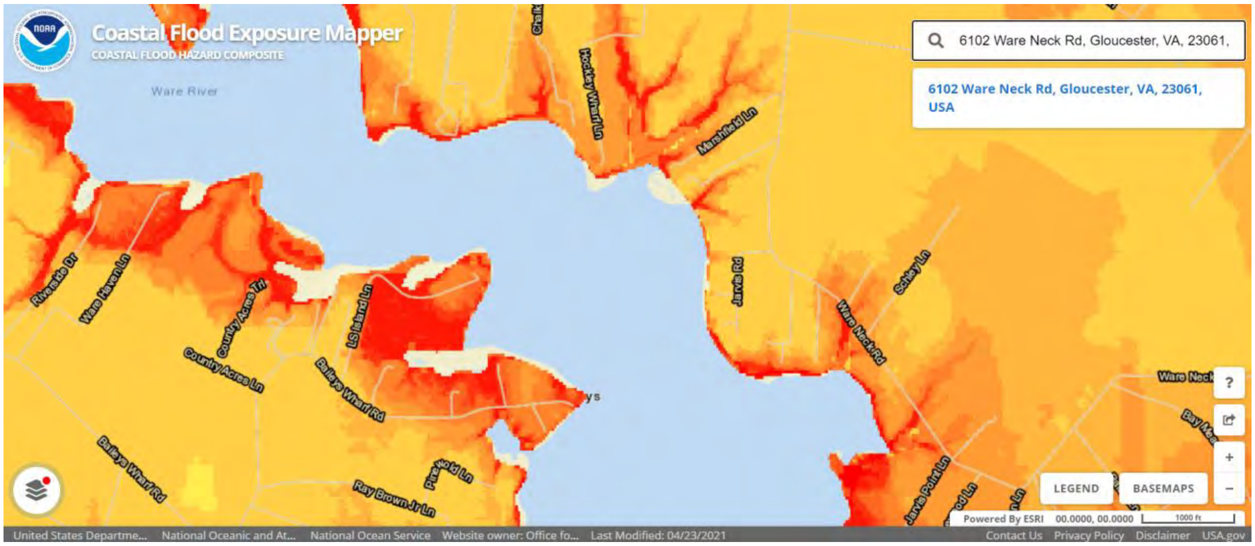
Figure 9. Project Location and Map of the Shoreline Change between 1937 and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 10.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



that



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Gloucester County's current floodplain ordinance can be found at: http://gloucestercounty-va.elaws.us/code/coor_ch8.5*

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

that

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a design for a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

that

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022, as seen in Table 1.

Table 1. Project Milestone Schedule

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

that

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

that

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

that

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

that

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

that

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

that

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

that

SCOPE OF WORK CHECKLIST.

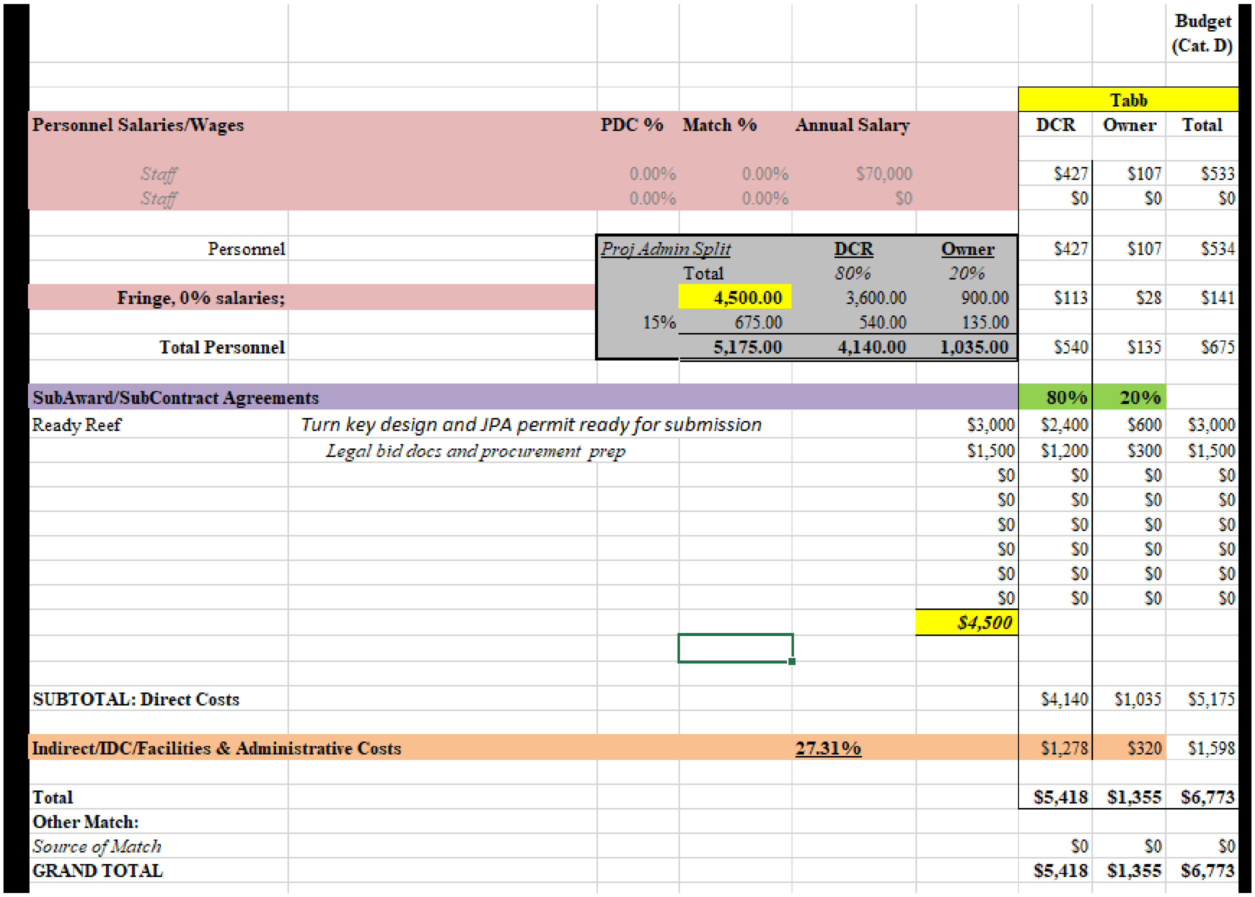
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

that

III. BUDGET NARRATIVE

- The proposed project has an estimated Total budget of $6,773



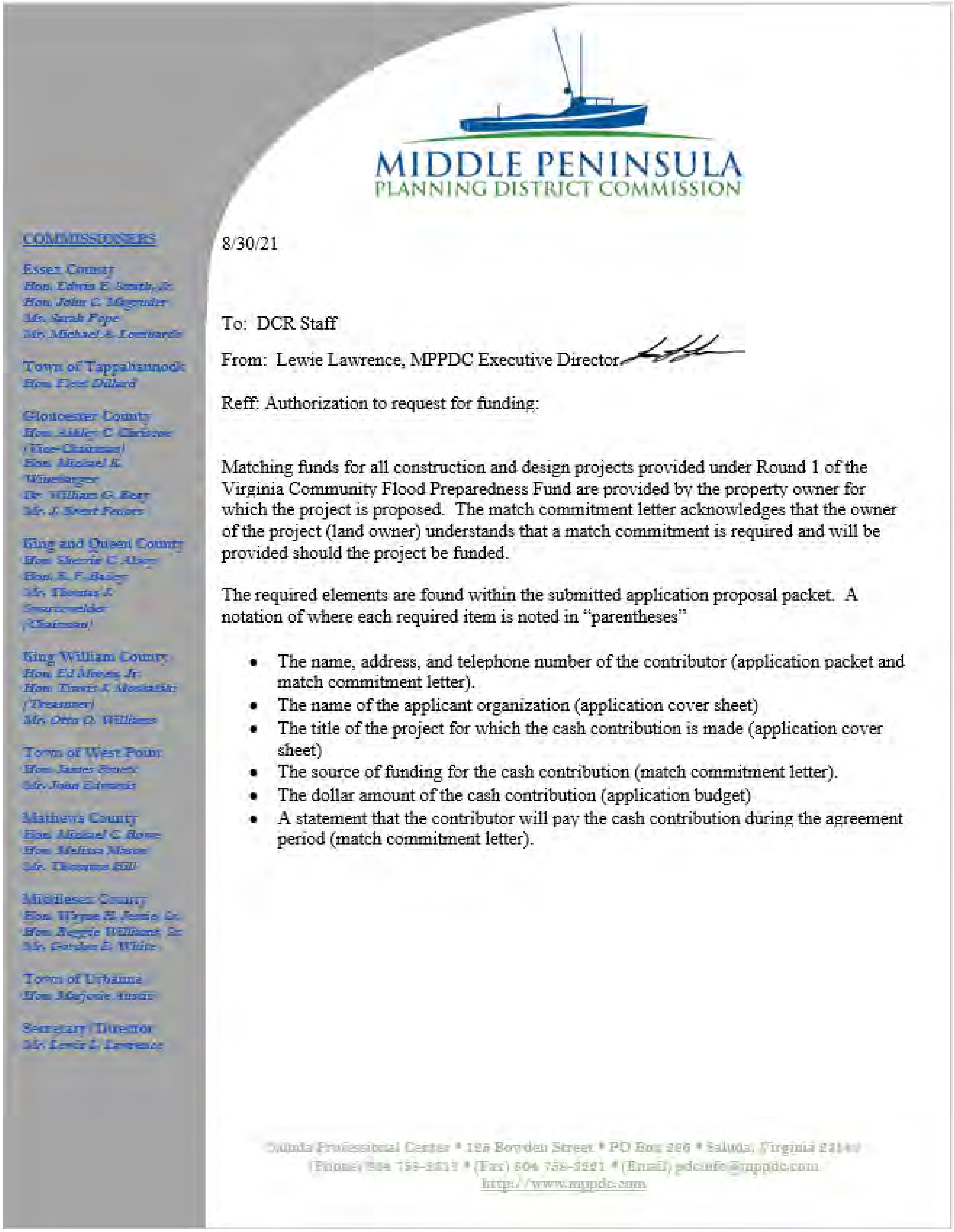
								Budget (Cat. D)
						Tabb		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$427	$107	$533
Staff		0.00%	0.00%	$0		$0	$0	$0
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$427	$107	$534
			Total	*80%*	*20%*			
Fringe, 0% salaries;			**4,500.00**	3,600.00	900.00	$113	$28	$141
		15%	675.00	540.00	135.00			
Total Personnel			**5,175.00**	**4,140.00**	**1,035.00**	$540	$135	$675
SubAward/SubContract Agreements						**80%**	**20%**	
Ready Reef	*Turn key design and JPA permit ready for submission*				$3,000	$2,400	$600	$3,000
	Legal bid docs and procurement prep				$1,500	$1,200	$300	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$4,500			
SUBTOTAL: Direct Costs						$4,140	$1,035	$5,175
Indirect/IDC/Facilities & Administrative Costs				**27.31%**		$1,278	$320	$1,598
Total						**$5,418**	**$1,355**	**$6,773**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$5,418**	**$1,355**	**$6,773**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

that

- *Authorization to request for funding:*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe (Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
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Middlesex County
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Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewie L. Lawrence

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

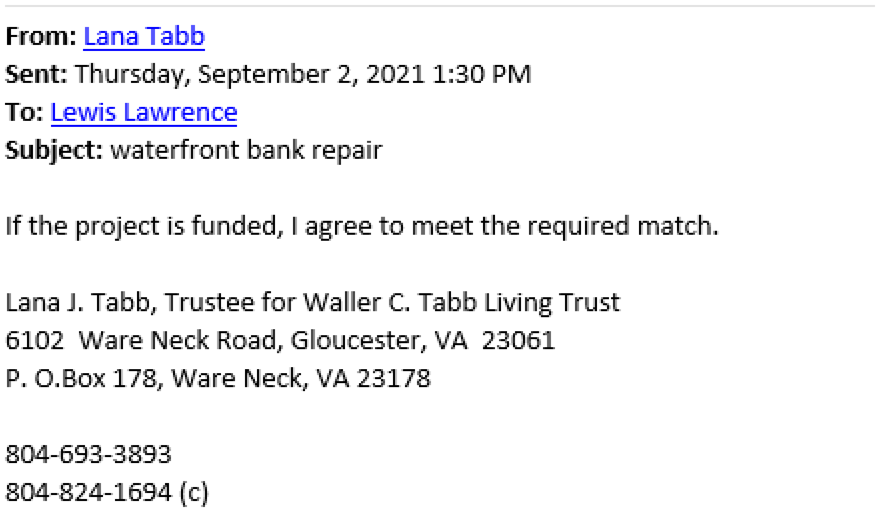
The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

that

- *Signed pledge agreement from each contributing organization*



From: Lana Tabb
Sent: Thursday, September 2, 2021 1:30 PM
To: Lewis Lawrence
Subject: waterfront bank repair

If the project is funded, I agree to meet the required match.

Lana J. Tabb, Trustee for Waller C. Tabb Living Trust
6102 Ware Neck Road, Gloucester, VA 23061
P. O.Box 178, Ware Neck, VA 23178

804-693-3893
804-824-1694 (c)

that

IV. SUPPORTING DOCUMENTATION

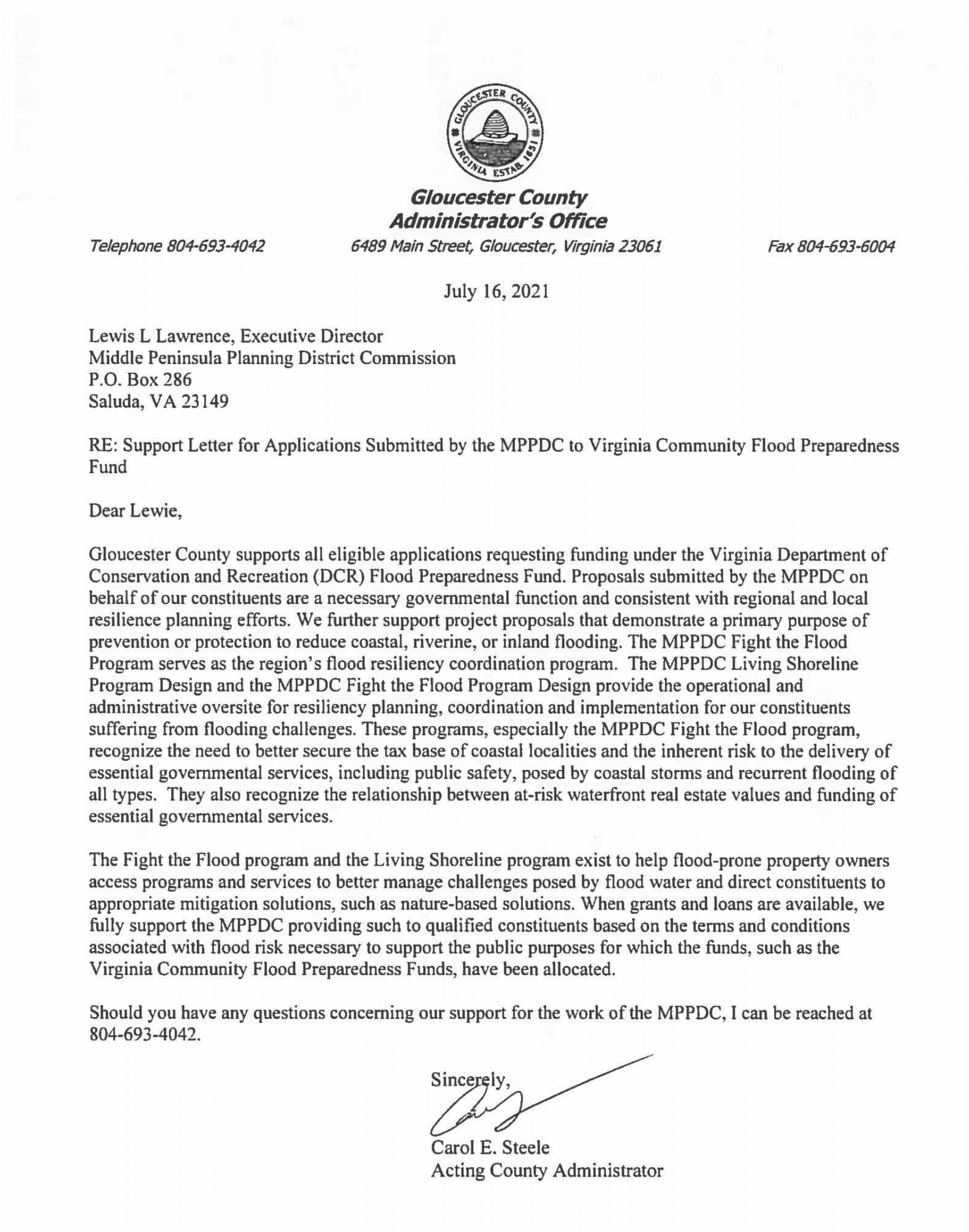
☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

that

APPENDIX 1

Community Support Letter

that



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

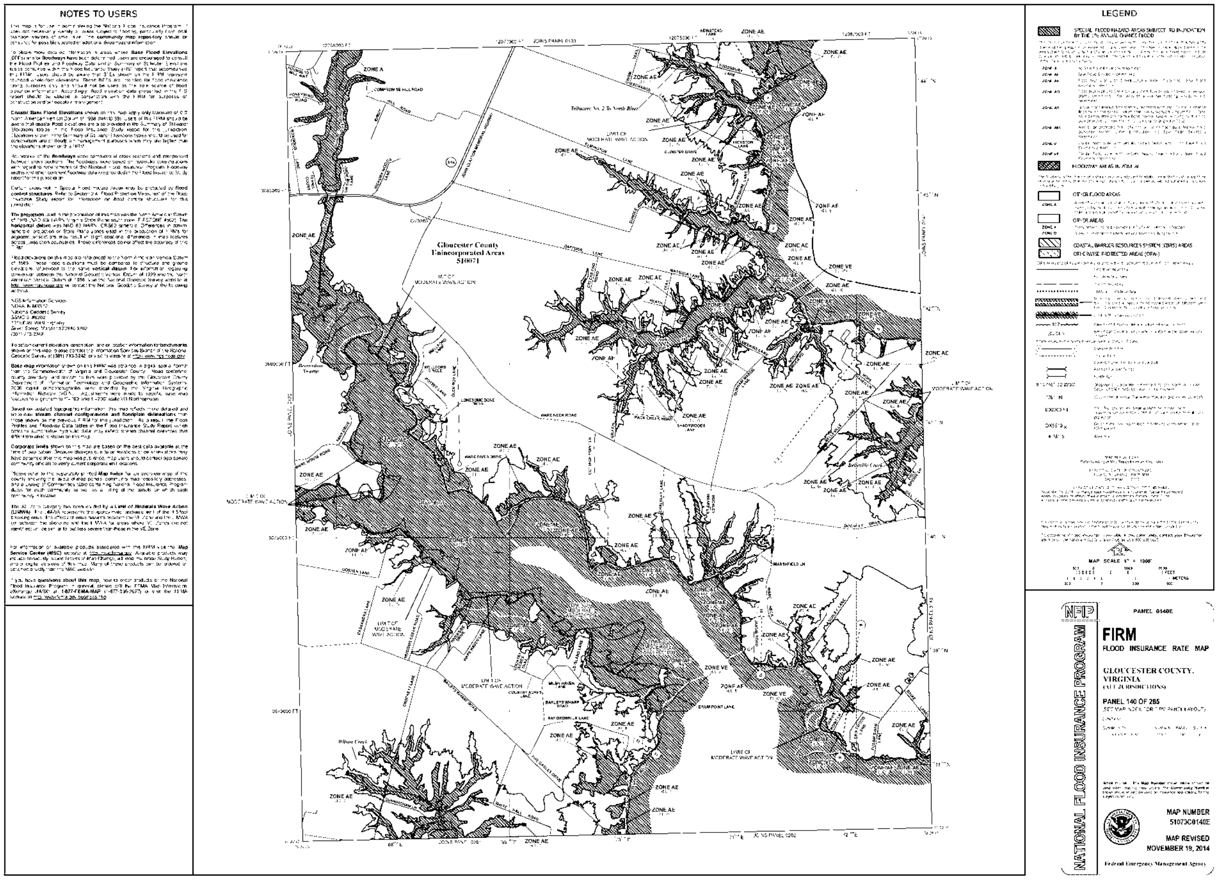
Carol E. Steele
Acting County Administrator

APPENDIX 2

Project Location FIRMette

that

(FIRMette #: 51073C0140E / Effective Date: 11/19/2014)



APPENDIX 3

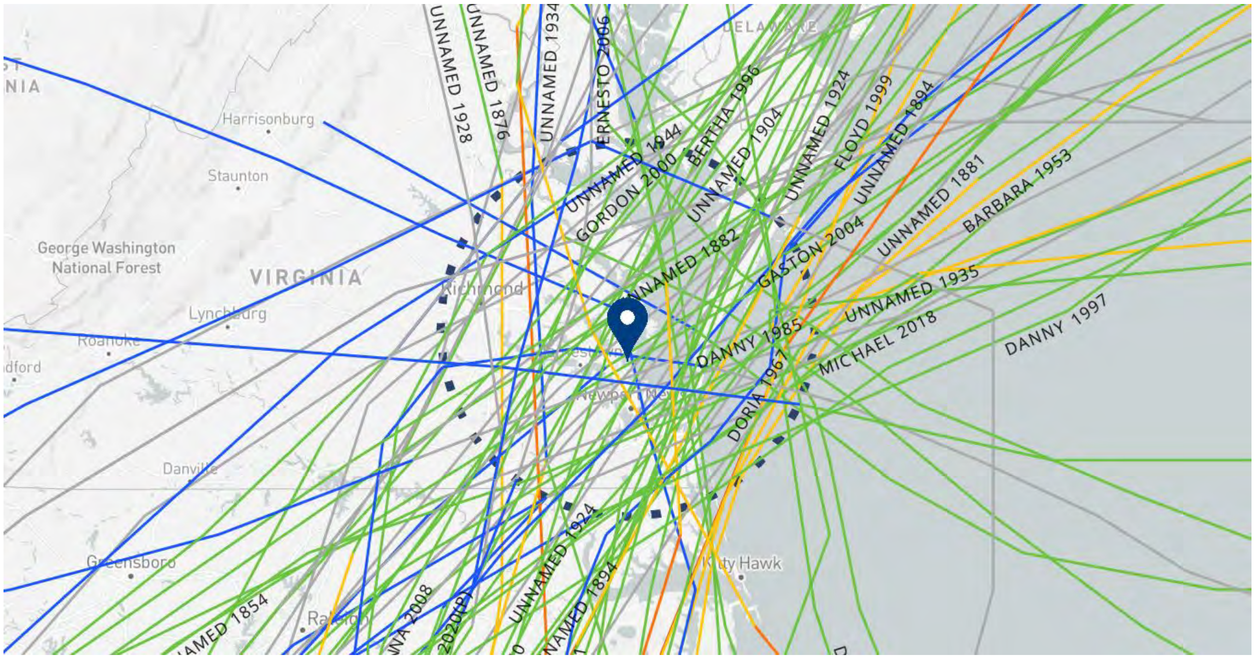
<u>Additional Property Photos</u>

that

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location

that



Location: 37.394351 -76.457027
Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3

that

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS

that

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS

that

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS

that

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS

that

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy,

that

research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)
The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)
Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)
In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

that

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living

that

shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)

Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

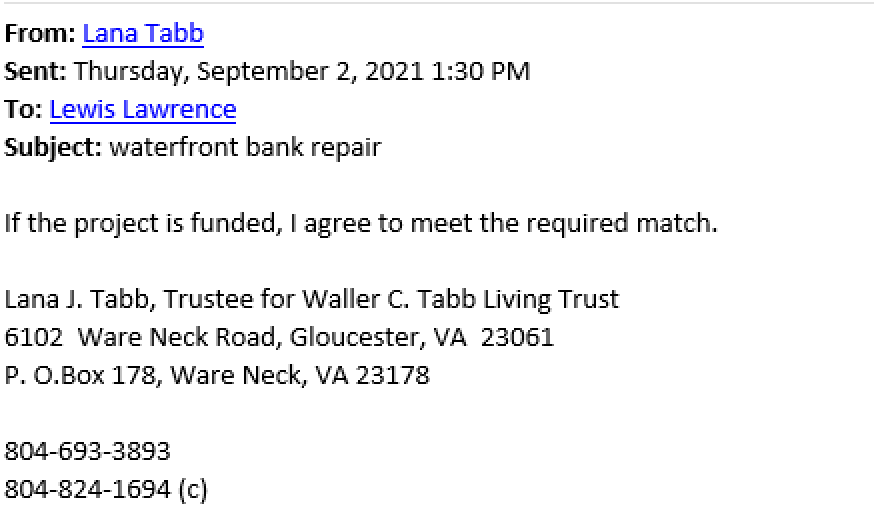
Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

that

APPENDIX 6

Match Commitment Letter



From: Lana Tabb
Sent: Thursday, September 2, 2021 1:30 PM
To: Lewis Lawrence
Subject: waterfront bank repair

If the project is funded, I agree to meet the required match.

Lana J. Tabb, Trustee for Waller C. Tabb Living Trust
6102 Ware Neck Road, Gloucester, VA 23061
P. O.Box 178, Ware Neck, VA 23178

804-693-3893
804-824-1694 (c)

that

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

March 28, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Matthew Wells

Enclosed in this packet are three applications for flood protection and prevention projects that involve implementation of nature-based shoreline solutions.

Among the applications are projects which are currently at the construction stage. Construction projects are requesting funds to implement projects which have approved permits or are nearing permit approval prior to construction of a nature-based flood protection solution.

Below is short summary of proposed construction projects in Gloucester County:

A. **Ware River Phase III - Nature-based Construction Project**
(CID): 510071 Total Cost (from individual project application): $161,686
This project proposes to construct a 3rd phase to an ongoing multi-owner/multi-parcel nature-based solution on private property located on the Ware River in Gloucester County. The 3rd phase nature-based solution will involve the installation of 192 linear feet (LF) out of a multi-parcel project totaling 1,300 LF of living shoreline. The VIMS Shoreline Studies Program has designed shoreline plans and established cost estimates for the entire 1,300 LF.

B. **Wilsons Creek – Brednin-Karny and Harvey's Living Shoreline Construction Project**
(CID): 510071 Total Cost (from individual project application): $204,719
This project proposes to construct a nature-based shoreline management solution spanning two private properties located on Wilsons Creek in Gloucester County. The nature-based solution will involve the installation of a 485-feet-long rock sill with clean sand back fill and plantings of native vegetation and a 95 linear feet section of riprap revetment. This project will be apartnership between

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

the MPPDC and two private property owners and is supported by Gloucester County.

C. **Sarah's Creek – Parker's Nature-based Construction Project**
(CID): 510071 Total Cost (from individual project application): $93,569
This project proposes to construct a nature-based solution on a private property located on Sarah's Creek in Gloucester County. The nature-based solution will involve the installation of 115 linear feet of rock sills and 150 linear feet of living shoreline (i.e., clean sand nourishment and spartina plantings). This project will be a partnership between the MPPDC and one private property owners and is supported by Gloucester County.

The total project costs for Gloucester County Round 3 applications are **$459,974** and MPPDC staff are requesting **$323,224** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at llawrence@mppdc.com or by phone at 804-758-2311.

Lewis Lawrence
Executive Director

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

PROJECT TITLE: Ware River Phase III - Nature-based Construction Project
Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning X Project _____Study

NFIP/DCR Community Identification Number (CID): Gloucester County (510071)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ________________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ____

Project Grants (Check All that Apply)

Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

þ Wetland restoration.

Þ Floodplain restoration.

Construction of swales and settling ponds.

Þ Living shorelines and vegetated buffers.

Structural floodwalls, levees, berms, flood gates, structural conveyances.

Storm water system upgrades.

Medium and large-scale Low Impact Development (LID) in urban areas.

Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

Dam restoration or removal.

☑ **Stream bank restoration or stabilization.**

Restoration of floodplains to natural and beneficial function.

Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County
NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? þ Yes □ No
Is Project Located in a Special Flood Hazard Area? þ Yes □ No Flood Zone(s) (If Applicable): AE Zone
Flood Insurance Rate Map Number(s) (If Applicable): 51073C0140F

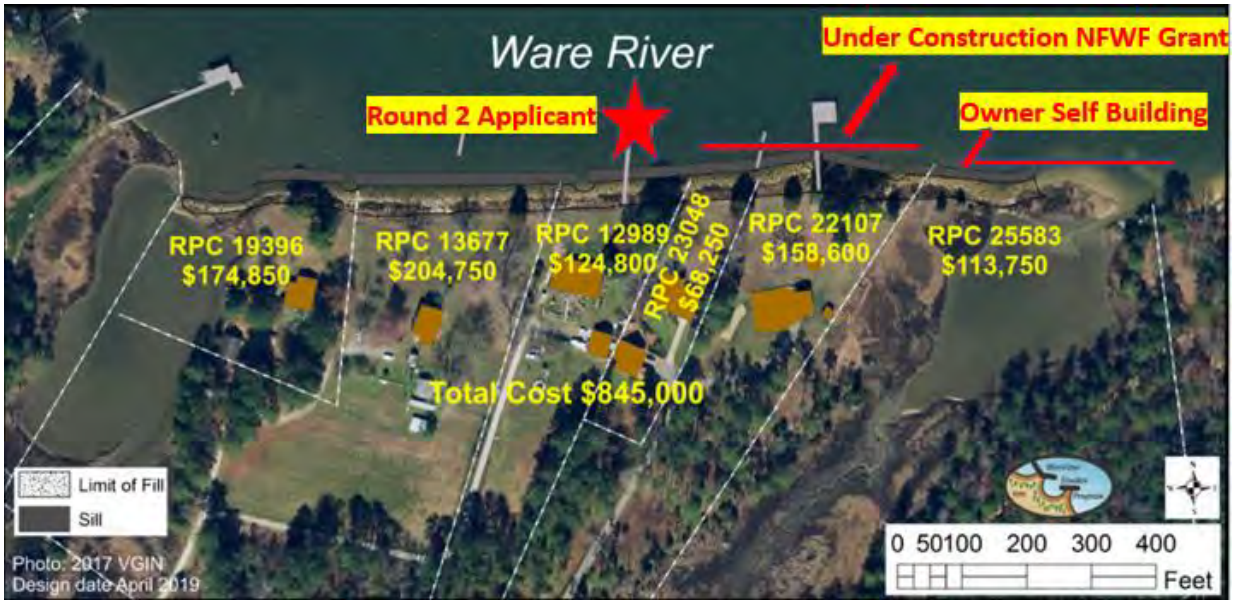
Total Cost of Project: **$ 161,686**

Total Amount Requested: **$ 114,422**

INTRODUCTION –

This project proposes to construct a 3rd phase to an ongoing multi-owner/multi-parcel nature-based solution on private property located on the Ware River in Gloucester County. The 3rd phase nature-based solution will involve the installation of 192 linear feet (LF) out of a multi-parcel project totaling 1,300 LF of living shoreline. The VIMS Shoreline Studies Program has designed shoreline plans and established cost estimates for the entire 1,300 LF.

FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). This proposal is a Nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions,* June 2021).



This project will be a partnership between the MPPDC and one private property owner and is supported by Gloucester County (See the community support letter in Attachment 1).

- A link or copy to the approved resilience plan: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf within the plan please see Section 4 (page 25). This Section includes historical hazard data within the region.
- Here’s a link to the Gloucester County Comprehensive Plan: https://www.gloucesterva.info/DocumentCenter/View/5777/2016-Gloucester-County-Comprehensive-Plan

PROJECT LOCATION INFORMATION –

In 2019, the MPPDC was funded through the National Fish Wildlife Foundation (NFWF) to engage local landowners in Living Shorelines and nature-based shoreline management solutions (NFWF Project ID:0603.18.062813). Upon funding MPPDC staff-initiated discussions with a community on the Ware River interested in implementing strategies to reduce/better manager chronic flooding issues associated flooding on and around FEMA Repetitive Loss parcels and adjoining parcels to offer “reach based”, multi parcel protection. The project consisted of one RL structure (6626 Ware Haven) with six contiguous waterfront parcels on the Ware River. Phase I of this project entailed the design cost estimation of nature-based living shorelines for all 6 properties, and the construction of nature-based living shoreline designed/ extrapolated to a FEMA year storm event. As MPPDC staff continue to work with this community to implement reach-based solution to chronic flooding issues along the Ware River, Phase II, as proposed in this application will construct living shorelines at 7903 Riverside Drive in Gloucester County. (**Figure 1 and 2**).

FIGURE 1: COUNTY MAP OF PROJECT LOCATION.

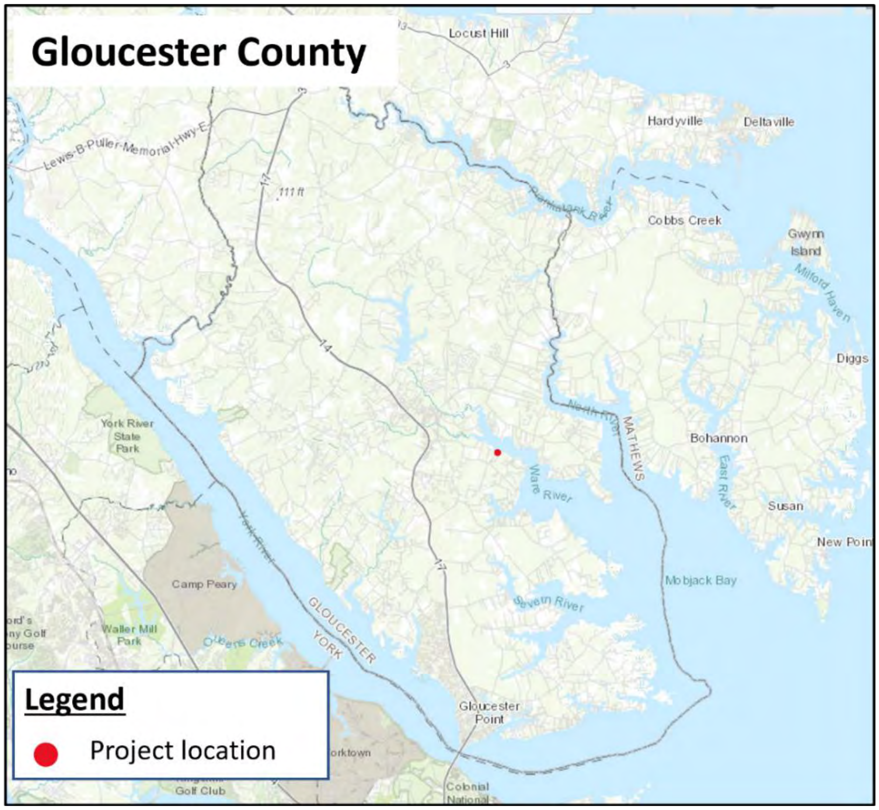
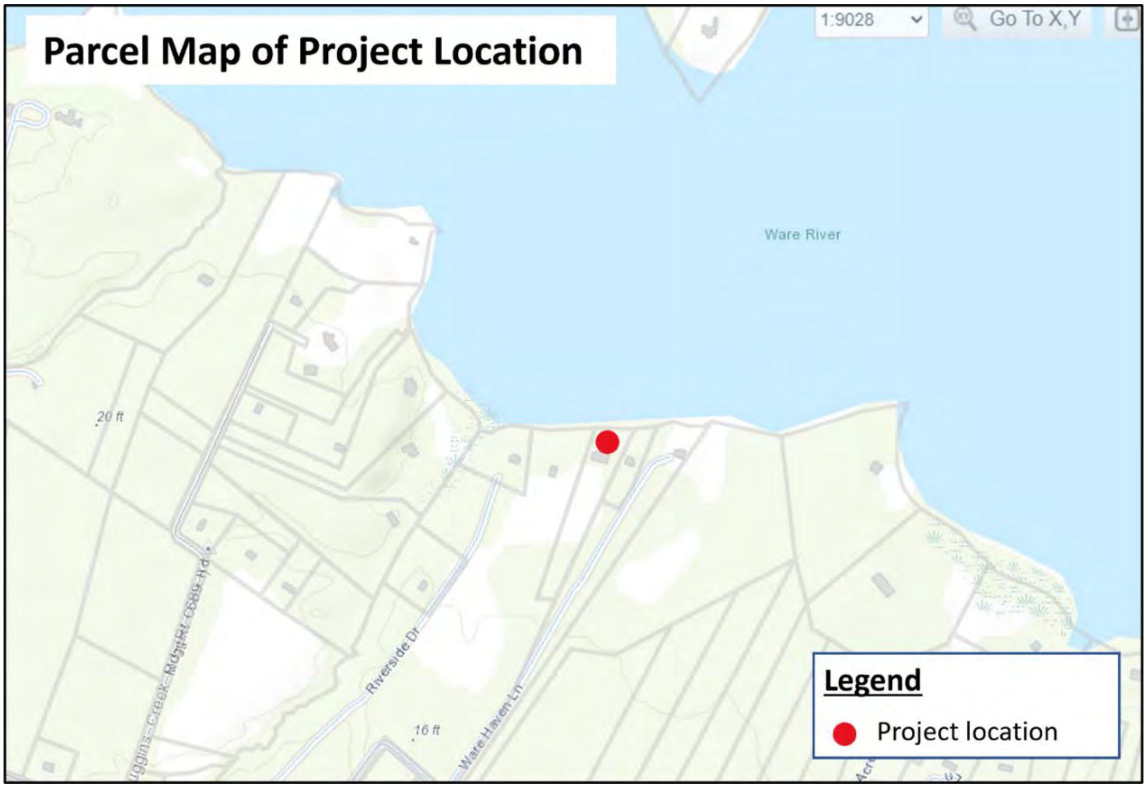
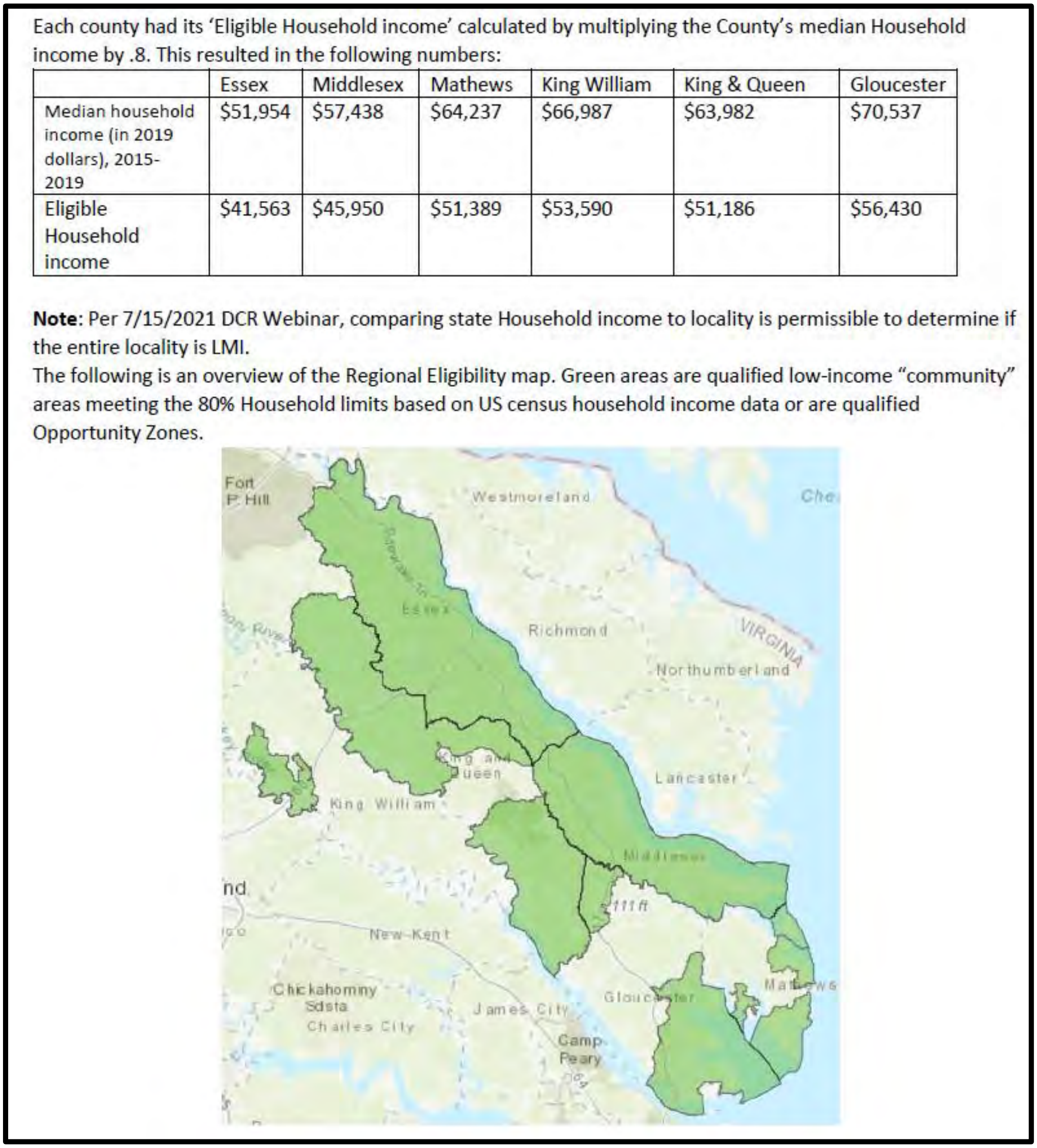


FIGURE 2: PARCEL MAP OF PROJECT LOCATION.



Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 3** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 3: Map of Middle Peninsulas Low Income Geographic Areas qualifying under DCR guidelines.



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

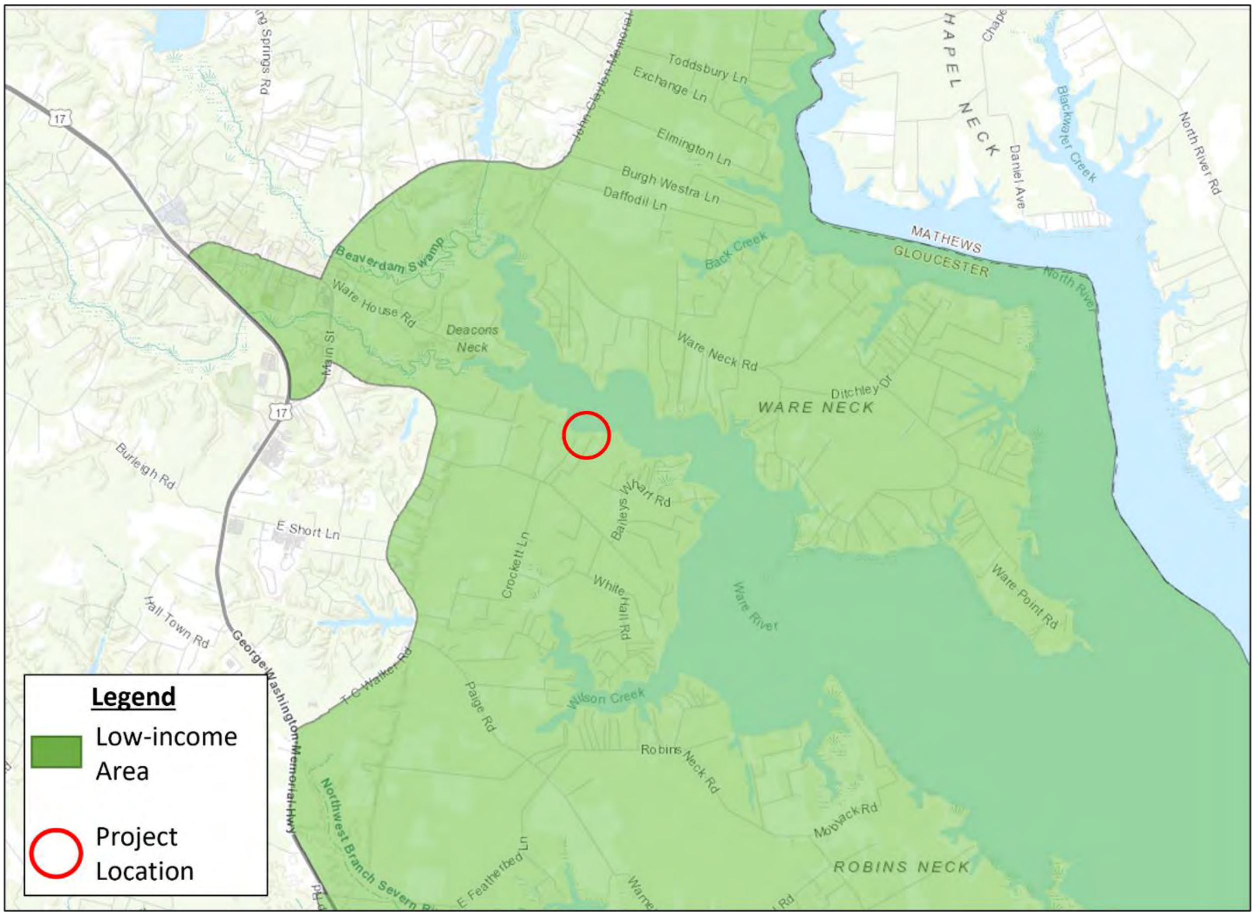
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

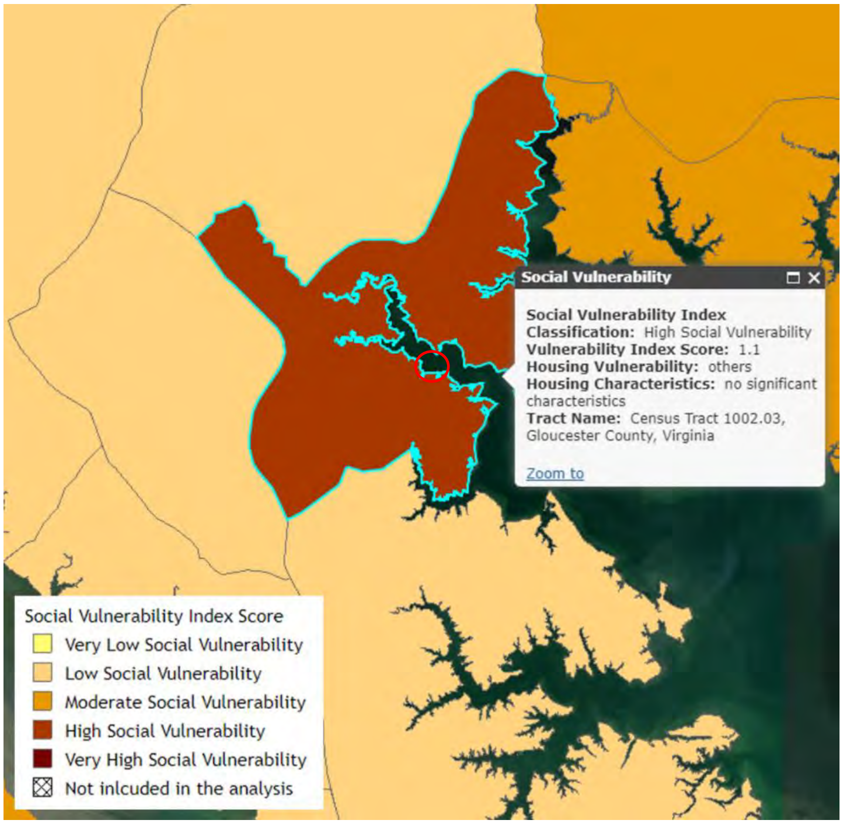
Please see **Figure 4** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

FIGURE 4: MAP OF THE PROJECT LOCATION WITHIN THE GREEN LOW-INCOME AREA.



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a high social vulnerability score (**Figure 5**).

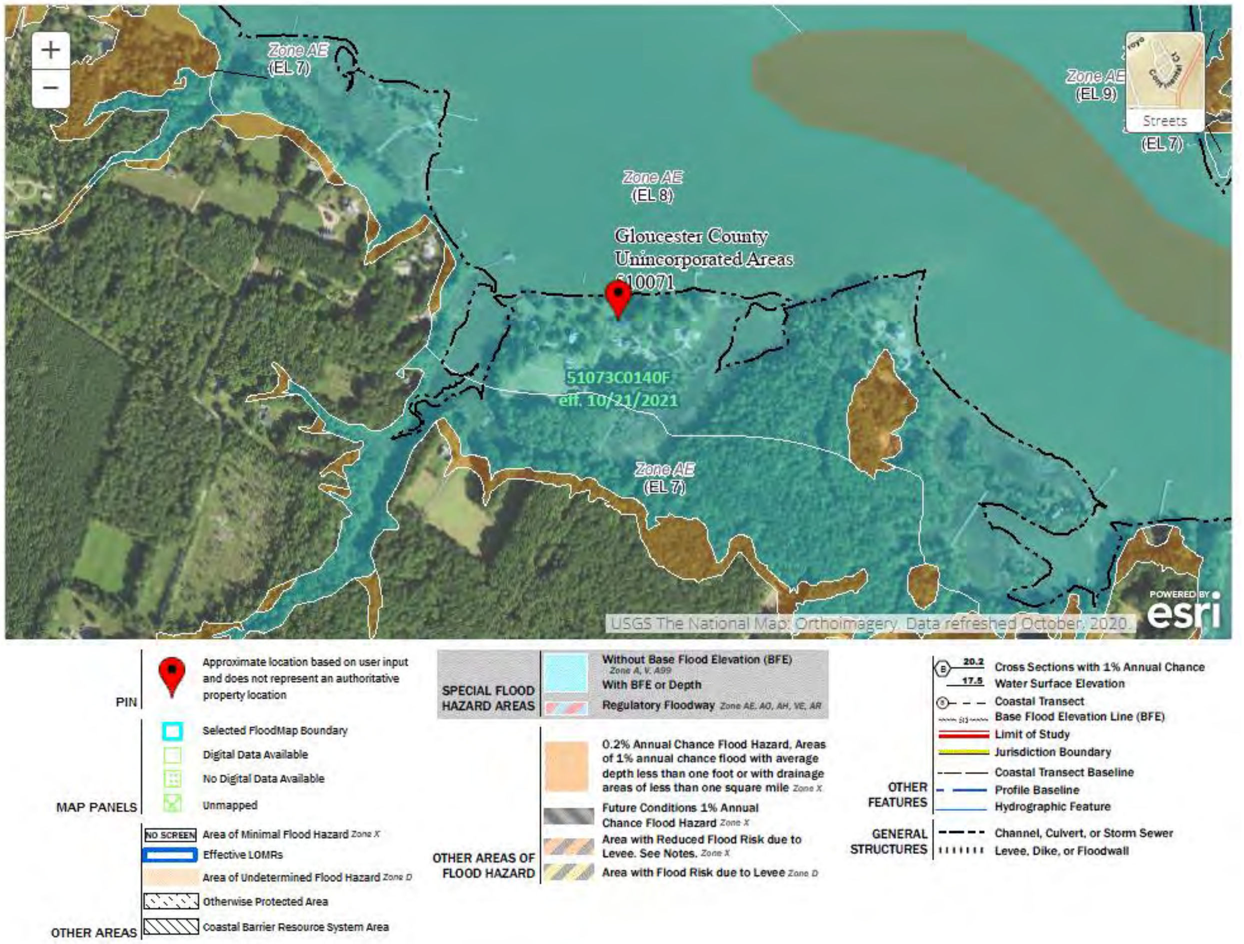
Figure 5: Virginia's Social Vulnerability Index Score Map for the project location.



Social Vulnerability Index
Classification: High Social Vulnerability
Vulnerability Index Score: 1.1
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1002.03, Gloucester County, Virginia

The project is located at 7903 Riverside Dr Gloucester, VA 23061 (37.39407, -76.48094). This project proposes to construct 1,300 linear feet of living shoreline. Within the project area there is 1 residential home, 1 detached garage and two septic systems. The structures are not identified as severe repetitive loss structure or repetitive loss structures. This site is located within the AE flood zone (**Figure 7**). Please see **Attachment 2** for the FIRMettes (last mapped 10/21/2021).

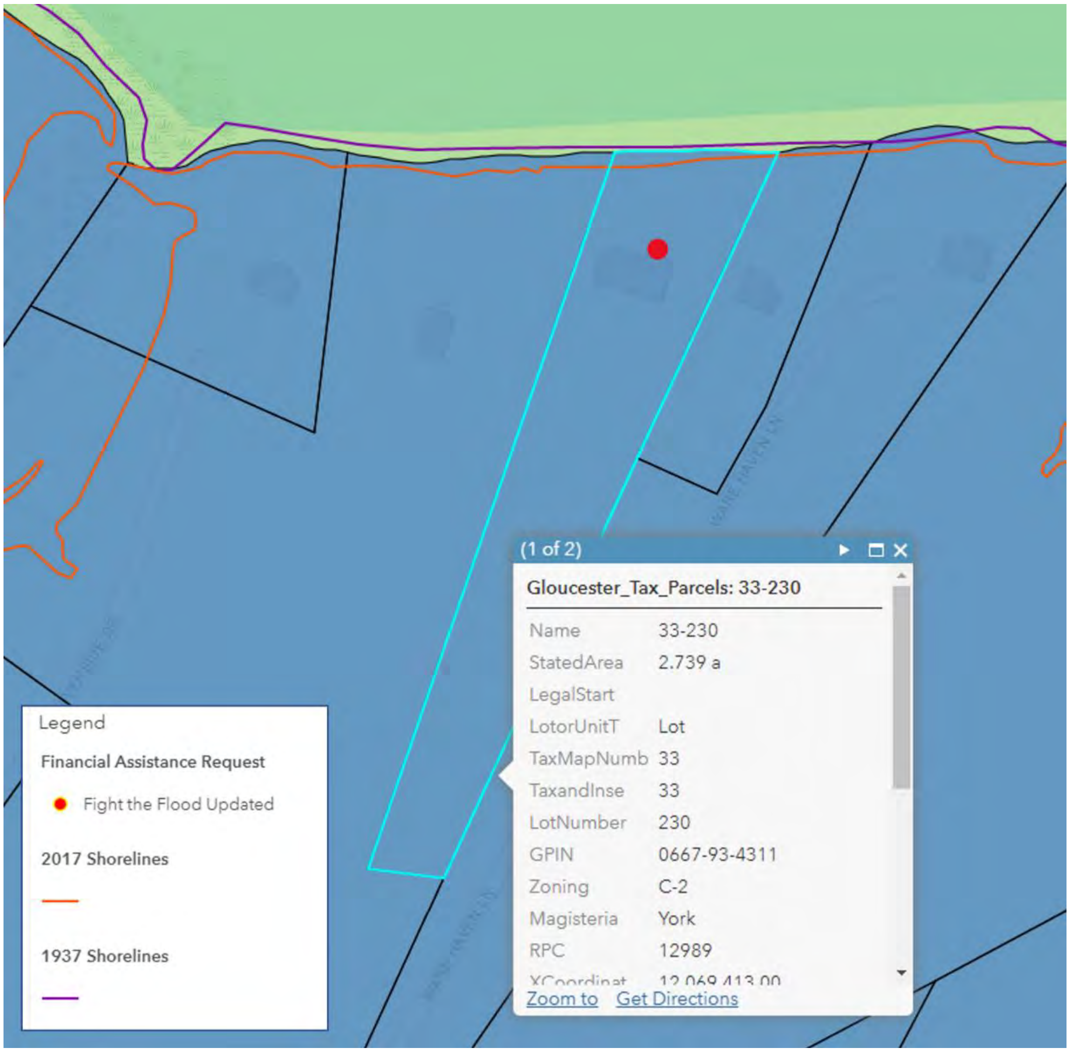
FIGURE 7: MAP OF FEMA FLOOD ZONES.



USGS The National Map: Orthoimagery. Data refreshed October, 2020.

Due to the project site’s proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 8** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 3,498.5 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor’easter events. **Attachment 3** lists 81 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

FIGURE 8: PROJECT LOCATION AND MAP OF THE SHORELINE CHANGE BETWEEN 1937 AND 2017. PLEASE NOTE THAT THE PROJECT AREA PARCEL IS OUTLINED IN WHITE.

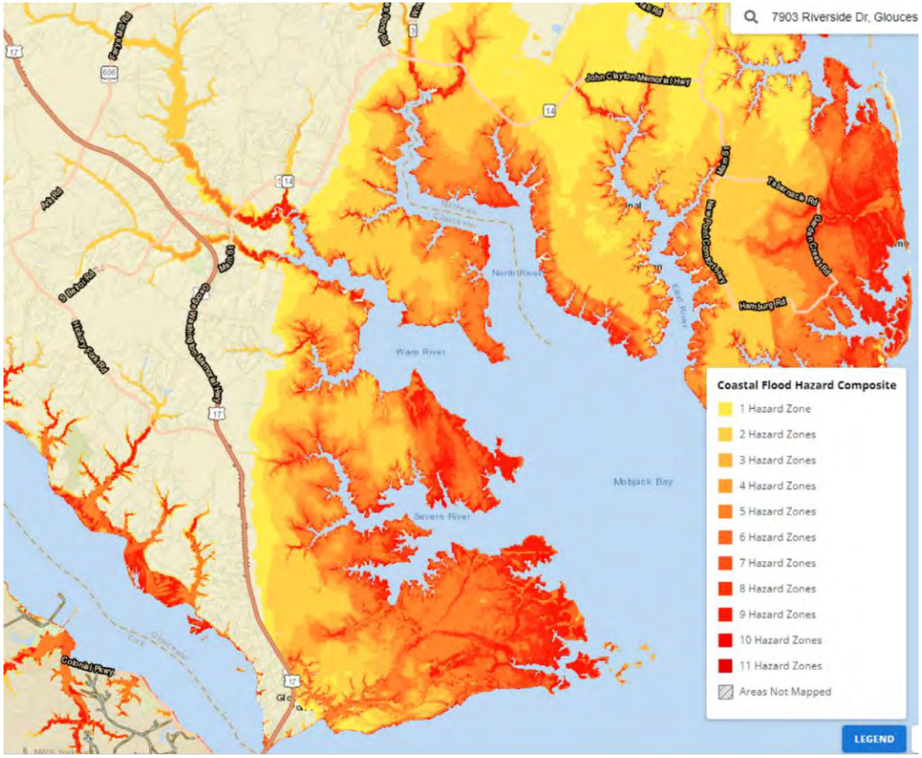


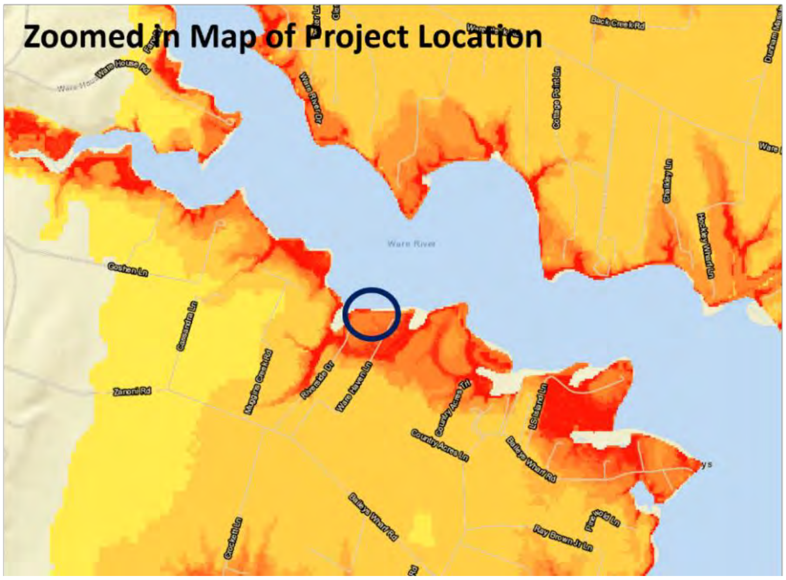
Gloucester_Tax_Parcels: 33-230

Name	33-230
StatedArea	2.739 a
LegalStart	
LotorUnitT	Lot
TaxMapNumb	33
TaxandInse	33
LotNumber	230
GPIN	0667-93-4311
Zoning	C-2
Magisteria	York
RPC	12989
XCoordinat	12 069 413.00

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding (**Figure 9**).

Figure 9: Map of project location and risk of coastal flooding (NOAA, 2021).





For more information about this project area please see:

- The Middle Peninsula All Hazards Mitigation Plan identifies all hazards that impact the region - https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf .
- Gloucester County Building and Engineering Department administers the NFIP. Here is the link to the current floodplain ordinance: http://gloucestercounty-va.elaws.us/code/coor_ch8.5

NEED FOR ASSISTANCE –
The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of $1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from $750,000 to over $1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The need for assistance is two-fold.

First, as Gloucester County is near the Chesapeake Bay and numerous tidal rivers that create an area of high risk of coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from VIMS, relative sea- level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Gloucester County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds causing a storm surge. In Gloucester County, strong East and Northeast winds can push water from the Chesapeake Bay into the mouth of the York and Rappahannock Rivers and Mobjack Bay, flooding much of the county's low-lying areas (Middle Peninsula Planning District Commission, 2005). Additionally, when a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide". In Gloucester County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below (FEMA 1987, 6). If a severe hurricane were to make landfall during high tide, and additional 1.2 feet of water would be added to the highest storm surge possible, which could create a storm tide of 16.2 feet (Rygel, 2005). Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and produce hurricane-force winds that push large amounts of sea water inland. According to a study conducted by the Center for Coastal Resources Management, a one-and-a-half-foot rise in sea level coupled with a three-foot storm surge, like what would be experienced in a strong tropical storm, would lead to 13% of Gloucester County's land mass being flooded – including 118 miles of roads. Only 3% of the projected flood area is currently developed. A strong indicator that Gloucester County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, the County had 147 repetitive loss properties with claims topping $3.3 Million and 13 severe repetitive loss properties with claims totaling nearly $1.9 Million. The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on communities. Therefore, this project will build on other local efforts move toward becoming a more resilient community.

Second, at this project location, the shoreline is experiencing sever erosion and frequent flooding. Currently the shoreline is tidal marsh grass, but with the shoreline quickly eroding and rising sea levels and more frequent storms, additional shoreline protection is needed. Additionally, there are mature trees on the property that help the soil and land in place and with without offering this shoreline some protection the trees will most certainly be lost. This will ultimately bring water closer to the structures on the property. Please see **Figure 10** for project location photos and **Attachment 4** for more photos.

FIGURE 10: PHOTOS OF THE ROBENS PROPERTY.
BELOW IS A PHOTO OF THE NATURAL SHORELINE ON THE PROPERTY.

THIS IS A PHOTO OF THE YARD WITH DURING AN ABOVE AVERAGE HIGH TIDE AND SOME WIND.

ALTERNATIVES –

Alternatives are not applicable to this project. A living shoreline is feasible at this location and therefore required per VMRC regulations. This project employs a nature-based solution, and this project cost is not greater than $3 Million.

GOALS AND OBJECTIVES –

This project will install a nature-based solution consisting of 1,300 linear feet of living shoreline (i.e., clean sand nourishment and spartina plantings). This project will reduce erosion and stabilize the shoreline. Through a previous grant a draft JPA has been completed but not yet sent to VMRC for approval. During this project the JPA will be submitted for permits and the living shoreline will be installed as designed within the approved JPA application. **Attachment 5** does not include the draft JPA because it will be developed as part of the project and submitted as a final deliverable.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.
Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.
Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode.

Goal 2: Improve water quality
Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.
Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the living shoreline installed at this project location will:

1. **Stabilize the shoreline and reduce the overall erosion rate at the project location**. According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

2. **Provide ecosystem services to the community.** Since this project is proposing the installation of living shorelines, this project will have nutrient and sediment reduction benefit to local waters. According to a report titled, <u>Removal Rates of Shoreline Management Project</u>, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb./lf./yr.) and a phosphorus removal rate of 0.00861 lbs./lf./yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb./lf./yr. Therefore, with a proposed project of 1300 linear feet of living shoreline this has the ability of

removing 15.834 pounds of nitrogen per year, 11.193 pounds of phosphorus per year and 54,600 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

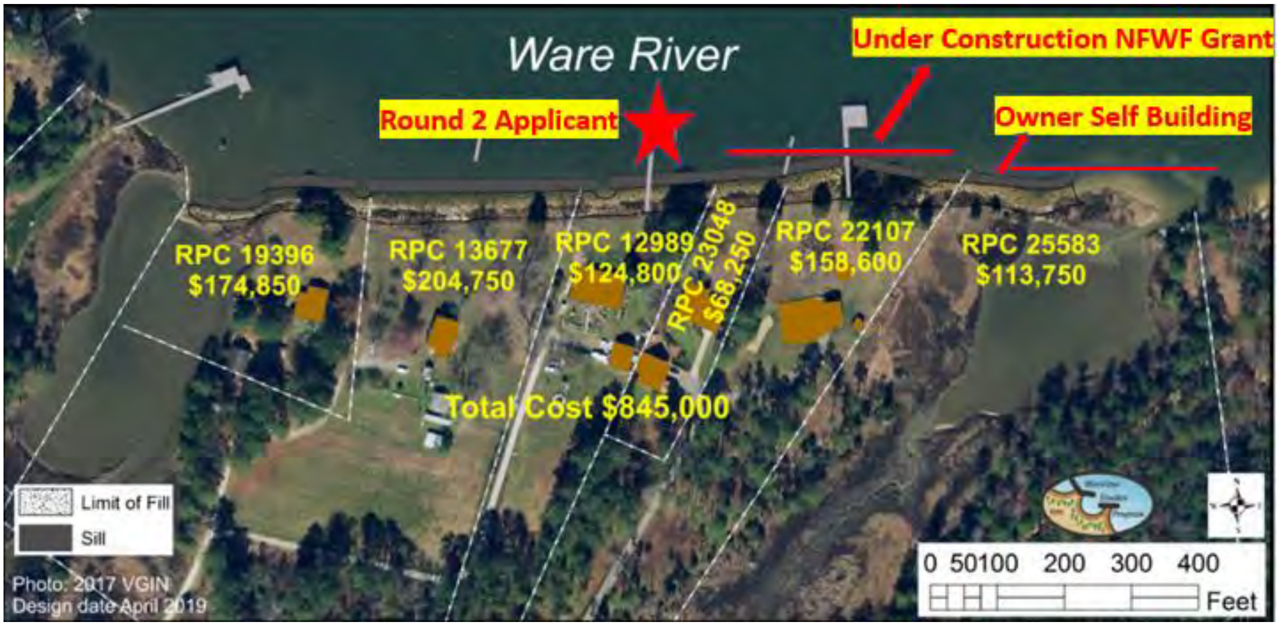
3. **Prevent loss of property and life.** As the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

APPROACH, MILESTONES, AND DELIVERABLES –

This project will follow the designs outlined in the draft Joint Permit Application. Upon issuance of the permits for this project, VMRC will analyze the upstream and downstream impacts of this project using the best available science, as per state law. Please see **Attachment 5** for the draft JPA application and designs. The below table outlines the components of the nature-based solution:

Phase 3 ★	**Total Project Location**
Living Shoreline	192 Linear Feet

The anticipated timeline for this project could be as quick as 1 year, but no more than two years. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a two-year timeline will offer potential windows for planting the living shoreline - one in 2022 and one in 2023. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses for living shorelines should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them develop strong roots and leafy growth.



Below is the project timeline and project milestones for this project.

Receive funding notice - December 2021
Coordinate with property owners and the project contractor to review project timeline and project expectations – January 2021
Initiate site preparation at the project location - January 2021 to July 2022
Construction of the living shoreline – June 2022 to September 2022
Project Close out – December 2022

RELATIONSHIP TO OTHER PROJECTS –

For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

In 2019, Middle Peninsula Planning District Commission (MPPDC) targeted repetitive loss (RL) and severe repetitive loss (SRL) waterfront properties for nature-based flood mitigation projects across the Middle Peninsula. The MPPDC funded through National Fish Wildlife Foundation (NFWF) to engage local landowners in Living Shorelines and nature-based shoreline management solutions (NFWF Project ID:0603.18.062813). Upon funding MPPDC staff-initiated discussions with a community on the Ware River interested in implementing strategies to reduce/better manager chronic flooding issues associated flooding on and around a FEMA RL parcel and adjoining parcels to offer "reach based", multi parcel protection. This project consisted of one RL structure (6626 Ware Haven) with 6 contiguous waterfront parcels on the Ware River. Phase I of this project entailed the design cost estimation of nature-based living shorelines for all 6 properties, and the construction of nature-based living shoreline designed/ extrapolated to a FEMA year storm event on 2 properties 6626 (RL) and 6631 Ware Haven. The proposed project in this application will build on phase I and add more living shorelines to an adjacent property on the Ware River that will improve the community resiliency.

The proposed project is also a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 6** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in

2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program.** This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN –

The approved VMRC permits does not require a maintenance plan; therefore, the maintenance of this construction project will be in accordance with the permit requirements.

CRITERIA –

Describe how the project meets each of the applicable scoring criteria containedin Appendix B and provide the required documentation where necessary. Documentationcan be incorporated into the Scope of Work Narrative or included as attachments to the application. Appendix B must be completed and submitted with the application.

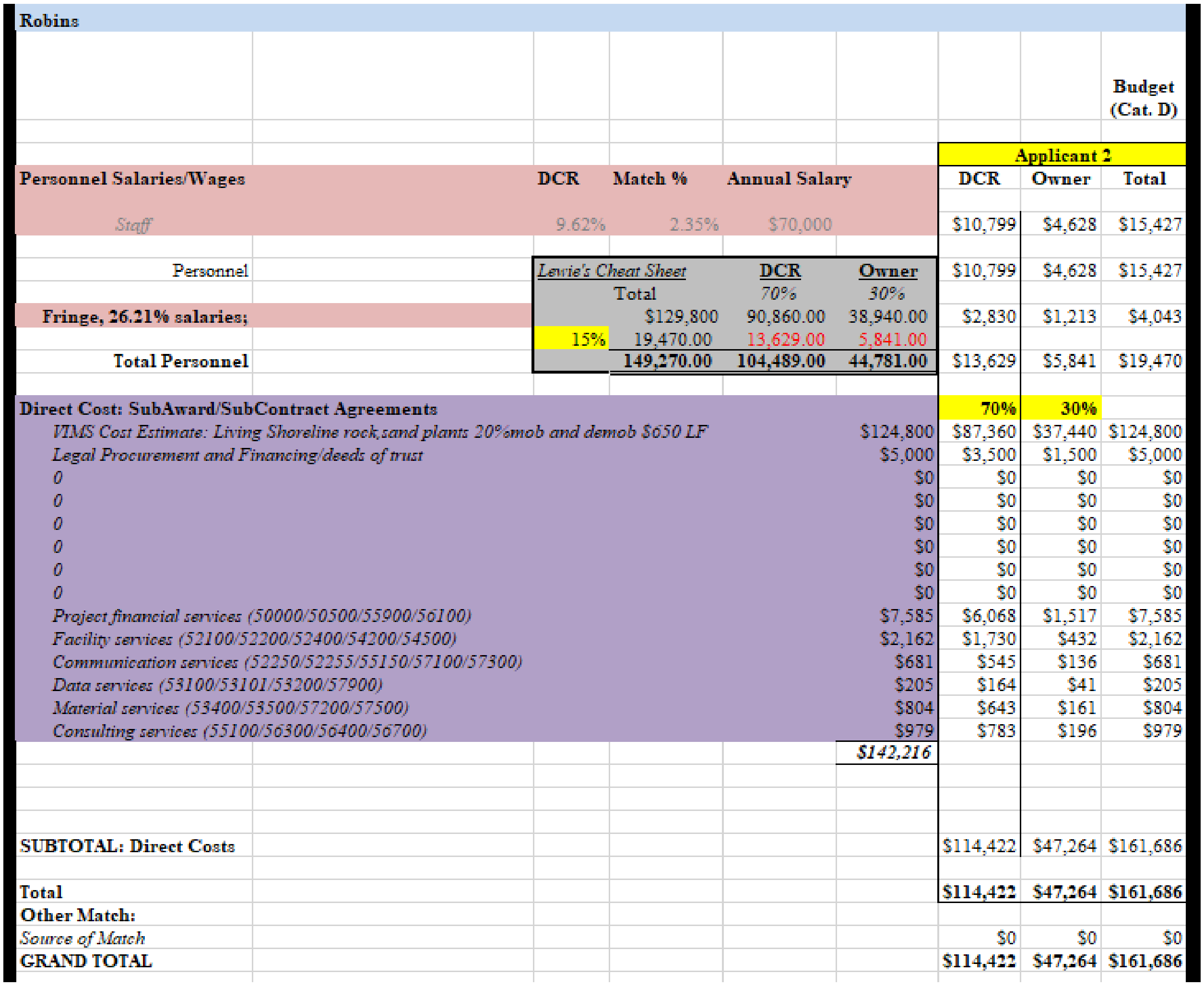
For local governments that are not towns, cities, or counties, the documentation providedfor the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
   YES.
2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   YES. Here’s the link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   YES. Please see Attachment 1
4. **Has the applicant provided evidence of an ability to provide the required match funds?**
   YES. Please see the match commitment letter in **Attachment 8**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
   YES.

BUDGET NARRATIVE -
For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

Please see match commitment letters from the property owners in **Attachment 11**.



Robins							
							Budget (Cat. D)
					Applicant 2		
Personnel Salaries/Wages	**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	9.62%	2.35%	$70,000		$10,799	$4,628	$15,427
Personnel	*Lewie's Cheat Sheet*		**DCR**	**Owner**	$10,799	$4,628	$15,427
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		$129,800	90,860.00	38,940.00	$2,830	$1,213	$4,043
	15%	19,470.00	13,629.00	5,841.00			
Total Personnel		**149,270.00**	**104,489.00**	**44,781.00**	$13,629	$5,841	$19,470
Direct Cost: SubAward/SubContract Agreements					**70%**	**30%**	
VIMS Cost Estimate: Living Shoreline rock,sand plants 20%mob and demob $650 LF				$124,800	$87,360	$37,440	$124,800
Legal Procurement and Financing/deeds of trust				$5,000	$3,500	$1,500	$5,000
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$7,585	$6,068	$1,517	$7,585
Facility services (52100/52200/52400/54200/54500)				$2,162	$1,730	$432	$2,162
Communication services (52250/52255/55150/57100/57300)				$681	$545	$136	$681
Data services (53100/53101/53200/57900)				$205	$164	$41	$205
Material services (53400/53500/57200/57500)				$804	$643	$161	$804
Consulting services (55100/56300/56400/56700)				$979	$783	$196	$979
				$142,216			
SUBTOTAL: Direct Costs					$114,422	$47,264	$161,686
Total					**$114,422**	**$47,264**	**$161,686**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$114,422**	**$47,264**	**$161,686**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles

Also please note that the cost estimates for the construction of this project were supplied by the contractor, Shoreline Structures, LLC. Please see **Attachment 7**.

In summary:

Estimated total project cost:	$ 161,686
Amount of funds requested from the Fund:	$ 114,422

Finally, please see the authorization to request for funding in **Attachment 9.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	Middle Peninsula Planning District Commission

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

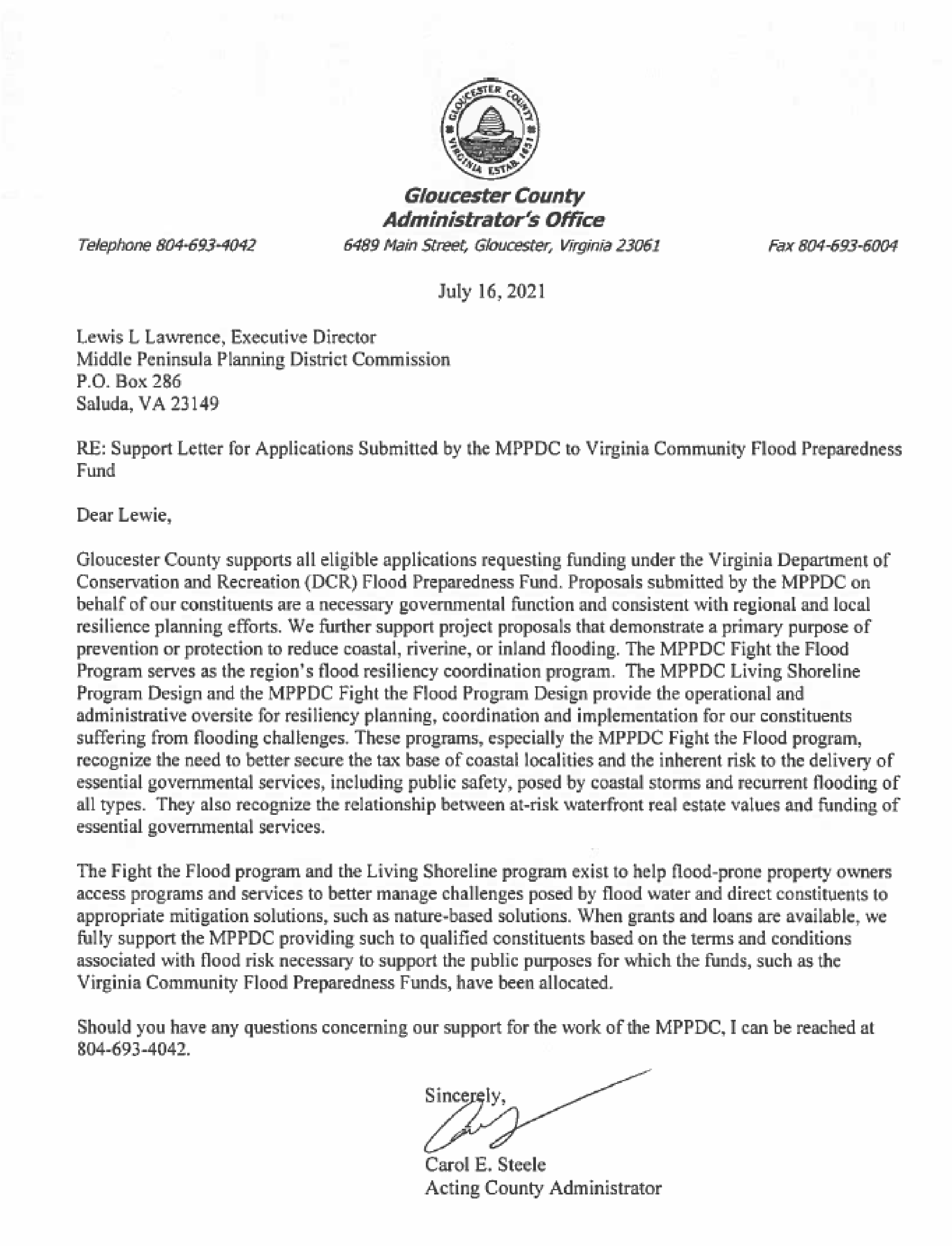
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

Appendix D: Checklist All Categories

Virginia Department of Conservation and RecreationCommunity Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

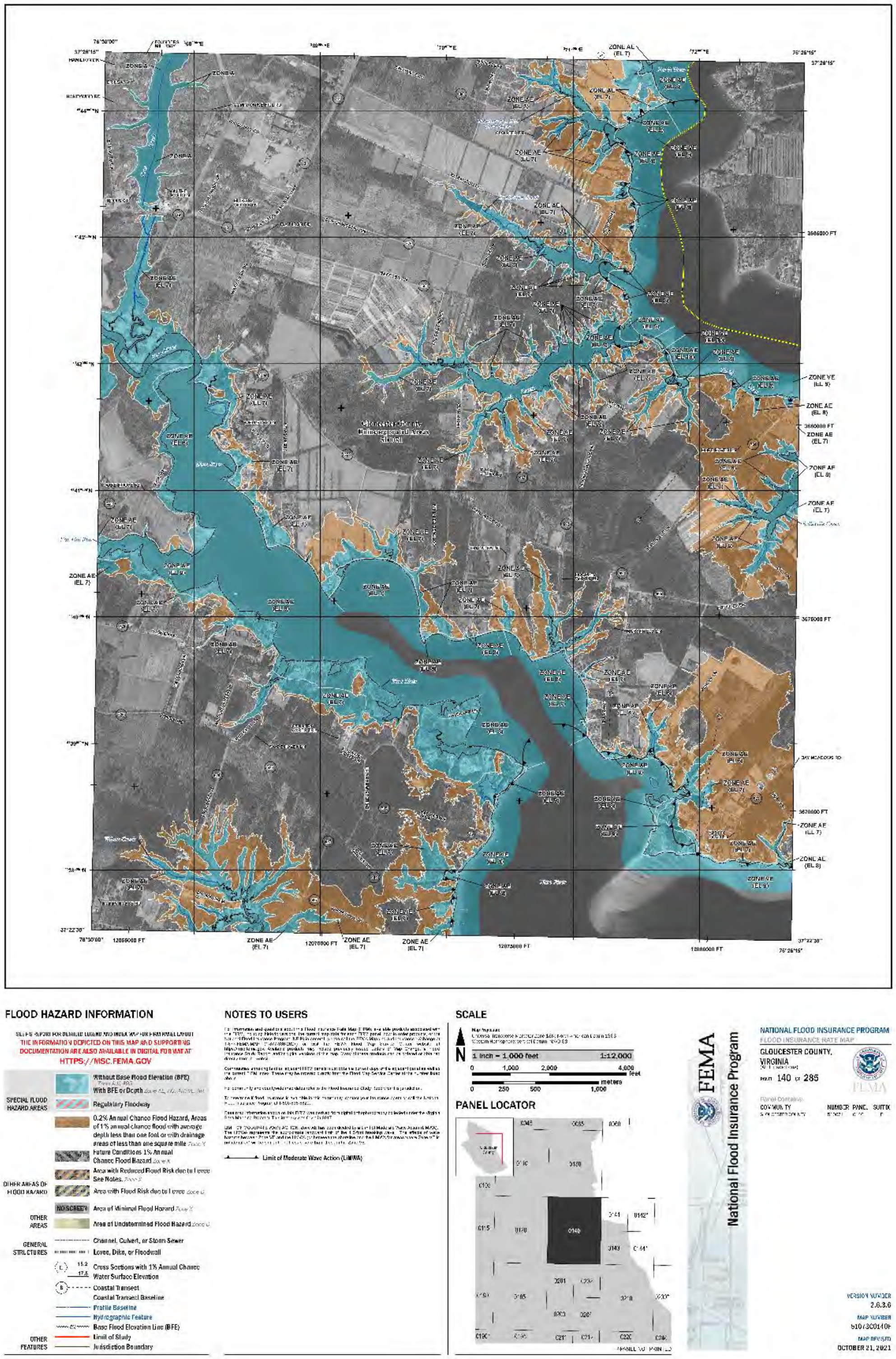
Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

Carol E. Steele
Acting County Administrator

Attachment 2: Project Location FIRMette

Robens Property (FIRMette #: **51073C0140F)**



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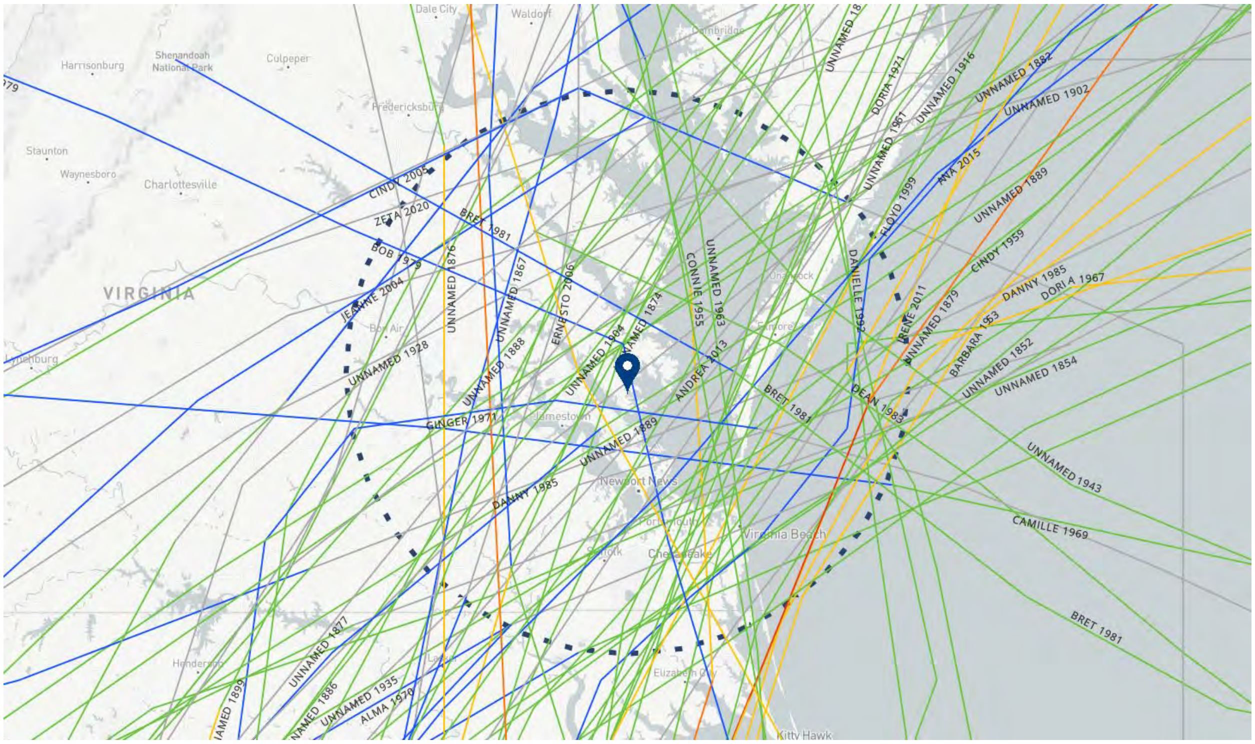
Attachment 3: List of historic hurricanes impacting the project area.

Hurricane List



Search Filter Criteria

Location: 37.39407, -76.48094

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: Photos of the Roben’s property.

This shows flooding of the property’s driveway which impedes ingress and egress onto the property.

Photo of flooding in the backyard due to tides and winds.

The below photos show the damage from Hurricane Isabel in 2003. The water reaces the house during the hurricane.

The below photos show the damage from Hurricane Isabel in 2003. The water reaces the house and side yard during the hurricane.

The below photos show the damage from Hurricane Isabel in 2003. The water reaces the house and the garage during the hurricane.

The below photos show the damage from Hurricane Isabel in 2003. Flood waters move objects in the yard during the hurricane.

Attachment 5: Draft JPA Application & Design

Regulatory Agency Contact Information

Virginia Marine Resources Commission (VMRC)
Habitat Management Division
380 Fenwick Road, Building 96
Fort Monroe, VA 23651
Phone: (757) 247-2200, Fax: (757) 247-8062
Website: http://www.mrc.virginia.gov/hmac/hmoverview.shtm

United States Army Corps of Engineers (USACE)
Norfolk District
803 Front Street, ATTN: CENAO-WR-R
Norfolk, Virginia 23510-1011
Phone: (757) 201-7652, Fax: (757) 201-7678
Website: http://www.nao.usace.army.mil/Missions/Regulatory.aspx

Virginia Department of Environmental Quality (DEQ)
Virginia Water Protection Permit
Program
Post Office Box 1105
Richmond, Virginia 23218
Phone: (804) 698-4000
Website: http://www.deq.virginia.gov/

LOCAL WETLANDS BOARD (LWB) CONTACT INFORMATION:

Links to LWB information on the Web can be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html
In addition, the phone numbers listed below can be used to contact the LWB. Please be advised that these phone numbers are subject to change at any time.

Accomack County (757) 787-5721, Cape Charles (757) 331-3259, Charles City County (804) 829-9296, Chesapeake (757) 382-6248, Colonial Heights (804) 520-9275, Essex County (804) 443-4951, Fairfax County (703) 324-1364, Fredericksburg (540) 372-1179, Gloucester County (804) 693-2744, Hampton (757) 727-6140, Hopewell (804) 541-2267, Isle of Wight County (757) 365-6211, James City County (757) 253-6673, King and Queen County (804) 769-4978, King George County (540) 775-7111, King William County (804) 769-4927, Lancaster County (804) 462-5220, Mathews County (804) 725-5025, Middlesex County (804) 758-0500, New Kent County (804) 966-9690, Newport News (757) 247-8437, Norfolk (757) 664-4368, Northampton County (757) 678-0442, Northumberland County (804) 580-8910, Poquoson (757) 868-3040, Portsmouth (757) 393-8836, Prince William County (703) 792-6984, Richmond County (804) 333-3415, Stafford County (540) 658-8668, Suffolk (757) 923-3650, Virginia Beach (757) 427-8246, Westmoreland County (804) 493-0120, West Point (804) 843-3330, Williamsburg (757) 220-6130, York County (757) 890-3538

Tidewater Joint Permit Application (JPA) For Projects Involving Tidal Waters, Tidal Wetlands and/or Dunes and Beaches in Virginia

This application may be used for most commercial and noncommercial projects involving **tidal waters, tidal wetlands and/or dunes and beaches in Virginia** which require review and/or authorization by Local Wetlands Boards (LWB), the Virginia Marine Resources Commission (VMRC), the Department of Environmental Quality (DEQ), and/or the U. S. Army Corps of Engineers (USACE). This application can be used for:

- **Access-related activities**, including piers, boathouses, boat ramps (without associated dredging or excavation*), moorings, marinas.
- **Shoreline stabilization projects** including living shorelines, riprap revetments, marsh toe stabilization, bulkheads, breakwaters, beach nourishment, groins, and jetties. It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1).
- **Crossings** over or under tidal waters and wetlands including bridges and utility lines (water, sewer, electric).
- **Aquaculture structures**, including cages and floats except "oyster gardening"**

***Note:** for all dredging, excavation, or surface water withdrawal projects you **MUST** use the Standard JPA form; for noncommercial, riparian shellfish aquaculture projects (i.e., "oyster gardening") you must use the abbreviated JPA found at https://mrc.virginia.gov/forms/2019/VGP3_Aquaculture_form_2019.pdf or call VMRC for a form.

The DEQ and the USACE use this form to determine whether projects qualify for certain General, Regional, and/or Nationwide permits. If your project does not qualify for these permits and you need a DEQ Virginia Water Protection permit or an individual USACE permit, you must submit the Standard Joint Permit application form. You can find this application at http://www.nao.usace.army.mil/Missions/Regulatory/JPA.aspx. Please note that some health departments and local agencies, such as local building officials and erosion and sediment control authorities, do not use the Joint Permit Application process or forms and may have different informational requirements. The applicant is responsible for contacting these agencies for information regarding those permitting requirements.

HOW TO APPLY

Submit one (1) completed copy of the Tidewater JPA to VMRC:

1. If by mail or courier, use the VMRC address provided on page 1.
2. If by electronic mail, address the package to: **JPA.permits@mrc.virginia.gov**. The application must be provided in the .pdf format and should not exceed 10 MB. If larger than 10 MB you may provide a file transfer protocol (ftp) site for download purposes.

The Tidewater JPA should include the following:

1. **Part 1** – General Information
2. **Part 2** – Signatures
3. **Part 3** - Appendices (A, B, C, and/or D as applicable to your project)
4. **Part 4** – Project Drawings.
   The drawings shall include the following for **ALL** projects:
   - Vicinity Map (USGS topographic map, road map or similar showing project location)
   - Plan View Drawing (overhead, to scale or with dimensions clearly marked)
   - Section View Drawing (side-view, to scale or with dimensions clearly marked)

Sample drawings are included at the end of Part 4 of this application to show examples of the information needed to consider your application complete and allow for the timely processing.

When completing this form, use the legal name of the applicant, agent, and/or property owner. For DEQ application purposes, *legal name* means the full legal name of an individual, business, or other organization. For an individual, the legal name is the first name, middle initial, last name, and suffix. For an entity authorized to do business in Virginia, the legal name is the exact name set forth in the entity's articles of incorporation, organization or trust, or formation agreement, as applicable. Also provide the name registered with the State Corporation Commission, if required to register. DEQ issues a permit or grants coverage to the so-named individual or business, who becomes the 'permittee'. Correspondence from some agencies, including permits, authorizations, and/or coverage, may be provided via electronic mail. If the applicant and/or agent wishes to receive their permit via electronic mail, please remember to include an e-mail address at the requested place in the application.

In order for projects requiring LWB authorization to be considered complete (Virginia Code § 28.2-1302); "The permit application shall include the following: the name and address of the applicant; a detailed description of the proposed activities; a map, drawn to an appropriate and uniform scale, showing the area of wetlands directly affected, the location of the proposed work thereon, the area of existing and proposed fill and excavation, the location, width, depth and length of any proposed channel and disposal area, and the location of all existing and proposed structures, sewage collection and treatment facilities, utility installations, roadways, and other related appurtenances of facilities, including those on the adjacent uplands; a description of the type of equipment to be used and the means of access to the activity site; the names and addresses of record of adjacent land and known claimants of water rights in or adjacent to the wetland of whom the applicant has notice; an estimate of cost; the primary purpose of the project; and secondary purpose of the proposed project; a complete description of measures to be taken during and after alteration to reduce detrimental offsite effects; the completion date of the proposed work, project, or structure; and such additional materials and documentation as the wetlands board may require."

You may include signed Adjacent Property Owner (APO) Acknowledgement Forms found at the end of this Short Form. You must provide these addresses in Part 1 whether or not you use the APO forms. VMRC will request comments from APOs for projects that require permits for encroachment over state-owned submerged lands. VMRC or your local wetlands board must notify all APO's of public hearings required for all proposals involving tidal wetlands and dunes/beaches that are not authorized by statute. This information will not be used by DEQ to meet the requirements of notifying riparian land owners.

Regional Permit 17 (RP-17), authorizes the installation and/or construction of open-pile piers, mooring structures/devices, fender piles, covered boathouses/boatslips, boatlifts, osprey pilings/platforms, accessory pier structures, and certain devices associated with shellfish gardening, for private use, subject to strict compliance with all conditions and limitations further set out in the RP-17 enclosure located at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/. In addition to the information required in this JPA, prospective permittees seeking authorization under RP-17 must complete and submit the 'Regional Permit 17 Checklist' with their JPA. A copy of the 'Regional Permit 17 Checklist' is found on pages 13 and 14 of this application package. If the prospective permittee answers "yes" (or "N/A", where applicable) to all of the questions on the 'Regional Permit 17 Checklist', the permittee is in compliance with RP-17 and will not receive any other written authorization from the Corps but may not proceed with construction until they have obtained all necessary state and local permits. ***Note: If the prospective permittee answers "no" to any of the questions on the 'Regional Permit 17 Checklist' then their proposed structure(s) does not meet the terms and conditions of RP-17 and written authorization from the Corps is required before commencement of any work.***

Note: Land disturbance (grading, filling, etc.) or removal of vegetation associated with projects located in Chesapeake Bay Preservation Areas will require approval from local governments. Certain localities utilize this application during their Bay Act review. Part 5 of this application is included to provide assistance for the applicant to comply with Bay Act /or Erosion and Sediment Control requirements concurrent with this application.

WHAT HAPPENS NEXT

Upon receipt of an application, VMRC will assign a permit application number to the JPA and will then distribute a copy of the application and any original plan copies submitted to the other regulatory agencies that are involved in the JPA process. All agencies will conduct separate but concurrent reviews of your project. Please be aware that each agency must issue a separate permit (or a notification that no permit is required). Note that in some cases, DEQ may be taking an action on behalf of the USACE, such as when the State Program General Permit (SPGP) applies. Make sure that you have received all necessary authorizations, or documentation that no permit is required, from each agency prior to beginning the proposed work.

During the JPA review process, site inspections may be necessary to evaluate a proposed project. Failure to allow an authorized representative of a regulatory agency to enter the property, or to take photographs of conditions at the project site, may result in either the withdrawal or denial of your permit application.

For certain federal and state permit applications, a public notice is published in a newspaper having circulation in the project area, is mailed to adjacent and/or riparian property owners, and/or is posted on the agency's web page. The public may comment on the project during a designated comment period, if applicable, which varies depending upon the type of permit being applied for and the issuing agency. In certain circumstances, the project may be heard by a governing board, such as a Local Wetlands Board, the State Water Control Board, or VMRC in cases where a locality does not have a wetlands board and with certain subaqueous cases. You may be responsible for bearing the costs for advertisement of public notices.

Public hearings that are held by VMRC occur at their regularly scheduled monthly commission meetings under the following situations: Protested applications for VMRC permits which cannot be resolved; projects costing over $500,000 involving encroachment over state-owned subaqueous land; and all projects affecting tidal wetlands and dunes/beaches in localities without a LWB. All interested parties will be officially notified regarding the date and time of the hearing and Commission meeting procedures. The Commission will usually make a decision on the project at the meeting unless a decision for continuance is made. If a proposed project is approved, a permit or similar agency correspondence is sent to the applicant. In some cases, notarized signatures, as well as processing fees and royalties, are required before the permit is validated. If the project is denied, the applicant will be notified in writing.

PERMIT APPLICATION OR OTHER FEES

Do not send any fees with the JPA. VMRC is not responsible for accounting for fees required by other agencies. Please consult agency websites or contact agencies directly for current fee information and submittal instructions.

- USACE: Permit application fees are required for USACE Individual (Standard) permits. A USACE project manager will contact you regarding the proper fee and submittal requirements.

- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA #

APPLICANTS
Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply		
Pre-Construction Notification (PCN) ☐ NWP # ____________________ (*For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned*)	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: Gloucester

Waterway at project site: Ware River

PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)

Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html

Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address: Contact Information:

   Robens

   Home (____)_____________
   Work (____)_____________
   Fax (____)_____________
   Cell (____)_____________
   e-mail __________________

   State Corporation Commission Name and ID Number (if applicable) _____________

2. Property owner(s) legal name* and complete address, if different from applicant: Contact Information:

   Robens

   Home (____)_____________
   Work (____)_____________
   Fax (____)_____________
   Cell (____)_____________
   e-mail __________________

   State Corporation Commission Name and ID Number (if applicable) _____________

3. Authorized agent name* and complete mailing address (if applicable): Contact Information:

   Home (____)_____________
   Work (____)_____________
   Fax (____)_____________
   Cell (____)_____________
   e-mail __________________

   State Corporation Commission Name and ID Number (if applicable) _____________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

   The project is located on the upper Ware River in Gloucester County. The low bank shoreline faces north-northwest and has an average fetch of 0.7 miles with a long fetch to the northwest of 1.3 miles. The tide range is 2.5 ft. A marsh fringe with an eroding edge exists along the shoreline. To increase the level of shore protection and longer-term coastal resiliency, a living shoreline project was designed with 1 rock sill, sand fill, and Spartina patens and Spartina alterniflora marsh grass plantings. The structure (sill 4A) is part of a system designed for an overall living shoreline project on adjacent properties to provide shore protection with a reach approach. Coastal resiliency is enhanced by the reach approach because adjacent systems work together to provide an enhanced level of shore and habitat protection. Along the Robens properties, approximately 7,600 square feet of marsh will be created along about 200 ft of shoreline. For construction, the site will be accessed by land with materials being delivered by truck. No tree clearing or grading will occur.

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? ___ Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

Contact Information:
Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (____)_____________
email __________________

State Corporation Commission Name and ID Number (if applicable) _____________________

* If multiple contractors, each must be listed and each must sign the applicant signature page.

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:	Telephone number
Gloucester-Mathews Gazette-Journal P.O. Box 2060 Gloucester, Va. 23061	(804) 693-3101

7. Give the following project location information:

Street Address (911 address if available) 7903 Riverside Dr.
Lot/Block/Parcel# RPC 12989, Tax map #33-230
Subdivision______________________________
City / County Gloucester County ZIP Code 23061
Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
37.394333° / - -76.480857° (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

From Rt. 17 take TC Walker Rd (Rt 629). Turn onto Zanoni Rd (Rt 626). Turn onto Riverside Dr.

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose may be "to protect property from erosion due to boat wakes" and the secondary purpose may be "to provide safer access to a pier."

The primary purpose of the project is shore protection. The existing marsh and the upland, where exposed, is eroding. A stable marsh will be create to protect the upland property through the installation of a living shoreline. A secondary purpose is to provide coastal resiliency for the affected shoreline from flooding and sea-level rise.

Part 1 - General Information (continued)

9. Proposed use (check one):
   X Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

    Although 5,400 square feet of subaqueous land will be covered, the sills need to be slightly farther offshore to accommodate the beach fill that provides a level of protection. Bringing the structures closer to the shore would steepen the fill and reduce wetland plantings. No clearing, grading or excavating will occur. No SAV occurs in the area.

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes X No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $ 139,500
    Approximate cost of that portion of the project that is channelward of mean low water:
    $ 90,300

13. Completion date of the proposed work:________________________________-_____________

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

    1) Shannon and Robert Elrod
    7919 Riverside Dr.
    Gloucester, VA 23061

    2) Lanning Living Trust
    6626 Ware Haven Ln
    Gloucester, VA 23061

Part 2 - Signatures

1. Applicants and property owners (if different from applicant). NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant's Legal Name (printed/typed)	(Use if more than one applicant)
Applicant's Signature	(Use if more than one applicant)
Date	
Property Owner's Legal Name (printed/typed) (If different from Applicant)	(Use if more than one owner)
Property Owner's Signature	(Use if more than one owner)
Date	

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we),____________________, hereby certify that I (we) have authorized ___________________________
(Applicant's legal name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

____________________________________ (Agent's Signature)	_________________________________ (Use if more than one agent)
____________________________________ (Date)	
____________________________________ (Applicant's Signature)	_________________________________ (Use if more than one applicant)
____________________________________ (Date)	

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), ______________________, have contracted____
(Applicant's legal name(s)) (Contractor's name(s))
to perform the work described in this Joint Permit Application, signed and dated________________________.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

________________________________ Contractor's name or name of firm	_____________________________________ Contractor's or firms address
________________________________ Contractor's signature and title	_____________________________________ Contractor's License Number
________________________________ Applicant's signature	_____________________________________ (use if more than one applicant)
________________________________ Date	

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we), ____________________________________, own land next to (across the water
(Print adjacent/nearby property owner's name)

from/on the same cove as) the land of_____________________________________.
(Print applicant's name(s))

I have reviewed the applicant's project drawings dated ________________________
(Date)

to be submitted for all necessary federal, state and local permits.

I HAVE NO COMMENT_______ ABOUT THE PROJECT.

I DO NOT OBJECT ______ TO THE PROJECT.

I OBJECT ______ TO THE PROJECT.

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form be sure you have checked the appropriate option above).

____
Adjacent/nearby property owner's signature(s)

____
Date

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we), ___________________________________, own land next to (across the water
(Print adjacent/nearby property owner's name)

from/on the same cove as) the land of______________________________________.
(Print applicant's name(s))

I have reviewed the applicant's project drawings dated _________________________
(Date)

to be submitted for all necessary federal, state and local permits.

I HAVE NO COMMENT_______ ABOUT THE PROJECT.

I DO NOT OBJECT ______ TO THE PROJECT.

I OBJECT ______ TO THE PROJECT.

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form, be sure you have checked the appropriate option above).

____
Adjacent/nearby property owner's signature(s)

____
Date

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Part 3 – Appendices (continued)

Appendix B: Projects for Shoreline Stabilization in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS**.**

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

   The living shoreline project covers a total of about 200 linear feet along the Ware River. It consists of 1 rock sill that is 193 ft long. Clean sand fill will be placed behind each structure and planted with Spartina alterniflora and Spartina patens. About of 0.17 acres of wetlands will be created (1865 sq.ft S. alterniflora; 5700 sq.ft S. patens).

2. What is the maximum encroachment channelward of mean high water? 50 feet.
   Channelward of mean low water? 30 feet.
   Channelward of the back edge of the dune or beach? NA feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 3,700 square feet
   - Non-vegetated wetlands 1,865 square feet
   - Subaqueous bottom 5,407 square feet
   - Dune and/or beach NA square feet

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes____ No.

   If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____Yes ____No.

   If no, please provide an explanation for the purpose and need for the additional encroachment.

Part 3 – Appendices (continued)

5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
NOTE: Drawings must include construction details, including dimensions, design and all materials, including fittings if used.

Project will be constructed from the land side. The low bank allows direct access along the shoreline. It is anticipated that material will be placed with excavator. The project consists of clean sand and Class II armor.

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
Core (inner layer) material 25 pounds per stone Class size 1A
Armor (outer layer) material 325 pounds per stone Class size II

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

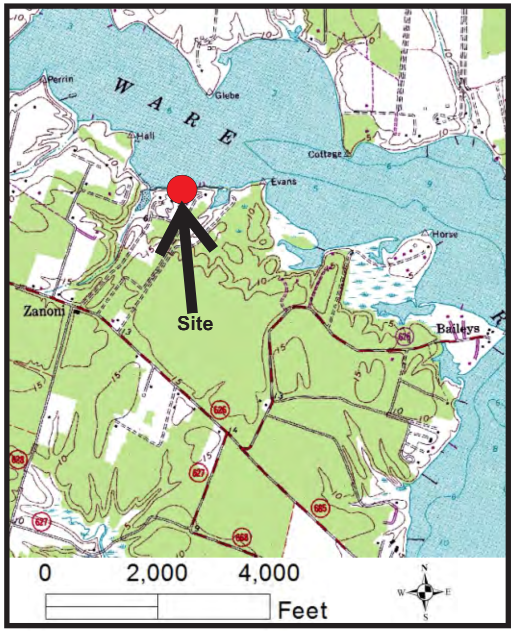
- Volume of material
31 cubic yards channelward of mean low water
500 cubic yards landward of mean low water
91 cubic yards channelward of mean high water
441 cubic yards landward of mean high water

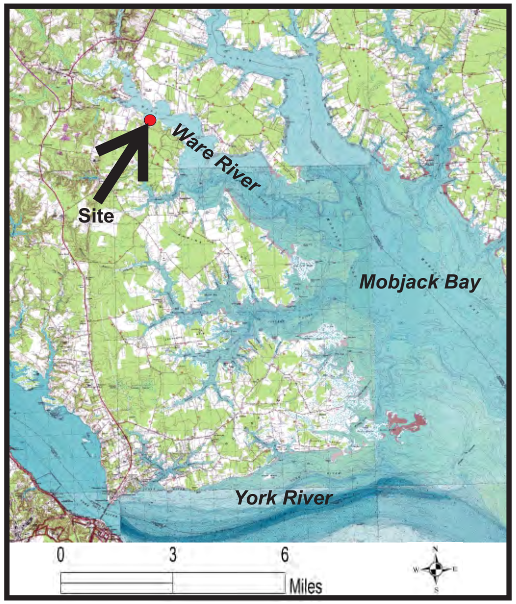
- Area to be covered
1,832 square feet channelward of mean low water
5,322 square feet landward of mean low water
91 cubic yards channelward of mean high water
441 cubic yards landward of mean high water

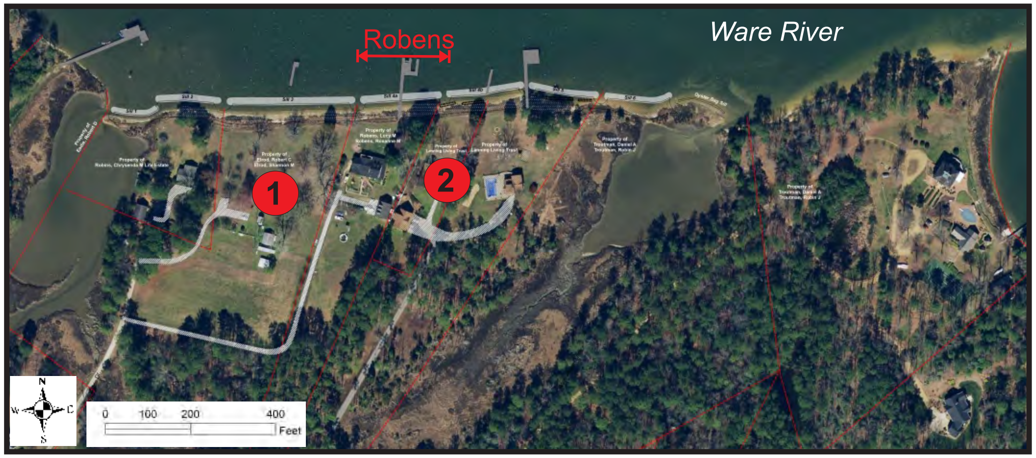
- Source of material, composition (e.g. 90% sand, 10% clay): Local borrow pit
- Method of transportation and placement:
Truck haul
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:

Vegetative stabilization of the sand substrate will be with Spartina alterniflora and Spartina patens. Each species will be planted on a 1.5’ x 1.5’ grid spacing with 0.5 oz of slow release fertilizer per plant. Survival of 80% of the planting is required for one year.

Ware River Living Shoreline Project: Robens







Adjacent Property Owners:
1) Robert & Shannon Elrod
2) Lanning Living Trust

GENERAL NOTES

1. Mean tide range is 2.5 ft (1983-2001)
2. Horizontal control was established by Real Time Kinematic Global Positioning System (RTK-GPS) and is shown in UTM, zone 18, NAD83, ift and Latitude/Longitude.
3. Vertical control is MLW. MLW (1983-2001) was determined to be 1.5 ft below NAVD88 at Ware River Living Shoreline Project.
4. Topographic data obtained on 18 Dec 2019 using RTK-GPS.
5. All dimensions and coordinates are given in feet.
6. Plans were created in Esri ArcGIS.

CONSTRUCTION SCHEDULE FOR SEDIMENT AND EROSION CONTROL

1. Contractor is to notify MPPDC of the date construction is to begin at least seven (7) days prior to the date (Time Frame = 1 day).
2. Install silt fences, erosion and sediment control measures and turbidity curtain, as needed (1 day).
3. Remove all debris interfering with shoreline construction as construction proceeds (continuous). Clear trees and underbrush within designated areas as construction proceeds.
4. Structure installation (60 days).
    1. Install stone sills.
    2. Place sand as a vegetative terrace.
    3. Plant vegetative planting terrace as specified
5. Stabilize and seed all upland disturbed areas as specified
6. Remove turbidity curtain (1 day).
7. After establishment of vegetative cover on site, remove silt fence and other erosion and sediment control measures.

Ware River
Living Shoreline
Project

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

NATIONAL FISH AND WILDLIFE FOUNDATION
NFWF

VIMS | WILLIAM & MARY
VIRGINIA INSTITUTE OF MARINE SCIENCE

Shoreline Studies Program
VIMS

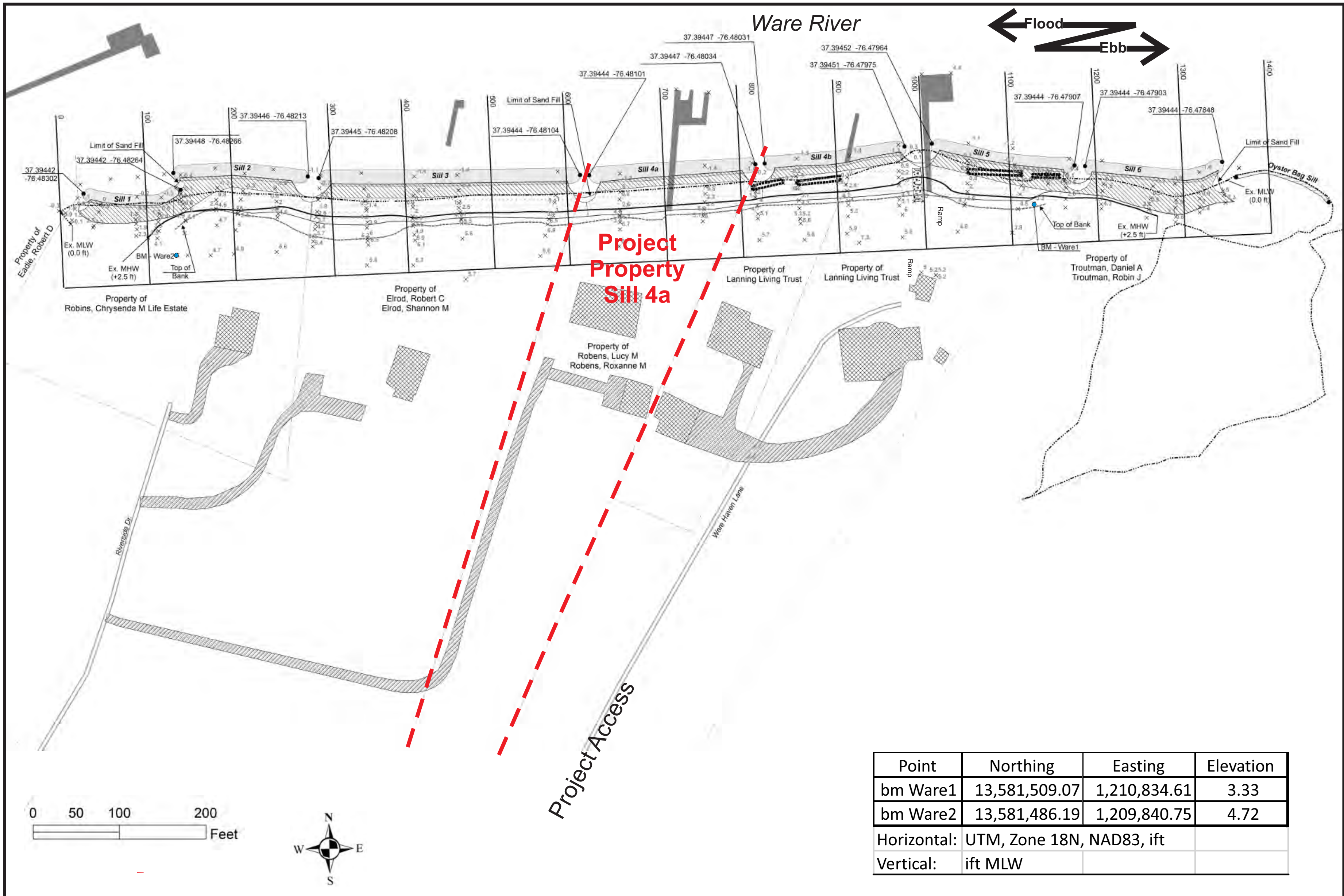
Project Title
Ware River
Living Shoreline
Project:
Robens

Issued for
Final Plan Permit
Drawings

Drawing Title
Cover Sheet

Date
10 Aug 2021
Scale

Sheet: 1 of 6



Point	Northing	Easting	Elevation
bm Ware1	13,581,509.07	1,210,834.61	3.33
bm Ware2	13,581,486.19	1,209,840.75	4.72
Horizontal:	UTM, Zone 18N, NAD83, ift		
Vertical:	ift MLW		

Structure end points located in Latitude/Longitude

Ware River
Living Shoreline Project

Existing Conditions

▩	Building
■	Dock
▨	Driveway
-·-·-·-	Existing MLW
——	Existing MHW
········	Top of Bank
——	Parcel Lines
▬▬▬	Existing Oyster Bag Sill
×	Survey Points (ft MLW) Survey Date: 18 Dec 2019
●	Benchmark

Proposed Plan

▭	Rock Sill
▧	Spartina alterniflora
▭	Spartina patens
▤	Oyster Bag Sill
——	Limit of Sand Fill

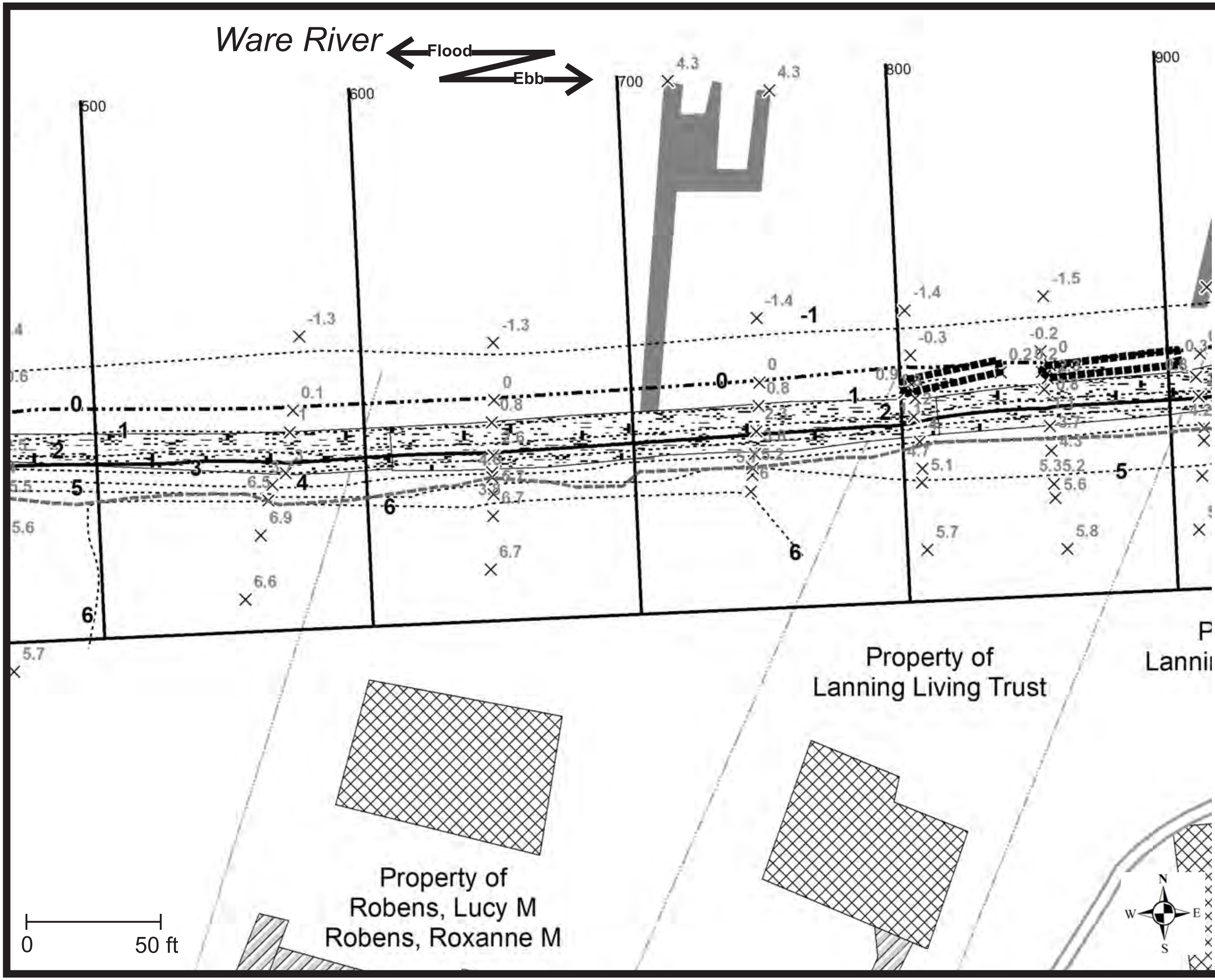
Project Title
Ware River Living
Shoreline Project:
Overall Proposed Plan

Issued for
Final Plan Permit
Drawings

Drawing Title

Date 10 Aug 2021
Scale

Sheet 2 of 6



Ware River Living Shoreline Project: Sill 4a

Existing Conditions

- ▨ Building
- ■ Dock
- ▨ Driveway
- ▩ Ex. Vegetated Wetlands (based on survey extent)
- ▪▪▪▪ Existing Oyster Bag Sill
- × Survey Points (ft MLW) Survey Date: 18 Dec 2019
- Existing MLW
- Existing MHW
- Contours
- Profiles
- Baseline
- Parcel Lines

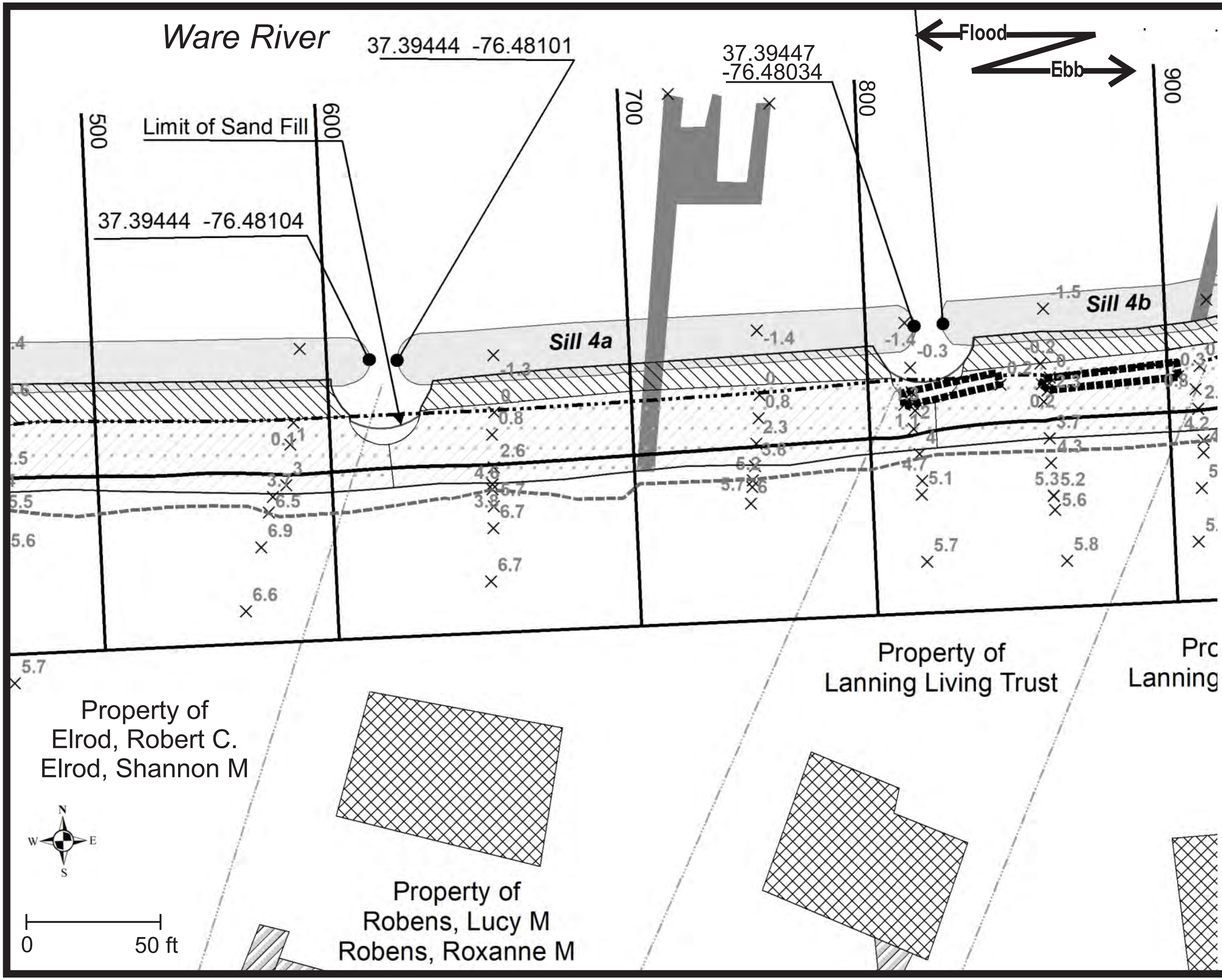
Project Title
Ware River Living Shoreline Project: Robens

Issued for
Final Plan Permit Drawings

Drawing Title
Existing Conditions

Date 10 Aug 2021
Scale 1”=50’

Sheet: 3 of 6



Ware River Living Shoreline Project: Sill 4a

Existing Conditions

- ▩ Building
- ■ Dock
- ▨ Driveway
- -·-·- Existing MLW
- —— Existing MHW
- ······ Top of Bank
- — - — Parcel Lines
- ▬▬ Existing Oyster Bags
- × Survey Points (ft MLW)
  Survey Date: 18 Dec 2019

Proposed Plan

- ▭ Rock Sill
- ▧ Spartina alterniflora
- ▨ Spartina patens
- —— Limit of Sand Fill

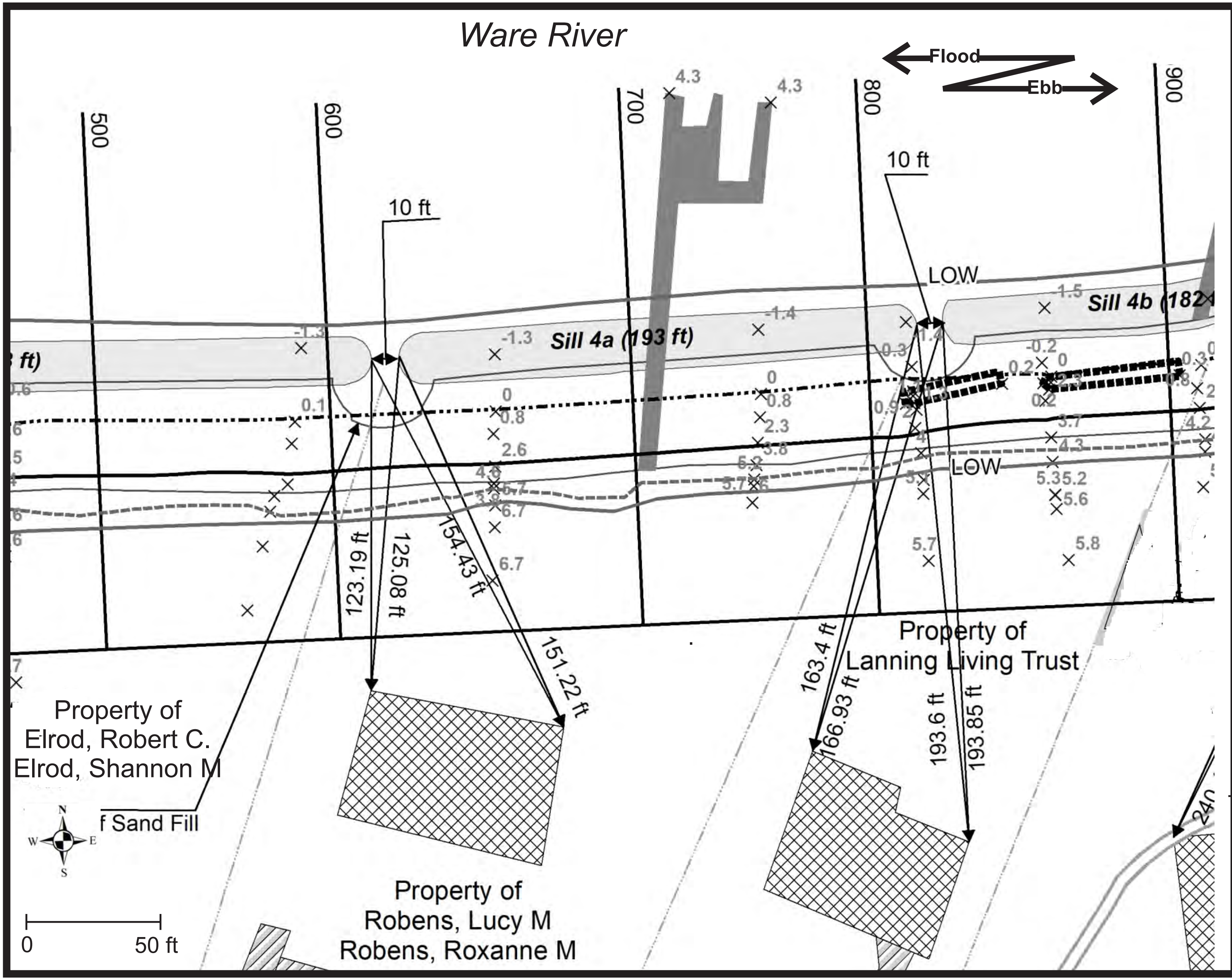
Project Title
Ware River
Living Shoreline
Project: Robens

Issued for
Final Plan Permit
Drawings

Drawing Title
Proposed Plan

Date	Scale
10 Aug 2021	1”=50’

Sheet: 4 of 6



Ware River Living Shoreline Project: Sill 4a

Existing Conditions

- ▩ Building
- ■ Dock
- ▨ Driveway
- Existing MLW
- Existing MHW
- Top of Bank
- Parcel Lines
- Existing Oyster Bags
- × Survey Points (ft MLW)
  Survey Date: 18 Dec 2019

Proposed Plan

- ▭ Rock Sill
- ▧ Spartina alterniflora
- ▨ Spartina patens
- ☰ Oyster Bag Sill
- Limit of Sand Fill
- LOW Limit of Work
- TC Turbidity Curtain
- ▭ Limit of Disturbance

Shoreline Studies Program
VIMS

Project Title
Ware River
Living Shoreline
Project: Robens

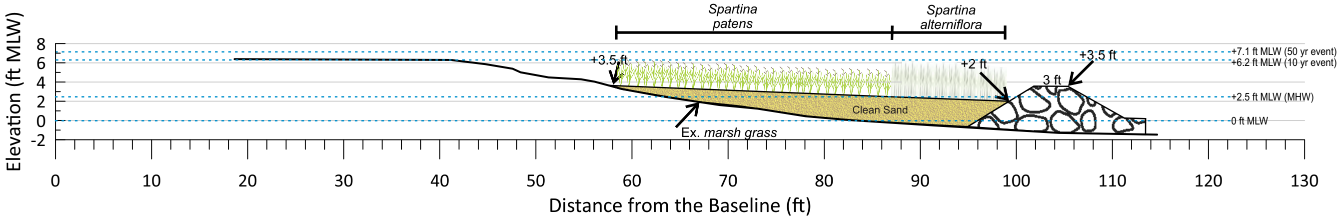
Issued for
Final Plan Permit
Drawings

Drawing Title
Structure Location

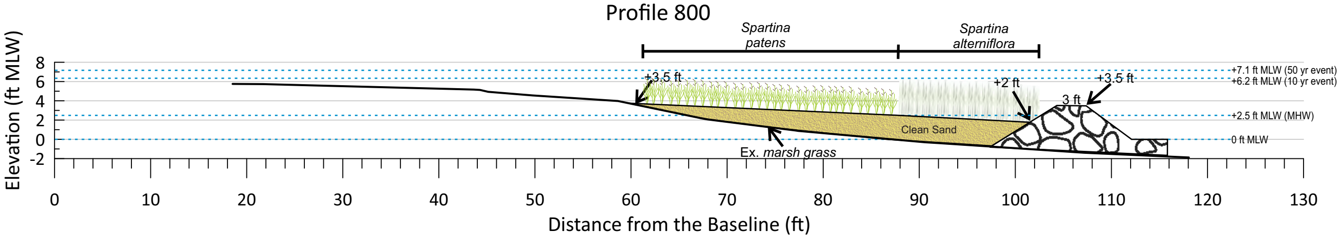
Date	Scale
10 Aug 2021	1"=50'

Sheet: 5 of 6

Profile 700



Profile 800



Ware River
Living
Shoreline
Project:
Sill 4a

Shoreline
Studies
Program
VIMS

Project Title
Ware River
Living Shoreline
Project: Robens

Issued for
Final Plan Permit
Drawings

Drawing Title
Cross-Section

Date
10 Aug 2021

Scale

Sheet: 6 of 6

Attachment 6: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)

The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and

community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

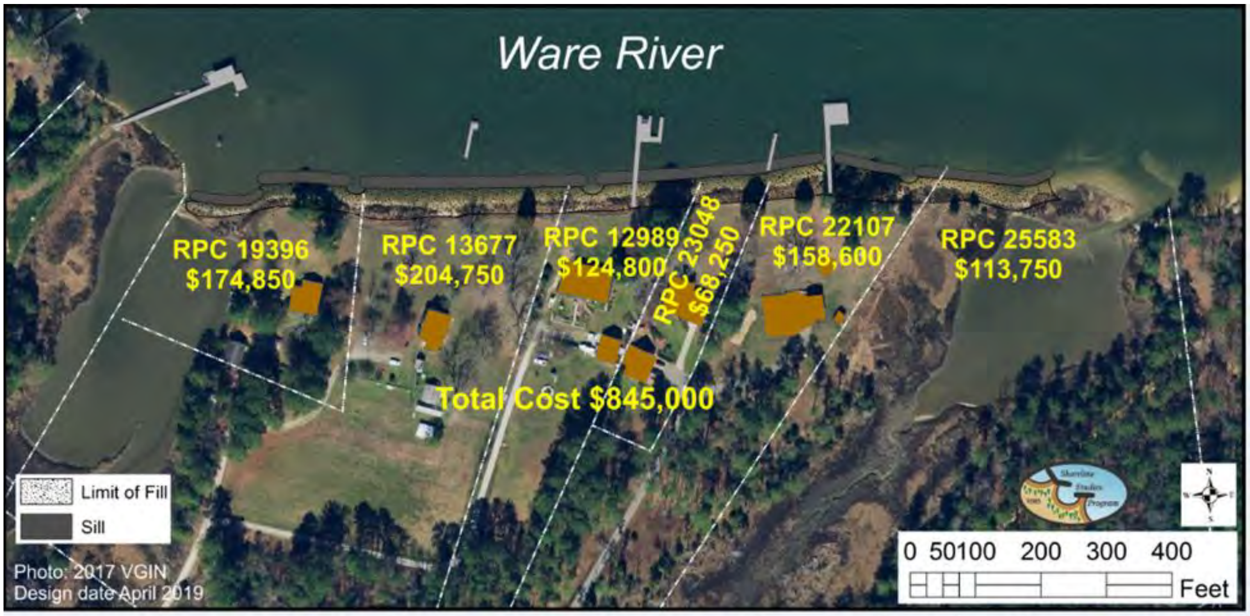
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

Attachment 7: Project cost estimates

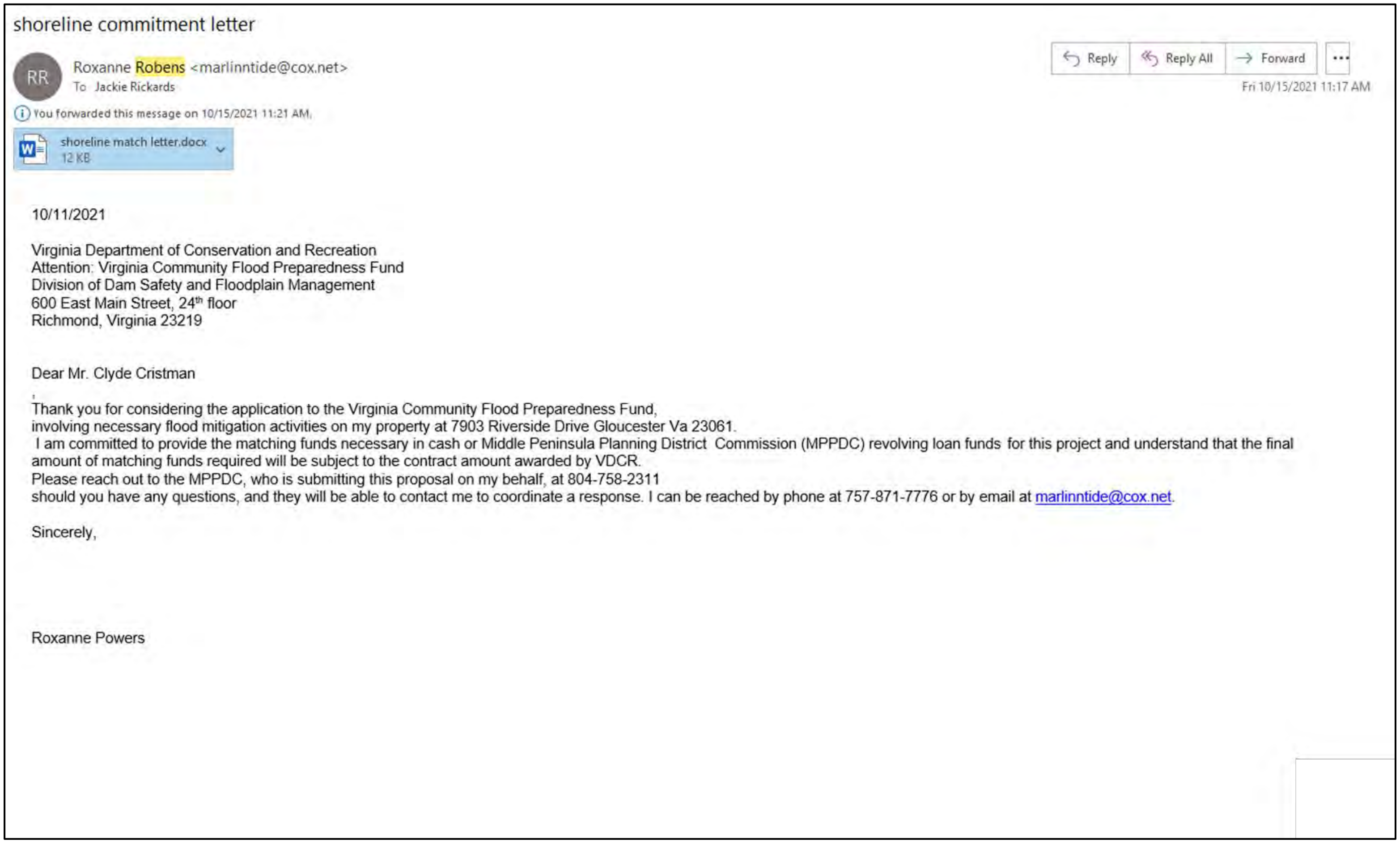
The below image is a map of the 6 contiguous property owners that were interested in participating in the original NFWF grant. From this project Virginia Institute of Marine Science developed a cost estimate for each parcel to install living shorelines. For the Robens property (RPC 12989) the cost for living shorelines would be $124,800.



Approximate cost per parcel for the Ware River Living Shoreline based on the average cost of $650 per linear foot calculated for this project. The total includes rock, sand, plants, and 20% mob/demob .

Robins								
								Budget (Cat. D)
						Applicant 2		
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		9.62%	2.35%	$70,000		$10,799	$4,628	$15,427
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$10,799	$4,628	$15,427
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			$129,800	90,860.00	38,940.00	$2,830	$1,213	$4,043
		15%	19,470.00	13,629.00	5,841.00			
Total Personnel			########	**104,489.00**	**44,781.00**	$13,629	$5,841	$19,470
SubAward/SubContract Agreements						**70%**	**30%**	
VIMS Cost Estimate: Living Shoreline rock,sand plants 20%mob and demob $650 LF					$124,800	$87,360	$37,440	$124,800
Legal Procurement and Financing/deeds of trust					$5,000	$3,500	$1,500	$5,000
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$129,800			
SUBTOTAL: Direct Costs						$104,489	$44,781	$149,270
Indirect/IDC/Facilities & Administrative Costs				27.92%	$12,416	$8,691	$3,725	$12,416
Total						**$113,180**	**$48,506**	**$161,686**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$113,180**	**$48,506**	**$161,686**

Attachment 8: Match Commitment Letters



shoreline commitment letter

RR Roxanne Robens <marlinntide@cox.net>
To Jackie Rickards

Fri 10/15/2021 11:17 AM

You forwarded this message on 10/15/2021 11:21 AM.

shoreline match letter.docx
12 KB

10/11/2021

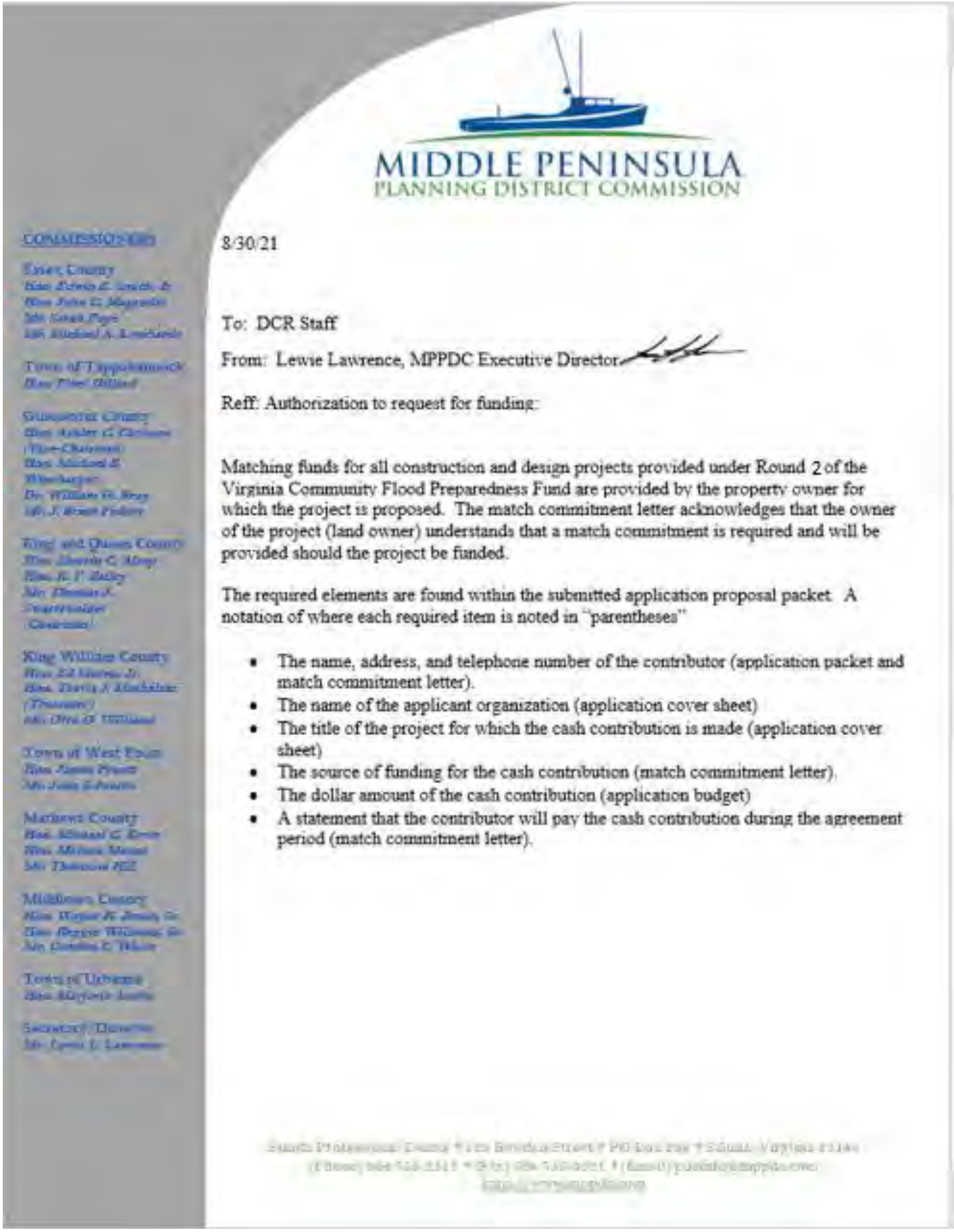
Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman
,
Thank you for considering the application to the Virginia Community Flood Preparedness Fund,
involving necessary flood mitigation activities on my property at 7903 Riverside Drive Gloucester Va 23061.
I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.
Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311
should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 757-871-7776 or by email at marlinntide@cox.net.

Sincerely,

Roxanne Powers

Attachment 9: Authorization to request for funding



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 2 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Karny-Harvey Shoreline Construction** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

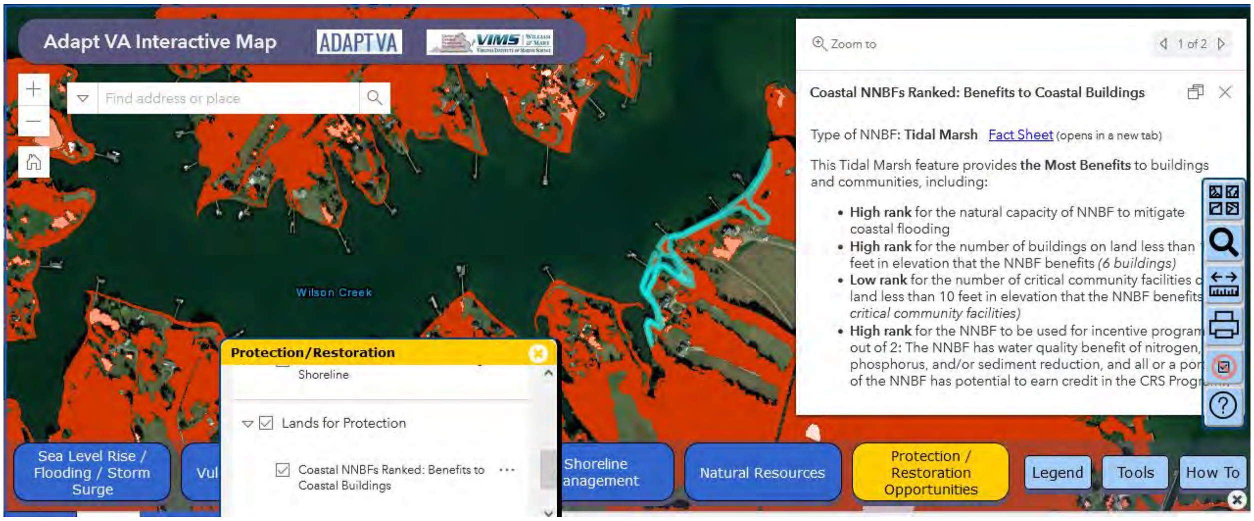
Issue #2

DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

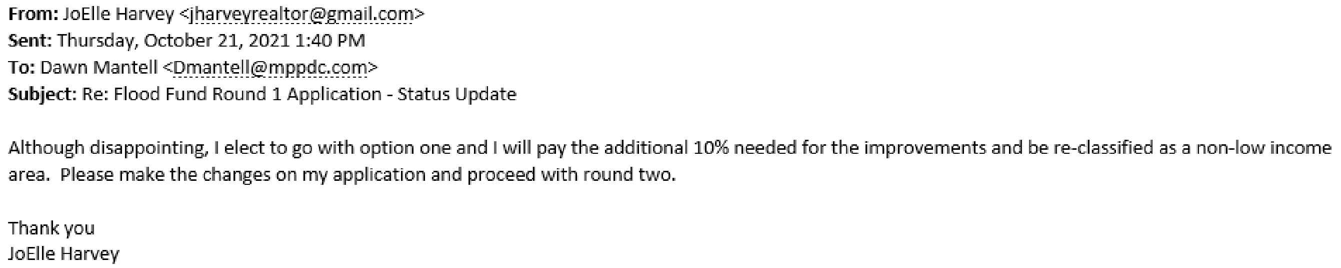
Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(6 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

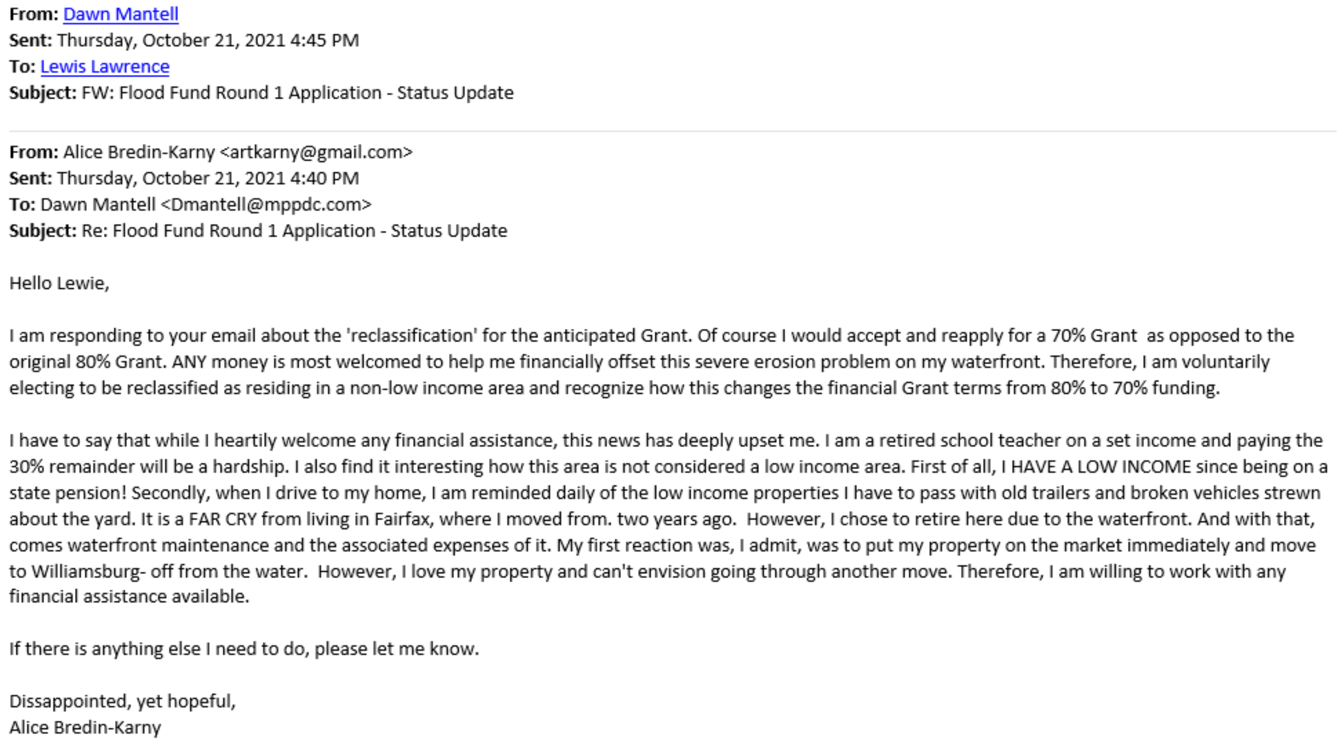
Applicant Voluntarily Selection: Multi Parcel



From: JoElle Harvey <jharveyrealtor@gmail.com>
Sent: Thursday, October 21, 2021 1:40 PM
To: Dawn Mantell <Dmantell@mppdc.com>
Subject: Re: Flood Fund Round 1 Application - Status Update

Although disappointing, I elect to go with option one and I will pay the additional 10% needed for the improvements and be re-classified as a non-low income area. Please make the changes on my application and proceed with round two.

Thank you
JoElle Harvey



From: Dawn Mantell
Sent: Thursday, October 21, 2021 4:45 PM
To: Lewis Lawrence
Subject: FW: Flood Fund Round 1 Application - Status Update

From: Alice Bredin-Karny <artkarny@gmail.com>
Sent: Thursday, October 21, 2021 4:40 PM
To: Dawn Mantell <Dmantell@mppdc.com>
Subject: Re: Flood Fund Round 1 Application - Status Update

Hello Lewie,

I am responding to your email about the 'reclassification' for the anticipated Grant. Of course I would accept and reapply for a 70% Grant as opposed to the original 80% Grant. ANY money is most welcomed to help me financially offset this severe erosion problem on my waterfront. Therefore, I am voluntarily electing to be reclassified as residing in a non-low income area and recognize how this changes the financial Grant terms from 80% to 70% funding.

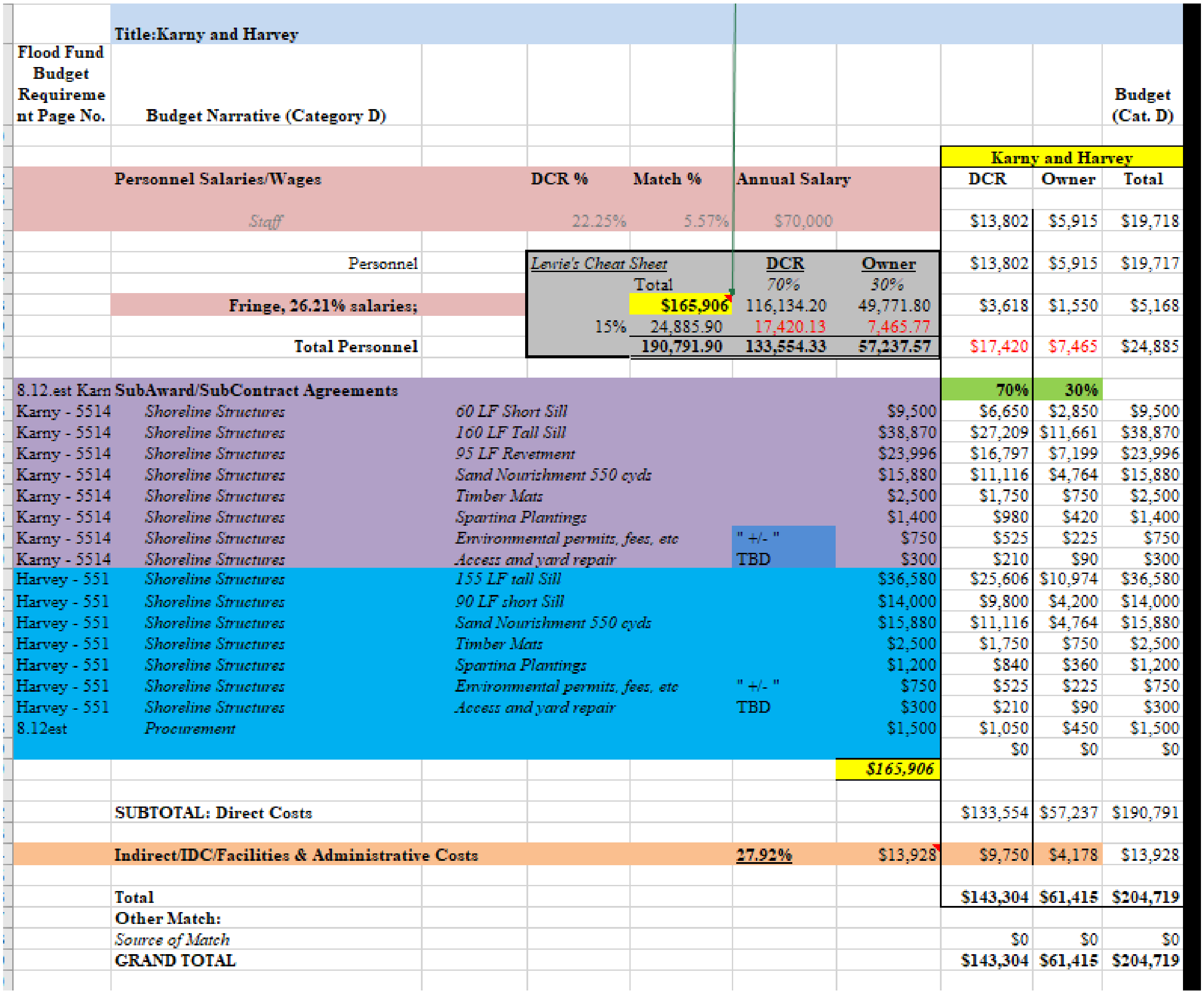
I have to say that while I heartily welcome any financial assistance, this news has deeply upset me. I am a retired school teacher on a set income and paying the 30% remainder will be a hardship. I also find it interesting how this area is not considered a low income area. First of all, I HAVE A LOW INCOME since being on a state pension! Secondly, when I drive to my home, I am reminded daily of the low income properties I have to pass with old trailers and broken vehicles strewn about the yard. It is a FAR CRY from living in Fairfax, where I moved from. two years ago. However, I chose to retire here due to the waterfront. And with that, comes waterfront maintenance and the associated expenses of it. My first reaction was, I admit, was to put my property on the market immediately and move to Williamsburg- off from the water. However, I love my property and can't envision going through another move. Therefore, I am willing to work with any financial assistance available.

If there is anything else I need to do, please let me know.

Dissappointed, yet hopeful,
Alice Bredin-Karny

Amended Budget Request

DCR Funding:	$ 143,304
Owner:	$ 61,414
Total	$ 204,719



Flood Fund Budget Requirement Page No.	Title:Karny and Harvey Budget Narrative (Category D)								Budget (Cat. D)
							Karny and Harvey		
	Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
	Staff		22.25%	5.57%	$70,000		$13,802	$5,915	$19,718
	Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$13,802	$5,915	$19,717
				Total	*70%*	*30%*			
	Fringe, 26.21% salaries;			**$165,906**	116,134.20	49,771.80	$3,618	$1,550	$5,168
			15%	24,885.90	17,420.13	7,465.77			
	Total Personnel			**190,791.90**	**133,554.33**	**57,237.57**	$17,420	$7,465	$24,885
8.12.est Karn	**SubAward/SubContract Agreements**						**70%**	**30%**	
Karny - 5514	*Shoreline Structures*	*60 LF Short Sill*				$9,500	$6,650	$2,850	$9,500
Karny - 5514	*Shoreline Structures*	*160 LF Tall Sill*				$38,870	$27,209	$11,661	$38,870
Karny - 5514	*Shoreline Structures*	*95 LF Revetment*				$23,996	$16,797	$7,199	$23,996
Karny - 5514	*Shoreline Structures*	*Sand Nourishment 550 cyds*				$15,880	$11,116	$4,764	$15,880
Karny - 5514	*Shoreline Structures*	*Timber Mats*				$2,500	$1,750	$750	$2,500
Karny - 5514	*Shoreline Structures*	*Spartina Plantings*				$1,400	$980	$420	$1,400
Karny - 5514	*Shoreline Structures*	*Environmental permits, fees, etc*			" +/- "	$750	$525	$225	$750
Karny - 5514	*Shoreline Structures*	*Access and yard repair*			TBD	$300	$210	$90	$300
Harvey - 551	*Shoreline Structures*	*155 LF tall Sill*				$36,580	$25,606	$10,974	$36,580
Harvey - 551	*Shoreline Structures*	*90 LF short Sill*				$14,000	$9,800	$4,200	$14,000
Harvey - 551	*Shoreline Structures*	*Sand Nourishment 550 cyds*				$15,880	$11,116	$4,764	$15,880
Harvey - 551	*Shoreline Structures*	*Timber Mats*				$2,500	$1,750	$750	$2,500
Harvey - 551	*Shoreline Structures*	*Spartina Plantings*				$1,200	$840	$360	$1,200
Harvey - 551	*Shoreline Structures*	*Environmental permits, fees, etc*			" +/- "	$750	$525	$225	$750
Harvey - 551	*Shoreline Structures*	*Access and yard repair*			TBD	$300	$210	$90	$300
8.12est	*Procurement*					$1,500	$1,050	$450	$1,500
							$0	$0	$0
						$165,906			
	SUBTOTAL: Direct Costs						$133,554	$57,237	$190,791
	Indirect/IDC/Facilities & Administrative Costs				**27.92%**	$13,928	$9,750	$4,178	$13,928
	Total						**$143,304**	**$61,415**	**$204,719**
	Other Match:								
	Source of Match						$0	$0	$0
	GRAND TOTAL						**$143,304**	**$61,415**	**$204,719**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

PROJECT TITLE: Wilsons Creek- Brednin-Karny and Harvey's Living Shoreline Construction Project
Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning X Project _____Study

NFIP/DCR Community Identification Number (CID): Gloucester County (510071)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ________________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) _______________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ **No ____**

Project Grants (Check All that Apply)

☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**

☑ **Wetland restoration.**

☑Floodplain restoration.

☐ Construction of swales and settling ponds.

☑Living shorelines and vegetated buffers.

☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.

☐ Storm water system upgrades.

☐ Medium and large-scale Low Impact Development (LID) in urban areas.

☐ Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

☐ Dam restoration or removal.

☑ Stream bank restoration or stabilization.

☑ Restoration of floodplains to natural and beneficial function.

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County
NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No
Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No Flood Zone(s) (If Applicable): AE Zone
Flood Insurance Rate Map Number(s) (If Applicable): 51073C0201E and 51073C0202E

Total Cost of Project: **<u>$202,629</u>**

Total Amount Requested: **<u>$162,103</u>**

INTRODUCTION –

FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). This proposal is a Nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions*, June 2021).

Specifically, this project proposes to construct a nature-based shoreline management solution on two private properties located on Wilsons Creek in Gloucester County. The nature-based solution will involve the installation of a 485-feet-long rock sill with clean sand back fill and plantings of native vegetation and a 95 linear feet section of riprap revetment. This project will be a partnership between the MPPDC and two private property owners and is supported by Gloucester County (See the community support letter in Attachment 1).

- *A link or copy to the approved resilience plan:* Approved-8_19_DCR-packet_letterandplan.pdf (fightthefloodva.com)
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf within the plan please see Section 4 (page 25). This Section includes historical hazard data within the region.
- Here's a link to the Gloucester County Comprehensive Plan: https://www.gloucesterva.info/DocumentCenter/View/5777/2016-Gloucester-County-Comprehensive-Plan

PROJECT LOCATION INFORMATION –

This project proposes to install living shorelines on two private properties on Wilson Creek in Gloucester County (**Figure 1 and 2**).

Figure 1: County map of project location.

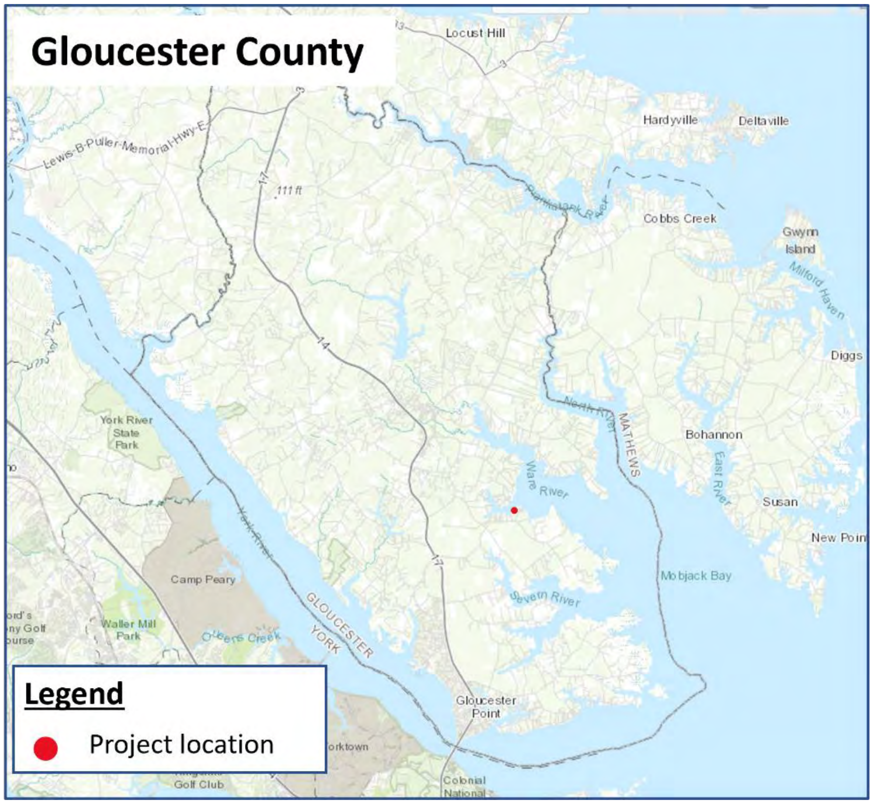
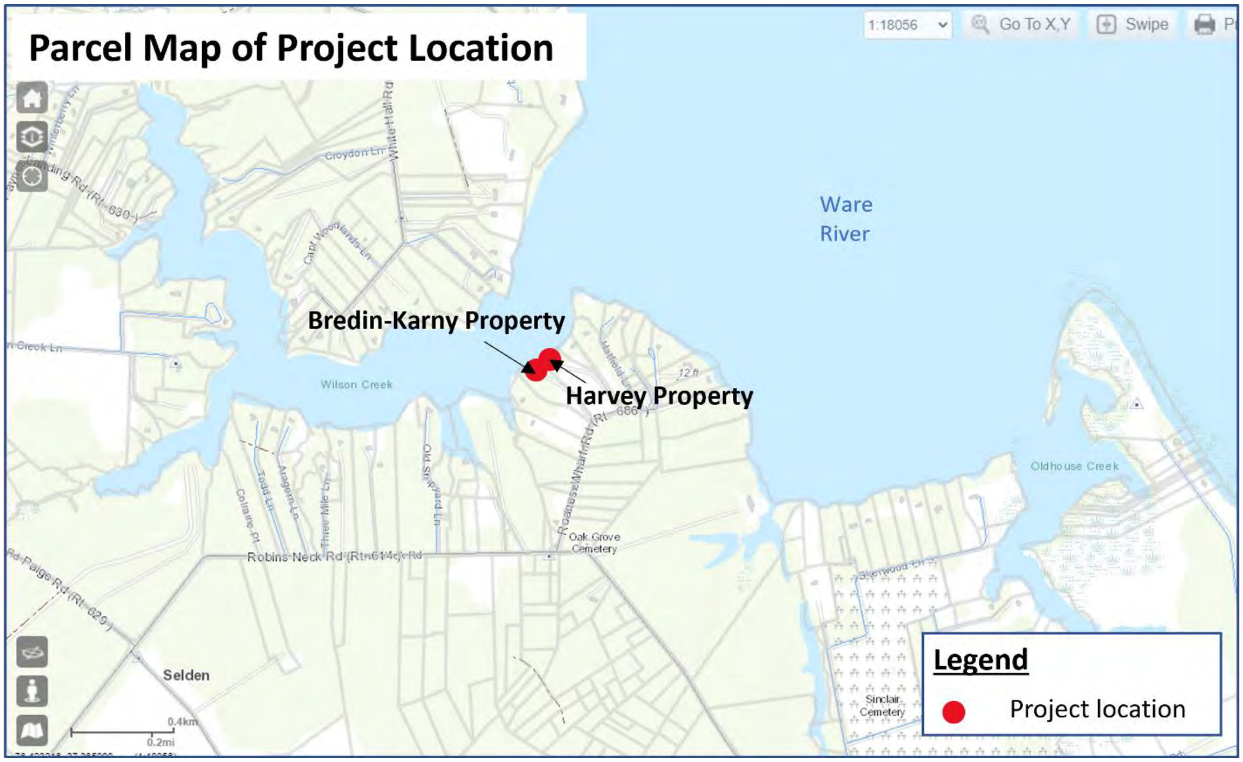
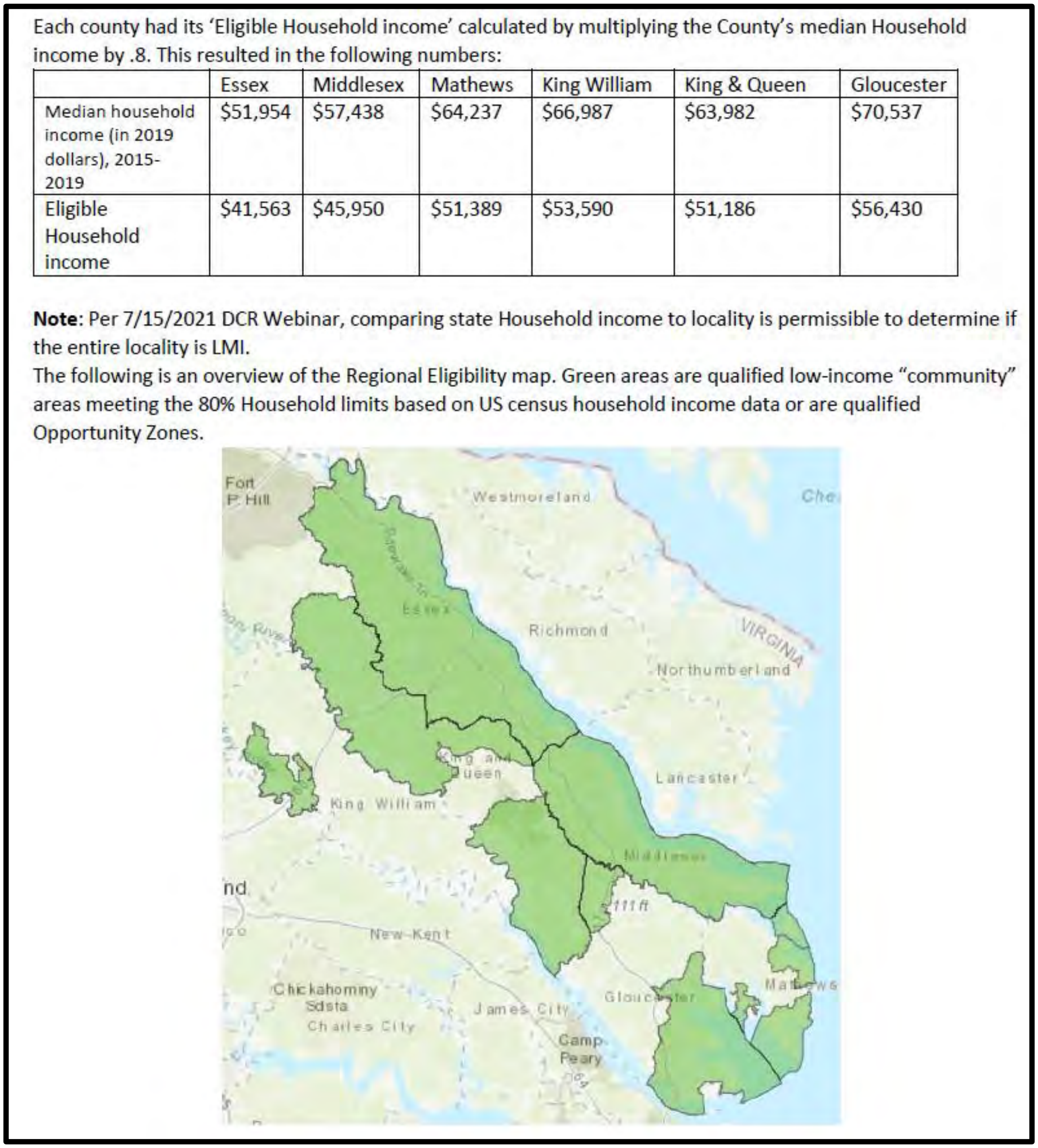


Figure 2: Parcel map of project location.



Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land and 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the most populous Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 3** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

FIGURE 3: MAP OF MIDDLE PENINSULAS LOW INCOME GEOGRAPHIC AREAS QUALIFYING UNDER DCR GUIDELINES.



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

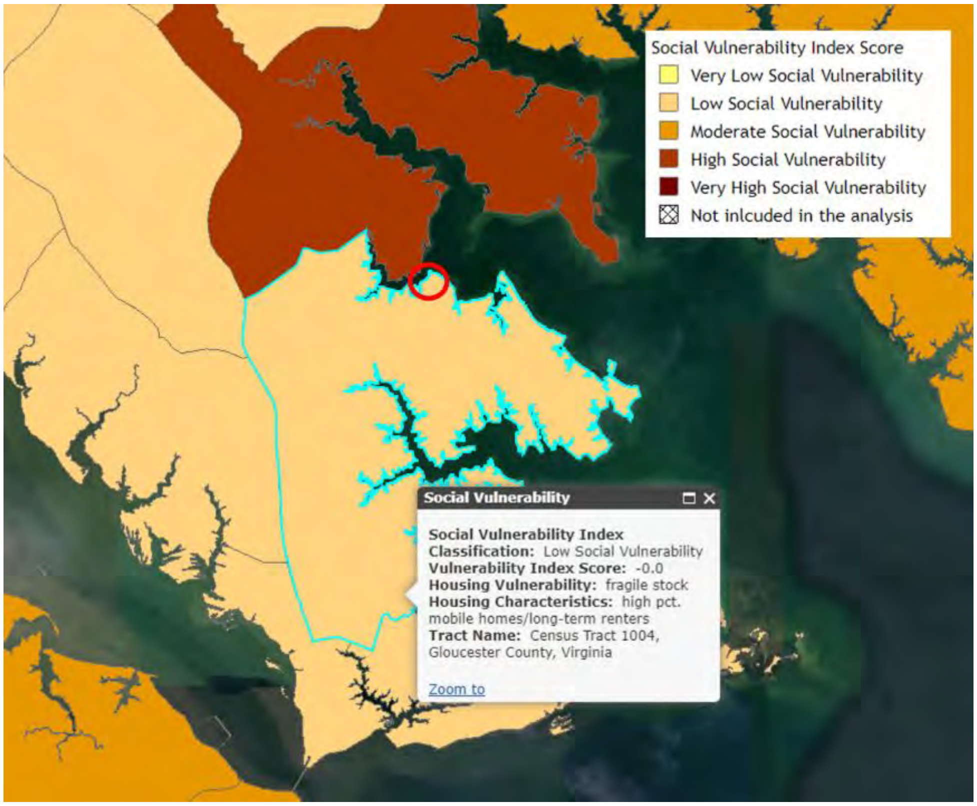
Please see **Figure 4** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 4: Map of the project location within the green low-income area.

According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a low social vulnerability score (**Figure 5**); however, it is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area.

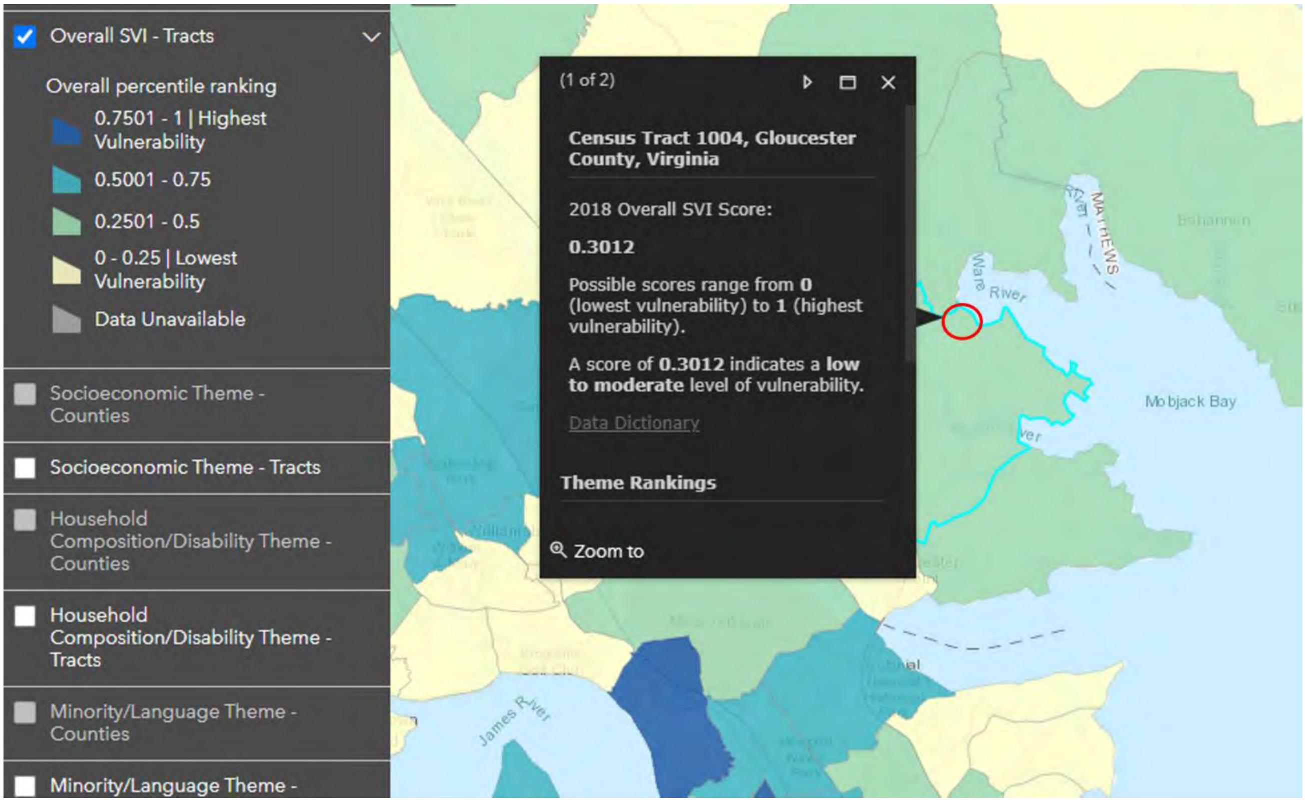
For instance, according to the CDC's Social Vulnerability Index (SVI) (https://svi.cdc.gov/map.html), which assesses vulnerability at a census track level, the social vulnerability is considered low to moderate level of vulnerability (**Figure 6**). The SVI is a database that helps emergency response planners and public health officials identify, map, and plan support for communities that will most likely need support before, during, and after a public health emergency. Please see **Attachment 2** for another model outcome.

FIGURE 5: VIRGINIA'S SOCIAL VULNERABILITY INDEX SCORE MAP FOR THE PROJECT LOCATION.



Social Vulnerability Index
Classification: Low Social Vulnerability
Vulnerability Index Score: -0.0
Housing Vulnerability: fragile stock
Housing Characteristics: high pct. mobile homes/long-term renters
Tract Name: Census Tract 1004, Gloucester County, Virginia

FIGURE 6: SVI OF CENSUS TRACK WHERE THE PROJECT LOCATION.



Census Tract 1004, Gloucester County, Virginia

2018 Overall SVI Score:

0.3012

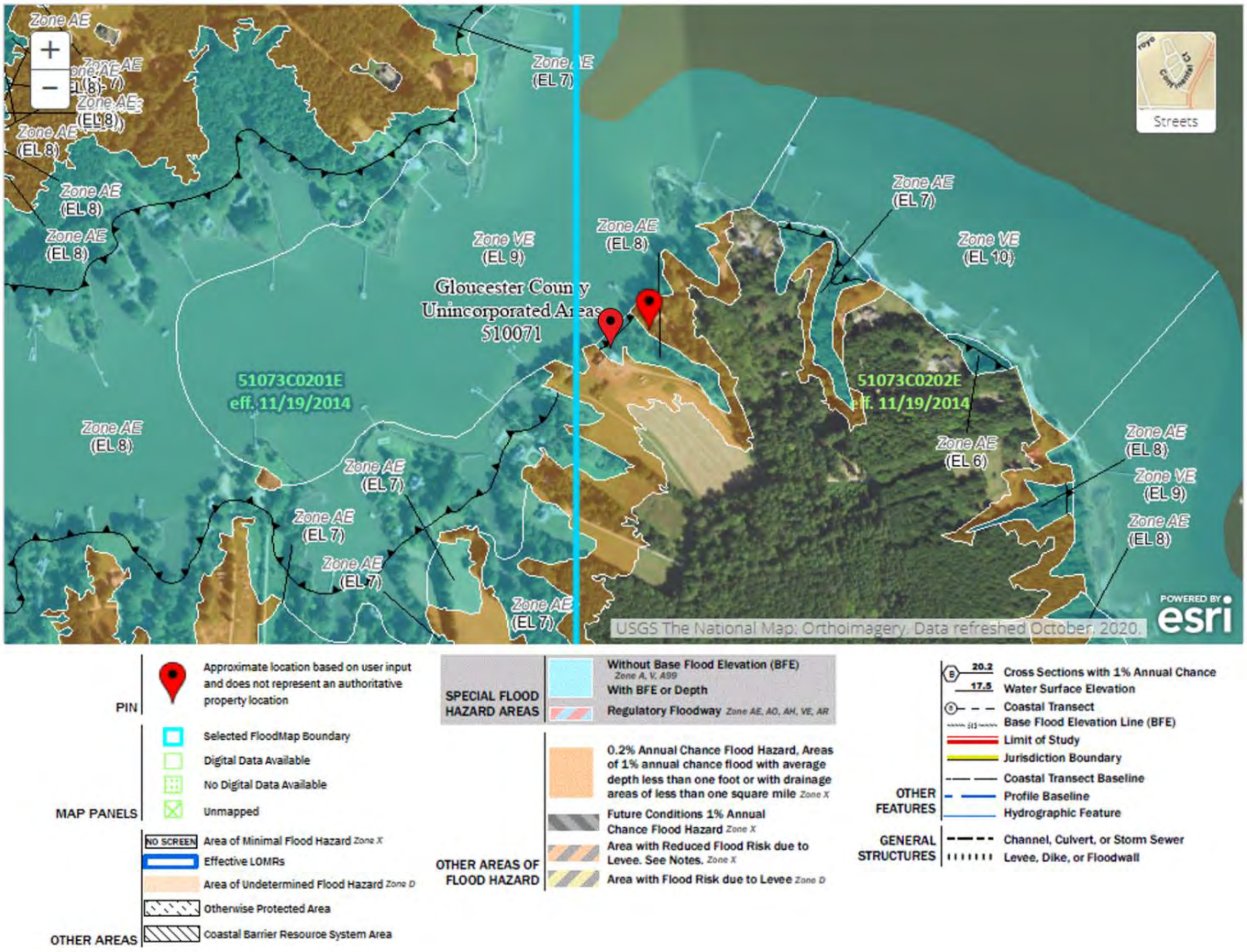
Possible scores range from **0** (lowest vulnerability) to **1** (highest vulnerability).

A score of **0.3012** indicates a **low to moderate** level of vulnerability.

The project location consists of two residential sites.

First, the Bredin-Karny property is located at 5514 Roane's Wharf Rd, Gloucester, Virginia (37.3638633, -76.469438). A 240-ft living shoreline will be constructed at this site. Second, a 245-ft. living shoreline will be constructed at the Harvey property located at 5518 Roane's Wharf Rd, Gloucester, Virginia (37.3643316, -76.46846). Within the project area there are 8 structures which will be protected from current and future flooding, including 2 residential homes, 1 smoke house, 2 barns, and 2 sheds. They are not severe repetitive loss structures or repetitive loss structures. Both sites are located within the AE flood zone (Figure 6). Please see **Attachment 3** for the FIRMettes (last mapped 11/19/2014).

FIGURE 7: MAP OF FEMA FLOOD ZONES.

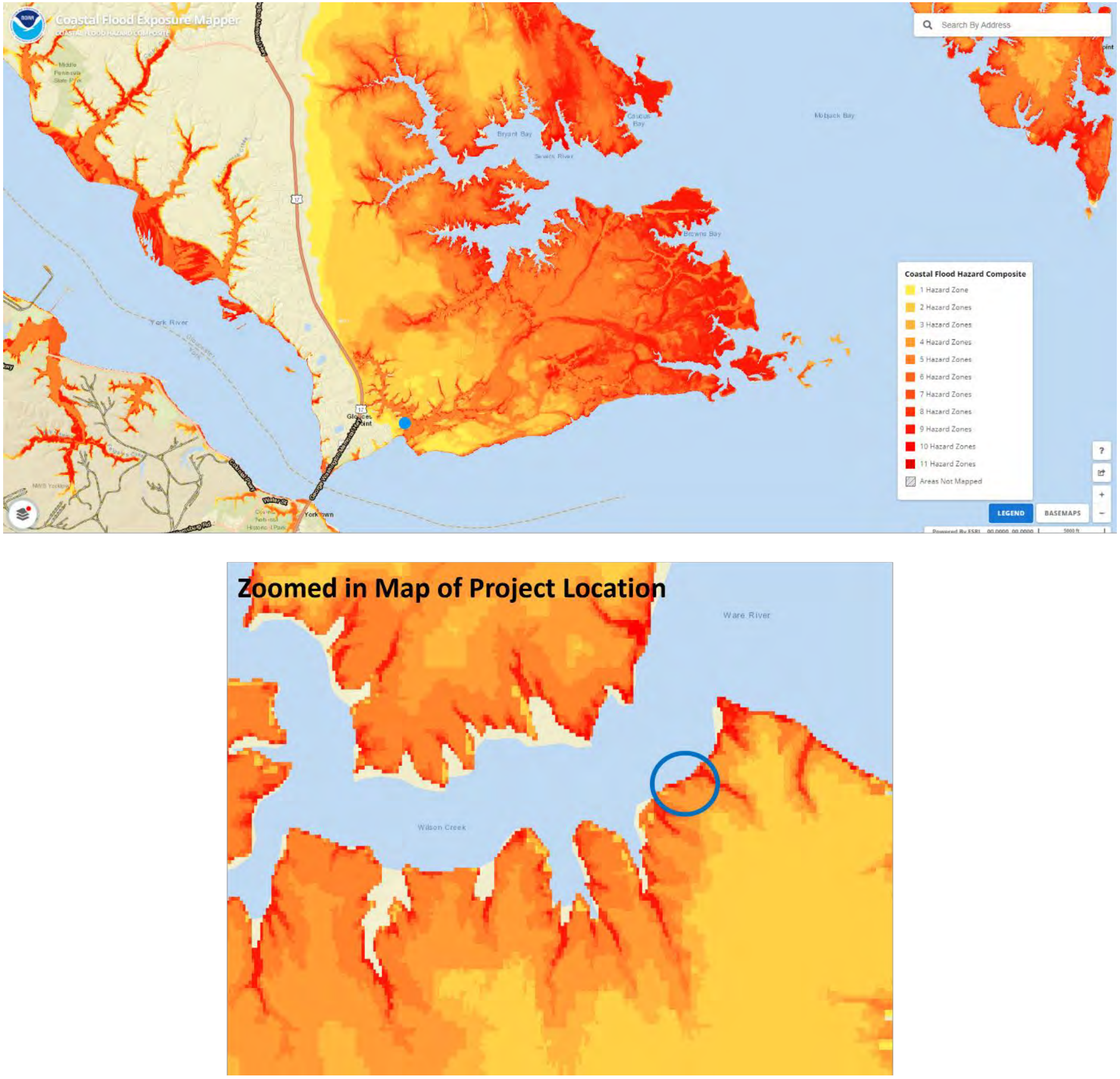


Due to the project site's proximity to the water, exposure to an expansive fetch to the mouth of Wilson Creek and Mobjack Bay, and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 8** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 9,327 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Attachment 4** lists 84 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

FIGURE 8: PROJECT LOCATION AND MAP OF THE SHORELINE CHANGE BETWEEN 1937 AND 2017.

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding (**Figure 9**).

FIGURE 9: MAP OF PROJECT LOCATION AND RISK OF COASTAL FLOODING (NOAA, 2021).



For more information about this project area please see:

- The Middle Peninsula All Hazards Mitigation Plan identifies all hazards that impact the region - https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf .
- Gloucester County Building and Engineering Department administers the NFIP. Here is the link to the current floodplain ordinance: http://gloucestercounty-va.elaws.us/code/coor_ch8.5

NEED FOR ASSISTANCE –

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the

Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of $1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from $750,000 to over $1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The need for assistance is two-fold.

First, as Gloucester County is near the Chesapeake Bay and numerous tidal rivers that create an area of high risk of coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from VIMS, relative sea- level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Gloucester County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds causing a storm surge. In Gloucester County, strong East and Northeast winds can push water from the Chesapeake Bay into the mouth of the York and Rappahannock Rivers and Mobjack Bay, flooding much of the county's low-lying areas (Middle Peninsula Planning District Commission, 2005). Additionally, when a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide". In Gloucester County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below (FEMA 1987, 6). If a severe hurricane were to make landfall during high tide, and additional 1.2 feet of water would be added to the highest storm surge possible, which could create a storm tide of 16.2 feet (Rygel, 2005). Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and produce hurricane-force winds that push large amounts of sea water inland. According to a study conducted by the Center for Coastal Resources Management, a one-and-a-half-foot rise in sea level coupled with a three-foot storm surge, like what would be experienced in a strong tropical storm, would lead to 13% of Gloucester County's land mass being flooded – including 118 miles of roads. Only 3% of the projected flood area is currently developed. A strong indicator that Gloucester County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, the County had 147 repetitive loss properties with claims topping $3.3 Million and 13 severe repetitive loss properties with claims totaling nearly $1.9 Million. The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on communities. Therefore, this project will build on other local efforts move toward becoming a more resilient community.

Second, at this project location, the shoreline is unstable and quickly eroding. At the Bredin-Karny property the existing bulkhead has underperformed and is severely damaged. As boards are coming off the bulkhead the soil is being washed away from the roots of an old cedar tree that sits in the RPA. This tree provides a lot of shade on the property and is critical for holding the soil and the bank with its roots. If a living shoreline is not installed this tree will most certainly be lost in the very near future. This will ultimately bring water closer to the house as the soil and bank will continue to erode. Please see **Figure 10** for project location photos and **Attachment 5** for more photos. At the Harvey property all the marsh grasses that used to be on the shoreline have drowned over the course of a year and now the shoreline is an eroded beach area. The shoreline is steadily and quickly eroding. Also, big cedar trees lining the shoreline will be affected next by flooding and the eroding bank if not mitigated. Please see **Figure 11** for project location photos and **Attachment 6** for more photos.

FIGURE 10: PHOTOS OF THE BREDIN-KARNY PROPERTY.

FIGURE 11: PHOTOS OF THE HARVEY PROPERTY.

ALTERNATIVES –

Alternatives are not applicable to this project. A living shoreline is feasible at this location and therefore required per VMRC regulations. This project employs a nature-based solution, and this project cost is not greater than $3 Million.

GOALS AND OBJECTIVES –

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

This project will install a total of 485 ft. of living shorelines at the project location including 240 ft. on the Bredin-Karny property and 245 ft. on the Harvey property. These adjoining neighbors are taking a collaborative approach to reduce erosion and stabilize their shoreline. The installation of living shorelines will also help to protect 4 red cedar trees and one pine tree that line the shoreline and hold a lot of the soil and bank in place. The living shoreline will be installed as designed and permitted through the JPA process. Please see the permit package for each site within the project area in **Attachment 7 and 8**.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.
Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.
Objective B: Stabilize the shoreline to ensure that the County’s tax base does not erode.

Goal 2: Improve water quality
Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.
Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the living shoreline installed at this project location will:

1. **Stabilize the shoreline and reduce the overall erosion rate at the project location**. According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the red cedars on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

2. **Provide ecosystem services to the community.** Since this project is proposing the installation of living shorelines, this project will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb./lf./yr.) and a phosphorus removal rate of 0.00861 lbs./lf./yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb./lf./yr. Therefore, with a proposed project of 485 linear feet of living shoreline this has the ability of removing 5.9073 pounds of nitrogen per year, 4.17585 pounds of phosphorus per year and 20,370 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

   In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

3. **Prevent loss of property and life.** As the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

APPROACH, MILESTONES, AND DELIVERABLES –

This project will follow the designs outlined and approved in the Joint Permit Application. Please see **Attachment 7 & 8** for the JPA application, Design, and Permit Package. The below table outlines the components of the living shoreline and what will be installed at the project location.

	Bredin-Karny property	**Harvey Property**	**Total Project Location**
Tall Rock Sills	160 linear feet (LF)	155 LF	315 LF
Short Rock Sills	60 LF	95 LF	155 LF
Rock Revetment	95 LF	0 LF	95 LF
Sand Nourishment	550 cubic yards	550 cubic yards	1100 cubic yards
Spartina Plantings	1,660 square feet	1,200 square feet	2,860 square feet

The anticipated timeline for this project could be as quick as 1 year, but no more than two years. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a two-year timeline will offer potential windows for planting the living shoreline - one in 2022 and one in 2023. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses for living shorelines should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them develop strong roots and leafy growth.

Below is the project timeline and project milestones for this project.

Receive funding notice - October 2021
Coordinate with property owners and the project contractor Shoreline Structures, LLC to review project timeline and project expectations – October 2021
Initiate site preparation at the project location - November 2021 to May 2022
Construction of the living shoreline – June 2022 to September 2022
Project Close out – November 2022

RELATIONSHIP TO OTHER PROJECTS –

For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea-level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:
Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 9** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program.** This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN –

The approved VMRC permits does not require a maintenance plan; therefore, the maintenance of this construction project will be in accordance with the permit requirements.

CRITERIA –

Describe how the project meets each of the applicable scoring criteria containedin Appendix B and provide the required documentation where necessary. Documentationcan be incorporated into the Scope of Work Narrative or included as attachments to the application. Appendix B must be completed and submitted with the application.

For local governments that are not towns, cities, or counties, the documentation providedfor the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
   YES.
2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   YES. Here's the link: Approved-8_19_DCR-packet_letterandplan.pdf (fightthefloodva.com)
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   YES. Please see Attachment 1
4. **Has the applicant provided evidence of an ability to provide the required match funds?**
   YES. Please see the match commitment letter in **Attachment 11.**
5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
   YES.

BUDGET NARRATIVE -

Below is the estimated budget for the proposed flood prevention and protection construction project that will result in a nature-based solution located in a low-income geographic area. Therefore, MPPDC staff is requesting 80% funding from DCR and will provide 20% match. Please see match commitment letters from the property owners in **Attachment 11**.

			DCR (80%)	Match from Owner (20%)	Project Total
Project Management Costs					
	Personnel		$ 15,586	$ 3,896	$ 19,482
	Fringe (26.58% on Salaries)		$ 4,143	$ 1,036	$ 5,179
SubAward/SubContract Agreement					
	Karny - 5514	*60 LF Short Sill*	$ 7,600	$ 1,900	$ 9,500
	Karny - 5514	*160 LF Tall Sill*	$ 31,096	$ 7,774	$ 38,870
	Karny - 5514	*95 LF Revetment*	$ 19,197	$ 4,799	$ 23,996
	Karny - 5514	*Sand Nourishment 550 cyds*	$ 12,704	$ 3,176	$ 15,880
	Karny - 5514	*Timber Mats*	$ 2,000	$ 500	$ 2,500
	Karny - 5514	*Spartina Plantings*	$ 1,120	$ 280	$ 1,400
	Karny - 5514	*Environmental permits, fees, etc*	$ 600	$ 150	$ 750
	Karny - 5514	*Access and yard repair*	$ 240	$ 60	$ 300
	Harvey - 5518	*155 LF tall Sill*	$ 29,264	$ 7,316	$ 36,580
	Harvey - 5518	*90 LF short Sill*	$ 11,200	$ 2,800	$ 14,000
	Harvey - 5518	*Sand Nourishment 550 cyds*	$ 12,704	$ 3,176	$ 15,880
	Harvey - 5518	*Timber Mats*	$ 2,000	$ 500	$ 2,500
	Harvey - 5518	*Spartina Plantings*	$ 960	$ 240	$ 1,200
	Harvey - 5518	*Environmental permits, fees, etc*	$ 600	$ 150	$ 750
	Harvey - 5518	*Access and yard repair*	$ 240	$ 60	$ 300
Indirect/IDC/Facilities & Administrative Costs (27.31%)			$ 10,850	$ 2,712	$ 13,562
Project totals			$ 162,103	$ 40,526	$ 202,629

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.

Also please note that the cost estimates for the construction of this project were supplied by the contractor, Shoreline Structures, LLC. Please see **Attachment 10**.

In summary:

***Estimated total project cost*:**	$202,629
***Amount of funds requested from the Fund (80% project total)*:**	$162,103
***Amount of cash funds available (20% project total)*:**	$40,526

Finally, please see the authorization to request for funding in **Attachment 12.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	Middle Peninsula Planning District Commission

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		120

Appendix D: Checklist All Categories

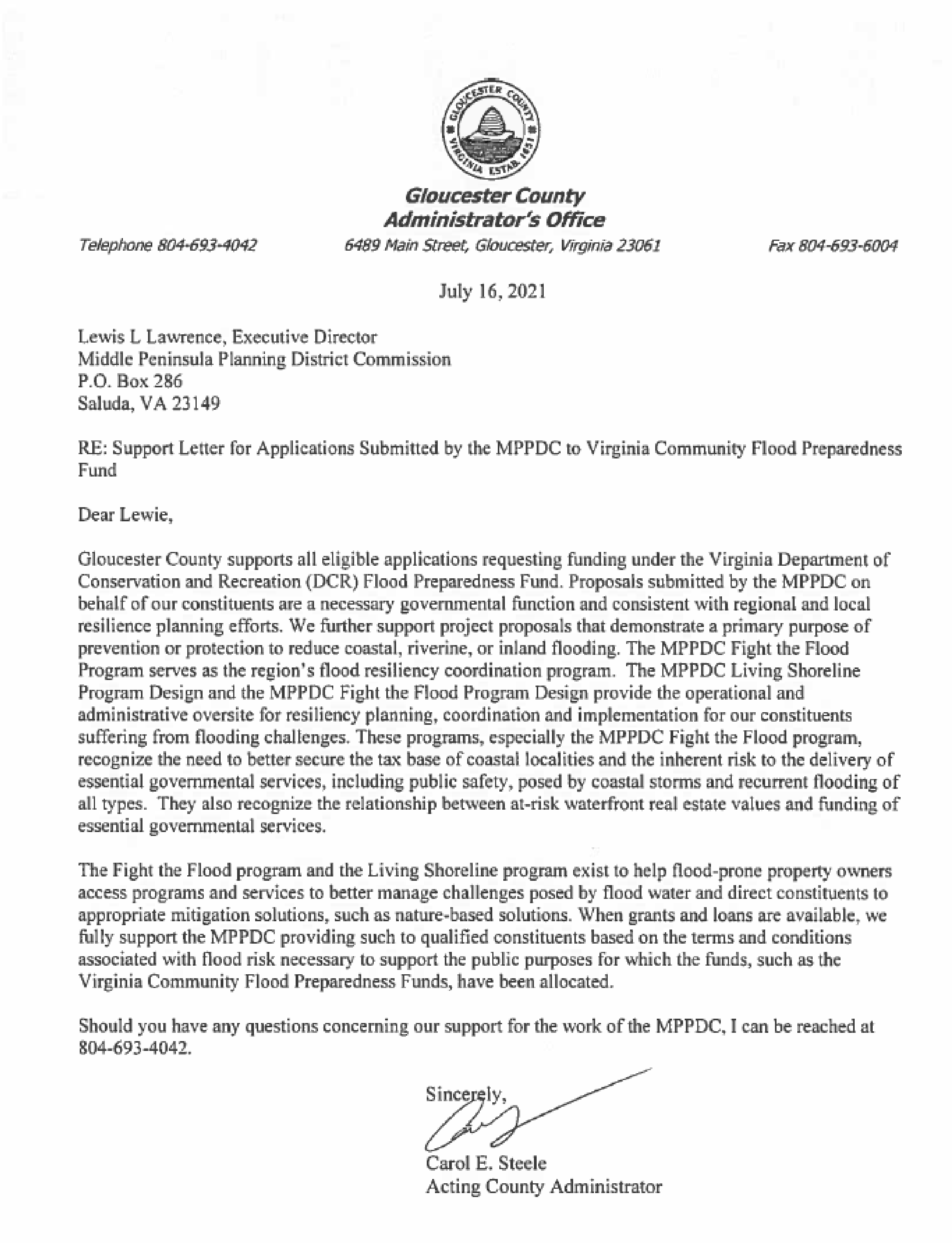
Virginia Department of Conservation

and RecreationCommunity Flood

Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter



Gloucester County
Administrator's Office

Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

Carol E. Steele
Acting County Administrator

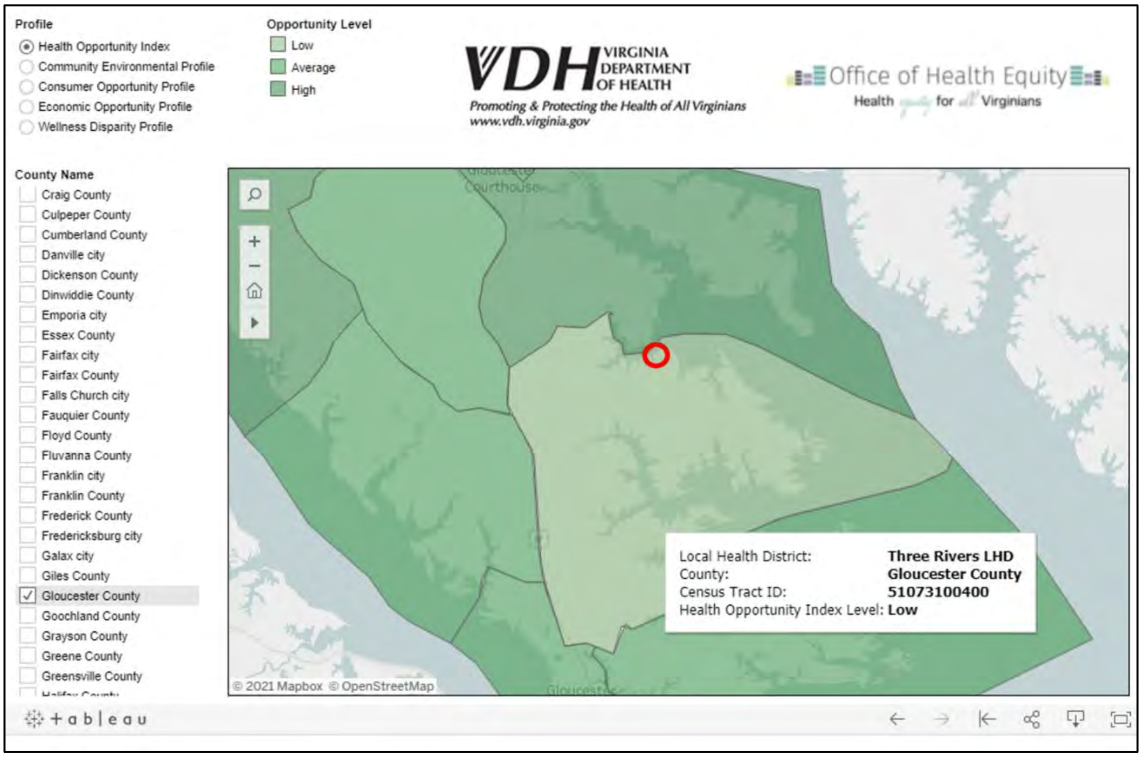
Attachment 2: Other Social Vulnerability Models to Consider

Social vulnerability refers to the resilience of communities when confronted by external stresses on human health, stresses such as natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss. When considering the social vulnerability of this project location a variety of social vulnerability models were considered and based on the differences between the methodology and scale of the model, the project area ranged from being classified as having low social vulnerability to average social vulnerability.

Below is another model considered to determine social vulnerability within the project area.

When considering the Virginia Department of Health (VDH) – Office of Health Equity Health Opportunity Index a group of indicators provide broad insight into the overall opportunity for Virginians to live long and healthy lives based on the Social Determinants of Health. It is a hierarchical index that allows users to examine social determinants of health at multiple levels of detail in Virginia. It is made up of over 30 variables, combined into 13 indicators (i.e., Air quality, population churning, population density, walkability, affordability, education, food accessibility, material deprivation, employment accessibility, income inequality, job participation, access to care, segregation), grouped into four profiles (i.e. community environment, consumer opportunity, economic opportunity, and wellness disparity), which are aggregated into a single Health Opportunity Index (HOI). The HOI is reported on a Census Tract level and is defined as the opportunity to live a long and healthy life in each area. Therefore, as the HOI is low for the project location this means that opportunity to live a long and healthy life is low due to Social Determinants of Health. (Figure 22).

Figure 22: HOI for the project location. The red circle shows the project location.



Profile
● Health Opportunity Index
○ Community Environmental Profile
○ Consumer Opportunity Profile
○ Economic Opportunity Profile
○ Wellness Disparity Profile

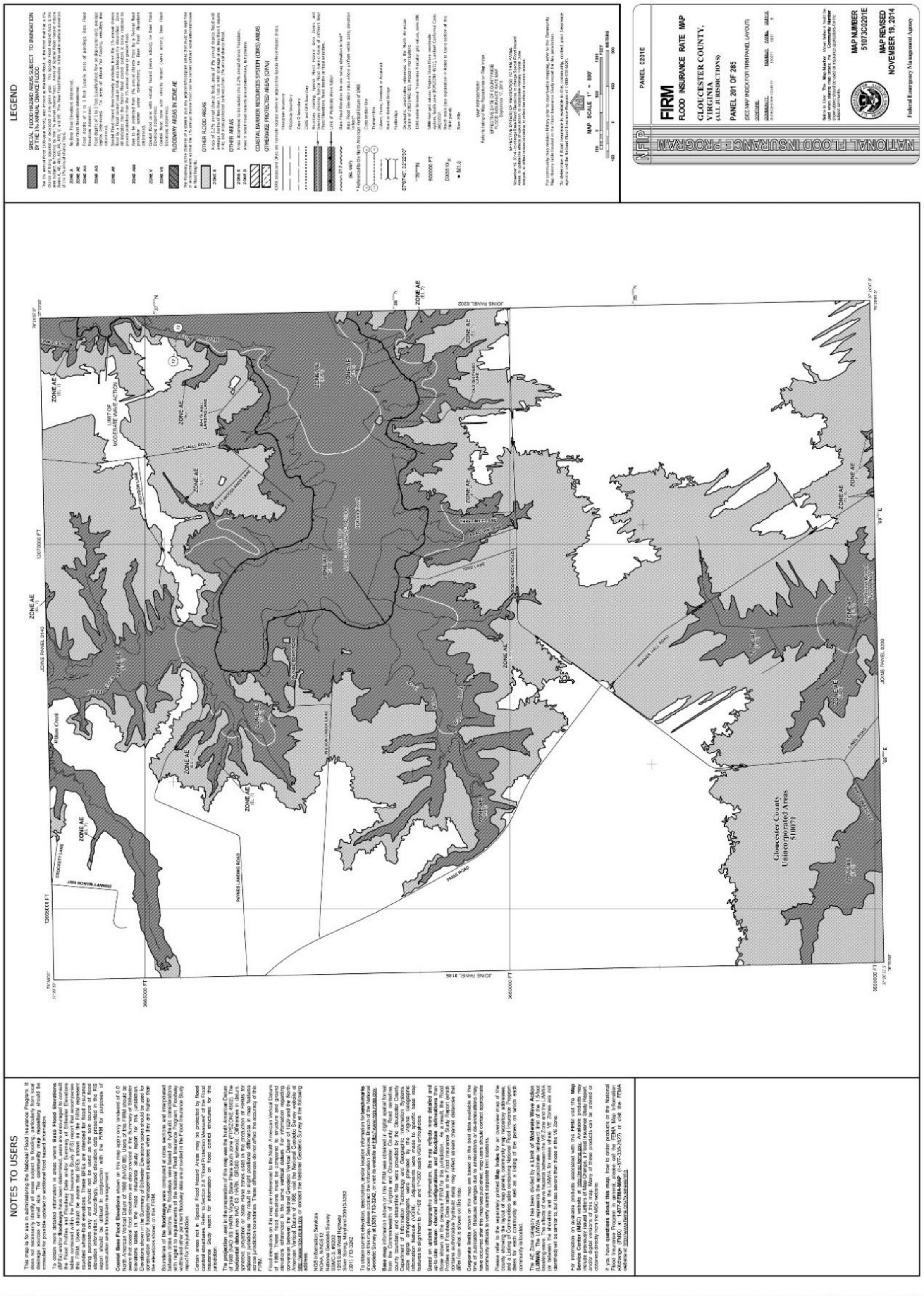
Opportunity Level
🟩 Low
🟩 Average
🟩 High

County Name
☐ Craig County
☐ Culpeper County
☐ Cumberland County
☐ Danville city
☐ Dickenson County
☐ Dinwiddie County
☐ Emporia city
☐ Essex County
☐ Fairfax city
☐ Fairfax County
☐ Falls Church city
☐ Fauquier County
☐ Floyd County
☐ Fluvanna County
☐ Franklin city
☐ Franklin County
☐ Frederick County
☐ Fredericksburg city
☐ Galax city
☐ Giles County
☑ Gloucester County
☐ Goochland County
☐ Grayson County
☐ Greene County
☐ Greensville County

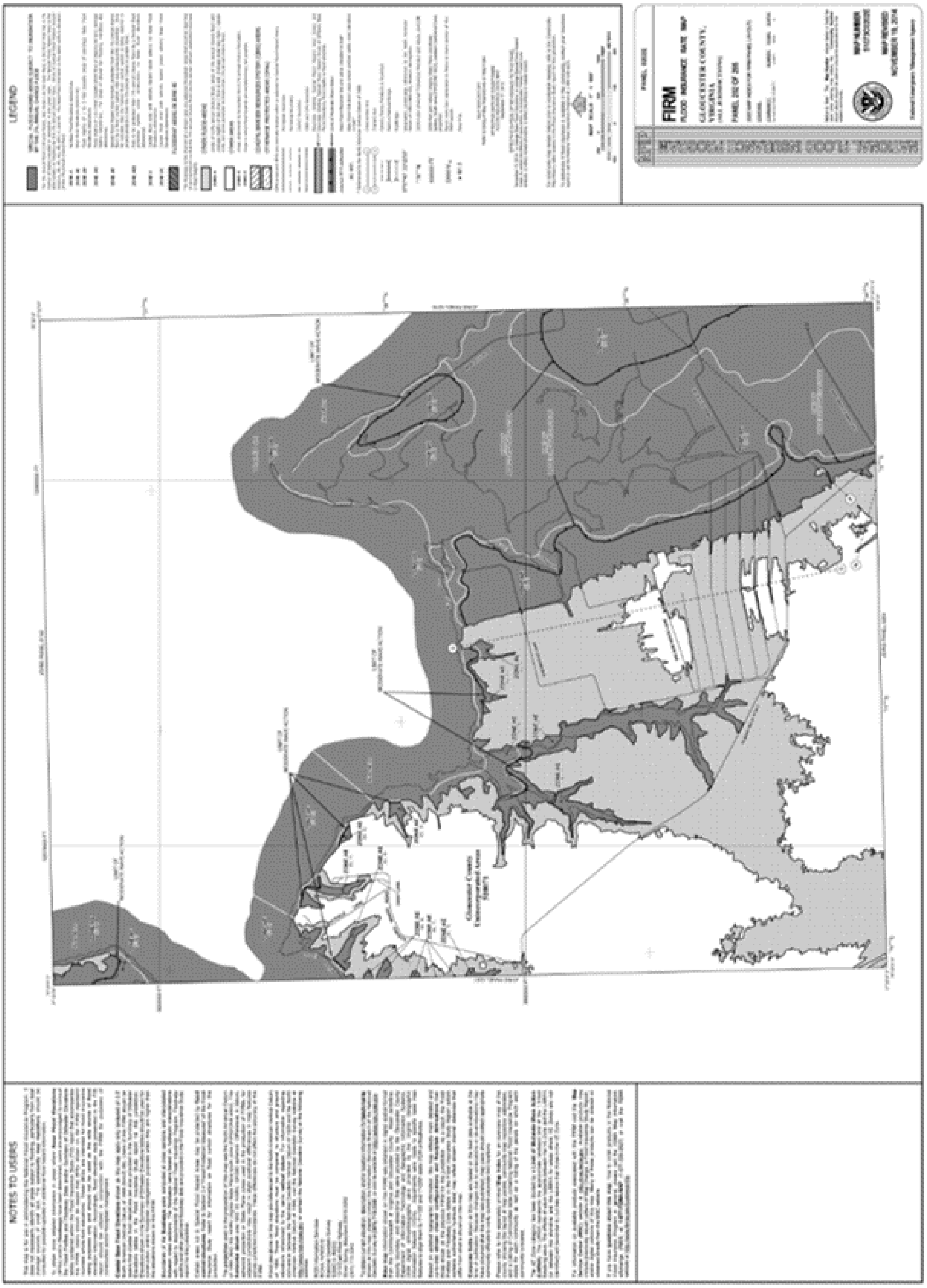
Local Health District: **Three Rivers LHD**
County: **Gloucester County**
Census Tract ID: **51073100400**
Health Opportunity Index Level: **Low**

Attachment 3: Project Location FIRMettes

Bredin-Karny Property (FIRMette #: 51073C0201E)

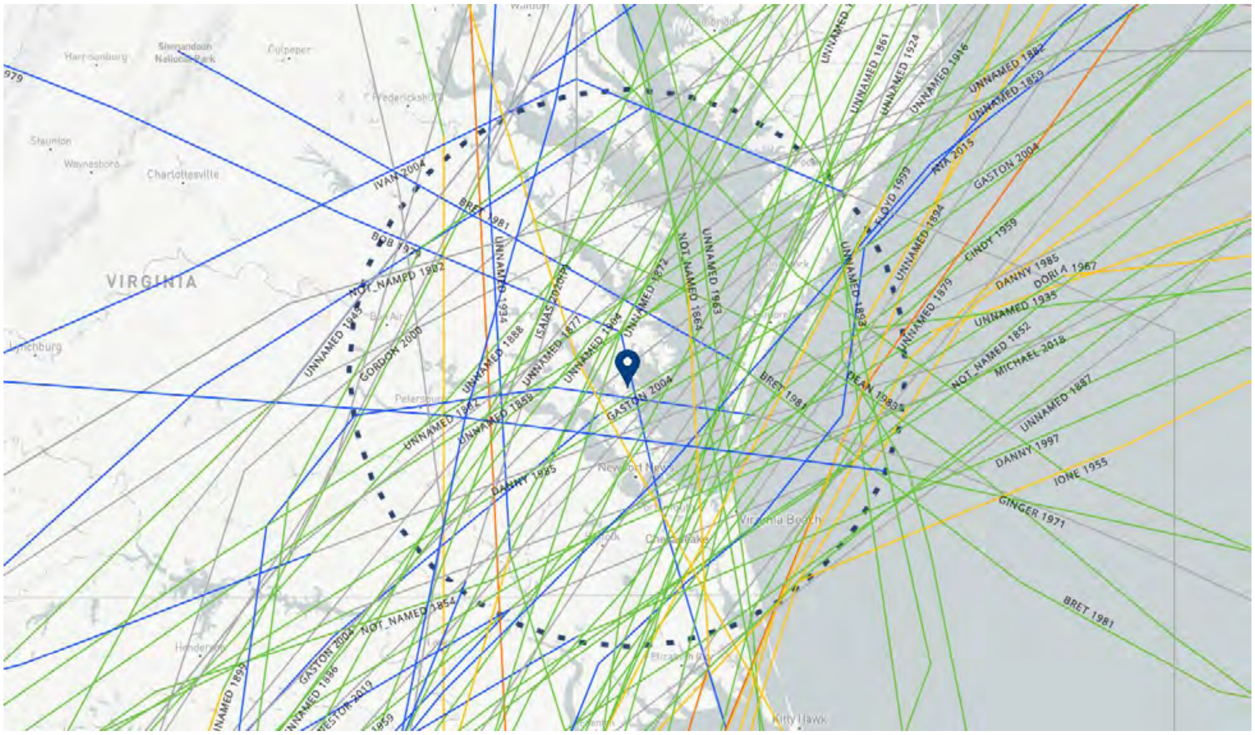


Harvey Property (FIRMette #: 51073C0202E)



Attachment 4: List of historic hurricanes impacting the project area.

Hurricane List



Search Filter Criteria

Location: 37.3638633, -76.469438

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

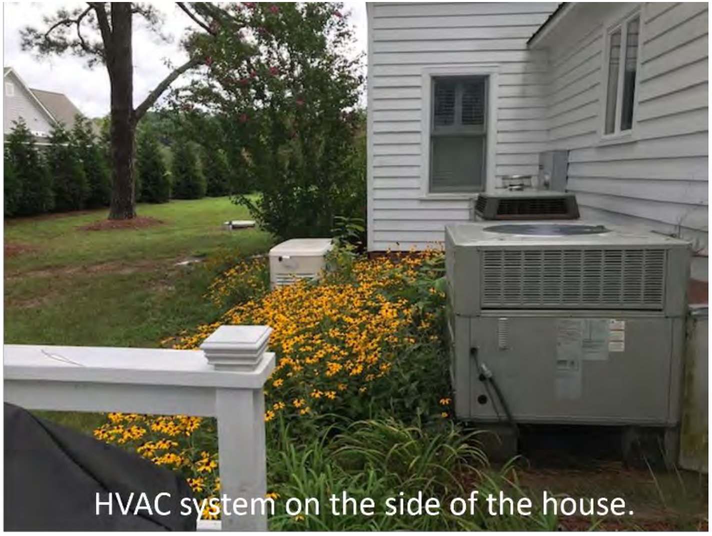
Attachment 5: Photos of the Bredin-Karny property shoreline.

Photo of failing bulkhead.

Photo of dead shrub on the shoreline.

Drowning marsh grasses on shoreline.

The house and HVAC system are about 30 feet from the water's edge. Also, the corner of one of the barns on the property is only feet from flooding waters. Without the installation of a nature-based solution all structures are at risk of flooding and damage.


HVAC system on the side of the house.


Corner of barn is within feet of the rising waters. This threatens the foundation of this structure.

Attachment 6: Photos of the Harvey property shoreline.

Exposed beach with little vegetation to protect it from erosion or rising waters.

This is the beach at high tide.

Harvey is seeing changes in the wetland grass. Instead of this section being full of marsh grasses the grasses in the middle have died and have increased flooding in this area of the property.

This is flooding around the pine trees. The photos below show the proximity to the house, and it also shows that the pine trees and grass around the are being impacted.

Attachment 7: Bredin-Karny JPA, Design, and Permit Package

From: Gloucester Office Supply
To: jpa.permits@mrc.virginia.gov; Jeffrey G. Watkins
Subject: two new applications
Date: Monday, May 3, 2021 10:54:21 AM
Attachments: DOC065.PDF
DOC064.PDF

Please let Jeff know you received this.
Thanks

Office Supply of Gloucester 6754 Main Street Edgehill Town Center Gloucester□VA 23061 Phone□804-693-4155 Fax□804-693-2270 □□officesu□□□y@yahoo.com

Received by VMRC May 3, 2021 /blh

- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA # 21-1009

APPLICANTS
Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply

Pre-Construction Notification (PCN) ☐ NWP # ______	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: Gloucester

Waterway at project site: Wilson Creek

[redacted]

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address:

Alice Bredin-Karny
5514 Roane's Wharf Rd.
Gloucester, VA 23061

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (____)____________
e-mail ________________

State Corporation Commission Name and ID Number (if applicable) ____________

2. Property owner(s) legal name* and complete address, if different from applicant:

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (____)____________
e-mail ________________

State Corporation Commission Name and ID Number (if applicable) ____________

3. Authorized agent name* and complete mailing address (if applicable):

Jeff Watkins, Shoreline Structures, LLC
P.O. Box 515
Gloucester VA 23061

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (____)804-815-0813
e-mail ________________

State Corporation Commission Name and ID Number (if applicable) ____________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

Shoreline Erosion control project:
Rock sills = 240 L.F.
Revetment = 95 L.F.
Sand Nourishment = 750 c.yds.
Spartina plantings = 1660 s.f.

Private pier replacement: 6' x 210', 400 s.f. L head, finger pier & boatlift.
↳ 5'x57'

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? ✓ Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

Jeff Watkins
P.O. Box 515
Gloucester, Va. 23061

Contact Information:

Home ( )
Work (804) 815-0813
Fax ( )
Cell ( )
email jwatkins49@cox.net

State Corporation Commission Name and ID Number (if applicable) __________

*** If multiple contractors, each must be listed and each must sign the applicant signature page.**

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:

Gazette-Journal
6625 Main Street
Gloucester, Va. 23061

Telephone number (804) 693-3101

7. Give the following project location information:

Street Address (911 address if available) 5514 Roanes Wharf Rd.
Lot/Block/Parcel# RP11844 40-167
Subdivision Selden
City / County Gloucester, Va. ZIP Code 23061
Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
__________ / - __________ (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

- from rt 17N to Featherbed Lane, past Paige Rd + Warner Hall Rd on Robins Neck Rd.
- turn left onto Roanes Wharf Rd
- turn left into Magnolia Farm property on Roanes Wharf Rd # 5514

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose may be "to protect property from erosion due to boat wakes" and the secondary purpose may be "to provide safer access to a pier."

First - to prevent further erosion to front of property
Second - to stablize waterfront to prevent old trees from uprooting (three trees on very edge)

Part 1 - General Information (continued)

9. Proposed use (check one):
   ✓ Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

There will need to be careful excavating during project construction because there is a narrow piece of land in the front between house and water. The most serious area is a very narrow strip of land.

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes ✓ No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $97,000.00 +/-
Approximate cost of that portion of the project that is channelward of mean low water:
$____________

13. Completion date of the proposed work:______________________________-____________

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

John and Margaret Singleton
5488 Roanes Wharf Rd
Gloucester, Va. 23061

Mark and JoElle Harvey
5518 Roanes Wharf Rd.
Gloucester, Va. 23061

Part 2 - Signatures

1. **Applicants and property owners (if different from applicant).**
   NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.
CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit. **In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

Alice Bredin-Karny
Applicant's Legal Name (printed/typed)

N/A
(Use if more than one applicant)

Alice Bredin-Karny
Applicant's Signature

N/A
(Use if more than one applicant)

April 20, 2021
Date

N/A
Property Owner's Legal Name (printed/typed)
(If different from Applicant)

N/A
(Use if more than one owner)

N/A
Property Owner's Signature

N/A
(Use if more than one owner)

N/A
Date

Received by VMRC May 3, 2021 /blh

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

Lewie Lawrence

I (we), Alice Bredin-Karny, hereby certify that I (we) have authorized Jeff Watkins
(Applicant's legal name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

(Agent's Signature)

(Use if more than one agent)

4-20-21
(Date)

Alice Bredin-Karny
(Applicant's Signature)

(Use if more than one applicant)

April 20, 2021
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), Alice Bredin-Karny, have contracted Jeff Watkins / Shoreline Structures LLC
(Applicant's legal name(s)) (Contractor's name(s))
to perform the work described in this Joint Permit Application, signed and dated 4-20-21.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

Shoreline Structures LLC
Contractor's name or name of firm

PO Box 515 Glo. VA 23061
Contractor's or firms address

Contractor's signature and title

Contractor's License Number

Alice Bredin-Karny
Applicant's signature

(use if more than one applicant)

April 20, 2021
Date

U.S. Army Corps
Of Engineers
Norfolk District

REGIONAL PERMIT 17 CHECKLIST

Please review the 18-RP-17 enclosure before completing this form and note 18-RP-17 can only be used for proposed <u>PRIVATE USE</u> structures that comply with the terms and conditions of 18-RP-17. Copies can be obtained online at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/.

YES☑ NO☐	**(1)** Has the permittee reviewed the 18-RP-17 enclosure and verified that the proposed structure(s) is in compliance with all the terms, conditions, and limitations of 18-RP-17?
YES☑ NO☐	**(2)** Does the proposed structure(s) extend no more than one-fourth of the distance across the waterway measured from either mean high water (MHW) to MHW (including all channelward wetlands) or ordinary high water (OHW) to OHW (including all channelward wetlands)?
YES☑ NO☐	**(3)** Does the proposed structure(s) extend no more than 300 feet from MHW or OHW (including all channelward wetlands)?
YES☑ NO☐ N/A☐	**(4)** Does the proposed structure(s) attach to the upland at a point landward of MHW or OHW (including all channelward wetlands)?
YES☑ NO☐ N/A☐	**(5)** If the proposed structure(s) crosses wetland vegetation, is it an open-pile design that has a <u>maximum</u> width of five (5) feet and a <u>minimum</u> height of four (4) feet between the decking and the wetland substrate?
YES☑ NO☐ N/A☐	**(6)** Does the proposed structure(s) include no more than two (2) boatlifts and no more than two (2) boat slips?
YES☑ NO☐ N/A☐	**(7)** Is the open-sided roof structure designed to shelter a boat ≤ 700 square feet and/or is the open sided roof structure or gazebo structure designed to shelter a pier ≤ 400 square feet?
YES☑ NO☐ N/A☐	**(8)** Are all piles associated with the proposed structure(s) non-steel, less than or equal to 12" in diameter, and will less than or equal to 25 piles be installed channelward of MHW?
YES☑ NO☐ N/A☐	**(9)** Is all work occurring behind cofferdams, turbidity curtains, or other methods to control turbidity being utilized when operationally feasible and federally listed threatened or endangered species may be present?
YES☑ NO☐ N/A☐	**(10)** If the proposed structure(s) is to be located within an anadromous fish use area, will the prospective permittee adhere to the anadromous fish use area time of year restriction (TOYR) prohibiting in-water work from occurring between February 15 through June 30 of any given year if (1) piles are to be installed with a cushioned impact hammer and there is less than 492 feet between the most channelward pile and mean low water (MLW) on the opposite shoreline or (2) piles are to be installed with a vibratory hammer and there is less than 384 feet between the most channelward pile and MLW on the opposite shoreline?
YES☑ NO☐	**(11)** Is all work occurring outside of submerged aquatic vegetation (SAV) mapped by the Virginia Institute of Marine Sciences[1] (VIMS) most recent survey year and 5 year composite?
YES☑ NO☐	**(12)** Has the permittee ensured the construction and/or installation of the proposed structure(s) will not affect federally listed threatened or endangered species or designated critical habitat?
YES☑ NO☐	**(13)** Will the proposed structure be located outside of Broad Creek in Middlesex County, Fisherman's Cove in Norfolk, or the Salt Ponds in Hampton?
YES☑ NO☐	**(14)** Will the proposed structure(s) be located outside of the waterways containing a Federal Navigation Project listed in Permit Specific Condition 12 of 18-RP-17 and/or will all portions of the proposed structure(s) be located more than 85 feet from the Federal Navigation Project?

YES☒ NO☐	**(15)** Will the proposed structure(s) be located outside a USACE Navigation and Flood Risk Management project area?
YES☒ NO☐	**(16)** Will the proposed structure(s) be located outside of any Designated Trout Waters?
YES☒ NO☐ N/A☐	**(17)** If the proposed structure(s) includes flotation units, will the units be made of materials that will not become waterlogged or sink if punctured?
YES☒ NO☐ N/A☐	**(18)** If the proposed structure(s) includes flotation units, will the floating sections be braced so they will not rest on the bottom during periods of low water?
YES☒ NO☐	**(19)** Is the proposed structure(s) made of suitable materials and practical design so as to reasonably ensure a safe and sound structure?
YES☒ NO☐	**(20)** Will the proposed structure(s) be located on the property in accordance with the local zoning requirements?
YES☒ NO☐ N/A☐	**(21)** If the proposed structure(s) includes a device used for shellfish gardening, will the device be attached directly to a pier and limited to a total of 160 square feet?
YES☒ NO☐ N/A☐	**(22)** If the proposed structure(s) includes a device used for shellfish gardening, does the permittee recognize this RP does not negate their responsibility to obtain an oyster gardening permit (General Permit #3) from Virginia Marina Resources Commission (VMRC)'s Habitat Management Division? Please refer to Appendix D of the Tidewater JPA for more details on VMRC's aquaculture requirements.
YES☒ NO☐	**(23)** Does the permittee recognize this RP does not authorize any dredging or filling of waters the United States (including wetlands) and does not imply that future dredging proposals will be approved by the Corps?
YES☒ NO☐	**(24)** Does the permittee understand that by accepting 18-RP-17, the permittee accepts all of the terms and conditions of the permit, including the limits of Federal liability contained in the 18-RP-17 enclosure? Does the permittee acknowledge that the structures permitted under 18-RP-17 may be exposed to waves caused by passing vessels and that the permittee is solely responsible for the integrity of the structures permitted under 18-RP-17 and the exposure of such structures and vessels moored to such structures to damage from waves? Does the permittee accept that the United States is not liable in any way for such damage and that it shall not seek to involve the United States in any actions or claims regarding such damage?

IF YOU HAVE ANSWERED "NO" TO ANY OF THE QUESTIONS ABOVE, REGIONAL PERMIT 17 (18-RP-17) DOES NOT APPLY AND YOU ARE REQUIRED TO OBTAIN WRITTEN AUTHORIZATION FROM THE CORPS PRIOR TO PERFORMING THE WORK.

IF YOU HAVE ANSWERED "YES" (OR "N/A", WHERE APPLICABLE) TO ALL OF THE QUESTIONS ABOVE, YOU ARE IN COMPLIANCE WITH REGIONAL PERMIT 17 (18-RP-17). PLEASE SIGN BELOW, ATTACH, AND SUBMIT THIS CHECKLIST WITH YOUR COMPLETED JOINT PERMIT APPLICATION (JPA). THIS SIGNED CERTIFICATE SERVES AS YOUR LETTER OF AUTHORIZATION FROM THE CORPS. YOU WILL NOT RECEIVE ANY OTHER WRITTEN AUTHORIZATION FROM THE CORPS; HOWEVER, YOU MAY NOT PROCEED WITH CONSTRUCTION UNTIL YOU HAVE OBTAINED ALL OTHER NECESSARY STATE AND LOCAL PERMITS.

I CERTIFY THAT I HAVE READ AND UNDERSTAND ALL CONDITIONS OF THE REGIONAL PERMIT 17 (18-RP-17), DATED SEPTEMBER 2018, ISSUED BY THE US ARMY CORPS OF ENGINEERS, NORFOLK DISTRICT REGULATORY BRANCH (CENAO-WRR), NORFOLK, VIRGINIA.

Signature of Property Owner(s) or Agent

Date 4-1-21

Proposed work to be located at:

5514
Roane's Wharf R.
Glo. VA 23061

Part 3 – Appendices

Please complete and submit the appendix questions applicable to your project, and attach the required vicinity map(s) and drawings to your application. If an item does not apply to your project, please write "N/A" in the space provided.

Appendix A: **Projects for Access** to the water such as private and community piers, boathouses, marinas, moorings, and boat ramps. Answer all questions that apply.

1. **Briefly describe your proposed project.**

Replace pier: 6' x 210', 400 S.F. L head
finger pier & BoatLift

2. **For private, noncommercial piers:**

Do you have an existing pier on your property? ✓ Yes ___ No
If yes, will it be removed? ✓ Yes ___ No
Is your lot platted to the mean low water shoreline? ✓ Yes ___ No
What is the overall length of the proposed structure? 210 feet.
Channelward of Mean High Water? 205 feet.
Channelward of Mean Low Water? 200 feet.
What is the area of the piers and platforms that will be constructed over
Tidal non-vegetated wetlands __________ square feet.
Tidal vegetated wetlands _________ square feet.
Submerged lands __________ square feet.
What is the total size of any and all L- or T-head platforms? 400 sq. ft.
For boathouses, what is the overall size of the roof structure? ________ sq. ft.
Will your boathouse have sides? _____ Yes ____ No.

NOTE: All proposals for piers, boathouses and shelter roofs must be reviewed by the Virginia Marine Resources Commission (Commission or VMRC), however, pursuant to § 28.2-1203 A 5 of the Code of Virginia a VMRC permit may not be required for such structures (except as required by subsection D of § 28.2-1205 for piers greater than 100 feet in length involving commercially productive leased oyster or clam grounds), provided that (i) the piers do not extend beyond the navigation line or private pier lines established by the Commission or the United States Army Corps of Engineers (USACE), (ii) the piers do not exceed six feet in width and finger piers do not exceed five feet in width, (iii) any L or T head platforms and appurtenant floating docking platforms do not exceed, in the aggregate, 400 square feet, (iv) if prohibited by local ordinance open-sided shelter roofs or gazebo-type structures shall not be placed on platforms as described in clause (iii), but may be placed on such platforms if not prohibited by local ordinance, and (v) the piers are determined not to be a navigational hazard by the Commission. Subject to any applicable local ordinances, such piers may include an attached boat lift and an open-sided roof designed to shelter a single boat slip or boat lift. In cases in which open-sided roofs designed to shelter a single boat, boat slip or boat lift will exceed 700 square feet in coverage or the open-sided shelter roofs or gazebo structures exceed 400 square feet, and in cases in which an adjoining property owner objects to a proposed roof structure, permits shall be required as provided in § 28.2-1204.

Part 3 – Appendices (continued)

Appendix B: Projects for Shoreline Stabilization in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS.

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

- Rock Revetment, 95L.F. Class II over Core & F.C.
- Rock sills = 240 L.F. Class II & I over Core
- Sand Nourishment = 750 cyds
- Spartina plantings = 1660 S.F.

2. What is the maximum encroachment channelward of mean high water? 40 feet.
Channelward of mean low water? 25 feet.
Channelward of the back edge of the dune or beach? NA feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 0 square feet
   - Non-vegetated wetlands [illegible] square feet — Rock REVT. = 950, Sand = 1200
   - Subaqueous bottom → square feet — Rock = 3080, SAND = 1120
   - Dune and/or beach NA square feet

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes ____ No.

If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____ Yes ____ No.

If no, please provide an explanation for the purpose and need for the additional encroachment.

Part 3 – Appendices (continued)

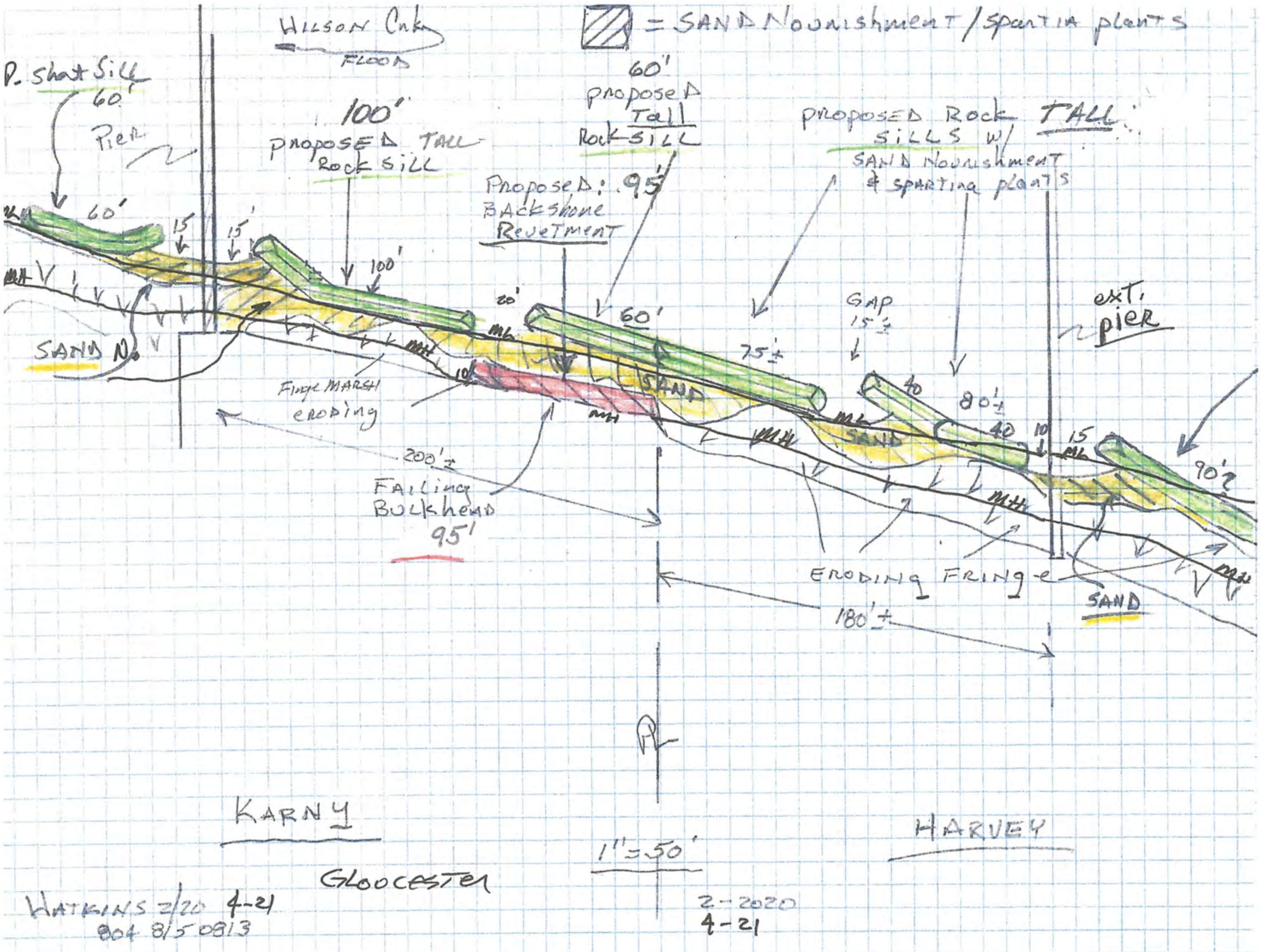
5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
NOTE: Drawings must include construction details, including dimensions, design and all materials, including fittings if used.

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
Core (inner layer) material 20 pounds per stone Class size Small
Armor (outer layer) material 500/1,500 pounds per stone Class size II

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

- Volume of material
  250 cubic yards channelward of mean low water
  500 cubic yards landward of mean low water
  750 cubic yards channelward of mean high water
  0 cubic yards landward of mean high water
- Area to be covered
  1120 square feet channelward of mean low water
  1200 square feet landward of mean low water
  ___________ cubic yards channelward of mean high water
  ___________ cubic yards landward of mean high water
- Source of material, composition (e.g. 90% sand, 10% clay): 90
- Method of transportation and placement:
  ____
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:

Received by VMRC May 3, 2021 /blh



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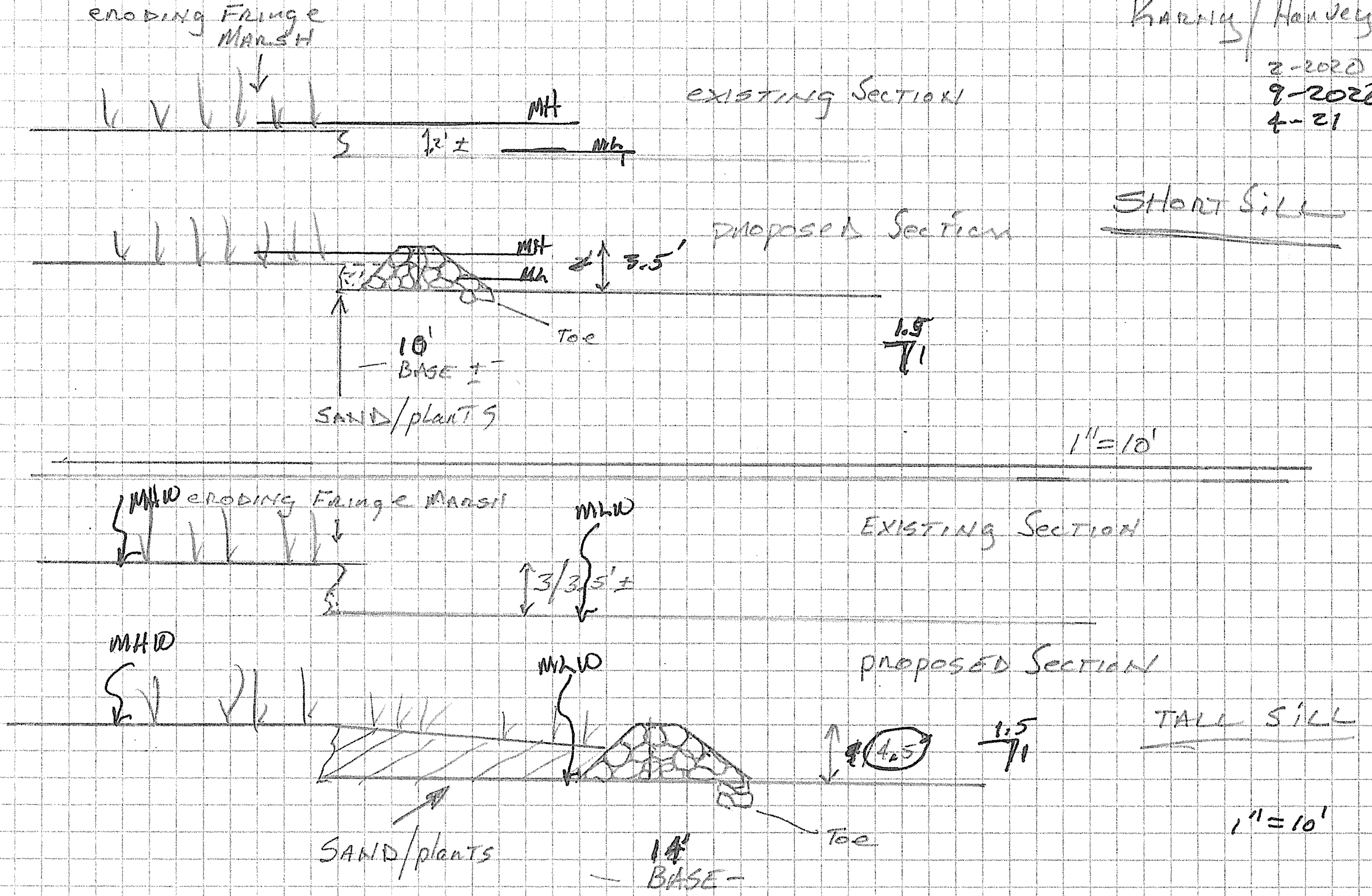
Karney / Harvey

2-2020
9-2020
4-21



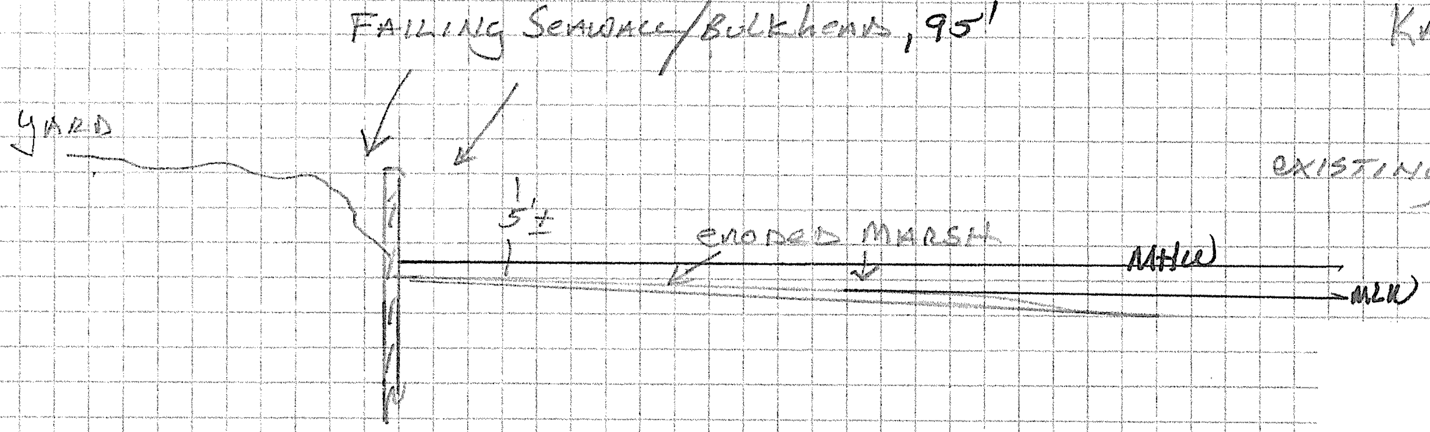
Watkins, 2/20 9/20
804 815 0813

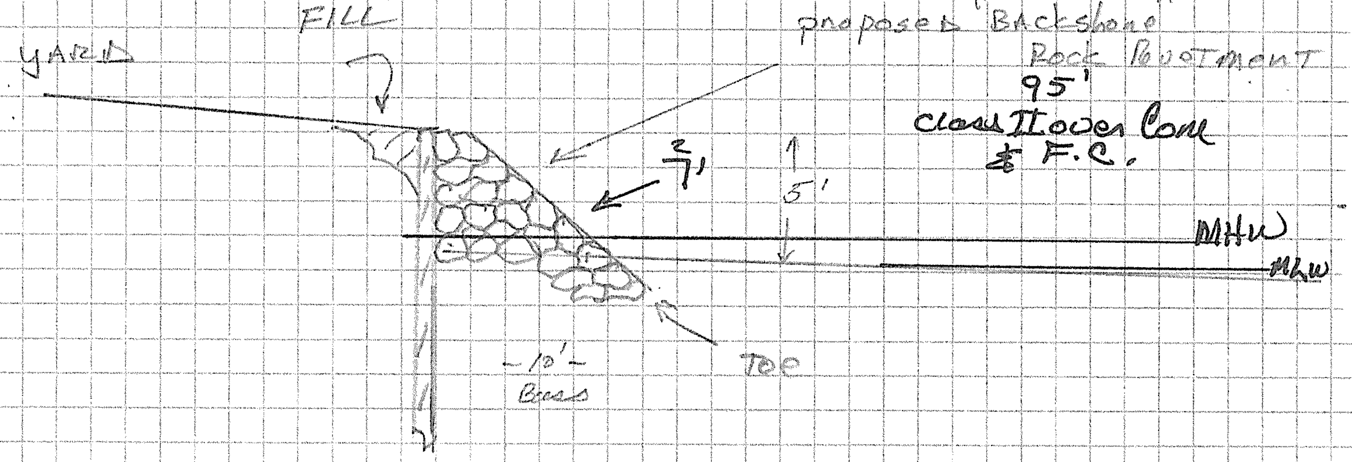
Received by VMRC May 3, 2021 /blh

KARNY

2-2020
9-2020
4-21

EXISTING SECTION





1"=10'

WATKINS : 2/20 9/20 4/21
804 815 0613

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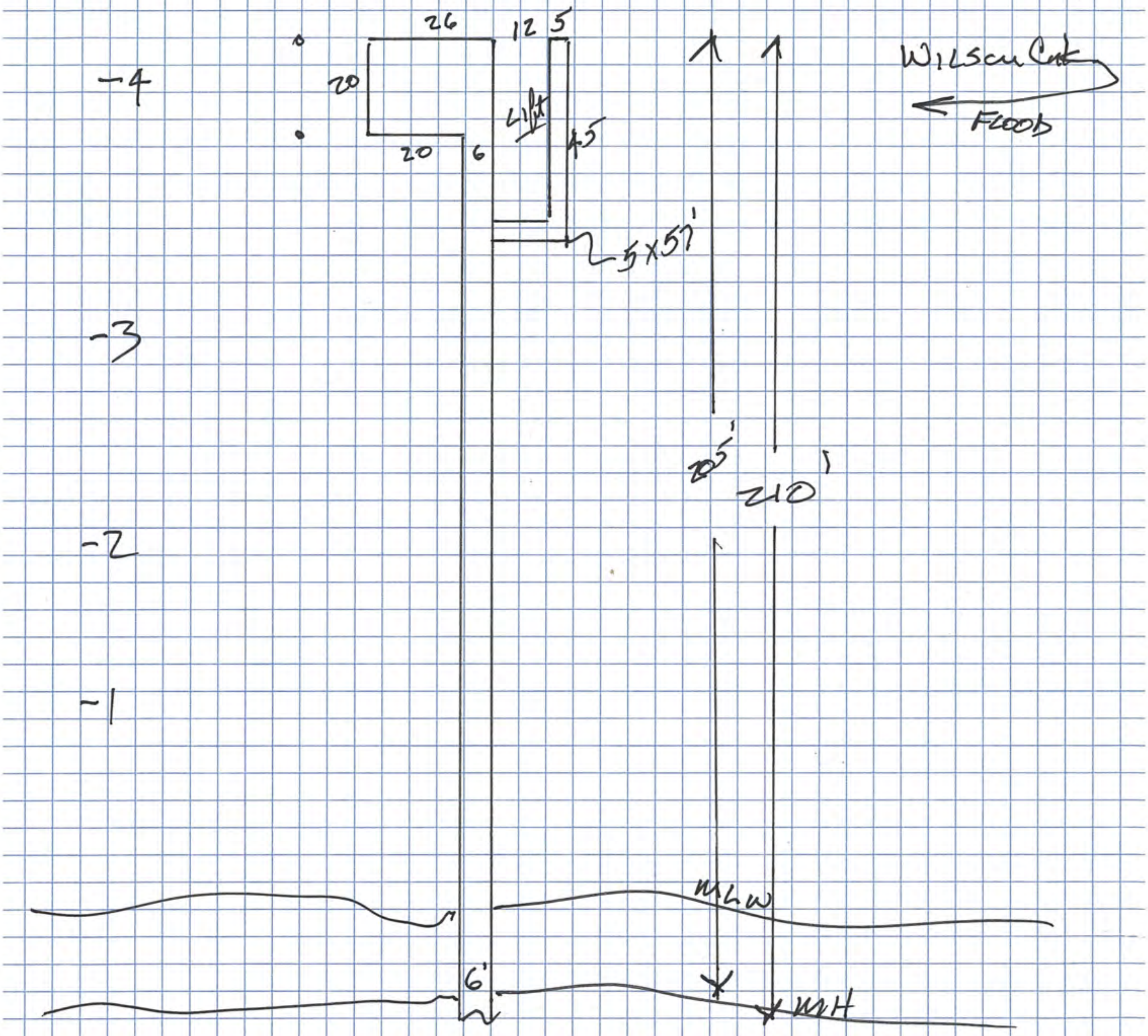

KARNY
5514 Roane's Wharf RD
Gloucester VA
Wilson Creek

4-20-21

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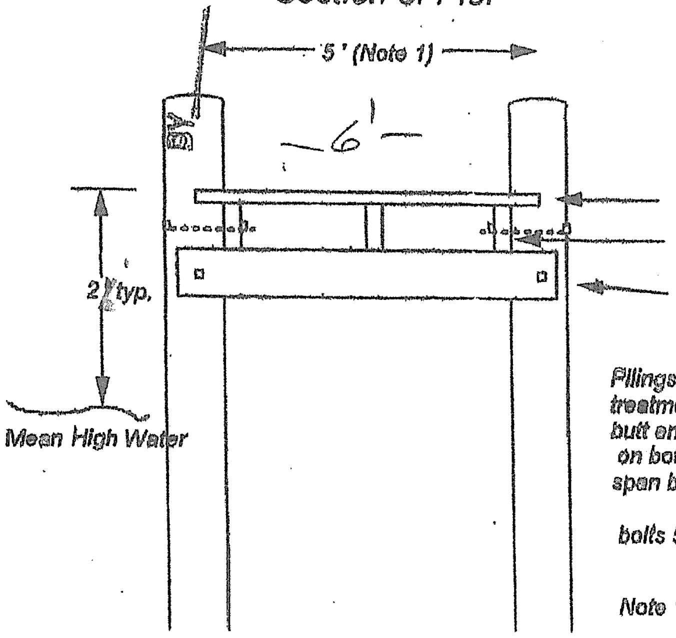
Received by VMRC May 3, 2021 /blh

Section of Pier



2 x 6 decking

3 joists, 2 x 8 rough, lapped and
outer 2 bolted

2 cross ties, 2 x 8 rough, bolted

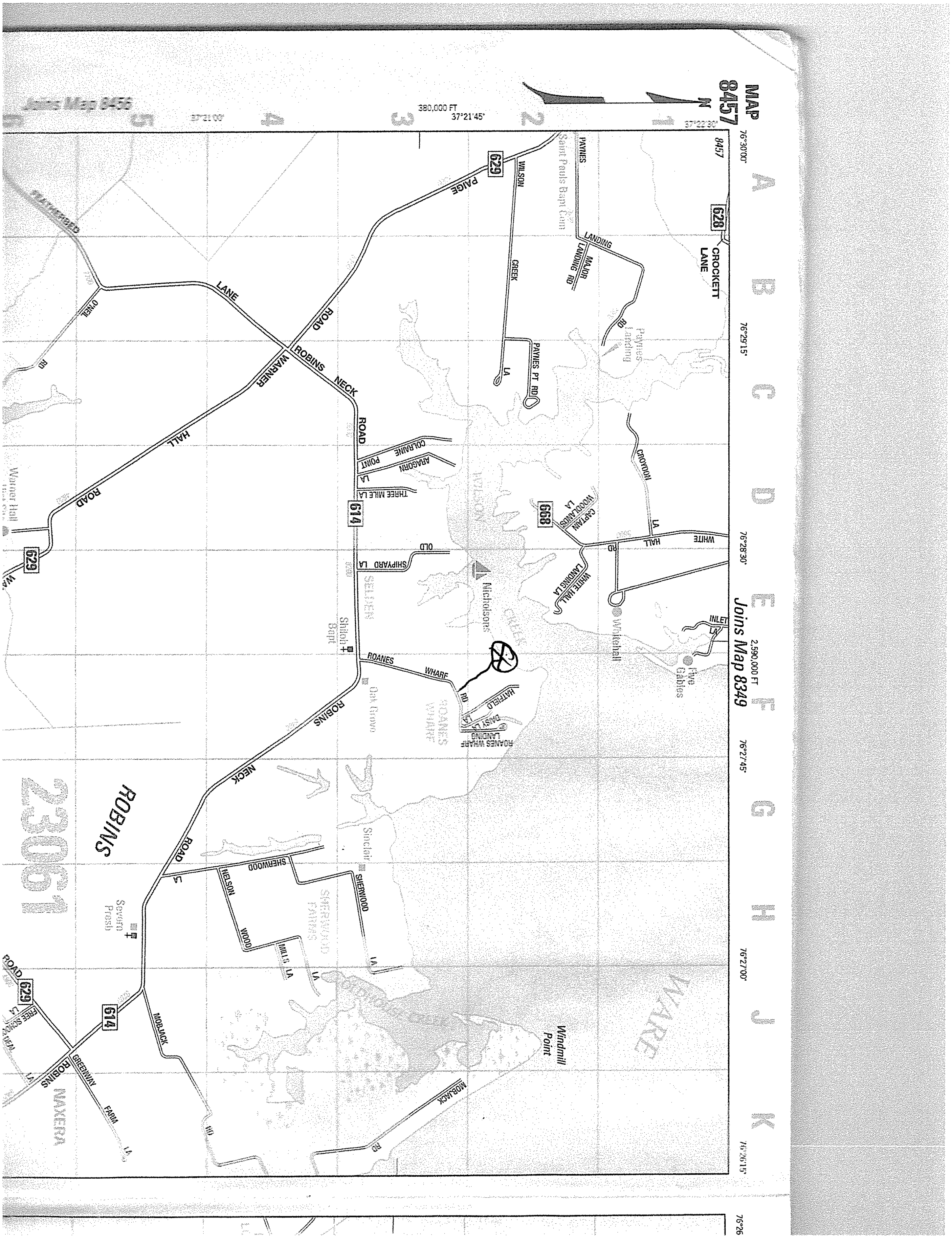
Pilings: 10" at butt end, 8" at top,
treatment CCA 2.5;
butt end driven down 8' to 10' depending
on bottom;
span between pilings 8' to 10'

bolts 5/8" hardened, nails 20d hardened HDG

Note 1: 6' deck will have 4 joists,
8' will have 5 joists;

Boat Lift: Ace "Overhead Beam" type w/ No-notch adapter kit;
Motors and beams mounted at least 7' off the deck

Courtesy of [redacted]
Jeff Watkins
P.O. Box 515
Gloucester, VA 23061
(804) 642-2826
815-0813



Received by VMRC May 3, 2021 /blh

Virginia Marine Resources Commission
Permit Application 20211009
Printed: Friday August 13, 2021 9:33 PM

Applicant: Alice Bredin-Karny
5514 Roanes Wharf Road
Gloucester, VA 23061

Application Number:	20211009	**Engineer:**	Mike Johnson
Application Date:	May 3, 2021	**Locality:**	Gloucester
Permit Type:	VMRC Subaqueous	**Waterway:**	Wilson Creek
Permit Status:	Issued	**Expiration Date:**	July 31, 2024
Wetlands Board Action:	Approved as Proposed	**Public Hearing Date:**	June 9, 2021

Project Description: Lift/Pier/Riprap

Project Dimensions:

Sill: 240 Linear Feet

Living Shoreline: 270 Linear Feet

Virginia Marine Resources Commission

Photos for Permit Application 20211009

Printed: Friday August 13, 2021 9:33 PM

Date Photo Taken: 2021:06:07 10:11:54

Date Photo Taken: 2021:06:07 10:09:26

Virginia Marine Resources Commission
Photos for Permit Application 20211009
Printed: Friday August 13, 2021 9:33 PM

Date Photo Taken: 2021:06:07 10:09:24

Date Photo Taken: 2021:06:07 10:10:00

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

August 13, 2021

Northern Virginia Regulatory Section
NAO-2021-0161, VMRC #21-1009 (Wilson Creek)

Alice Bredin- Karny
5514 Roane's Wharf Rd
Gloucester, VA 23061

Ms. Karny:

This is in reference to the Department of the Army application NAO-2021-0161, VMRC #21-1009 you have submitted to create a living shoreline by installing a 240-foot-long rock sill with clean sand back fill and plantings of native vegetation and repair 95-linear feet of riprap revetment. You submitted the RP17 checklist correctly filled out and signed. The signed checklist serves as your permit verification for the proposed pier. Therefore, you will not receive any further authorization from the ACOE for the proposed pier. All work will be completed at 5514 Roane's Wharf Rd, Gloucester, Virginia (37.3638633, -76.469438). Your proposed project as described above and depicted on attached drawings entitled "Proposed Project" in three sheets dated and stamped as received by our office on June 9, 2021 satisfies the terms and conditions of Norfolk District's Regional Permit 19 (18-RP-19). Provided that you follow the general and permit specific conditions of 18-RP-19, as well as any additional special conditions that have been included below, no further authorization will be required from the Corps.

The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

Incidents where any individuals of sea turtles, Atlantic sturgeon, or any species listed by NOAA Fisheries under the Endangered Species Act appear to be injured or killed as a result of discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States authorized by this RP shall be reported to NOAA Fisheries, Office of Protected Resources at (301) 713-1401 and the Regulatory Office of the Norfolk District of the U.S. Army Corps of Engineers at 757-201-7652. The finder should leave the animal alone, make note of any circumstances likely causing the death or injury, note the location and number of individuals involved and, if possible, take photographs. Adult animals should not be disturbed unless circumstances arise where they are obviously injured or killed by discharge exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NOAA Fisheries, Office of Protected Resources, to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

Enclosed is a "compliance certification" form, which must be signed and returned within 30 days of completion of the project. Your signature on this form certifies that you have completed the work in accordance with the regional permit terms and conditions.

This verification is valid until the RP is modified, reissued, or revoked. RPs 2, 15, 17, 18, 19 and 22, are scheduled to be modified, reissued, or revoked on September 5, 2023. Activities which have commenced (i.e. under construction) or are under contract to commence in reliance upon this RP will remain authorized provided the activity is completed within twelve (12) months of the date of the RP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization. Activities completed under the authorization of the RP which was in effect at the time the activity was completed continue to be authorized by that RP.

The State Water Control Board provided unconditional §401 Water Quality Certification for this RP. Therefore, the activities that qualify for this RP meet the requirements of the Department of Environmental Quality's (DEQ) Virginia Water Protection Permit Regulation, provided that the permittee abides by the conditions of this RP. You will not be required to obtain a separate §401 Water Quality Certification from DEQ. This authorization does not relieve your responsibility to comply with local requirements pursuant to the Chesapeake Bay Preservation Act (CBPA), nor does it supersede local government authority and responsibilities pursuant to the Act. You should contact your local government before you begin work to find out how the CBPA applies to your project.

Pursuant to the Coastal Zone Management Act (CZMA) of 1972, the Virginia Department of Environmental Quality Virginia Coastal Zone Management Program (VCP) completed its review of the Federal Consistency Determination (FCD) for this RP on August 16, 2018, and provided concurrence that this RP is consistent with the VCP. Therefore, no further coordination with the VCP is required. Authorizations under this RP do not supersede State or local government authority or responsibilities pursuant to any State or local laws or regulations.

In granting an authorization pursuant to this permit, the Norfolk District has relied on the information and data provided by the permittee. If, subsequent to notification by the Corps that a project qualifies for this permit, such information and data prove to be materially false or materially incomplete, the authorization may be suspended or revoked, in whole or in part, and/or the Government may institute appropriate legal proceedings. Please note that you should obtain all required State and local authorizations before you proceed with the project.

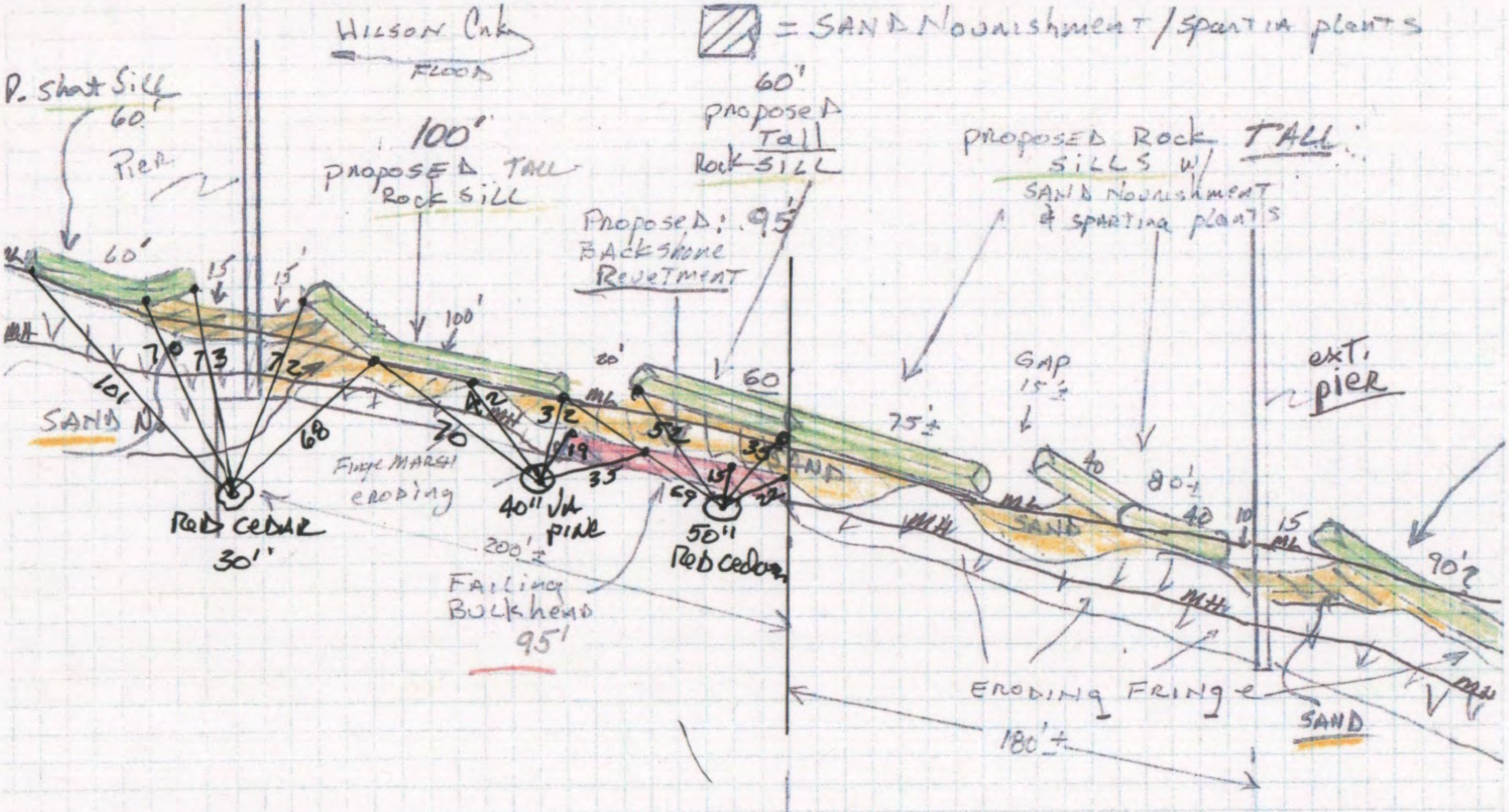
If you have any questions and/or concerns about this permit authorization, please contact Jaime Longo via phone at 757-201-7551 or email at jaime.garello@usace.army.mil.

Sincerely,

Jaime P. Longo

Jaime Longo
Northern Virginia
Regulatory Section

Proposed Project



21-1009
Rev. Benchmarks JhW
6-1-21

KARNY

GLOUCESTER

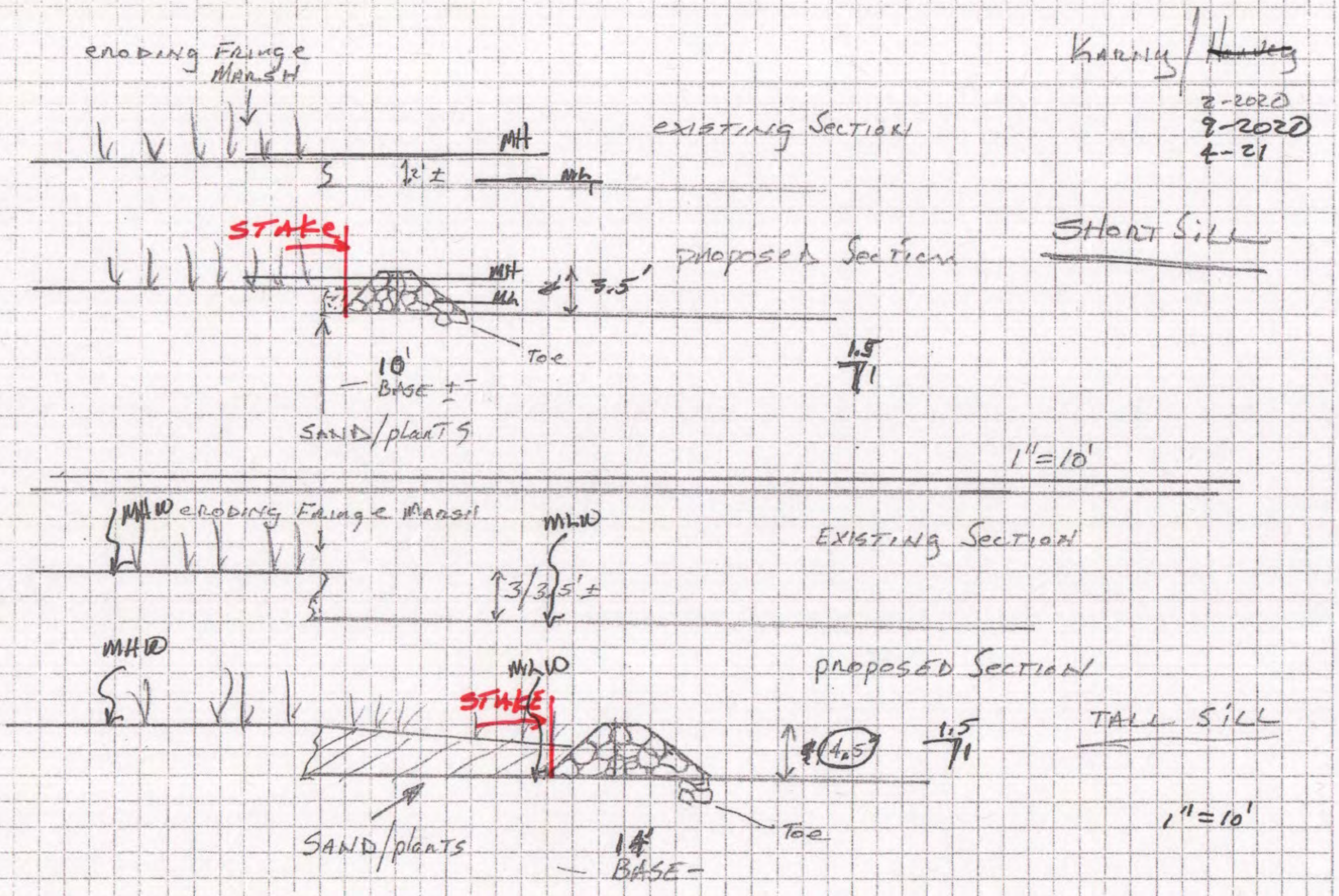
1" = 50'

HARVEY

WATKINS 2/20 4-21
804 8/5 0813

2-2020
4-21

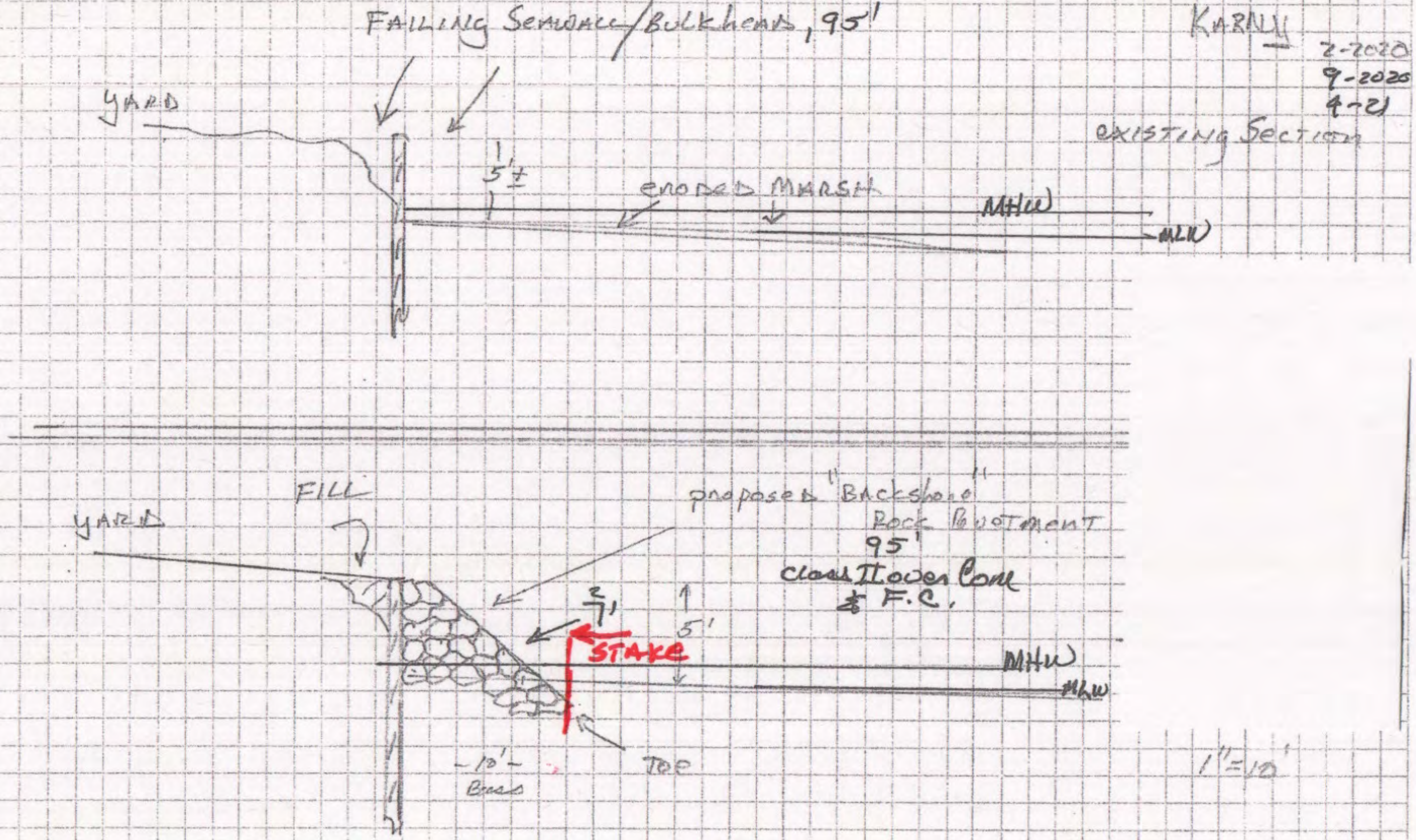
Proposed Project



WATKINS, 2/20 9/20
804 815 0813

Karney VMRC 21-1009 Rev. Benchmarks
6-1-21

Proposed Project



WATKINS 2/20 9/20 4/21
804 815 0813

21-1009 Karny

Benchmarks 6-1-21

U.S. Army Corps
Of Engineers
Norfolk District

CERTIFICATE OF COMPLIANCE
WITH
ARMY CORPS OF ENGINEERS PERMIT

Permit Number: NAO-2021-01261

VMRC Number: 21-1009

Corps Contact: □aime □. □on□o

Name of Permittee: Alice Bredin- Karny

Date of Issuance: August 13, 2021

Permit Type: Norfolk District's Regional Permit 19 (18-RP-19)

Within 30 days of completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

US Army Corps of Engineers - Norfolk District
C□NAO-WR-R
Attn: □aime □. □on□o
803 Front Street
Norfolk, VA 23510-1096

Or scan and send via email to □aime.□are□o@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation has been completed in accordance with the permit conditions.

________________________________ ________________________________
Signature of Permittee Date

MRC 30-317

VMRC# 2021-1009
Applicant: Alice Bredin-Karny

COMMONWEALTH OF VIRGINIA
MARINE RESOURCES COMMISSION
PERMIT

The Commonwealth of Virginia, Marine Resources Commission, hereinafter referred to as the Commission, on this 30th day of July 2021 hereby grants unto:

Alice Bredin-Karny
5514 Roanes Wharf Road
Gloucester, VA 23061

hereinafter referred to as the Permittee, permission to:

X Encroach in, on, or over State-owned subaqueous bottoms pursuant to Chapter 12, Subtitle III, of Title 28.2 of the Code of Virginia.

___ Use or develop tidal wetlands pursuant to Chapter 13, Subtitle III, of Title 28.2 of the Code of Virginia.

Permittee is hereby authorized to install 220 linear feet of rock sill with clean sand backfill and plantings of native wetland vegetation along Wilson Creek at 5514 Roanes Wharf Road in Gloucester County. All activities authorized herein shall be accomplished in conformance with the plans and drawings dated received May 3, 2021, and revised drawings dated received June 7, 2021, which are attached and made a part of this permit.

This permit is granted subject to the following conditions:

(1) The work authorized by this permit is to be completed by **July 31st, 2024.** The Permittee shall notify the Commission when the project is completed. The completion date may be extended by the Commission in its discretion. Any such application for extension of time shall be in writing prior to the above completion date and shall specify the reason for such extension and the expected date of completion of construction. All other conditions remain in effect until revoked by the Commission or the General Assembly.

(2) This permit grants no authority to the Permittee to encroach upon the property rights, including riparian rights, of others.

(3) The duly authorized agents of the Commission shall have the right to enter upon the premises at reasonable times, for the purpose of inspecting the work being done pursuant to this permit.

(4) The Permittee shall comply with the water quality standards as established by the Department of Environmental Quality, Water Division, and all other applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining any and all other permits or authority for the projects.

(5) This permit shall not be transferred without written consent of the Commissioner.

(6) This permit shall not affect or interfere with the right vouchsafed to the people of Virginia concerning fishing, fowling and the catching of and taking of oysters and other shellfish in and from the bottom of acres and waters not included within the terms of this permit.

(7) The Permittee shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the Commonwealth.

(8) This permit may be revoked at any time by the Commission upon the failure of the Permittee to comply with any of the terms and conditions hereof or at the will of the General Assembly of Virginia.

(9) There is expressly excluded from the permit any portion of the waters within the boundaries of the Baylor Survey.

(10) This permit is subject to any lease of oyster planting ground in effect on the date of this permit. Nothing in this permit shall be construed as allowing the Permittee to encroach on any lease without the consent of the leaseholder. The Permittee shall be liable for any damages to such lease.

(11) The issuance of this permit does not confer upon the Permittee any interest or title to the beds of the waters.

(12) All structures authorized by this permit, which are not maintained in good repair, shall be completely removed from State-owned bottom within three (3) months after notification by the Commission.

(13) The Permittee agrees to comply with all of the terms and conditions as set forth in this permit and that the project will be accomplished within the boundaries as outlined in the plans attached hereto. Any encroachment beyond the limits of this permit shall constitute a Class 1 misdemeanor.

(14) This permit authorizes no claim to archaeological artifacts that may be encountered during the course of construction. If, however, archaeological remains are encountered, the Permittee agrees to notify the Commission, who will, in turn notify the Department of Historic Resources. The Permittee further agrees to cooperate with agencies of the Commonwealth in the recovery of archaeological remains if deemed necessary.

(15) The Permittee agrees to indemnify and save harmless the Commonwealth of Virginia from any liability arising from the establishment, operation or maintenance of said project.

The following special conditions are imposed on this permit:

(16) The placard accompanying this permit document must be conspicuously displayed at the work site.

(17) Permittee agrees to notify the Commission upon the start of the activities authorized by this permit.

Description of Fees	Amount	Unit of Measure	Rate	Total	Frequency	After-The-Fact
Permit Fee				$300.00	One-Time	
Total Permit Fees				**$300.00**		

This permit consists of 7 Pages

PERMITTEE(S)

☒ BY CHECKING THIS BOX, I certify that I am the Permittee OR the certified agent acting on behalf of all Permittees, that I have read and understood the permit as drafted and accept all of the terms and conditions herein. I agree and understand that checking the box has the same legal authority as a written signature. The provisions of the permit authorization shall be binding on any assignee or successor in interest of the original Permittee(s). In cases where the Permittee is a corporation, agency or political jurisdiction, I certify I have proper authorization to bind the organization to the financial and performance obligations which result from activity authorized by this permit.

PERMITTEE OR CERTIFIED AGENT	**DATE TERMS ACCEPTED**
Alice Bredin-Karny	July 29, 2021
Print Your Name Here	

PERMITEE
Alice Bredin-Karny
5514 Roanes Wharf Road
Gloucester, VA 23061

AGENT
Shoreline Structures
Jeff Watkins
Post Office Box 515
Gloucester, Va 23061

COMMISSION

This permit is executed on behalf of the Commonwealth of Virginia, Marine Resources Commission by the undersigned:

Justin Worrell	DATE SIGNED
Environmental Engineer, Habitat Management	30th day of July 2021

Attachment 8: Harvey JPA, Design, and Permit Package

From: Gloucester Office Supply
To: jpa.permits@mrc.virginia.gov; Jeffrey G. Watkins
Subject: two new applications
Date: Monday, May 3, 2021 10:54:21 AM
Attachments: DOC065.PDF
DOC064.PDF

Please let Jeff know you received this.
Thanks

Office Supply of Gloucester 6754 Main Street Edgehill Town Center Gloucester, VA 23061 Phone: 804-693-4155 Fax: 804-693-2270 □oofficesu□□y@yahoo.com

Received by VMRC May 3, 2021 /blh

- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA # 21-1008

APPLICANTS
Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply		
Pre-Construction Notification (PCN) ☐ NWP # __________ (*For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned*)	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: GLOUCESTER

Waterway at project site: WILSON CREEK

PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre-application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)

Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html

Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address:

Mark S. Harvey
Joelle K. Harvey
Po Box 376
White Marsh VA 23183

Contact Information:
Home (804) 694-7557
Work (____)__________
Fax (____)__________
Cell (____)__________
e-mail jshrvys@cox.net

State Corporation Commission Name and ID Number (if applicable) __________

2. Property owner(s) legal name* and complete address, if different from applicant: Contact Information:
Home (____)__________
Work (____)__________
Fax (____)__________
Cell (____)__________
e-mail __________

State Corporation Commission Name and ID Number (if applicable) __________

3. Authorized agent name* and complete mailing address (if applicable):

JEFF WATKINS
PO Box 515
Gloucester VA 23061

Contact Information:
Home (____)__________
Work (____)__________
Fax (____)__________
Cell (804 815083
e-mail __________

State Corporation Commission Name and ID Number (if applicable) __________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

Rock Sills: 245 L.F.

Sand Nourishment 500 cyds.

Spartina plantings: 1200 S.F.

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? [✓ Yes]* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

ShoreLine Structures LLC.
PO Box 515
Gloucester VA 23061

Contact Information:
Home (___)________
Work (___)________
Fax (___)________
Cell (804) 8150813
email JWatkins49@cox.Net

State Corporation Commission Name and ID Number (if applicable) ________

*** If multiple contractors, each must be listed and each must sign the applicant signature page.**

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:

Telephone number
(___) ________

7. Give the following project location information:

Street Address (911 address if available) 5518 Roanes Wharf Rd
Lot/Block/Parcel# 40-169 Selden, Parcel 2
Subdivision ________
City / County Gloucester ZIP Code 23061
Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
________ / -________ (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

Rt 17 N. Right on Featherbed Lane. Right on Robins Neck Rd. Left on Roanes Wharf Rd. House will be on the left.

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose may be "to protect property from erosion due to boat wakes" and the secondary purpose may be "to provide safer access to a pier."

Control erosion

Part 1 - General Information (continued)

9. Proposed use (check one):
   ✓ Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes ✓ No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $ 95,000
    Approximate cost of that portion of the project that is channelward of mean low water:
    $____________

13. Completion date of the proposed work:______________________-____________

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

Alice Bredin-Karny
5514 Roanes Wharf Rd
Gloucester VA 23061

Kim Lawlor (5552 Roanes Wharf)
7612 Timberly Ct
McLean VA 22102

Part 2 - Signatures

1. Applicants and property owners (if different from applicant). NOTE: REQUIRED FOR ALL PROJECTS

<u>PRIVACY ACT STATEMENT</u>: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.
In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

JoElle K. Harvey Applicant's Legal Name (printed/typed)	Mark S. Harvey (Use if more than one applicant)
JoElle K Harvey Applicant's Signature	Mark S. Harvey (Use if more than one applicant)
4/20/21 Date	
JoElle K Harvey Property Owner's Legal Name (printed/typed) (If different from Applicant)	Mark S Harvey (Use if more than one owner)
JoElle K Harvey Property Owner's Signature	Mark S Harvey (Use if more than one owner)
4/20/21 Date	

Received by VMRC May 3, 2021 /blh

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we), HARVEY, hereby certify that I (we) have authorized J.WATKINS
(Applicant's legal name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

(Agent's Signature)

(Use if more than one agent)

4-25-21
(Date)

Joelle K Harvey
(Applicant's Signature)

Mark S Harvey
(Use if more than one applicant)

4-25-21
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), Harvey have contracted Shoreline Structures LLC
(Applicant's legal name(s)) (Contractor's name(s))
to perform the work described in this Joint Permit Application, signed and dated 4/20/21.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

Shoreline Structures LLC
Contractor's name or name of firm

POB 515 Glo. VA 23061
Contractor's or firms address

Contractor's signature and title

Contractor's License Number

Joelle K Harvey
Applicant's signature

Mark S Harvey
(use if more than one applicant)

4-25-21
Date

Received by VMRC May 3, 2021 /blh

Part 3 – Appendices (continued)

Appendix B: **Projects for Shoreline Stabilization** in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS.

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

Rock Sills : 245 L.F. Class I & II
over core
Sand Nourishment : 500 cyds.
Spartina plantings : 1200 S.F.

2. What is the maximum encroachment channelward of mean high water? 40 feet.
Channelward of mean low water? 22 feet.
Channelward of the back edge of the dune or beach? NA feet.

3. Please calculate the square footage of encroachment over:
- Vegetated wetlands 0 square feet
- Non-vegetated wetlands ____ square feet — Rock = 700, Sand = 950
- Subaqueous bottom ____ square feet — Rock = 1320
- Dune and/or beach NA square feet — Sand = 250

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes____ No.

Part 3 – Appendices (continued)

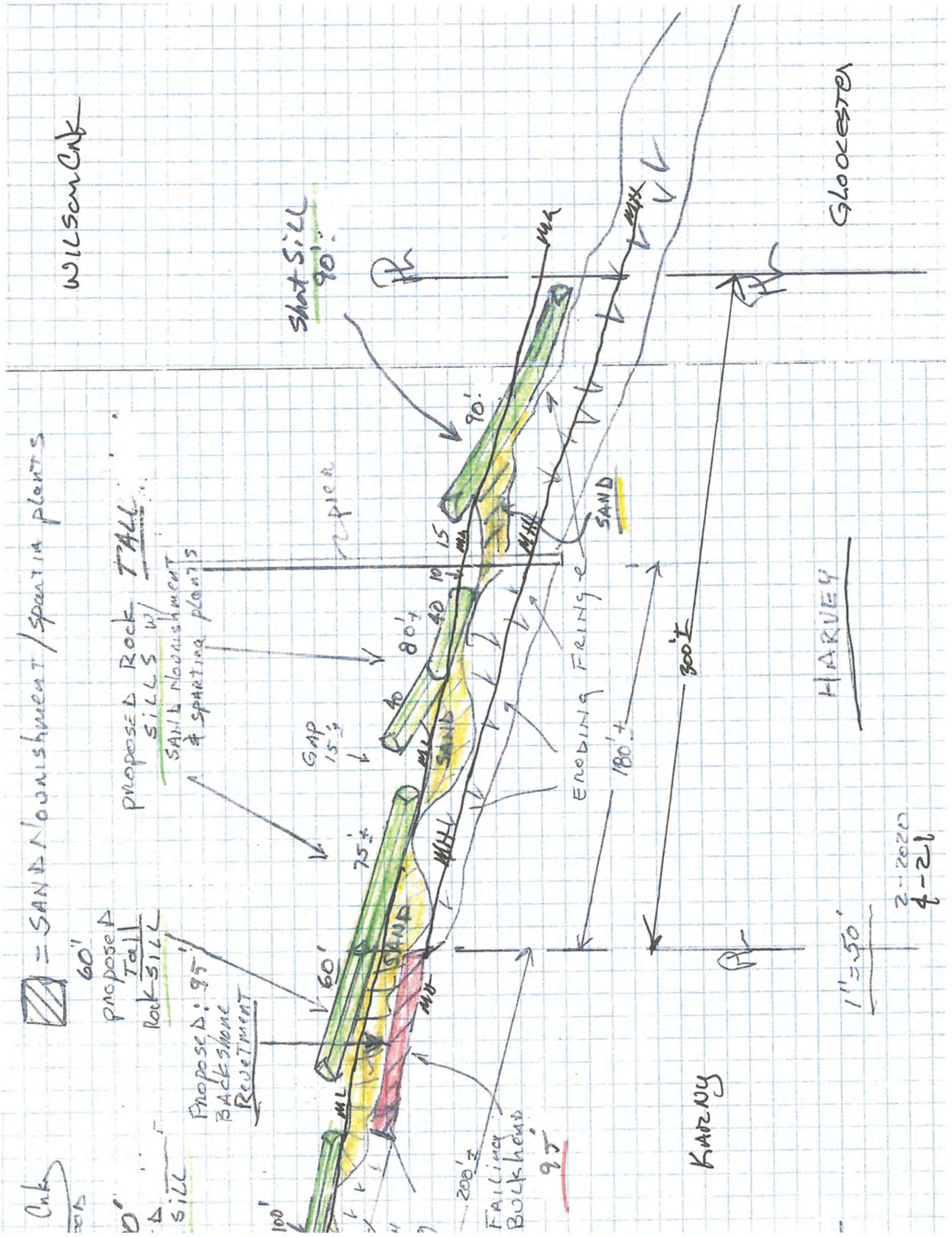
5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
NOTE: Drawings must include construction details, including dimensions, design and all materials, including fittings if used.

quary Stone

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
Core (inner layer) material 10~20 pounds per stone Class size 6~12''
Armor (outer layer) material 150 – 1500 pounds per stone Class size I & II

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

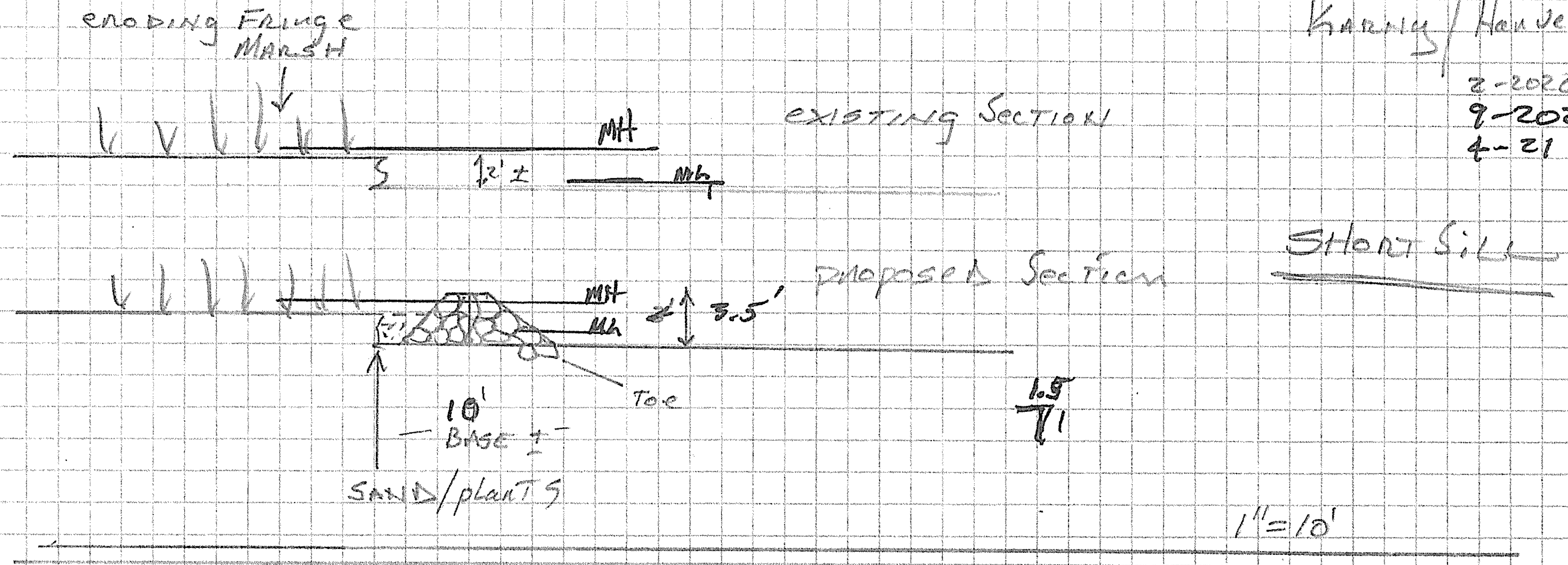
- Volume of material 50 cubic yards channelward of mean low water
450 cubic yards landward of mean low water
500 cubic yards channelward of mean high water
0 cubic yards landward of mean high water
- Area to be covered 250 square feet channelward of mean low water
950 square feet landward of mean low water
__________ cubic yards channelward of mean high water
__________ cubic yards landward of mean high water
- Source of material, composition (e.g. 90% sand, 10% clay): 90% sand
- Method of transportation and placement:
____
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:

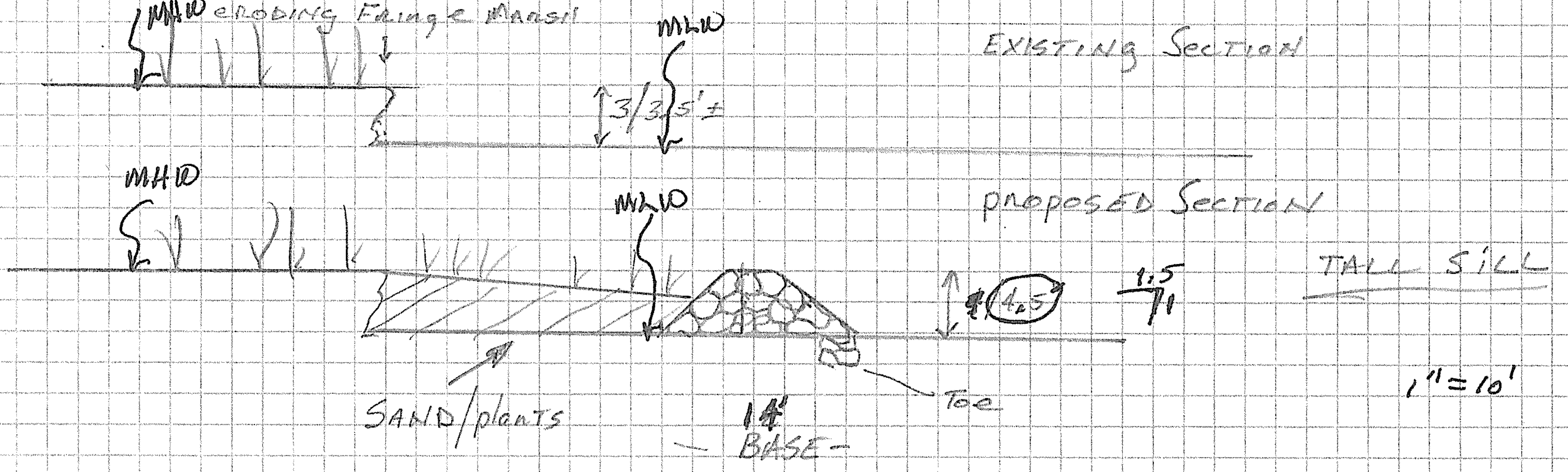


Received by VMRC May 3, 2021 /blh

Karney / Harvey

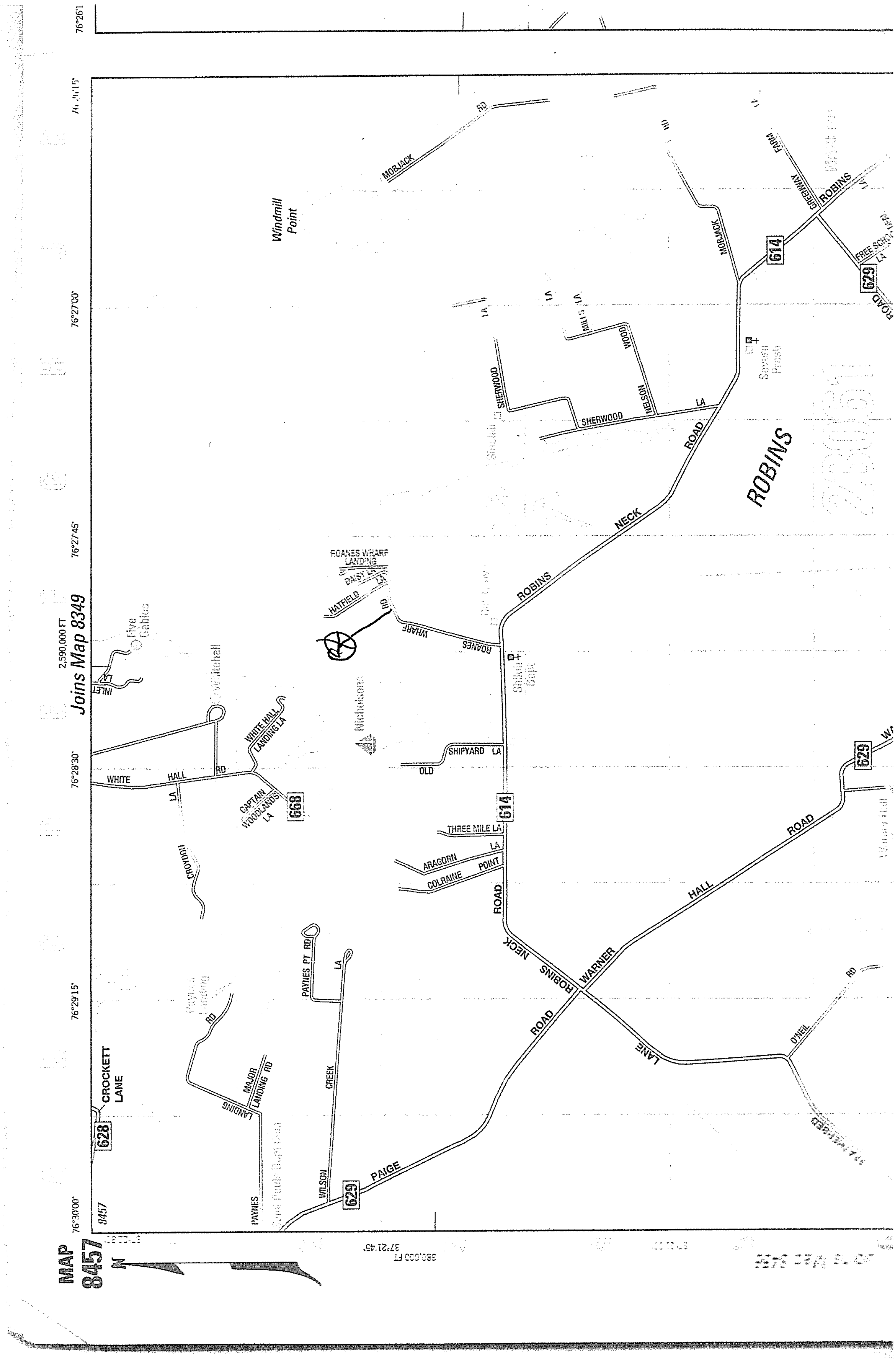
2-2020
9-2020
4-21





WATKINS, 2/20 9/20
804 815 0813

Received by VMRC May 3, 2021 /blh



Received by VMRC May 3, 2021 /blh

- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA #

APPLICANTS
Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply		
Pre-Construction Notification (PCN) ☐ NWP # ____________	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: Gloucester
Waterway at project site: Wilson Creek

[redacted]

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address:

Alice Bredin-Karny
5514 Roane's Wharf Rd.
Gloucester, VA 23061

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (____)____________
e-mail ________________

State Corporation Commission Name and ID Number (if applicable) ____________

2. Property owner(s) legal name* and complete address, if different from applicant: Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (____)____________
e-mail ________________

State Corporation Commission Name and ID Number (if applicable) ____________

3. Authorized agent name* and complete mailing address (if applicable):

Jeff Watkins, Shoreline Structures, LLC
P.O. Box 515
Gloucester VA 23061

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (____)804-815-0813
e-mail ________________

State Corporation Commission Name and ID Number (if applicable) ____________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

Shoreline Erosion control project:
Rock sills = 240 L.F.
Revetment = 95 L.F.
Sand Nourishment = 750 c.yds.
Spartina plantings = 1660 s.f.

Private pier replacement: 6' x 210', 400 s.f. L head, finger pier & boatlift.
↳ 5'x57'

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? ✓ Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

Jeff Watkins
P.O. Box 515
Gloucester, Va. 23061

Contact Information:

Home ( )
Work (804) 815-0813
Fax ( )
Cell ( )
email jwatkins49@cox.net

State Corporation Commission Name and ID Number (if applicable) __________

<u>* If multiple contractors, each must be listed and each must sign the applicant signature page.</u>

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:

Gazette-Journal
6625 Main Street
Gloucester, Va. 23061

Telephone number
(804) 693-3101

7. Give the following project location information:

Street Address (911 address if available) 5514 Roanes Wharf Rd.
Lot/Block/Parcel# RP11844 40-167
Subdivision Selden
City / County Gloucester, Va. ZIP Code 23061
Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
__________ / -__________ (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

- from rt 17N to Featherbed Lane, past Paige Rd + Warner Hall Rd on Robins Neck Rd.
- turn left onto Roanes Wharf Rd
- turn left into Magnolia Farm property on Roanes Wharf Rd # 5514

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose <u>may</u> be "to protect property from erosion due to boat wakes" and the secondary purpose <u>may</u> be "to provide safer access to a pier."

<u>First</u> - to prevent <u>further</u> erosion to front of property
<u>Second</u> - to stablize waterfront to prevent old trees from uprooting (three trees on very edge)

Part 1 - General Information (continued)

9. Proposed use (check one):
   ✓ Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

    There will need to be careful excavating during project construction because there is a narrow piece of land in the front between house and water. The most serious area is a very narrow strip of land.

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes ✓No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $97,000.00 +/-
    Approximate cost of that portion of the project that is channelward of mean low water:
    $____________

13. Completion date of the proposed work:______________________________-____________

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

    John and Margaret Singleton
    5488 Roanes Wharf Rd
    Gloucester, Va. 23061

    Mark and JoElle Harvey
    5518 Roanes Wharf Rd.
    Gloucester, Va. 23061

Part 2 - Signatures

1. **Applicants and property owners (if different from applicant).**
   NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Alice Bredin-Karny
Applicant's Legal Name (printed/typed)

N/A
(Use if more than one applicant)

Alice Bredin-Karny
Applicant's Signature

N/A
(Use if more than one applicant)

April 20, 2021
Date

N/A
Property Owner's Legal Name (printed/typed)
(If different from Applicant)

N/A
(Use if more than one owner)

N/A
Property Owner's Signature

N/A
(Use if more than one owner)

N/A
Date

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

Lewie Lawrence

I (we), Alice Bredin-Karny, hereby certify that I (we) have authorized Jeff Watkins
(Applicant's legal name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

(Agent's Signature) (Use if more than one agent)

4-20-21
(Date)

Alice Bredin-Karny
(Applicant's Signature) (Use if more than one applicant)

April 20, 2021
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), Alice Bredin-Karny, have contracted Jeff Watkins / Shoreline Structures LLC
(Applicant's legal name(s)) (Contractor's name(s))
to perform the work described in this Joint Permit Application, signed and dated 4-20-21.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

Shoreline Structures LLC
Contractor's name or name of firm

PO Box 515 Glo. VA 23061
Contractor's or firms address

Contractor's signature and title

Contractor's License Number

Alice Bredin-Karny
Applicant's signature

(use if more than one applicant)

April 20, 2021
Date

U.S. Army Corps
Of Engineers
Norfolk District

REGIONAL PERMIT 17 CHECKLIST

Please review the 18-RP-17 enclosure before completing this form and note 18-RP-17 can only be used for proposed PRIVATE USE structures that comply with the terms and conditions of 18-RP-17. Copies can be obtained online at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/.

YES☑ NO☐	**(1)** Has the permittee reviewed the 18-RP-17 enclosure and verified that the proposed structure(s) is in compliance with all the terms, conditions, and limitations of 18-RP-17?
YES☐ NO☐	**(2)** Does the proposed structure(s) extend no more than one-fourth of the distance across the waterway measured from either mean high water (MHW) to MHW (including all channelward wetlands) or ordinary high water (OHW) to OHW (including all channelward wetlands)?
YES☐ NO☐	**(3)** Does the proposed structure(s) extend no more than 300 feet from MHW or OHW (including all channelward wetlands)?
YES☐ NO☐ N/A☐	**(4)** Does the proposed structure(s) attach to the upland at a point landward of MHW or OHW (including all channelward wetlands)?
YES☐ NO☐ N/A☐	**(5)** If the proposed structure(s) crosses wetland vegetation, is it an open-pile design that has a maximum width of five (5) feet and a minimum height of four (4) feet between the decking and the wetland substrate?
YES☐ NO☐ N/A☐	**(6)** Does the proposed structure(s) include no more than two (2) boatlifts and no more than two (2) boat slips?
YES☑ NO☐ N/A☐	**(7)** Is the open-sided roof structure designed to shelter a boat ≤ 700 square feet and/or is the open sided roof structure or gazebo structure designed to shelter a pier ≤ 400 square feet?
YES☑ NO☐ N/A☐	**(8)** Are all piles associated with the proposed structure(s) non-steel, less than or equal to 12" in diameter, and will less than or equal to 25 piles be installed channelward of MHW?
YES☐ NO☐ N/A☐	**(9)** Is all work occurring behind cofferdams, turbidity curtains, or other methods to control turbidity being utilized when operationally feasible and federally listed threatened or endangered species may be present?
YES☑ NO☐ N/A☐	**(10)** If the proposed structure(s) is to be located within an anadromous fish use area, will the prospective permittee adhere to the anadromous fish use area time of year restriction (TOYR) prohibiting in-water work from occurring between February 15 through June 30 of any given year if (1) piles are to be installed with a cushioned impact hammer and there is less than 492 feet between the most channelward pile and mean low water (MLW) on the opposite shoreline or (2) piles are to be installed with a vibratory hammer and there is less than 384 feet between the most channelward pile and MLW on the opposite shoreline?
YES☑ NO☐	**(11)** Is all work occurring outside of submerged aquatic vegetation (SAV) mapped by the Virginia Institute of Marine Sciences[1] (VIMS) most recent survey year and 5 year composite?
YES☑ NO☐	**(12)** Has the permittee ensured the construction and/or installation of the proposed structure(s) will not affect federally listed threatened or endangered species or designated critical habitat?
YES☑ NO☐	**(13)** Will the proposed structure be located outside of Broad Creek in Middlesex County, Fisherman's Cove in Norfolk, or the Salt Ponds in Hampton?
YES☑ NO☐	**(14)** Will the proposed structure(s) be located outside of the waterways containing a Federal Navigation Project listed in Permit Specific Condition 12 of 18-RP-17 and/or will all portions of the proposed structure(s) be located more than 85 feet from the Federal Navigation Project?

YES☒ NO☐ **(15)** Will the proposed structure(s) be located outside a USACE Navigation and Flood Risk Management project area?

YES☒ NO☐ **(16)** Will the proposed structure(s) be located outside of any Designated Trout Waters?

YES☒ NO☐ N/A☐ **(17)** If the proposed structure(s) includes flotation units, will the units be made of materials that will not become waterlogged or sink if punctured?

YES☒ NO☐ N/A☐ **(18)** If the proposed structure(s) includes flotation units, will the floating sections be braced so they will not rest on the bottom during periods of low water?

YES☒ NO☐ **(19)** Is the proposed structure(s) made of suitable materials and practical design so as to reasonably ensure a safe and sound structure?

YES☒ NO☐ **(20)** Will the proposed structure(s) be located on the property in accordance with the local zoning requirements?

YES☒ NO☐ N/A☐ **(21)** If the proposed structure(s) includes a device used for shellfish gardening, will the device be attached directly to a pier and limited to a total of 160 square feet?

YES☒ NO☐ N/A☐ **(22)** If the proposed structure(s) includes a device used for shellfish gardening, does the permittee recognize this RP does not negate their responsibility to obtain an oyster gardening permit (General Permit #3) from Virginia Marina Resources Commission (VMRC)'s Habitat Management Division? Please refer to Appendix D of the Tidewater JPA for more details on VMRC's aquaculture requirements.

YES☒ NO☐ **(23)** Does the permittee recognize this RP does not authorize any dredging or filling of waters the United States (including wetlands) and does not imply that future dredging proposals will be approved by the Corps?

YES☒ NO☐ **(24)** Does the permittee understand that by accepting 18-RP-17, the permittee accepts all of the terms and conditions of the permit, including the limits of Federal liability contained in the 18-RP-17 enclosure? Does the permittee acknowledge that the structures permitted under 18-RP-17 may be exposed to waves caused by passing vessels and that the permittee is solely responsible for the integrity of the structures permitted under 18-RP-17 and the exposure of such structures and vessels moored to such structures to damage from waves? Does the permittee accept that the United States is not liable in any way for such damage and that it shall not seek to involve the United States in any actions or claims regarding such damage?

IF YOU HAVE ANSWERED "NO" TO ANY OF THE QUESTIONS ABOVE, REGIONAL PERMIT 17 (18-RP-17) DOES NOT APPLY AND YOU ARE REQUIRED TO OBTAIN WRITTEN AUTHORIZATION FROM THE CORPS PRIOR TO PERFORMING THE WORK.

IF YOU HAVE ANSWERED "YES" (OR "N/A", WHERE APPLICABLE) TO ALL OF THE QUESTIONS ABOVE, YOU ARE IN COMPLIANCE WITH REGIONAL PERMIT 17 (18-RP-17). PLEASE SIGN BELOW, ATTACH, AND SUBMIT THIS CHECKLIST WITH YOUR COMPLETED JOINT PERMIT APPLICATION (JPA). THIS SIGNED CERTIFICATE SERVES AS YOUR LETTER OF AUTHORIZATION FROM THE CORPS. YOU WILL NOT RECEIVE ANY OTHER WRITTEN AUTHORIZATION FROM THE CORPS; HOWEVER, YOU MAY NOT PROCEED WITH CONSTRUCTION UNTIL YOU HAVE OBTAINED ALL OTHER NECESSARY STATE AND LOCAL PERMITS.

I CERTIFY THAT I HAVE READ AND UNDERSTAND ALL CONDITIONS OF THE REGIONAL PERMIT 17 (18-RP-17), DATED SEPTEMBER 2018, ISSUED BY THE US ARMY CORPS OF ENGINEERS, NORFOLK DISTRICT REGULATORY BRANCH (CENAO-WRR), NORFOLK, VIRGINIA.

Signature of Property Owner(s) or Agent

Date 4-1-21

Proposed work to be located at:

5514
Roane's Wharf R.
Glo. VA 23061

Received by VMRC May 3, 2021 /blh

Part 3 – Appendices

Please complete and submit the appendix questions applicable to your project, and attach the required vicinity map(s) and drawings to your application. If an item does not apply to your project, please write "N/A" in the space provided.

Appendix A: Projects for Access to the water such as private and community piers, boathouses, marinas, moorings, and boat ramps. Answer all questions that apply.

1. **Briefly describe your proposed project.**

Replace pier: 6' x 210', 400 S.F. L head, finger pier & Boatlift

2. **For private, noncommercial piers:**

Do you have an existing pier on your property? ✓ Yes____ No
If yes, will it be removed? ✓ Yes ____No
Is your lot platted to the mean low water shoreline? ✓ Yes ____No
What is the overall length of the proposed structure? 210 feet.
Channelward of Mean High Water? 205 feet.
Channelward of Mean Low Water? 200 feet.
What is the area of the piers and platforms that will be constructed over
Tidal non-vegetated wetlands __________ square feet.
Tidal vegetated wetlands _________ square feet.
Submerged lands __________square feet.
What is the total size of any and all L- or T-head platforms? 400 sq. ft.
For boathouses, what is the overall size of the roof structure? ________sq. ft.
Will your boathouse have sides?_____Yes____ No.

NOTE: All proposals for piers, boathouses and shelter roofs must be reviewed by the Virginia Marine Resources Commission (Commission or VMRC), however, pursuant to § 28.2-1203 A 5 of the Code of Virginia a VMRC permit may not be required for such structures (except as required by subsection D of § 28.2-1205 for piers greater than 100 feet in length involving commercially productive leased oyster or clam grounds), provided that (i) the piers do not extend beyond the navigation line or private pier lines established by the Commission or the United States Army Corps of Engineers (USACE), (ii) the piers do not exceed six feet in width and finger piers do not exceed five feet in width, (iii) any L or T head platforms and appurtenant floating docking platforms do not exceed, in the aggregate, 400 square feet, (iv) if prohibited by local ordinance open-sided shelter roofs or gazebo-type structures shall not be placed on platforms as described in clause (iii), but may be placed on such platforms if not prohibited by local ordinance, and (v) the piers are determined not to be a navigational hazard by the Commission. Subject to any applicable local ordinances, such piers may include an attached boat lift and an open-sided roof designed to shelter a single boat slip or boat lift. In cases in which open-sided roofs designed to shelter a single boat, boat slip or boat lift will exceed 700 square feet in coverage or the open-sided shelter roofs or gazebo structures exceed 400 square feet, and in cases in which an adjoining property owner objects to a proposed roof structure, permits shall be required as provided in § 28.2-1204.

Part 3 – Appendices (continued)

Appendix B: Projects for Shoreline Stabilization in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS.

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

- Rock Revetment, 95 L.F. Class II over Core & F.C.
- Rock sills = 240 L.F. Class II & I over Core
- Sand Nourishment = 750 cyds
- Spartina plantings = 1660 S.F.

2. What is the maximum encroachment channelward of mean high water? 40 feet.
Channelward of mean low water? 25 feet.
Channelward of the back edge of the dune or beach? NA feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 0 square feet
   - Non-vegetated wetlands ~~[illegible]~~ square feet
   - Subaqueous bottom → square feet
   - Dune and/or beach NA square feet

Rock REVT. = 950
Sand = 1200

Rock = 3080
Sand = 1120

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes____ No.

If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____Yes ____No.

If no, please provide an explanation for the purpose and need for the additional encroachment.

Part 3 – Appendices (continued)

5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
NOTE: Drawings must include construction details, including dimensions, design and all materials, including fittings if used.

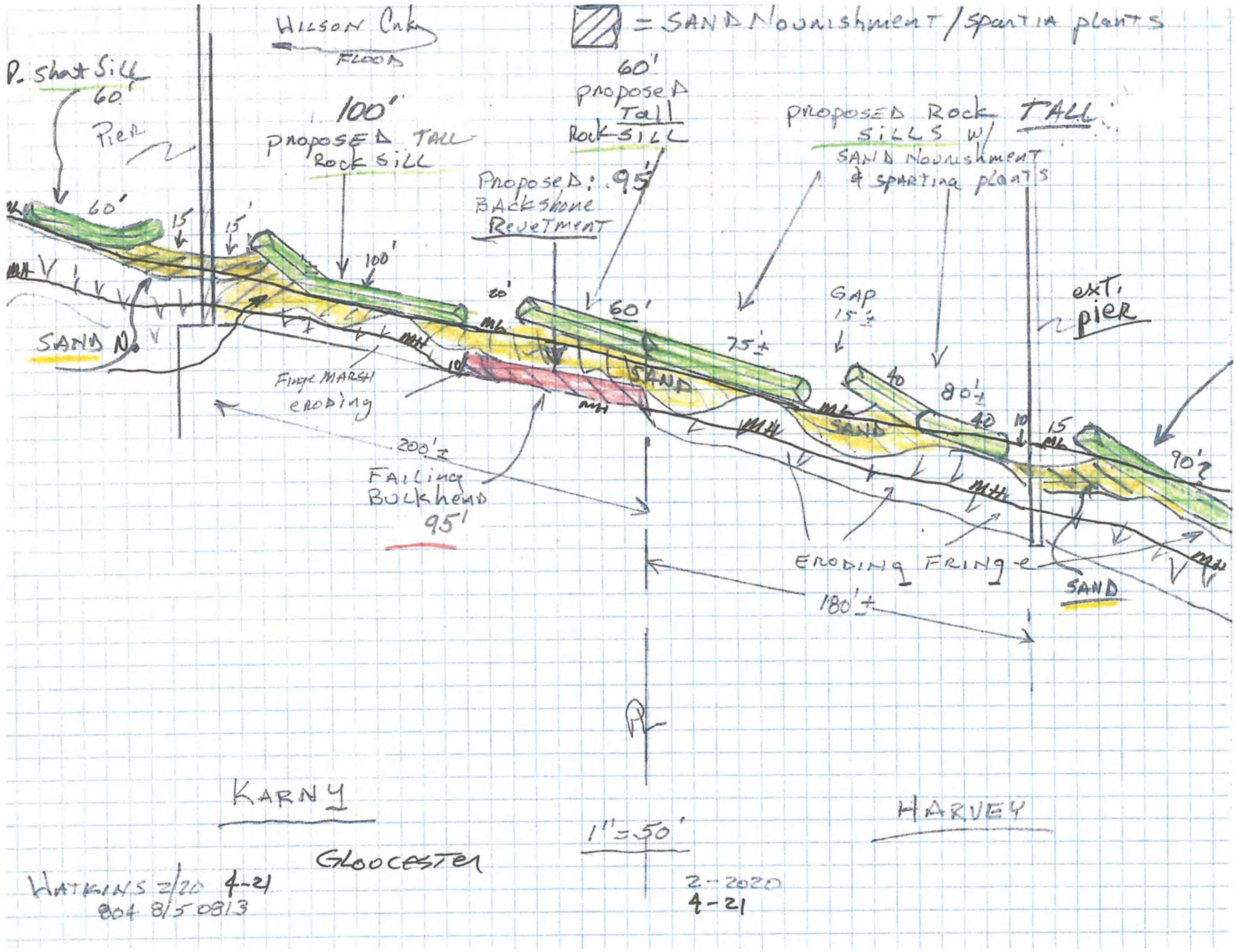
6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
   Core (inner layer) material 20 pounds per stone Class size Sungl
   Armor (outer layer) material 500/1,500 pounds per stone Class size II

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

- Volume of material 250 cubic yards channelward of mean low water
  500 cubic yards landward of mean low water
  750 cubic yards channelward of mean high water
  0 cubic yards landward of mean high water

- Area to be covered 1120 square feet channelward of mean low water
  1200 square feet landward of mean low water
  ___________ cubic yards channelward of mean high water
  ___________ cubic yards landward of mean high water

- Source of material, composition (e.g. 90% sand, 10% clay): 90
- Method of transportation and placement:
  ____
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:

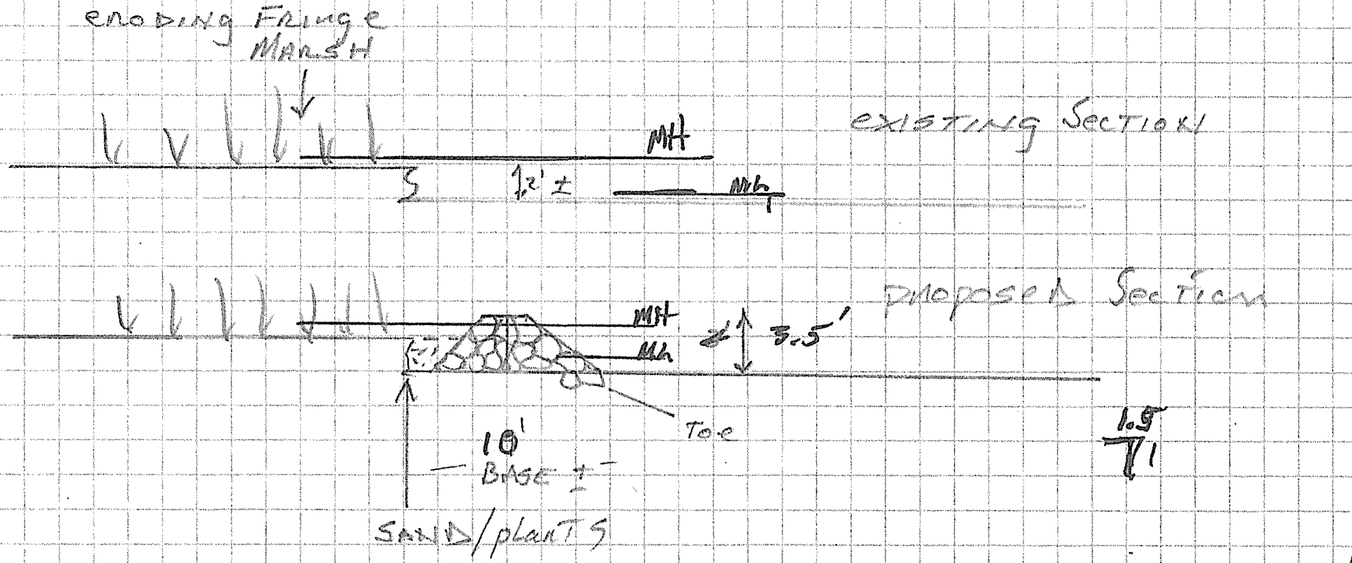


Received by VMRC May 3, 2021 /blh

Karmis / Harvey

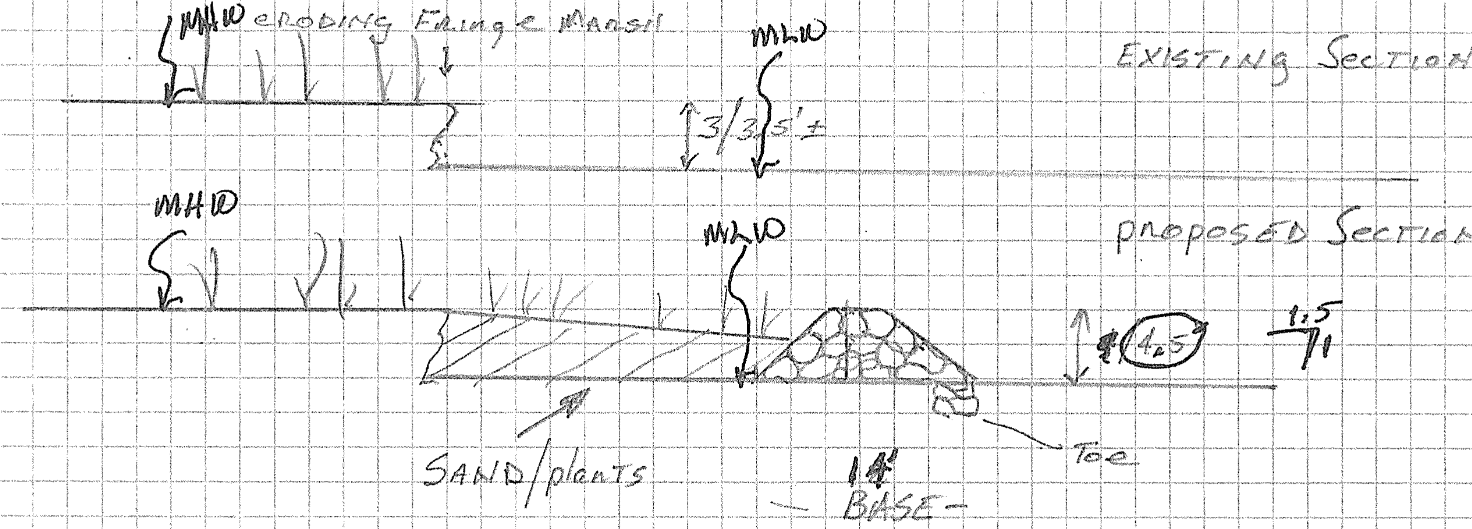
2-2020
9-2020
4-21

SHORT SILL



1''=10'

TALL SILL



1''=10'

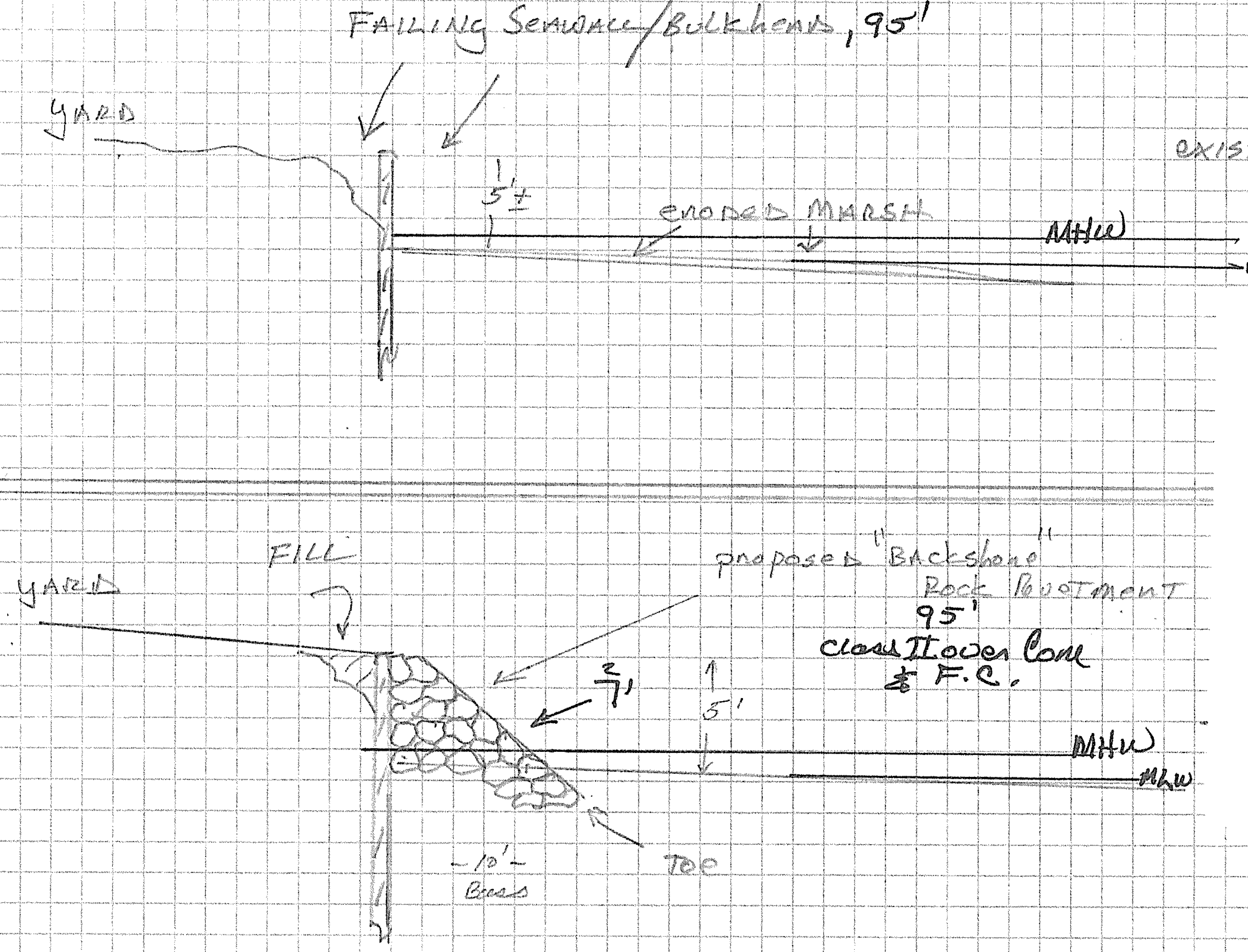
WATKINS, 2/20 9/20
804 815 0813

Received by VMRC May 3, 2021 /blh

KARNY

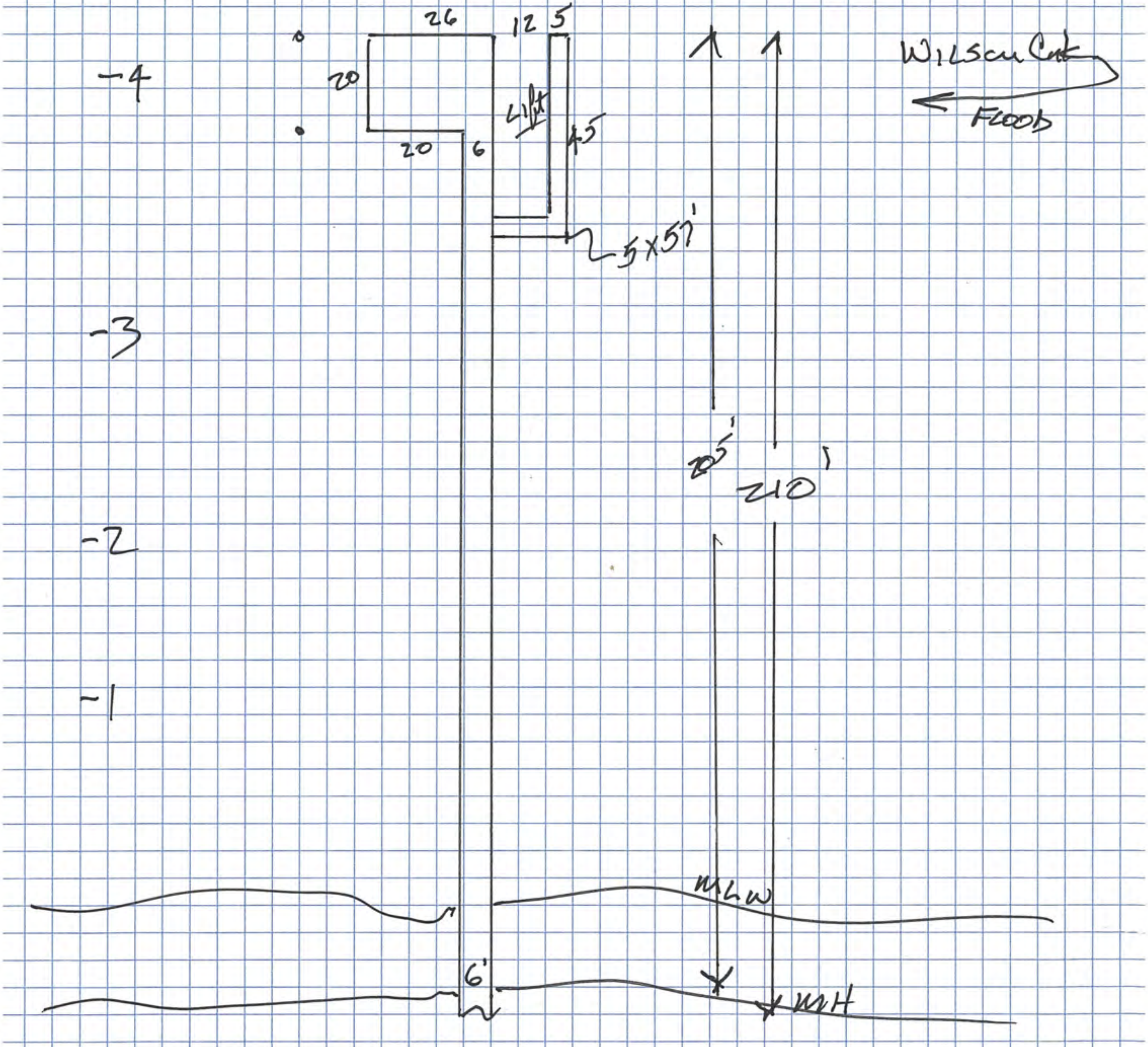
2-2020
9-2020
4-21

Existing Section



1" = 10'

WATKINS : 2/20 9/20 4/21
804 815 0613

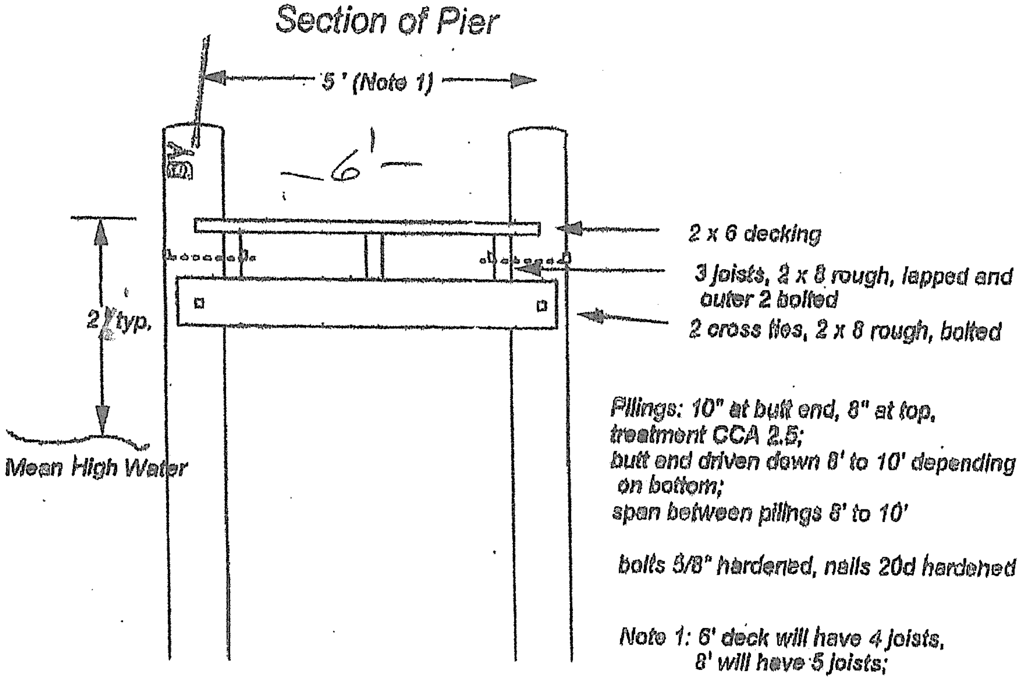


KARNY
5514 Roane's Wharf RD
Gloucester VA
Wilson Creek

4-20-21

Received by VMRC May 3, 2021 /blh

Section of Pier



Pilings: 10" at butt end, 8" at top,
treatment CCA 2.5;
butt end driven down 8' to 10' depending on bottom;
span between pilings 8' to 10'

bolts 5/8" hardened, nails 20d hardened H DG

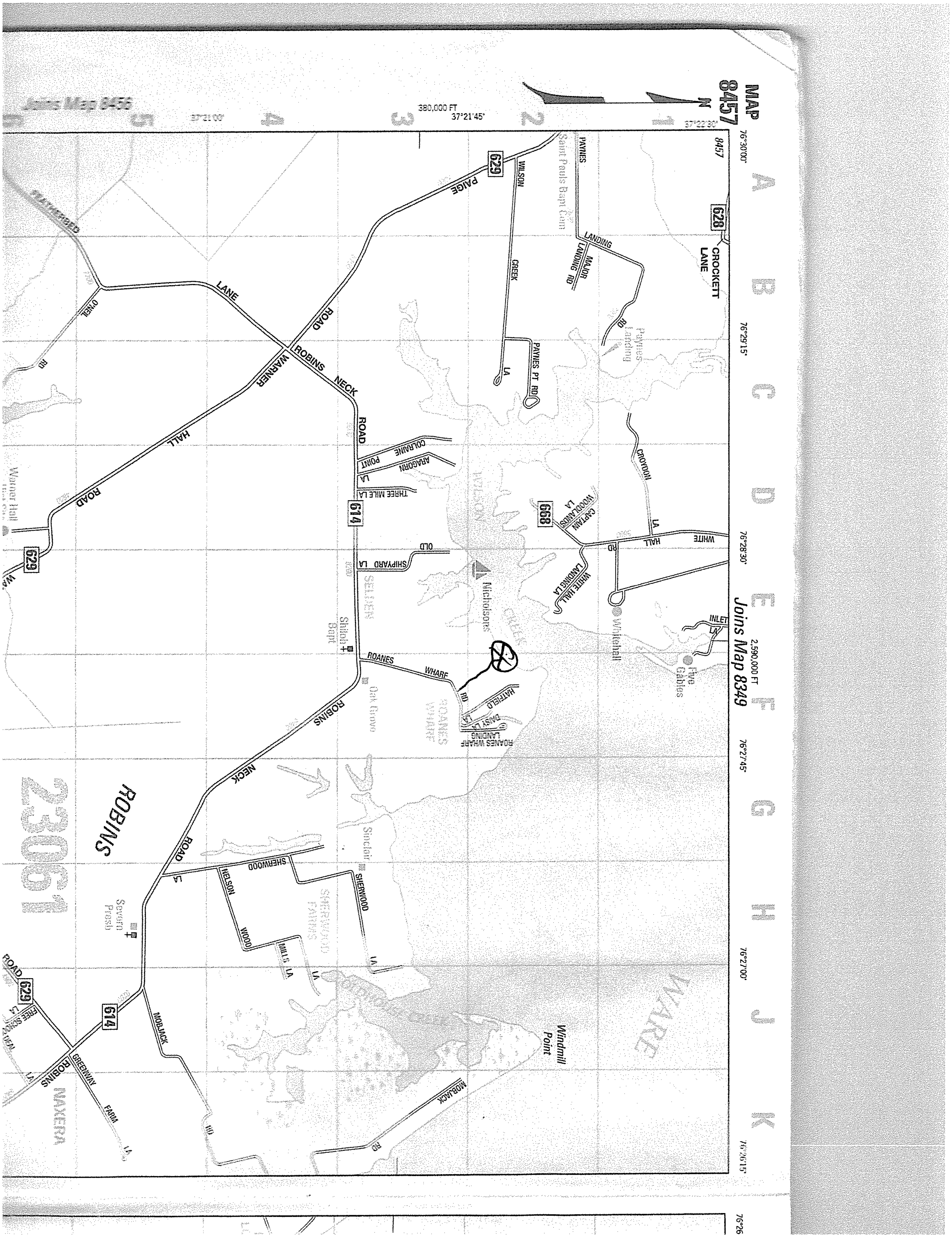
Note 1: 6' deck will have 4 joists,
8' will have 5 joists;

Boat Lift: Ace "Overhead Beam" type w/ No-notch adapter kit;
Motors and beams mounted at least 7' off the deck

Courtesy of [redacted]
Jeff Watkins
P.O. Box 515
Gloucester, VA 23061
(804) 642-2826

815-0813

Received by VMRC May 3, 2021 /blh



Received by VMRC May 3, 2021 /blh

Virginia Marine Resources Commission
Permit Application 20211008
Printed: Friday August 13, 2021 9:32 PM

Applicant: Mark S. Harvey
Post Office Box 376
White Marsh, VA 23183

Application Number:	20211008	**Engineer:**	Mike Johnson
Application Date:	May 3, 2021	**Locality:**	Gloucester
Permit Type:	VMRC Subaqueous	**Waterway:**	Wilson Creek
Permit Status:	Issued	**Expiration Date:**	June 30, 2024
Wetlands Board Action:	Approved as Proposed	**Public Hearing Date:**	June 9, 2021

Project Description: Riprap

Project Dimensions:

Sill: 245 Linear Feet

Living Shoreline: 305 Linear Feet

Virginia Marine Resources Commission

Photos for Permit Application 20211008

Printed: Friday August 13, 2021 9:32 PM

Date Photo Taken: 2021:06:07 10:03:36

Date Photo Taken: 2021:06:07 10:03:35

Virginia Marine Resources Commission
Photos for Permit Application 20211008
Printed: Friday August 13, 2021 9:32 PM

Date Photo Taken: 2021:06:07 10:03:30

Date Photo Taken: 2021:06:07 10:11:54

Virginia Marine Resources Commission
Photos for Permit Application 20211008
Printed: Friday August 13, 2021 9:32 PM

Date Photo Taken: 2021:06:07 10:09:26

Date Photo Taken: 2021:06:07 10:09:24

Virginia Marine Resources Commission
Photos for Permit Application 20211008
Printed: Friday August 13, 2021 9:32 PM

Date Photo Taken: 2021:06:07 10:10:00

Date Photo Taken: 2021:06:07 10:03:30

Virginia Marine Resources Commission
Photos for Permit Application 20211008
Printed: Friday August 13, 2021 9:32 PM

Date Photo Taken: 2021:06:07 10:03:36

Date Photo Taken: 2021:06:07 10:03:35

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

August 13, 2021

Northern Virginia Regulatory Section
NAO-2020-01525/VMRC #21-1008 (Wilson Creek)

Mark & Joelle Harvey
PO Box 376
White Marsh, VA 23183

Mr. & Mrs. Harvey:

This is in reference to the Department of the Army application NAO-2020-01525/ VMRC #21-1008 you have submitted to create a living shoreline by installing a 245-foot-long rock sill with clean sand back fill and plantings of native vegetation. All work will be completed at 5518 Roane's Wharf Rd., Gloucester, Virginia (37.3643316, -76.46846). Your proposed project as described above and depicted on attached drawings entitled "Proposed Project" in two sheets dated and stamped as received by our office on June 9, 2021 satisfies the terms and conditions of Norfolk District's Regional Permit 19 (18-RP-19). Provided that you follow the general and permit specific conditions of 18-RP-19, as well as any additional special conditions that have been included below, no further authorization will be required from the Corps.

The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

Incidents where any individuals of sea turtles, Atlantic sturgeon, or any species listed by NOAA Fisheries under the Endangered Species Act appear to be injured or killed as a result of discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States authorized by this RP shall be reported to NOAA Fisheries, Office of Protected Resources at (301) 713-1401 and the Regulatory Office of the Norfolk District of the U.S. Army Corps of Engineers at 757-201-7652. The finder should leave the animal alone, make note of any circumstances likely causing the death or injury, note the location and number of individuals involved and, if possible, take photographs. Adult animals should not be disturbed unless circumstances arise where they are obviously injured or killed by discharge exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NOAA Fisheries, Office of Protected Resources, to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

Enclosed is a "compliance certification" form, which must be signed and returned within 30 days of completion of the project. Your signature on this form certifies that you have completed the work in accordance with the regional permit terms and conditions.

This verification is valid until the RP is modified, reissued, or revoked. RPs 2, 15, 17, 18, 19 and 22 are scheduled to be modified, reissued, or revoked on September 5, 2023. Activities which have commenced (i.e. under construction) or are under contract to commence in reliance upon this RP will remain authorized provided the activity is completed within twelve (12) months of the date of the RP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization. Activities completed under the authorization of the RP which was in effect at the time the activity was completed continue to be authorized by that RP.

The State Water Control Board provided unconditional §401 Water Quality Certification for this RP. Therefore, the activities that qualify for this RP meet the requirements of the Department of Environmental Quality's (DEQ) Virginia Water Protection Permit Regulation, provided that the permittee abides by the conditions of this RP. You will not be required to obtain a separate §401 Water Quality Certification from DEQ. This authorization does not relieve your responsibility to comply with local requirements pursuant to the Chesapeake Bay Preservation Act (CBPA), nor does it supersede local government authority and responsibilities pursuant to the Act. You should contact your local government before you begin work to find out how the CBPA applies to your project.

Pursuant to the Coastal Zone Management Act (CZMA) of 1972, the Virginia Department of Environmental Quality Virginia Coastal Zone Management Program (VCP) completed its review of the Federal Consistency Determination (FCD) for this RP on August 16, 2018, and provided concurrence that this RP is consistent with the VCP. Therefore, no further coordination with the VCP is required. Authorizations under this RP do not supersede State or local government authority or responsibilities pursuant to any State or local laws or regulations.

In granting an authorization pursuant to this permit, the Norfolk District has relied on the information and data provided by the permittee. If, subsequent to notification by the Corps that a project qualifies for this permit, such information and data prove to be materially false or materially incomplete, the authorization may be suspended or revoked, in whole or in part, and/or the government may institute appropriate legal proceedings. Please note that you should obtain all required State and local authorizations before you proceed with the project.

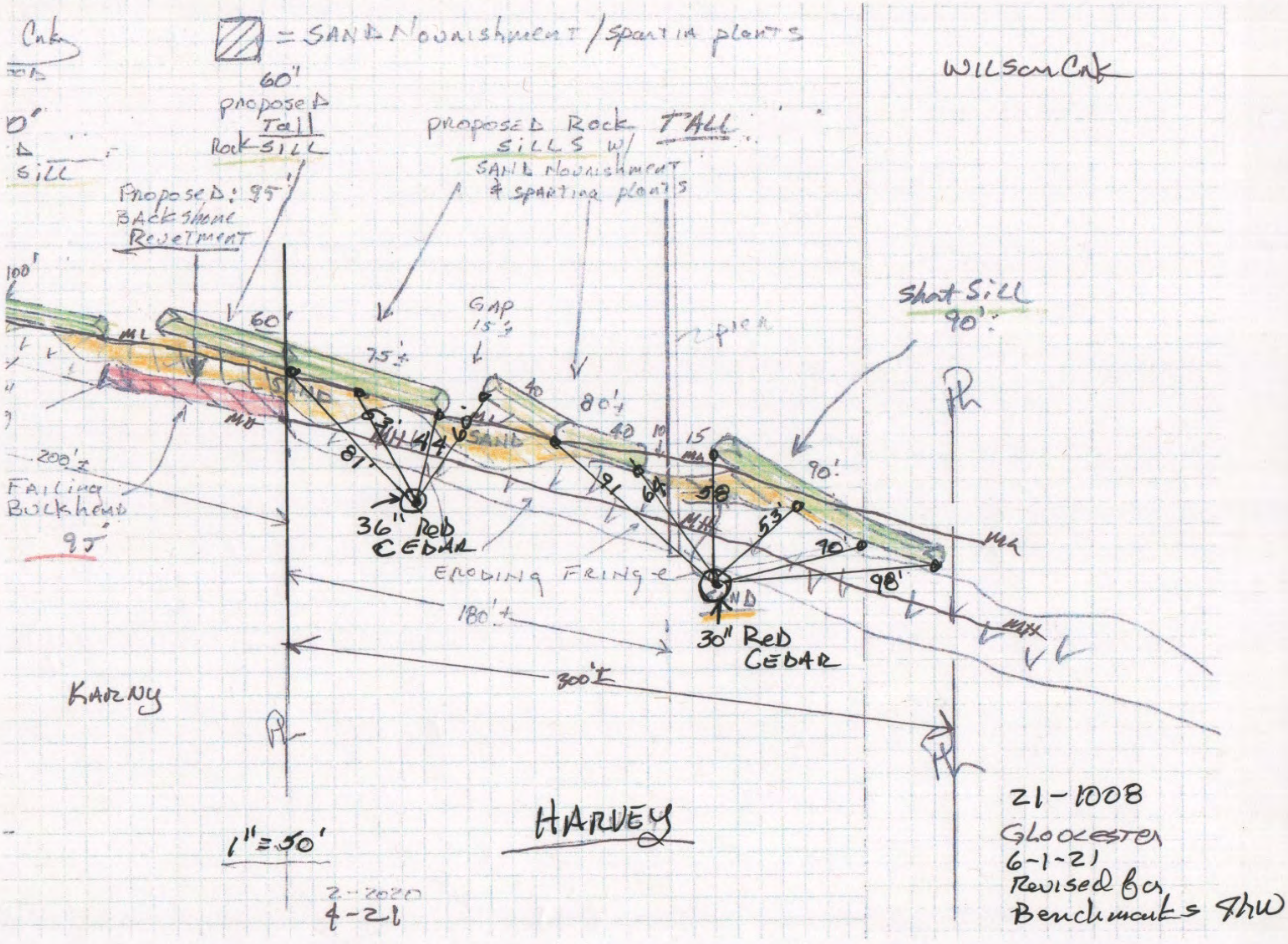
If you have any questions and/or concerns about this permit authorization, please contact Jaime Longo via phone at 757-201-7551 or email at jaime.□are□o@usace.army.mil.

Sincerely,

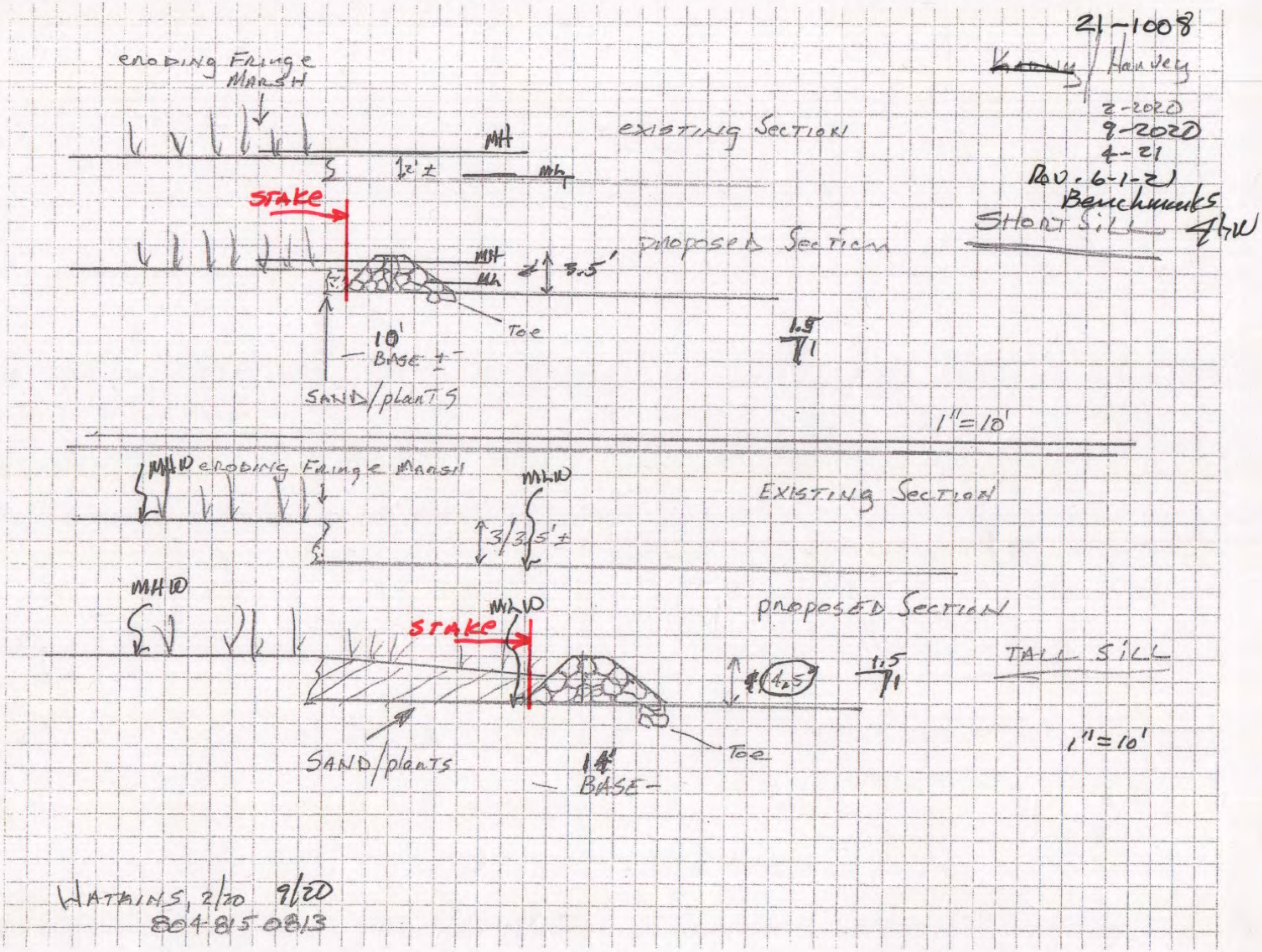
Jaime P. Longo

Jaime Longo
Northern Virginia
Regulatory Section

Proposed Project



Proposed Project



U.S. Army Corps
Of Engineers
Norfolk District

CERTIFICATE OF COMPLIANCE
WITH
ARMY CORPS OF ENGINEERS PERMIT

Permit Number: NAO-2020-01525

VMRC Number: 21-1008

Corps Contact: □aime □. □on□o

Name of Permittee: Mark □ □oe□□e Harvey

Date of Issuance: August 13, 2021

Permit Type: Norfolk District's Regional Permit 19 (18-RP-19)

<u>Within 30 days of completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:</u>

US Army Corps of Engineers - Norfolk District
CENAO-WR-R
Attn: □aime □. □on□o
803 Front Street
Norfolk, VA 23510-1096

Or scan and send via email to <u>□aime.□are□□o@usace.army.mil</u>

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation has been completed in accordance with the permit conditions.

_____________________________________ _____________________________________
Signature of Permittee Date

COMMONWEALTH OF VIRGINIA
MARINE RESOURCES COMMISSION
PERMIT

The Commonwealth of Virginia, Marine Resources Commission, hereinafter referred to as the Commission, on this 23rd day of July 2021 hereby grants unto:

Mark S. Harvey
Post Office Box 376
White Marsh, VA 23183

Joelle K. Harvey
Post Office Box 376
White Marsh, VA 23183

hereinafter referred to as the Permittee, permission to:

_X_ Encroach in, on, or over State-owned subaqueous bottoms pursuant to Chapter 12, Subtitle III, of Title 28.2 of the Code of Virginia.

___ Use or develop tidal wetlands pursuant to Chapter 13, Subtitle III, of Title 28.2 of the Code of Virginia.

Permittee is hereby authorized to install 245 linear feet of rock sill with clean sand fill and plantings of native wetland vegetation along Wilson creek at 5518 Roanes Wharf Road in Gloucester County. All activities authorized herein shall be accomplished in conformance with the plans and drawings dated received May 3, 2021, and revised drawings dated received June 7, 2021, which are attached and made a part of this permit.

This permit is granted subject to the following conditions:

(1) The work authorized by this permit is to be completed by **June 30th, 2024.** The Permittee shall notify the Commission when the project is completed. The completion date may be extended by the Commission in its discretion. Any such application for extension of time shall be in writing prior to the above completion date and shall specify the reason for such extension and the expected date of completion of construction. All other conditions remain in effect until revoked by the Commission or the General Assembly.

(2) This permit grants no authority to the Permittee to encroach upon the property rights, including riparian rights, of others.

(3) The duly authorized agents of the Commission shall have the right to enter upon the premises at reasonable times, for the purpose of inspecting the work being done pursuant to this permit.

(4) The Permittee shall comply with the water quality standards as established by the Department of Environmental Quality, Water Division, and all other applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining any and all other permits or authority for the projects.

(5) This permit shall not be transferred without written consent of the Commissioner.

(6) This permit shall not affect or interfere with the right vouchsafed to the people of Virginia concerning fishing, fowling and the catching of and taking of oysters and other shellfish in and from the bottom of acres and waters not included within the terms of this permit.

(7) The Permittee shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the Commonwealth.

(8) This permit may be revoked at any time by the Commission upon the failure of the Permittee to comply with any of the terms and conditions hereof or at the will of the General Assembly of Virginia.

(9) There is expressly excluded from the permit any portion of the waters within the boundaries of the Baylor Survey.

(10) This permit is subject to any lease of oyster planting ground in effect on the date of this permit. Nothing in this permit shall be construed as allowing the Permittee to encroach on any lease without the consent of the leaseholder. The Permittee shall be liable for any damages to such lease.

(11) The issuance of this permit does not confer upon the Permittee any interest or title to the beds of the waters.

(12) All structures authorized by this permit, which are not maintained in good repair, shall be completely removed from State-owned bottom within three (3) months after notification by the Commission.

(13) The Permittee agrees to comply with all of the terms and conditions as set forth in this permit and that the project will be accomplished within the boundaries as outlined in the plans attached hereto. Any encroachment beyond the limits of this permit shall constitute a Class 1 misdemeanor.

(14) This permit authorizes no claim to archaeological artifacts that may be encountered during the course of construction. If, however, archaeological remains are encountered, the Permittee agrees to notify the Commission, who will, in turn notify the Department of Historic Resources. The Permittee further agrees to cooperate with agencies of the Commonwealth in the recovery of archaeological remains if deemed necessary.

(15) The Permittee agrees to indemnify and save harmless the Commonwealth of Virginia from any liability arising from the establishment, operation or maintenance of said project.

The following special conditions are imposed on this permit:

(16) The placard accompanying this permit document must be conspicuously displayed at the work site.

(17) Permittee agrees to notify the Commission upon the start of the activities authorized by this permit.

Description of Fees	Amount	Unit of Measure	Rate	Total	Frequency	After-The-Fact
Permit Fee				$300.00	One-Time	
Total Permit Fees				**$300.00**		

This permit consists of 8 Pages

PERMITTEE(S)

☒ BY CHECKING THIS BOX, I certify that I am the Permittee OR the certified agent acting on behalf of all Permittees, that I have read and understood the permit as drafted and accept all of the terms and conditions herein. I agree and understand that checking the box has the same legal authority as a written signature. The provisions of the permit authorization shall be binding on any assignee or successor in interest of the original Permittee(s). In cases where the Permittee is a corporation, agency or political jurisdiction, I certify I have proper authorization to bind the organization to the financial and performance obligations which result from activity authorized by this permit.

PERMITTEE OR CERTIFIED AGENT

Mark and JoElle Harvey
Print Your Name Here

DATE TERMS ACCEPTED

July 22, 2021

PERMITEE
Mark S. Harvey
Post Office Box 376
White Marsh, VA 23183

PERMITEE 2
Joelle K. Harvey
Post Office Box 376
White Marsh, VA 23183

AGENT
Shoreline Structures
Jeff Watkins
Post Office Box 515
Gloucester, Va 23061

COMMISSION

This permit is executed on behalf of the Commonwealth of Virginia, Marine Resources Commission by the undersigned:

Randy Owen
Chief, Habitat Management Division

DATE SIGNED
23rd day of July 2021

Attachment 9: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)
The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000-$180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

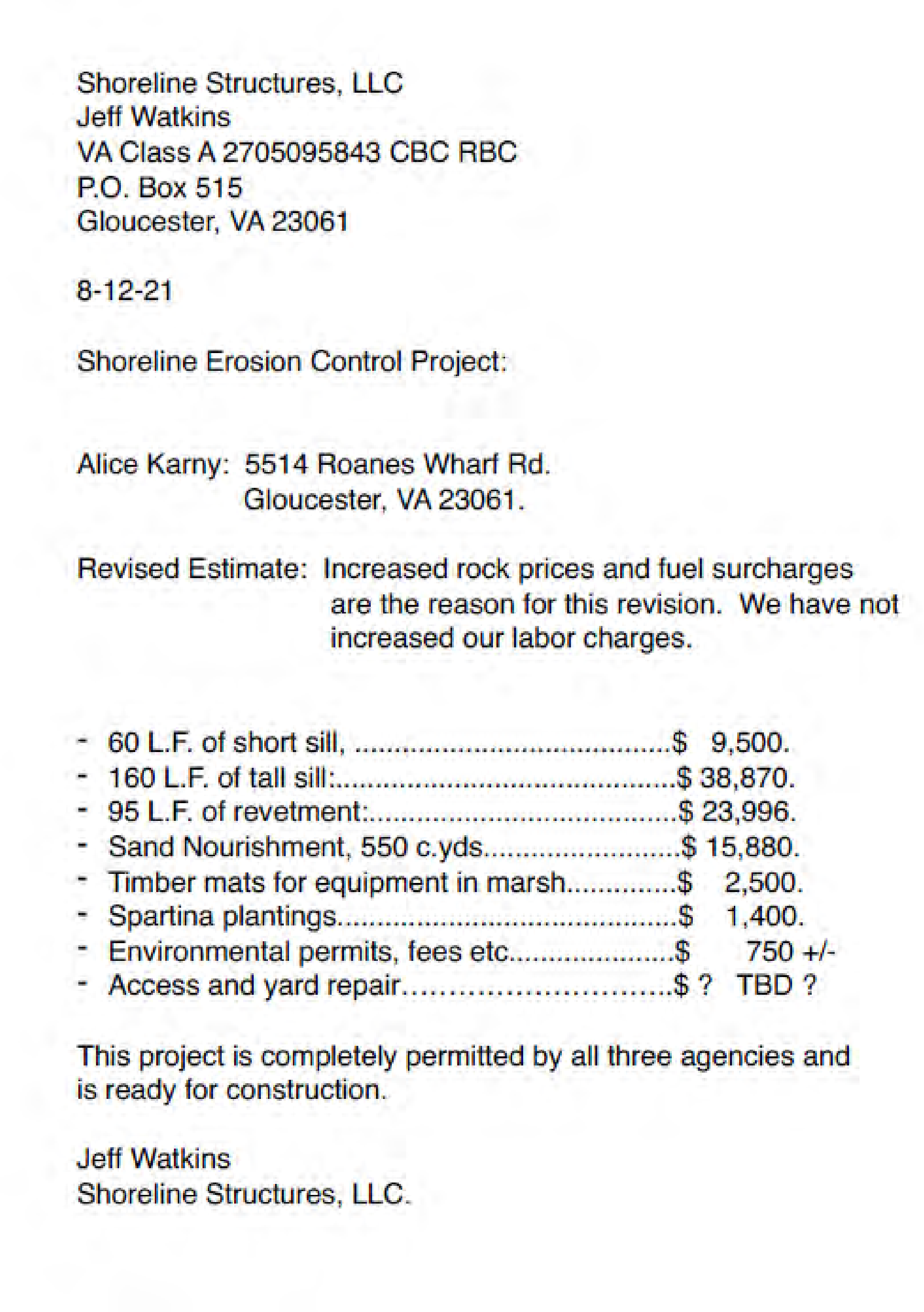
Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

Attachment 10: Project cost estimates



Shoreline Structures, LLC
Jeff Watkins
VA Class A 2705095843 CBC RBC
P.O. Box 515
Gloucester, VA 23061

8-12-21

Shoreline Erosion Control Project:

Alice Karny: 5514 Roanes Wharf Rd.
Gloucester, VA 23061.

Revised Estimate: Increased rock prices and fuel surcharges are the reason for this revision. We have not increased our labor charges.

- 60 L.F. of short sill,	$ 9,500.
- 160 L.F. of tall sill:	$ 38,870.
- 95 L.F. of revetment:	$ 23,996.
- Sand Nourishment, 550 c.yds	$ 15,880.
- Timber mats for equipment in marsh	$ 2,500.
- Spartina plantings	$ 1,400.
- Environmental permits, fees etc	$ 750 +/-
- Access and yard repair	$? TBD ?

This project is completely permitted by all three agencies and is ready for construction.

Jeff Watkins
Shoreline Structures, LLC.

Shoreline Structures, LLC
Jeff Watkins
VA Class A 2705095843 CBC RBC
P.O. Box 515
Gloucester, VA 23061

8-12-21

Shoreline Erosion Control Project: VMRC 21-1008

JoElle & Mark Harvey: 5518 Roanes Wharf Rd.
Gloucester, VA 23061.

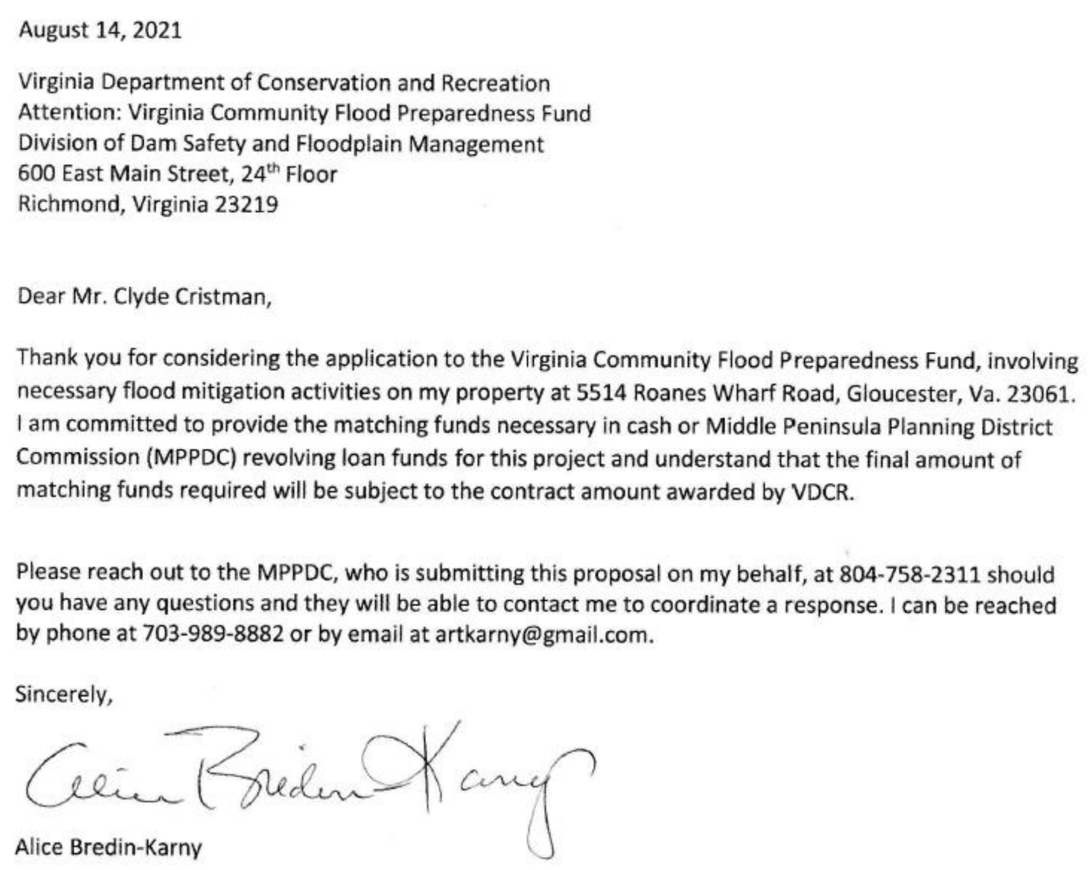
Revised Estimate: Increased rock prices and fuel surcharges are the reason for this revision. We have not increased our labor charges.

- 155 L.F. of tall sill (two parts)	$	36,580.
- 90 L.F. of short sill (right side of pier)	$	14,000.
- Sand Nourishment, 550 c.yds	$	15,880.
- Timber mats for equipment in marsh	$	2,500.
- Spartina plantings	$	1,200.
- Environmental permits, fees etc	$	750 +/-
- Access and yard repair	$?	TBD ?

This project is completely permitted by all three agencies and is ready for construction.

Jeff Watkins
Shoreline Structures, LLC.

Attachment 11: Match Commitment Letters



August 14, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 5514 Roanes Wharf Road, Gloucester, Va. 23061. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 703-989-8882 or by email at artkarny@gmail.com.

Sincerely,

Alice Bredin Karny

Alice Bredin-Karny

August 15, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

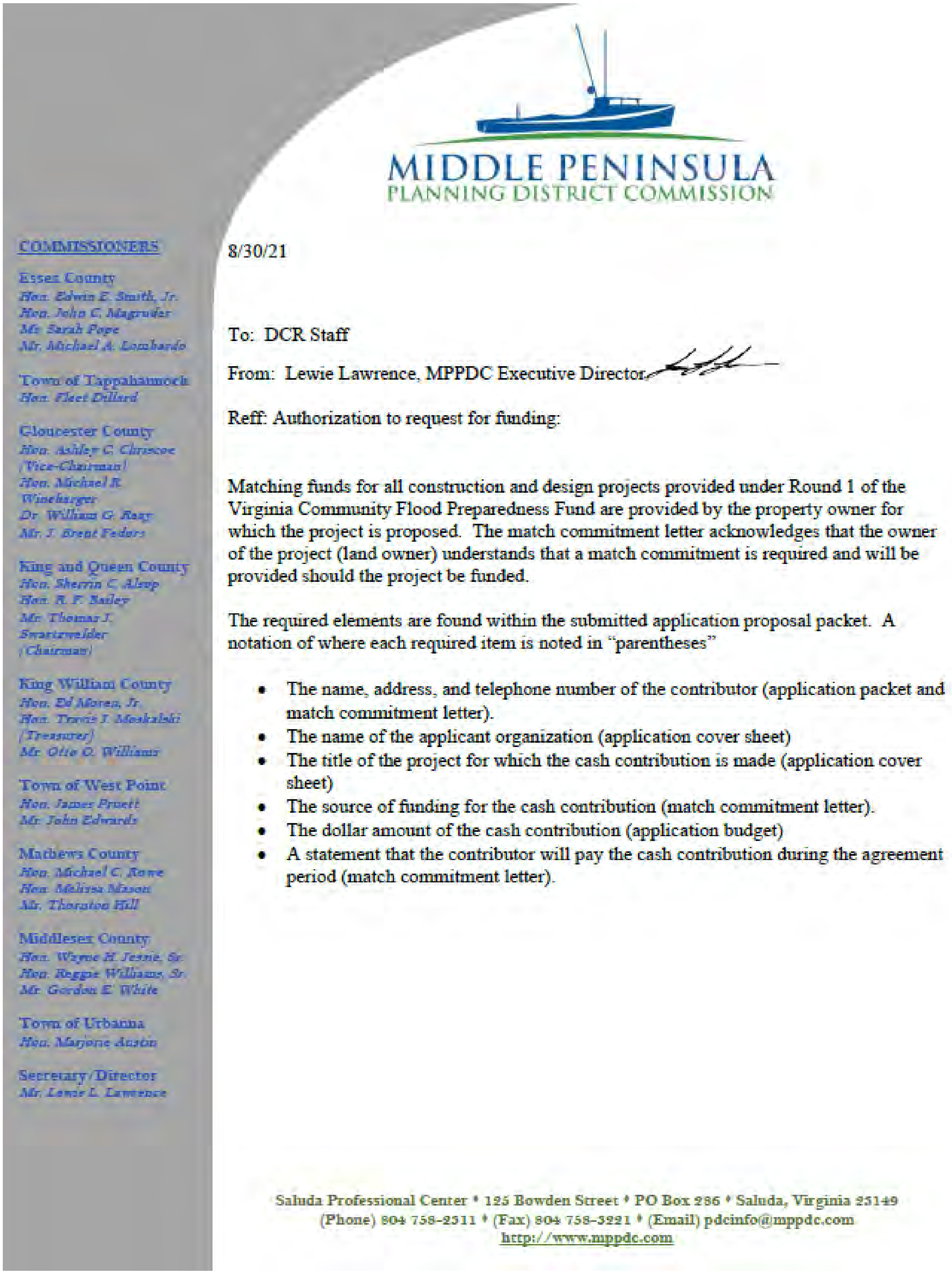
Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 5518 Roanes Wharf Rd, Gloucester VA 23061. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-694-7557 or by email at j5hrvys@cox.net.

Sincerely,

Authentisign
JoElle K. Harvey
8/16/2021 10:13:27 AM EDT
JoElle K. Harvey

Attachment 12: Authorization to request for funding



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center • 125 Bowden Street • PO Box 286 • Saluda, Virginia 23149
(Phone) 804 758-2311 • (Fax) 804 758-3221 • (Email) pdcinfo@mppdc.com
http://www.mppdc.com

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Parker Shoreline Construction** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

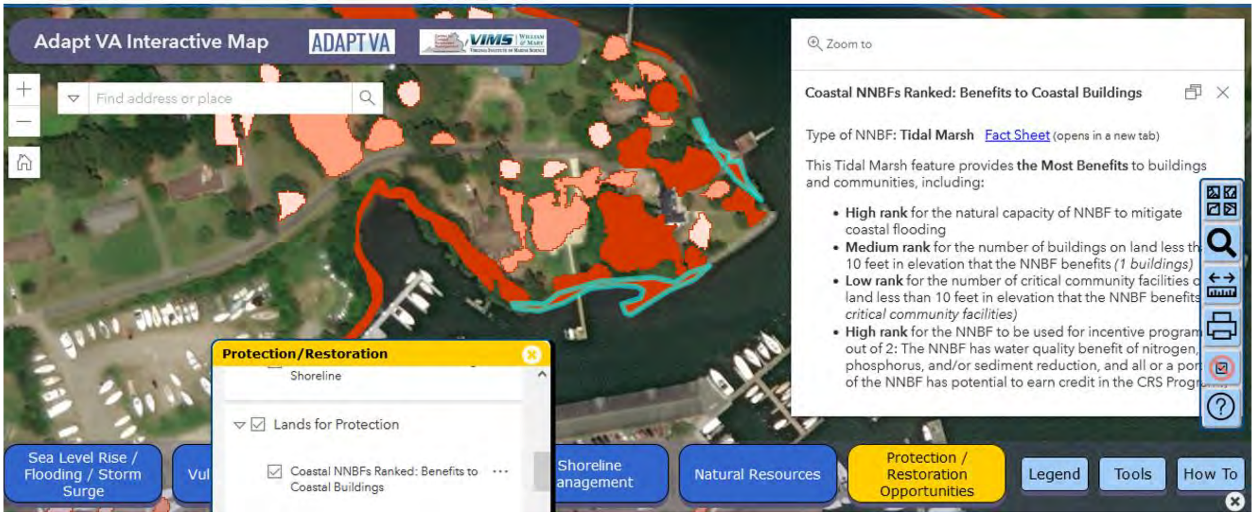
Issue #2

DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit. The owner mentions the following as well. The property is adjacent to the last navigational aid on this branch of the creek -Green Day mark “11”. This location is a choke point for the remainder of the creek . Continued erosion of the shoreline from flooding ,sea level rise and storms will impact the navigability of this creek . The channel is on the project side of the creek . The channel will continue to silt in . This has some major impact to the remaining property owners on the creek



Coastal NNBFs Ranked: Benefits to Coastal Buildings

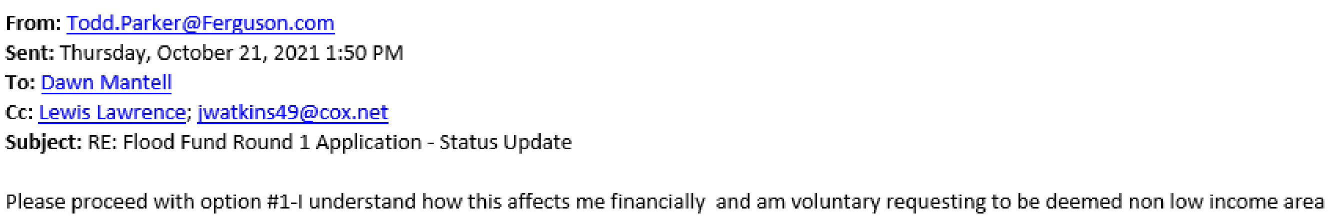
Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Medium rank** for the number of buildings on land less th 10 feet in elevation that the NNBF benefits *(1 buildings)*
- **Low rank** for the number of critical community facilities c land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



From: Todd.Parker@Ferguson.com
Sent: Thursday, October 21, 2021 1:50 PM
To: Dawn Mantell
Cc: Lewis Lawrence; jwatkins49@cox.net
Subject: RE: Flood Fund Round 1 Application - Status Update

Please proceed with option #1-I understand how this affects me financially and am voluntary requesting to be deemed non low income area

Amended Budget Request

DCR Funding:	$ 65,498
Owner:	$ 28,,071
Total	$ 93,569

Title: Parker								
								Budget (Cat. D)
							Parker	
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		9.62%	2.35%	$70,000		$6,044	$2,590	$8,634
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$6,044	$2,590	$8,634
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			**$72,650**	50,855.00	21,795.00	$1,584	$679	$2,263
		15%	10,897.50	7,628.25	3,269.25			
Total Personnel			**83,547.50**	**58,483.25**	**25,064.25**	$7,628	$3,269	$10,897
SubAward/SubContract Agreements						**70%**	**30%**	
Shoreline Structures	*115 LF rock Sill*				$36,800	$25,760	$11,040	$36,800
Shoreline Structures	*Sand Nourishment 250 cyds*				$18,750	$13,125	$5,625	$18,750
Shoreline Structures	*Filter Fabric*				$2,800	$1,960	$840	$2,800
Shoreline Structures	*Marsh Access. Timber Mats*				$2,500	$1,750	$750	$2,500
Shoreline Structures	*Spartina Plantings*				$3,250	$2,275	$975	$3,250
Shoreline Structures	*Site Access. Tree Removal, Sand Access Road to Water*				$3,500	$2,450	$1,050	$3,500
Shoreline Structures	*Remove Access road and restore yard*				$2,800	$1,960	$840	$2,800
Shoreline Structures	*Permits and procurement*				$2,250	$1,575	$675	$2,250
					$72,650			
SUBTOTAL: Direct Costs						$58,483	$25,064	$83,547
Indirect/IDC/Facilities & Administrative Costs				**27.92%**	$10,022	$7,015	$3,007	$10,022
Total						**$65,498**	**$28,071**	**$93,569**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$65,498**	**$28,071**	**$93,569**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

PROJECT TITLE: Sarah's Creek – Parker's Nature-based Construction Project
Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning X Project _____Study

NFIP/DCR Community Identification Number (CID): Gloucester County (510071)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ **No** ____

Project Grants (Check All that Apply)

☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**

☑ **Wetland restoration.**

☑**Floodplain restoration.**

☐ Construction of swales and settling ponds.

☑Living shorelines and vegetated buffers.

☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.

☐ Storm water system upgrades.

☐ Medium and large-scale Low Impact Development (LID) in urban areas.

☐ Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

☐ Dam restoration or removal.

☑ Stream bank restoration or stabilization.

☐ Restoration of floodplains to natural and beneficial function.

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County
NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No
Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No Flood Zone(s) (If Applicable): AE Zone
Flood Insurance Rate Map Number(s) (If Applicable): 51073C0213E

Total Cost of Project: **$91,564**

Total Amount Requested: **$73,252**

INTRODUCTION –
FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). This proposal is a Nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions,* June 2021).

Specifically, this project proposes to construct a nature-based solution on a private property located on Sarah's Creek in Gloucester County. The nature-based solution will involve the installation of 115 linear feet of rock sills and 150 linear feet of living shoreline (i.e., clean sand nourishment and spartina plantings). This project will be a partnership between the MPPDC and one private property owner and is supported by Gloucester County (See the community support letter in Attachment 1).

- A link or copy to the approved resilience plan: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf within the plan please see Section 4 (page 25). This Section includes historical hazard data within the region.
- Here's a link to the Gloucester County Comprehensive Plan: https://www.gloucesterva.info/DocumentCenter/View/5777/2016-Gloucester-County-Comprehensive-Plan

PROJECT LOCATION INFORMATION – This project proposes to install living shorelines on one private property on Sarah's Creek in Gloucester County (**Figure 1 and 2**).

FIGURE 1: COUNTY MAP OF PROJECT LOCATION.

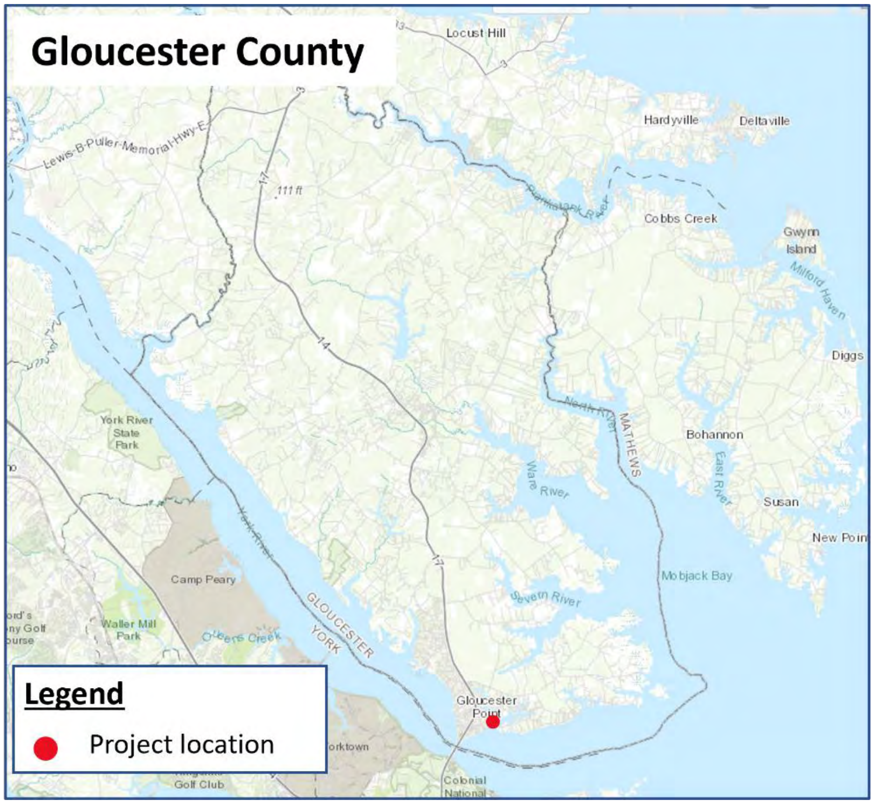
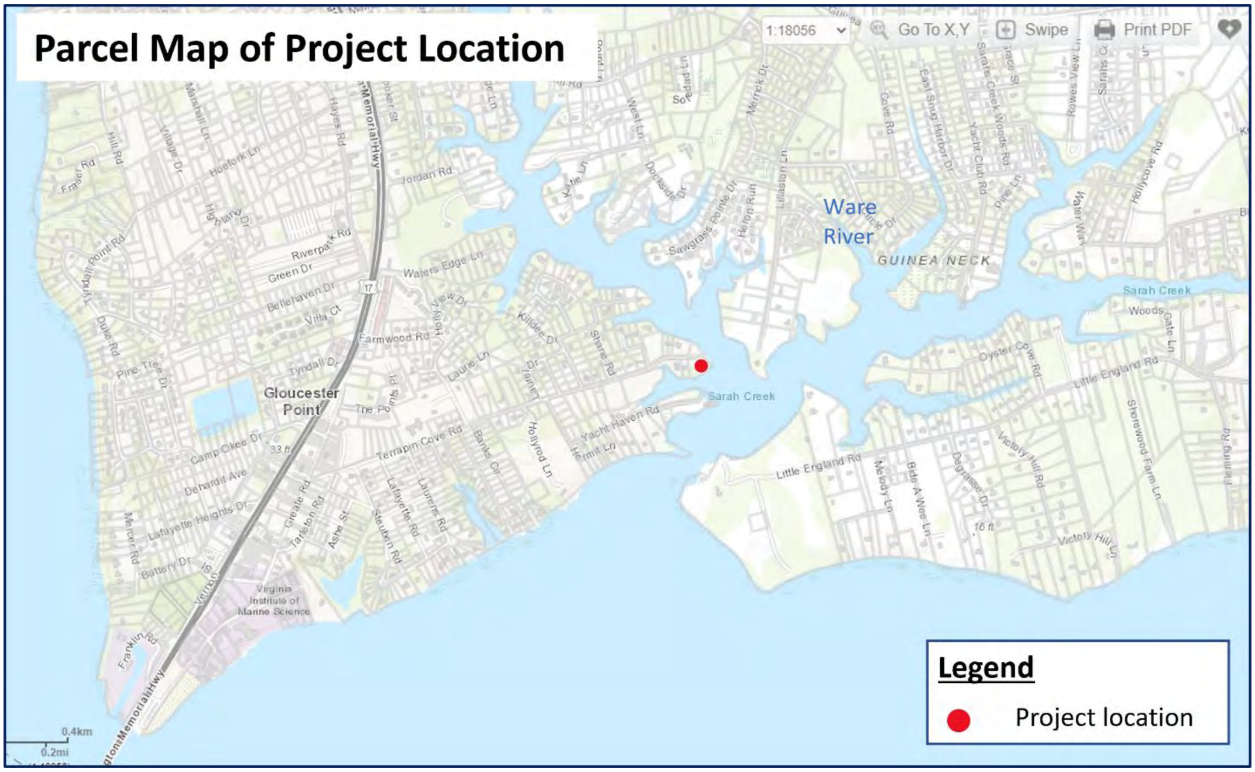
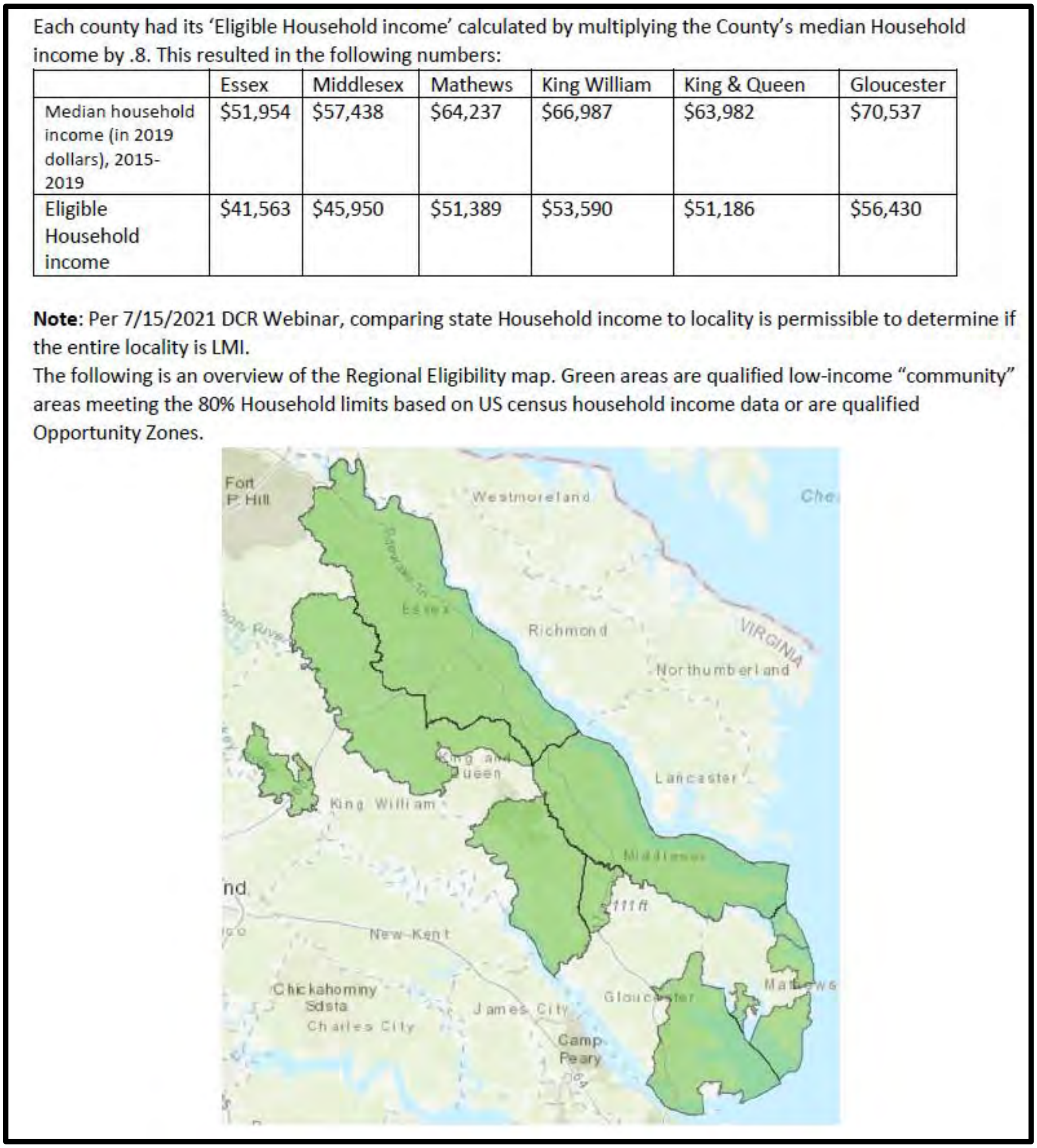


FIGURE 2: PARCEL MAP OF PROJECT LOCATION.



Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 3** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

FIGURE 3: MAP OF MIDDLE PENINSULAS LOW INCOME GEOGRAPHIC AREAS QUALIFYING UNDER DCR GUIDELINES.



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

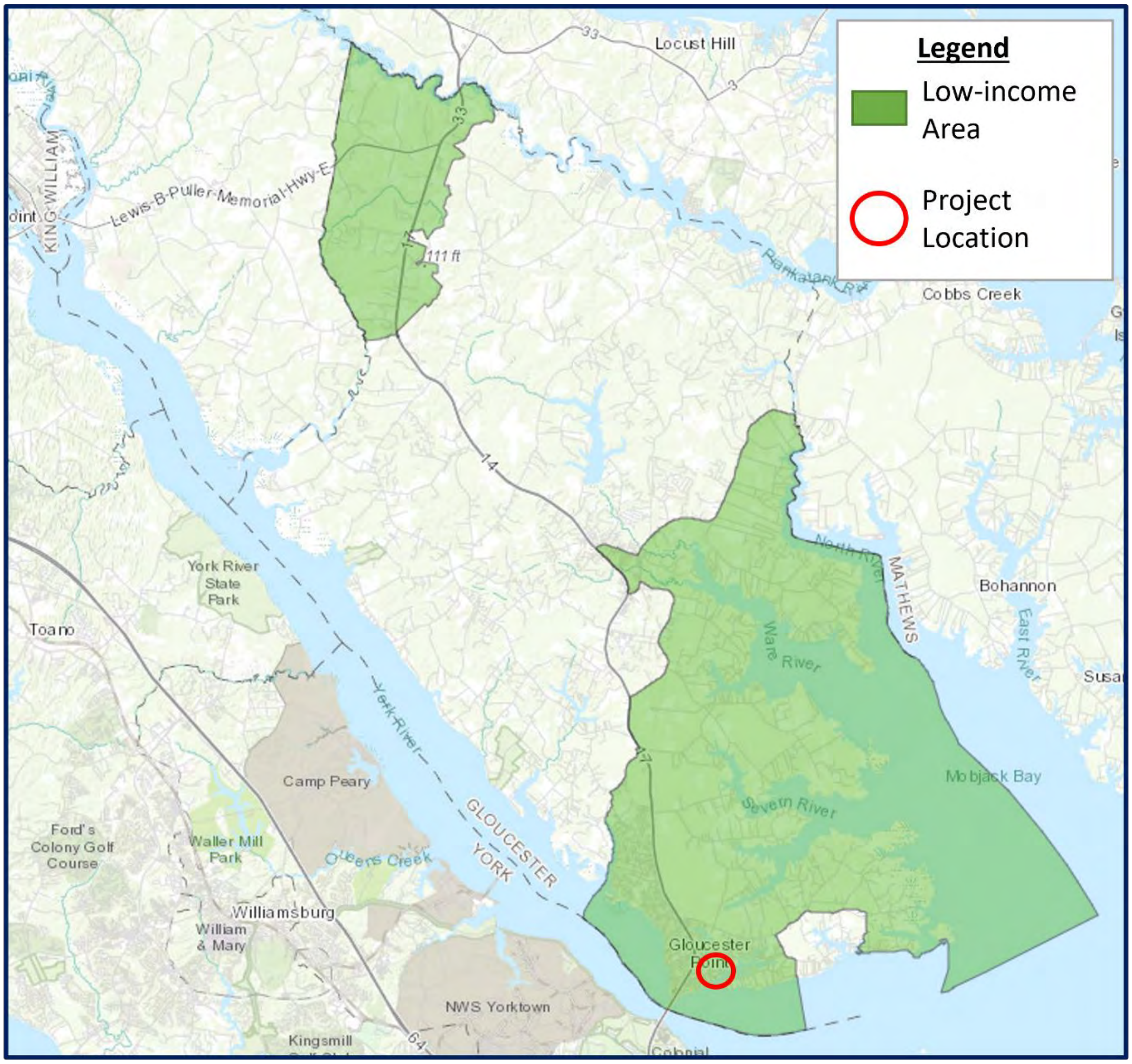
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

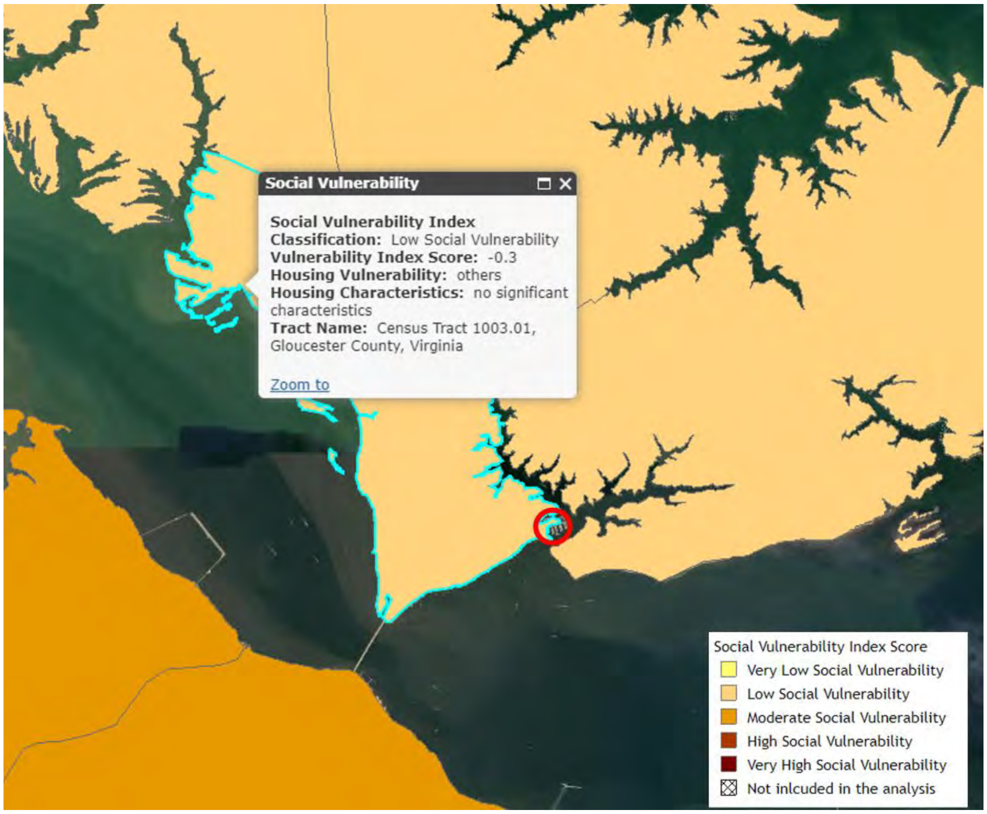
Please see **Figure 4** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

FIGURE 4: MAP OF THE PROJECT LOCATION WITHIN THE GREEN LOW-INCOME AREA.



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a low social vulnerability score (**Figure 5**). MPPDC is perplexed by the designation of the project area being automatically recognized as low income under the Community Flood Preparedness Fund Guidelines as an Opportunity Zone (**Figure 6**), identifying census tracts in the most in need, economically distressed and low-income communities while simultaneously the VA Social Vulnerability score of the exact same area reports a low social vulnerability score of -.03. MPPDC assumes the Opportunity Zone designation trumps the VA Social Vulnerability score in this case.

FIGURE 5: VIRGINIA'S SOCIAL VULNERABILITY INDEX SCORE MAP FOR THE PROJECT LOCATION.

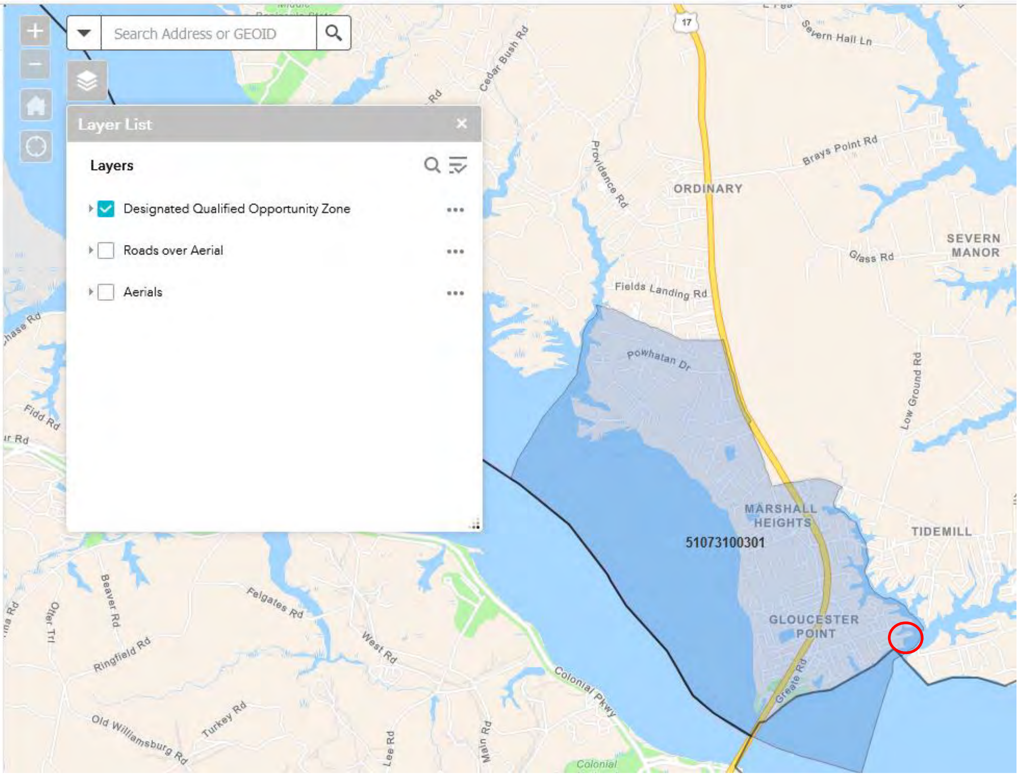


Social Vulnerability

Social Vulnerability Index
Classification: Low Social Vulnerability
Vulnerability Index Score: -0.3
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1003.01, Gloucester County, Virginia

Zoom to

FIGURE 6: FEMA NATION RISK INDEX OF CENSUS TRACK WHERE THE PROJECT LOCATION.



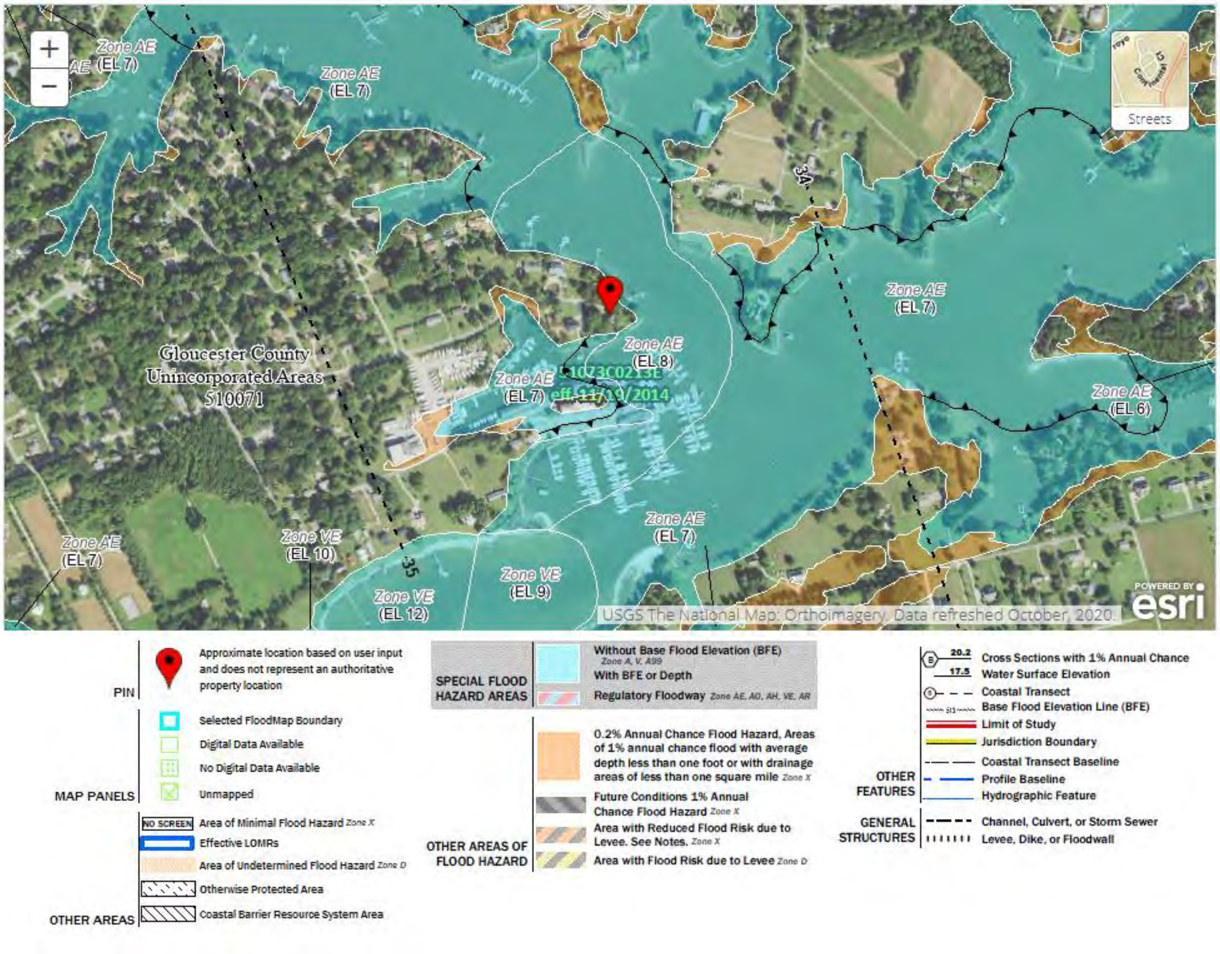
Layer List

Layers

☑ Designated Qualified Opportunity Zone
☐ Roads over Aerial
☐ Aerials

The project is located at 8106 Terrapin Cove Road Gloucester Point, VA 23062 (37.258058, -76.479883). A 115-linear feet sill and 150 linear feet of living shoreline, including sand nourishment and plantings will be constructed. Within the project area there are 2 structures on the property including 1 residential home and 1 detached garage. The structures are not identified as severe repetitive loss structure or repetitive loss structures. This site is located within the AE flood zone (**Figure 7**). Please see **Attachment 2** for the FIRMettes (last mapped 11/19/2014).

FIGURE 7: MAP OF FEMA FLOOD ZONES.

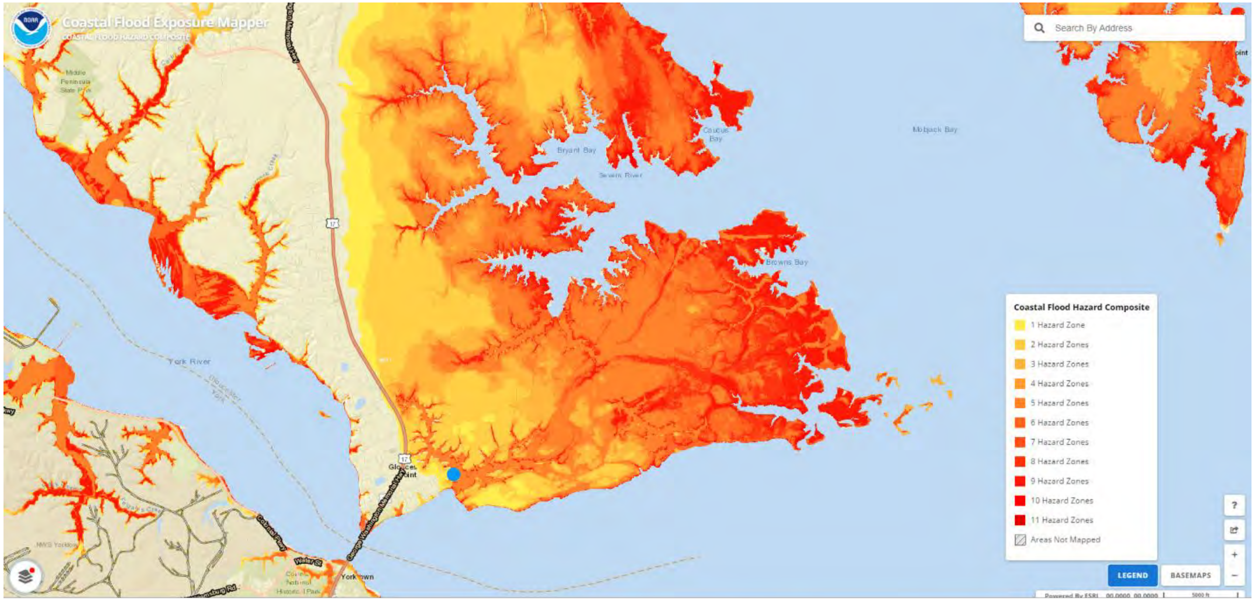


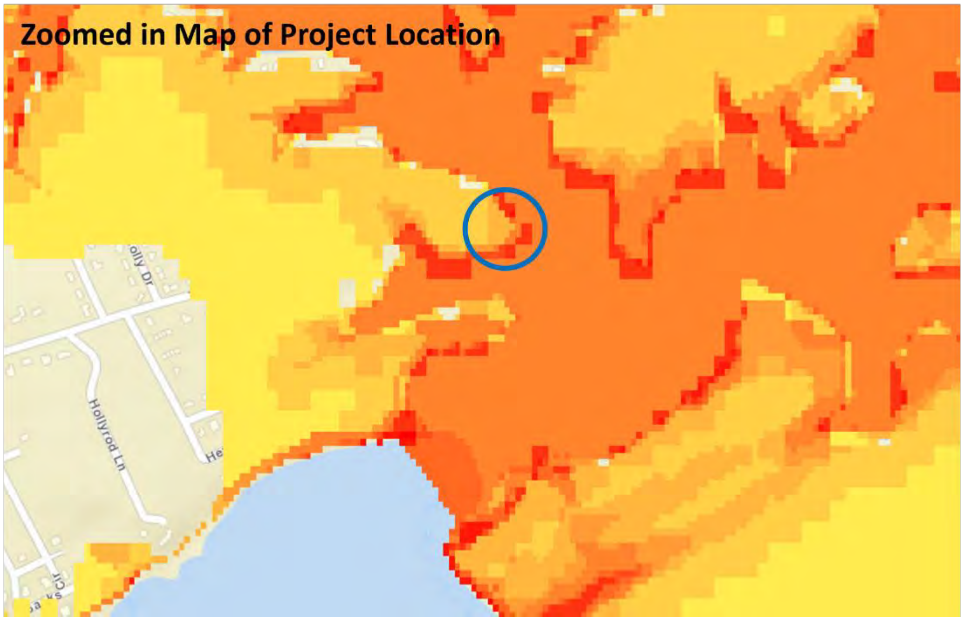
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 8** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 6,345.5 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Attachment 3** lists 87 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

FIGURE 8: PROJECT LOCATION AND MAP OF THE SHORELINE CHANGE BETWEEN 1937 AND 2017. PLEASE NOTE THAT THE PROJECT AREA PARCEL IS OUTLINED IN WHITE.

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding (**Figure 9**).

FIGURE 9: MAP OF PROJECT LOCATION AND RISK OF COASTAL FLOODING (NOAA, 2021).





For more information about this project area please see:

- The Middle Peninsula All Hazards Mitigation Plan identifies all hazards that impact the region - https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf .
- Gloucester County Building and Engineering Department administers the NFIP. Here is the link to the current floodplain ordinance: http://gloucestercounty-va.elaws.us/code/coor_ch8.5

NEED FOR ASSISTANCE –
The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of $1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from $750,000 to over $1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The need for assistance is two-fold.

First, as Gloucester County is near the Chesapeake Bay and numerous tidal rivers that create an area of high risk of coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from VIMS, relative sea- level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Gloucester County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds causing a storm surge. In Gloucester County, strong East and Northeast winds can push water from the Chesapeake Bay into the mouth of the York and Rappahannock Rivers and Mobjack Bay, flooding much of the county's low-lying areas (Middle Peninsula Planning District Commission, 2005). Additionally, when a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide". In Gloucester County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below (FEMA 1987, 6). If a severe hurricane were to make landfall during high tide, and additional 1.2 feet of water would be added to the highest storm surge possible, which could create a storm tide of 16.2 feet (Rygel, 2005). Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and produce hurricane-force winds that push large amounts of sea water inland. According to a study conducted by the Center for Coastal Resources Management, a one-and-a-half-foot rise in sea level coupled with a three-foot storm surge, like what would be experienced in a strong tropical storm, would lead to 13% of Gloucester County's land mass being flooded – including 118 miles of roads. Only 3% of the projected flood area is currently developed. A strong indicator that Gloucester County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, the County had 147 repetitive loss properties with claims topping $3.3 Million and 13 severe repetitive loss properties with claims totaling nearly $1.9 Million. The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on communities. Therefore, this project will build on other local efforts move toward becoming a more resilient community.

Second, at this project location, the shoreline is experiencing erosion and undercutting of the bank. This threatens mature oak trees on the shoreline. At the Parker property the bulkhead is severely damaged and the beach in front of the bulkhead is eroding due to rising sea levels and flooding events. This area was once vegetated with marsh grasses, but with excessive and recurrent flooding the grasses have died. This has reduced habitat for wildlife and has created an unstable shoreline. Additionally, large oak trees sit on top of the bulkhead and in the RPA. They help hold the soil and land in place. Without offering this section of shoreline some protection with the installation of a nature-based shoreline protection solution the trees will most certainly be lost in the very near future. This will ultimately bring water closer to the structures on the property. Please see **Figure 10** for project location photos and **Attachment 4** for more photos.

FIGURE 10: PHOTOS OF THE PARKER PROPERTY.

Exposed and eroding beach

Damaged bulkhead and exposed beach

ALTERNATIVES –

Alternatives are not applicable to this project. A living shoreline is feasible at this location and therefore required per VMRC regulations. This project employs a nature-based solution, and this project cost is not greater than $3 Million.

GOALS AND OBJECTIVES –

This project will install a nature-based solution consisting of 115 linear Feet of rock sills and 150 linear feet of living shoreline (i.e., clean sand nourishment and spartina plantings). This project will reduce erosion and stabilize the shoreline. The installation of a nature-based solution will also help to protect the large oak trees that hold the soil and bank in place. The nature-based solution will be installed as designed and permitted through the JPA process. Please see the permit package for each site within the project area in **Attachment 5**.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.
Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.
Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode.

Goal 2: Improve water quality
Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.
Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the living shoreline installed at this project location will:

1. **Stabilize the shoreline and reduce the overall erosion rate at the project location**. According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

2. **Provide ecosystem services to the community.** Since this project is proposing the installation of living shorelines, this project will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year

(lb./lf./yr.) and a phosphorus removal rate of 0.00861 lbs./lf./yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb./lf./yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

3. **Prevent loss of property and life.** As the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

APPROACH, MILESTONES, AND DELIVERABLES –

This project will follow the designs outlined and approved in the Joint Permit Application. Please see **Attachment 5** for the JPA application, Design, and Permit Package. The below table outlines the components of the nature-based solution and what will be installed at the project location, as permitted by Virginia Marine Resource Commission (VMRC).

	Total Project Location
Rock Sills	115 Linear Feet (LF)
Sand Nourishment	250 cubic yards
Spartina Plantings	1,500 square feet

The anticipated timeline for this project could be as quick as 1 year, but no more than two years. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a two-year timeline will offer potential windows for planting the living shoreline - one in 2022 and one in 2023. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses for living shorelines should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them develop strong roots and leafy growth.

Below is the project timeline and project milestones for this project.

Receive funding notice - October 2021
Coordinate with property owners and the project contractor Shoreline Structures, LLC to review project timeline and project expectations – October 2021

Initiate site preparation at the project location - November 2021 to May 2022
Construction of the living shoreline – June 2022 to September 2022
Project Close out – November 2022

RELATIONSHIP TO OTHER PROJECTS –

For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e. hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 6** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program.** This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN –

The approved VMRC permits does not require a maintenance plan; therefore, the maintenance of this construction project will be in accordance with the permit requirements.

CRITERIA –

Describe how the project meets each of the applicable scoring criteria containedin Appendix B and provide the required documentation where necessary. Documentationcan be incorporated into the Scope of Work Narrative or included as attachments to the application. Appendix B must be completed and submitted with the application.

For local governments that are not towns, cities, or counties, the documentation providedfor the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

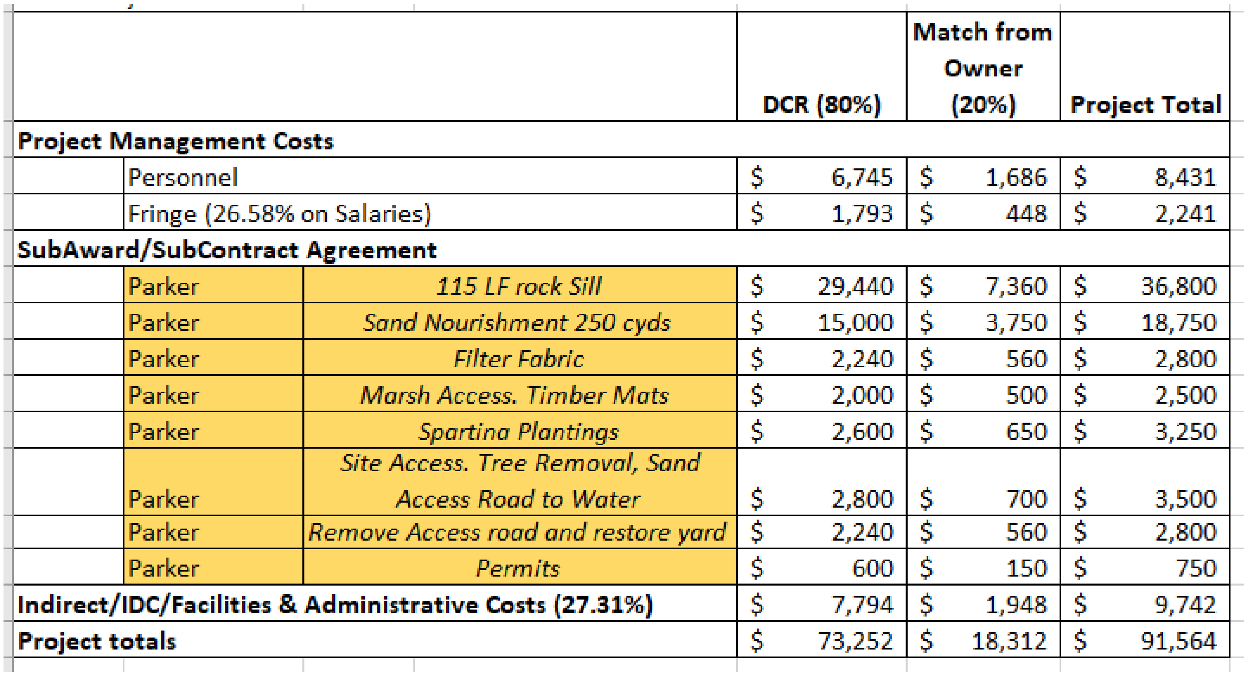
1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
   YES.
2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   YES. Here’s the link: https://fighttheflood va.com/wp-

content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   YES. Please see Attachment 1
4. **Has the applicant provided evidence of an ability to provide the required match funds?**
   YES. Please see the match commitment letter in **Attachment 8**
5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
   YES.

BUDGET NARRATIVE -

Below is the estimated budget for the proposed flood prevention and protection construction project that will result in a nature-based solution located in a low-income geographic area. Therefore, MPPDC staff is requesting 80% funding from DCR and will provide 20% match. Please see match commitment letters from the property owners in **Attachment 11**.



			DCR (80%)	Match from Owner (20%)	Project Total
Project Management Costs					
	Personnel		$ 6,745	$ 1,686	$ 8,431
	Fringe (26.58% on Salaries)		$ 1,793	$ 448	$ 2,241
SubAward/SubContract Agreement					
	Parker	*115 LF rock Sill*	$ 29,440	$ 7,360	$ 36,800
	Parker	*Sand Nourishment 250 cyds*	$ 15,000	$ 3,750	$ 18,750
	Parker	*Filter Fabric*	$ 2,240	$ 560	$ 2,800
	Parker	*Marsh Access. Timber Mats*	$ 2,000	$ 500	$ 2,500
	Parker	*Spartina Plantings*	$ 2,600	$ 650	$ 3,250
	Parker	*Site Access. Tree Removal, Sand Access Road to Water*	$ 2,800	$ 700	$ 3,500
	Parker	*Remove Access road and restore yard*	$ 2,240	$ 560	$ 2,800
	Parker	*Permits*	$ 600	$ 150	$ 750
Indirect/IDC/Facilities & Administrative Costs (27.31%)			$ 7,794	$ 1,948	$ 9,742
Project totals			$ 73,252	$ 18,312	$ 91,564

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.

Also please note that the cost estimates for the construction of this project were supplied by the contractor, Shoreline Structures, LLC. Please see **Attachment 7**.

In summary:
Estimated total project cost: $91,564
Amount of funds requested from the Fund (80% project total): $73,252
Amount of cash funds available (20% project total): $18,312

Finally, please see the authorization to request for funding in **Attachment 9.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		☑ **Yes** ☐ **No**
Applicant Name:	Middle Peninsula Planning District Commission	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		120

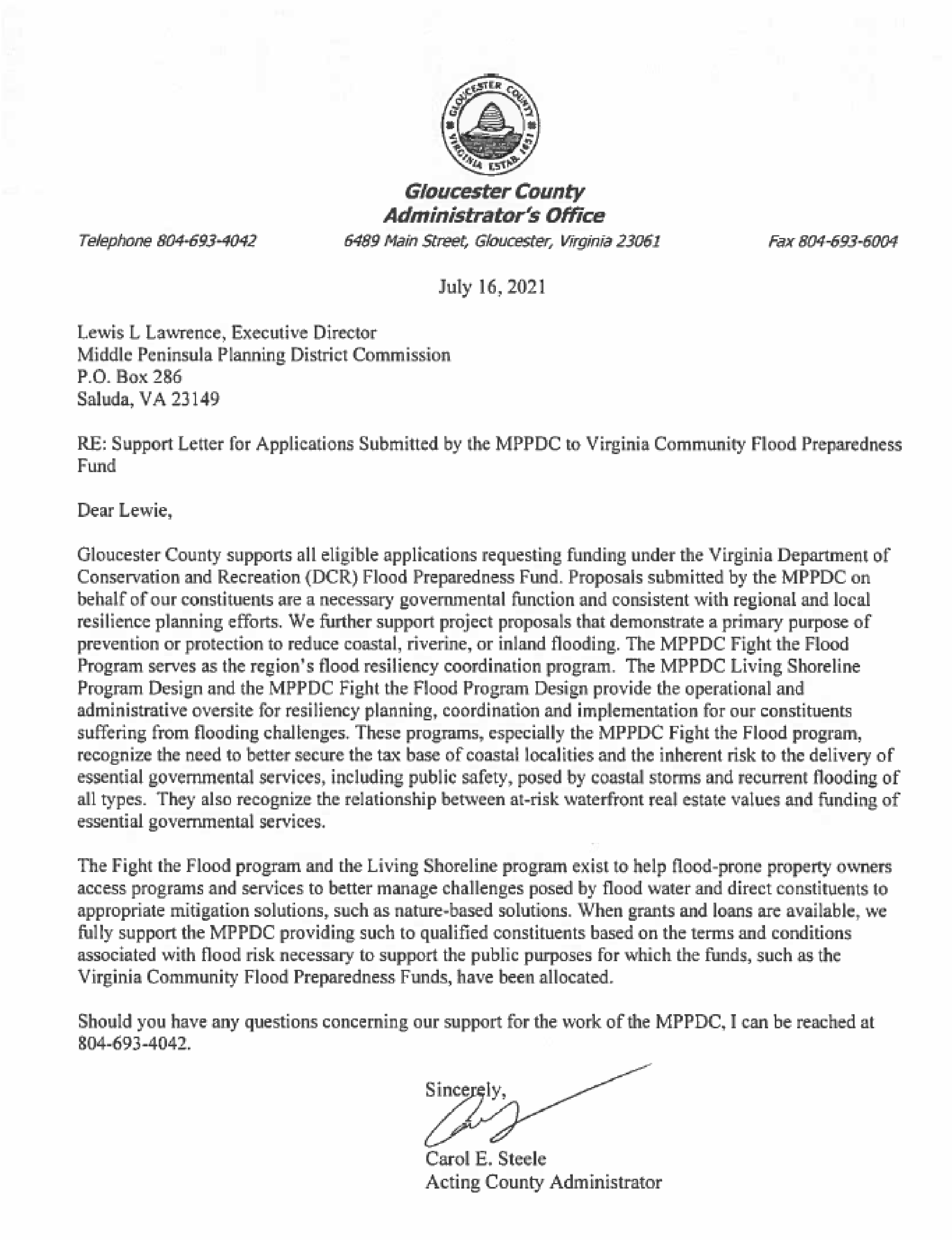
Appendix D: Checklist All Categories

Virginia Department of Conservation and RecreationCommunity Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

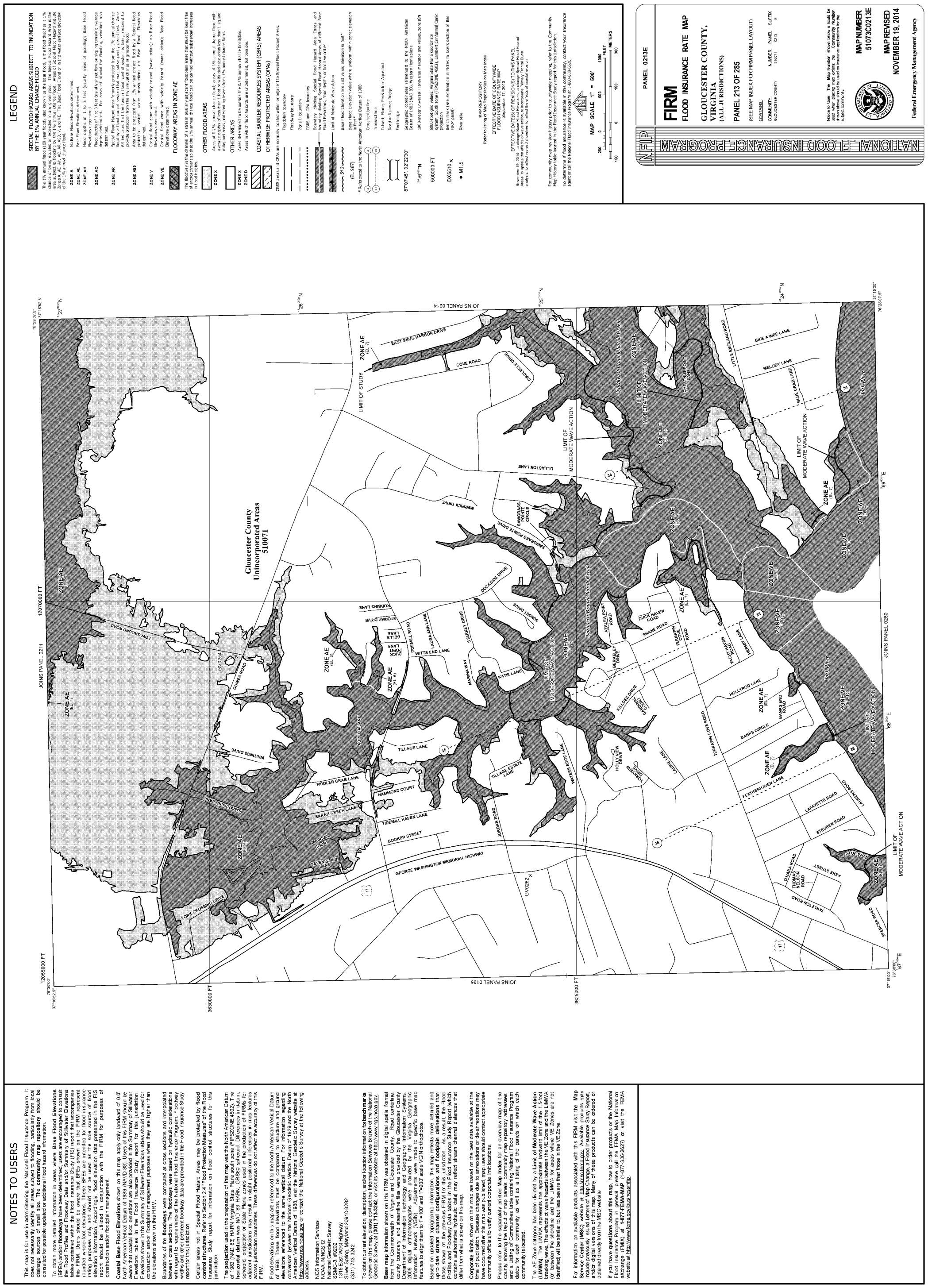
Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

Carol E. Steele
Acting County Administrator

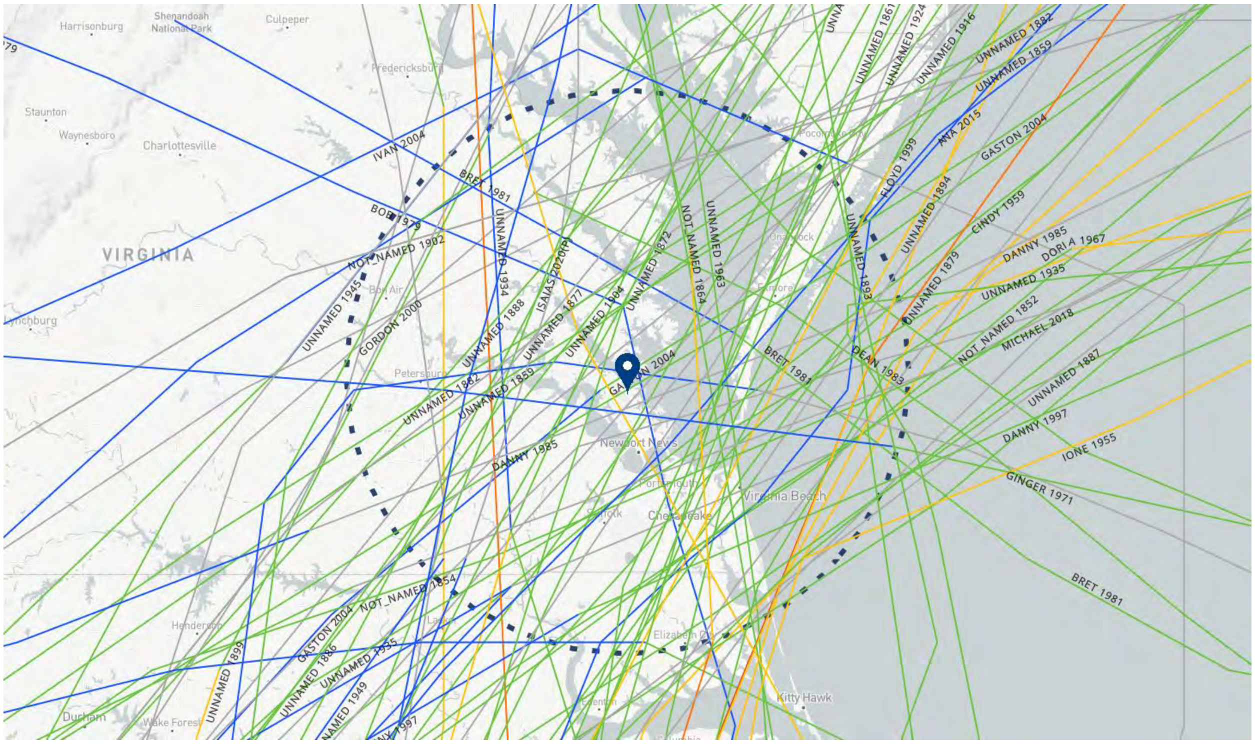
Attachment 2: Project Location FIRMette

Parker Property (FIRMette #: 51073C0213E)



Attachment 3: List of historic hurricanes impacting the project area.

Hurricane List



Search Filter Criteria

Location: 37.257538, -76.480435

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12,	50	998	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
	2015			
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
CLEO 1964	Aug 20, 1964 to Sep 11, 1964	130	938	H4
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1949	Sep 11, 1949 to Sep 14, 1949	45	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17,	50	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
	1902			
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

CANCEL

Attachment 4: Photos of the Parker property shoreline.

Exposed shore with no vegetation to bear the brunt of the rising seas, boat wakes, and storm surge.

Mature oak trees sit above the deteriorating bulkhead.

Mature trees on the shore.

Attachment 5: Parker JPA, Design, and Permit Package

From: Schaller, Kenna J.
To: Beth Howell
Subject: FW: New wetlands jpa
Date: Wednesday, February 24, 2021 10:39:34 AM
Attachments: image001.png
MX-3570N_20210224_093110.pdf

Beth –
Jeff Watkins sent this to us via email.
Thank you!

Kenna Schaller
Administrative Coordinator
Gloucester County Environmental Programs
6489 Main St., Gloucester, VA 23061
(804)693-1217
DON'T WAIT IN LINE, PAY ONLINE!
https://www.gloucesterva.info/332/Payment-Options

From: Jeffrey G. Watkins <jwatkins49@cox.net>
Sent: Wednesday, February 24, 2021 9:56 AM
To: Owens, Ronald W. <rowens@gloucesterva.info>; Schaller, Kenna J. <kschaller@gloucesterva.info>
Subject: New wetlands jpa

Please shoot me a # so I can get application fee paid.
Jeff

Sent from my iPad

Part 1 – General Information

PLEASE PRINT OR TYPE ALL RESPONSES: If a question does not apply to your project, please print N/A (not applicable) in the block or space provided. If additional space is needed, attach 8-1/2" x 11" sheets of paper.

County or City in which the project is located: Gloucester
Waterway at project site: Sarah Creek

1. Applicant's name* and complete mailing address:

Mr. Todd Parker
8100 Terrapin Cove Rd.
Gloucester, VA 23062

Contact Information:
Home (____)__________
Work (____)__________
Fax (____)__________
Cell/ Pager (757) 592-3903
e-mail __________

State Corporation Commission ID Number (if applicable)__________

2. Property owner(s) name* and complete address, if different from applicant

Contact Information:
Home (____)__________
Work (____)__________
Fax (____)__________
Cell/ Pager (____)__________
e-mail __________

State Corporation Commission ID Number (if applicable)__________

3. Authorized agent name* and complete mailing address (if applicable):

Jeff Watkins
P.O. Box 515
Gloucester Va 23061

Contact Information:
Home (____)__________
Work (____)__________
Fax (____)__________
Cell/ Pager (804) 815-0813
e-mail Jwatkins49@cox.net

State Corporation Commission ID Number (if applicable)__________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page. If for a company, use the SCC registered name.**

4. Provide a detailed description of the project in the space below. If additional space is needed, provide a separate sheet of paper with the project description. Be sure to include how the construction site will be accessed, especially if clearing and/or grading will be required.

Living Shoreline project.
115 L.F. Rock sills
250 c.yds beach grade sand as nourishment.
Spartina plantings where appropriate.

FOR AGENCY USE ONLY	
	Notes:
	JPA # 21-0440

Revised: July 2012

Revised: November 30, 2011

Received by VMRC February 24, 2021 /blh

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? _×_ Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

Shoreline Structures, LLC
Jeff Watkins
P.O. Box 515
Gloucester, VA 23061

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell / Pager (804) 815-0813
email Jwatkins49@cox.net

State Corporation Commission ID Number (if appicable)______________________

* If multiple contractors, each must be listed and each must sign the applicant signature page. If for a company, use the SCC registered name.

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:

Gazette Journal
P.O. Box J
Gloucester, VA 23061

Telephone number
(804) 693-3101

7. Give the following project location information:
Street Address (911 address if available) 8106 Terrapin Cove Rd.
Lot/Block/Parcel# 51-71
Subdivision Lot E Newbill Subdivision
City / County Gloucester Point Zipcode 23062
Latitude and Longitude at Center of Project Site (Decimal Degrees):
If the project is located in a rural area, please provide driving directions.

Rt 17 @ Gloucester Point, Terrapin Cove Rd.
To dead end, 8106 straight ahead.

Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.

Part 1 - General Information (continued)

12. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes [✓ No]. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

13. Approximate cost of the entire project (materials, labor, etc.): $ [redacted]. TBD
Approximate cost of that portion of the project which is below mean low water: $ [redacted]. TBD

14. Completion date of the proposed work: Sumer 2020 -

15. Adjacent Property Owner Information: List the name and complete mailing address, including zip code, of each adjacent property owner to the project. (NOTE: a property owner/applicant cannot be their own adjacent property owner. You must give the next owner down the river, creek, etc).

Left side: David J. Newcomber, 8105, Terrapin Cove road., Gloucester point, va 23062.

Right side: Jon and Rachel Sgroi, 8090 Terrapin Cove Road, Gloucester Point, Va 23062

Part 2 - Signatures

1. Applicants and property owners (if different from applicant).
NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.
In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

J. TODD PARKER
Applicant's Legal Name (printed/typed)

(Use if more than one applicant)

J Todd Parker
Applicant's Signature

(Use if more than one applicant)

2-23-21
Date

Property Owner's Legal Name (printed/typed)
(If different from Applicant)

(Use if more than one owner)

Property Owner's Signature

(Use if more than one owner)

Date

Received by VMRC February 24, 2021 /blh

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we), PARKER, hereby certify that I (we) have authorized JEFF WATKINS
(Applicant's legal name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

(Agent's Signature) (Use if more than one agent)

2-23-21
(Date)

(Applicant's Signature) (Use if more than one applicant)

2/23/21
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), PARKER, have contracted Shoreline Structures, LLC
(Applicant's legal name(s)) (Contractor's name(s))
to perform the work described in this Joint Permit Application, signed and dated 2-23-21.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

Shoreline Structures LLC
Contractor's name or name of firm

PO Box 515 Glo. VA 23061
Contractor's or firms address

Contractor's signature and title

Contractor's License Number

Applicant's signature

(use if more than one applicant)

2/23/21
Date

Part 3 – Appendices (continued)

Appendix B: Projects for Shoreline Stabilization in tidal wetlands, tidal waters and dunes/beaches (including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, etc). Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service.

NOTE: Information on non-structural, vegetative alternatives (i.e. Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html .

1. For **riprap, bulkheads, marsh toe, breakwaters, groins, jetties**: What is the overall length of the structure(s)? 115 linear feet. If applicable, what is the volume of the associated backfill? Na cubic yards.

2. What is the maximum encroachment channelward of mean high water? 21 feet.
channelward of mean low water? 13 feet.
channelward of the back edge of the dune or beach? Na feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 0 square feet
   - Nonvegetated wetlands 1250 square feet
   - Subaqueous bottom 680 square feet
   - Dune and/or beach Na square feet

B.N. = 400
sill = 850 — 1250

sill = 530
BN = 150 — 680

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes ____ No.

   If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____Yes ____No.

   If no, please provide an explanation for the purpose and need for the additional encroachment.

5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g. vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth). **NOTE: Drawings must include construction details, including dimensions, design and all materials, including fittings if used.**

   Quarry stone sills
   Coarse, clean beach grade sand as nourishment

6. If using stone, broken concrete, etc., for your structure(s), what is the average weight of the:
   Core (inner layer) material 1-25 pounds per stone Class size surge &A1
   Armor (outer layer) material 50-500 pounds per stone Class size 1 & 2

Part 3 – Appendices (continued)

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

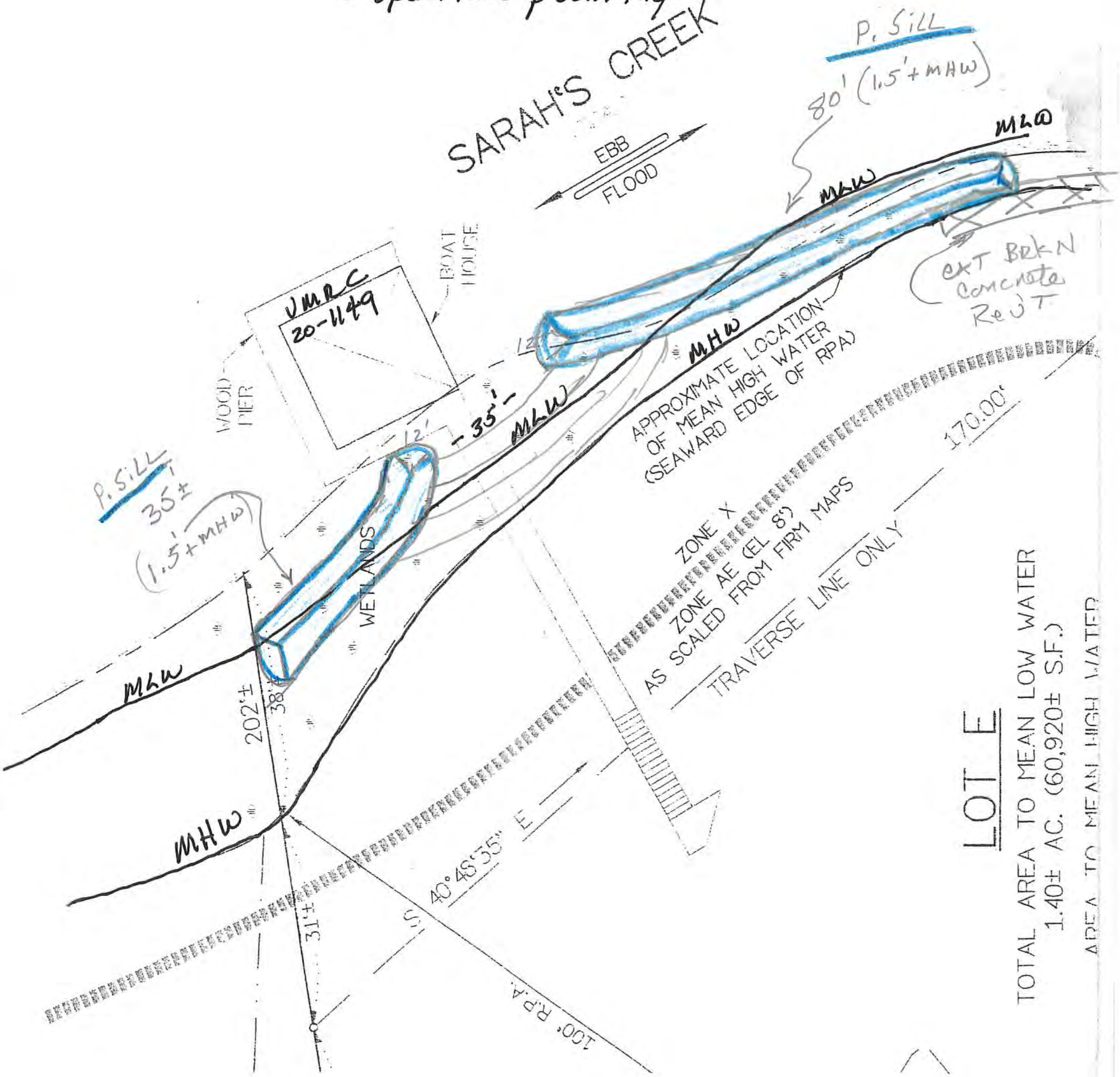
- Volume of material 75 cubic yards channelward of mean low water
  175 cubic yards landward of mean low water
- Area to be covered 150 square feet channelward of mean low water
  400 square feet landward of mean low water
- Source of material, composition (e.g. 90% sand, 10% clay): Local pit,
- Method of transportation and placement: Truck, heavy equipment
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc.:
  Spartina pattens & alternaflora 18" o.c. Where appropriate

Plan View

1" = 20'

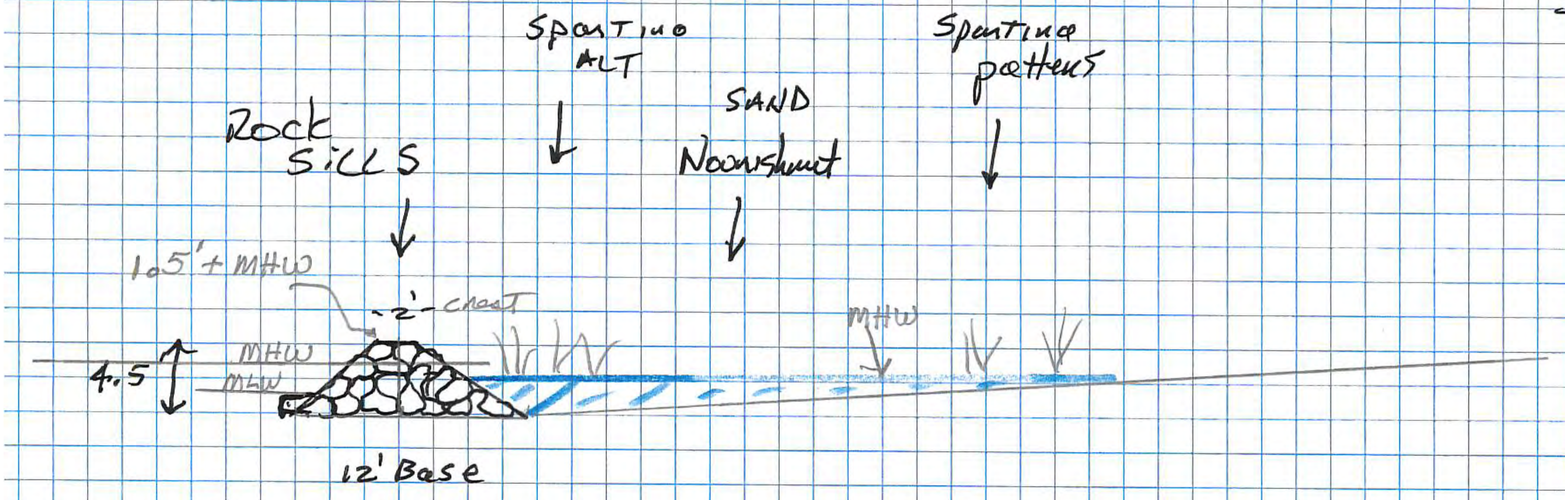
2-1-21

TODD PARKER
Sarah Creek
Gloucester, Co.
Wo. Shoreline
- Rock Sills : 115 L.F.
- Sand Nourishment
- Spartina plantings



Received by VMRC February 24, 2021 /blh

CROSS SECTION



TODD Parker
SARAH Creek
2-1-21
Living Shoreline

Rock Sills,
Sand Nourishments
Spartina plantings

1" = 10'

Received by VMRC February 24, 2021 /blh

Received by VMRC February 24, 2021 /blh

Virginia Marine Resources Commission

Permit Application 20210440

Printed: Friday August 13, 2021 9:39 PM

Applicant: Todd Parker
8100 Terrapin Cove Road
Gloucester Point, VA 23062

Application Number:	20210440	**Engineer:**	Mike Johnson
Application Date:	February 24, 2021	**Locality:**	Gloucester
Permit Type:	VMRC Subaqueous	**Waterway:**	Sarah Creek
Permit Status:	Issued	**Expiration Date:**	April 30, 2024
Wetlands Board Action:	Approved as Proposed	**Public Hearing Date:**	April 14, 2021

Project Description: Living Shoreline

Project Dimensions:

Sill: 115 Linear Feet

Living Shoreline: 150 Linear Feet

MRC 30-317

VMRC# 2021-0440
Applicant: Todd Parker

COMMONWEALTH OF VIRGINIA
MARINE RESOURCES COMMISSION
PERMIT

The Commonwealth of Virginia, Marine Resources Commission, hereinafter referred to as the Commission, on this 29th day of April 2021 hereby grants unto:

Todd Parker
8100 Terrapin Cove Road
Gloucester Point, VA 23062

hereinafter referred to as the Permittee, permission to:

X Encroach in, on, or over State-owned subaqueous bottoms pursuant to Chapter 12, Subtitle III, of Title 28.2 of the Code of Virginia.

___ Use or develop tidal wetlands pursuant to Chapter 13, Subtitle III, of Title 28.2 of the Code of Virginia.

Permittee is hereby authorized to install two (2) rock sills, 35 and 80 feet in length, with clean sand fill and plantings along Sarah's Creek at 8106 Terrapin Cove Road in Gloucester County. All activities authorized herein shall be accomplished in conformance with the plans and drawings dated received February 24, 2021, which are attached and made a part of this permit.

This permit is granted subject to the following conditions:

(1) The work authorized by this permit is to be completed by **April 30th, 2024.** The Permittee shall notify the Commission when the project is completed. The completion date may be extended by the Commission in its discretion. Any such application for extension of time shall be in writing prior to the above completion date and shall specify the reason for such extension and the expected date of completion of construction. All other conditions remain in effect until revoked by the Commission or the General Assembly.

(2) This permit grants no authority to the Permittee to encroach upon the property rights, including riparian rights, of others.

(3) The duly authorized agents of the Commission shall have the right to enter upon the premises at reasonable times, for the purpose of inspecting the work being done pursuant to this permit.

(4) The Permittee shall comply with the water quality standards as established by the Department of Environmental Quality, Water Division, and all other applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining any and all other permits or authority for the projects.

(5) This permit shall not be transferred without written consent of the Commissioner.

(6) This permit shall not affect or interfere with the right vouchsafed to the people of Virginia concerning fishing, fowling and the catching of and taking of oysters and other shellfish in and from the bottom of acres and waters not included within the terms of this permit.

(7) The Permittee shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the Commonwealth.

(8) This permit may be revoked at any time by the Commission upon the failure of the Permittee to comply with any of the terms and conditions hereof or at the will of the General Assembly of Virginia.

(9) There is expressly excluded from the permit any portion of the waters within the boundaries of the Baylor Survey.

(10) This permit is subject to any lease of oyster planting ground in effect on the date of this permit. Nothing in this permit shall be construed as allowing the Permittee to encroach on any lease without the consent of the leaseholder. The Permittee shall be liable for any damages to such lease.

(11) The issuance of this permit does not confer upon the Permittee any interest or title to the beds of the waters.

(12) All structures authorized by this permit, which are not maintained in good repair, shall be completely removed from State-owned bottom within three (3) months after notification by the Commission.

(13) The Permittee agrees to comply with all of the terms and conditions as set forth in this permit and that the project will be accomplished within the boundaries as outlined in the plans attached hereto. Any encroachment beyond the limits of this permit shall constitute a Class 1 misdemeanor.

(14) This permit authorizes no claim to archaeological artifacts that may be encountered during the course of construction. If, however, archaeological remains are encountered, the Permittee agrees to notify the Commission, who will, in turn notify the Department of Historic Resources. The Permittee further agrees to cooperate with agencies of the Commonwealth in the recovery of archaeological remains if deemed necessary.

(15) The Permittee agrees to indemnify and save harmless the Commonwealth of Virginia from any liability arising from the establishment, operation or maintenance of said project.

The following special conditions are imposed on this permit:

(16) The placard accompanying this permit document must be conspicuously displayed at the work site.

(17) Permittee agrees to notify the Commission upon the start of the activities authorized by this permit.

Description of Fees	Amount	Unit of Measure	Rate	Total	Frequency	After-The-Fact
Permit Fee				$300.00	One-Time	
Total Permit Fees				**$300.00**		

This permit consists of 6 Pages

PERMITTEE(S)

☒ BY CHECKING THIS BOX, I certify that I am the Permittee OR the certified agent acting on behalf of all Permittees, that I have read and understood the permit as drafted and accept all of the terms and conditions herein. I agree and understand that checking the box has the same legal authority as a written signature. The provisions of the permit authorization shall be binding on any assignee or successor in interest of the original Permittee(s). In cases where the Permittee is a corporation, agency or political jurisdiction, I certify I have proper authorization to bind the organization to the financial and performance obligations which result from activity authorized by this permit.

PERMITTEE OR CERTIFIED AGENT	**DATE TERMS ACCEPTED**
Todd Parker - owner	April 28, 2021
Print Your Name Here	

PERMITEE
Todd Parker
8100 Terrapin Cove Road
Gloucester Point, VA 23062

AGENT
Shoreline Structures
Jeff Watkins
Post Office Box 515
Gloucester, Va 23061

COMMISSION

This permit is executed on behalf of the Commonwealth of Virginia, Marine Resources Commission by the undersigned:

Randy Owen	DATE SIGNED
Deputy Chief, Habitat Management Division	29th day of April 2021

Gloucester County
Environmental Programs
6489 Main Street
Telephone 804-693-1217 Gloucester, Virginia 23061 Fax 804-824-2442

April 15, 2021

Mr. Todd Parker
c/o Jeff Watkins
Shoreline Structures, LLC
P.O. Box 515
Gloucester, VA 23061

RE: **VMRC #21-0440**

Dear Mr. Parker:

On April 14, 2021, the Gloucester County Wetlands Board approved your joint permit application as submitted granting authorization to install 115 LF rock sills, 250 cubic yards beach grade sand nourishment and spartina plantings at 8106 Terrapin Cove Road Gloucester, VA 23062.

Your Wetland Permit will be available to your agent/contractor at the Office of Environmental Programs, unless an appeal of the Board's decision or other delaying actions are filed with or by the Virginia Marine Resources Commission within ten (10) days.

If you have any questions concerning this letter you may contact Ron Owens at 804-693-1217 during our regular office hours, Monday – Friday from 8 a.m. to 4:30 p.m.

Respectfully,
Walter Priest
Walter Priest, Chairman
Gloucester Co. Wetlands Board

WP/kjs
cc:

Applicant – 8100 Terrapin Cove Road, Gloucester VA 23062
Army Corp
Virginia Marine Resources Commission
Virginia Institute of Marine Science
File

Received by VMRC April 15, 2021 /blh

MRC 30-317

VMRC# 2021-0440
Applicant: Todd Parker

COMMONWEALTH OF VIRGINIA
MARINE RESOURCES COMMISSION
PERMIT

The Commonwealth of Virginia, Marine Resources Commission, hereinafter referred to as the Commission, on this 29th day of April 2021 hereby grants unto:

Todd Parker
8100 Terrapin Cove Road
Gloucester Point, VA 23062

hereinafter referred to as the Permittee, permission to:

☒ Encroach in, on, or over State-owned subaqueous bottoms pursuant to Chapter 12, Subtitle III, of Title 28.2 of the Code of Virginia.

☐ Use or develop tidal wetlands pursuant to Chapter 13, Subtitle III, of Title 28.2 of the Code of Virginia.

Permittee is hereby authorized to install two (2) rock sills, 35 and 80 feet in length, with clean sand fill and plantings along Sarah's Creek at 8106 Terrapin Cove Road in Gloucester County. All activities authorized herein shall be accomplished in conformance with the plans and drawings dated received February 24, 2021, which are attached and made a part of this permit.

This permit is granted subject to the following conditions:

(1) The work authorized by this permit is to be completed by **April 30th, 2024.** The Permittee shall notify the Commission when the project is completed. The completion date may be extended by the Commission in its discretion. Any such application for extension of time shall be in writing prior to the above completion date and shall specify the reason for such extension and the expected date of completion of construction. All other conditions remain in effect until revoked by the Commission or the General Assembly.

(2) This permit grants no authority to the Permittee to encroach upon the property rights, including riparian rights, of others.

(3) The duly authorized agents of the Commission shall have the right to enter upon the premises at reasonable times, for the purpose of inspecting the work being done pursuant to this permit.

(4) The Permittee shall comply with the water quality standards as established by the Department of Environmental Quality, Water Division, and all other applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining any and all other permits or authority for the projects.

(5) This permit shall not be transferred without written consent of the Commissioner.

(6) This permit shall not affect or interfere with the right vouchsafed to the people of Virginia concerning fishing, fowling and the catching of and taking of oysters and other shellfish in and from the bottom of acres and waters not included within the terms of this permit.

(7) The Permittee shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the Commonwealth.

(8) This permit may be revoked at any time by the Commission upon the failure of the Permittee to comply with any of the terms and conditions hereof or at the will of the General Assembly of Virginia.

(9) There is expressly excluded from the permit any portion of the waters within the boundaries of the Baylor Survey.

(10) This permit is subject to any lease of oyster planting ground in effect on the date of this permit. Nothing in this permit shall be construed as allowing the Permittee to encroach on any lease without the consent of the leaseholder. The Permittee shall be liable for any damages to such lease.

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(12) All structures authorized by this permit, which are not maintained in good repair, shall be completely removed from State-owned bottom within three (3) months after notification by the Commission.

(13) The Permittee agrees to comply with all of the terms and conditions as set forth in this permit and that the project will be accomplished within the boundaries as outlined in the plans attached hereto. Any encroachment beyond the limits of this permit shall constitute a Class 1 misdemeanor.

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(15) The Permittee agrees to indemnify and save harmless the Commonwealth of Virginia from any liability arising from the establishment, operation or maintenance of said project.

The following special conditions are imposed on this permit:

(16) The placard accompanying this permit document must be conspicuously displayed at the work site.

(17) Permittee agrees to notify the Commission upon the start of the activities authorized by this permit.

Description of Fees	Amount	Unit of Measure	Rate	Total	Frequency	After-The-Fact
Permit Fee				$300.00	One-Time	
Total Permit Fees				**$300.00**		

This permit consists of 6 Pages

PERMITTEE(S)

☒ BY CHECKING THIS BOX, I certify that I am the Permittee OR the certified agent acting on behalf of all Permittees, that I have read and understood the permit as drafted and accept all of the terms and conditions herein. I agree and understand that checking the box has the same legal authority as a written signature. The provisions of the permit authorization shall be binding on any assignee or successor in interest of the original Permittee(s). In cases where the Permittee is a corporation, agency or political jurisdiction, I certify I have proper authorization to bind the organization to the financial and performance obligations which result from activity authorized by this permit.

PERMITTEE OR CERTIFIED AGENT	**DATE TERMS ACCEPTED**
Todd Parker - owner	April 28, 2021
Print Your Name Here	

PERMITEE
Todd Parker
8100 Terrapin Cove Road
Gloucester Point, VA 23062

AGENT
Shoreline Structures
Jeff Watkins
Post Office Box 515
Gloucester, Va 23061

COMMISSION

This permit is executed on behalf of the Commonwealth of Virginia, Marine Resources Commission by the undersigned:

Randy Owen	DATE SIGNED
Deputy Chief, Habitat Management Division	29th day of April 2021

Wetlands Permit

County of Gloucester, Virginia

Please post on site! Notify Gloucester County at 693-1217, 48 hours prior to initiation of permitted land disturbance.

Permit Number: 21020313

Parcel ID: 29202

Owner: PARKER, JERRY TODD

Contractor Name: WATKINS, JEFF

Address: 8100 TERRAPIN COVE RD

VRMC#: 21-0440

Water body: SARAH CRK

Specifications: 115 LF ROCK SILLS, 250 C YARDS BEACH GRADE SAND NOURISHMENT, SPARTINA PLANTINGS.

Date Issued: 04/14/2021
Expiration Date: 04/14/2024

for WAP
Gloucester County Wetlands Board Chairman

Date Issued: 04/14/2021

Shoreline Structures, LLC
Jeff Watkins
VA Class A # 2705095843 CBC, RBC
P.O. Box 515
Gloucester, VA 23061
804-815-0813

7-22-21

Mr. Todd Parker
8106 Terrapin Cove Rd.
Gloucester Point, VA 23062

Cost Estimate:

Living Shore Line project, VMRC: 21-0440

Project Description & Costs:

1.	115L.F. of Rock Sill, 12' base	$ 36,800.
2.	250 c.yds. of sand nourishment	$ 18,750.
3.	Filter fabric if desired	$ 2,800.
4.	Marsh access, timber mats	$ 2,500.
5.	Spartina plantings: pattens & alternaflora	$ 3,250.
6.	Site access, tree removal, construct sand access road down bank	$ 3,500.
7.	Remove access road, restore site/yard	$ 2,800.
8.	Permits	$ 750.
	Job Total =	$ 71,150.

Project material list/quantities

1. (Armor) stone, class 1 & 2 : 225 tons combined.
2. (Core)stone: 80 tons
3. Beach grade sand/nourishment: 250 cubic yards
4. Spartina plants: #1500

These material cost are good for 90 days.
20% deposit to hold spot on our construction calendar.

Jeff Watkins

Gloucester County Wetlands Board
Gloucester County, Virginia
Wetlands Permit

VMRC # 2021-0440

Pursuant to Chapter 13 of Title 28.2, as amended, of the *Code of Virginia* the County of Gloucester, Wetlands Board, hereinafter referred to as the Board, on this 14th day of April, 2021 hereby grants unto **Todd Parker** hereinafter referred to as the permittee(s) permission to: install 115 LF rock sills, 250 cubic yards beach grade sand nourishment and spartina plantings at 8106 Terrapin Cove Road Gloucester, VA 23062.

In conformance with attached drawings dated February 24, 2021.

This permit is granted subject to the following terms and conditions: **approved as submitted.**

The work authorized by this permit shall be completed by **April 14, 2024** after which time this permit shall become null and void.

1. Permittee shall comply with the applicable laws, ordinance rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining other permits of authority required for the project.
2. Except as specifically authorized herein, the Permittee agrees not to undertake any activity which would impair the natural function of the wetlands; physically alter the contours of the wetlands; or, destroy vegetation growing thereon as listed in the Wetlands Guidelines promulgated by the Virginia Marine Resources Commission. The duly authorized agents of the Wetlands Board and Marine Resources Commission shall have the right to enter upon the premises at reasonable times, for the purpose of inspecting the work being done pursuant to this permit.
3. This permit shall not be transferred without the prior written approval of the Board.
4. The Permittee or Authorized Agent **shall contact the Office of Environmental Programs at 804-693-1217** at least 48 hours prior to the start of the project. Failure to notify will constitute a permit violation and may subject the Permittee to an assessment of civil charges of up to **$10,000**.
5. This permit may be revoked at any time by the Board upon the failure of the Permittee to comply with any of the terms and conditions herein.

Gloucester County Wetlands Board
Gloucester County, Virginia
Wetlands Permit

VMRC #2021-0440

IN, WITNESS WHEREOF, the Gloucester County Wetlands Board has caused these presents to be executed in its behalf by Walter Priest, Chairman of this Board. The Permittee or agent's signature is affixed hereto as evidence of acceptance of the terms and conditions.

Gloucester County Wetlands Board

26th Day of April, 2021 by ____________________
Walter Priest, Chairman or Ronald Owens, WB Liaison

STATE OF VIRGINIA
GLOUCESTER COUNTY, to wit:

I, Kenna Schaller, Notary Public in and for said state and County of Gloucester, hereby certify that Ronald Owens whose name is signed to the foregoing, has acknowledged before me in my state and County of Gloucester aforesaid.

KENNA JEAN SCHALLER
NOTARY PUBLIC
REG # 7909113
MY COMMISSION EXPIRES
10/31/2024

Given under my hand this 26th day of April, 2021
Notary Public ____________________ REG# 7909113
My Commission expires on 10/31/24

Permittee of Agent

3RD Day of May, 2021 by ____________________
Permittee or Agent

STATE OF VIRGINIA
GLOUCESTER COUNTY, to wit:

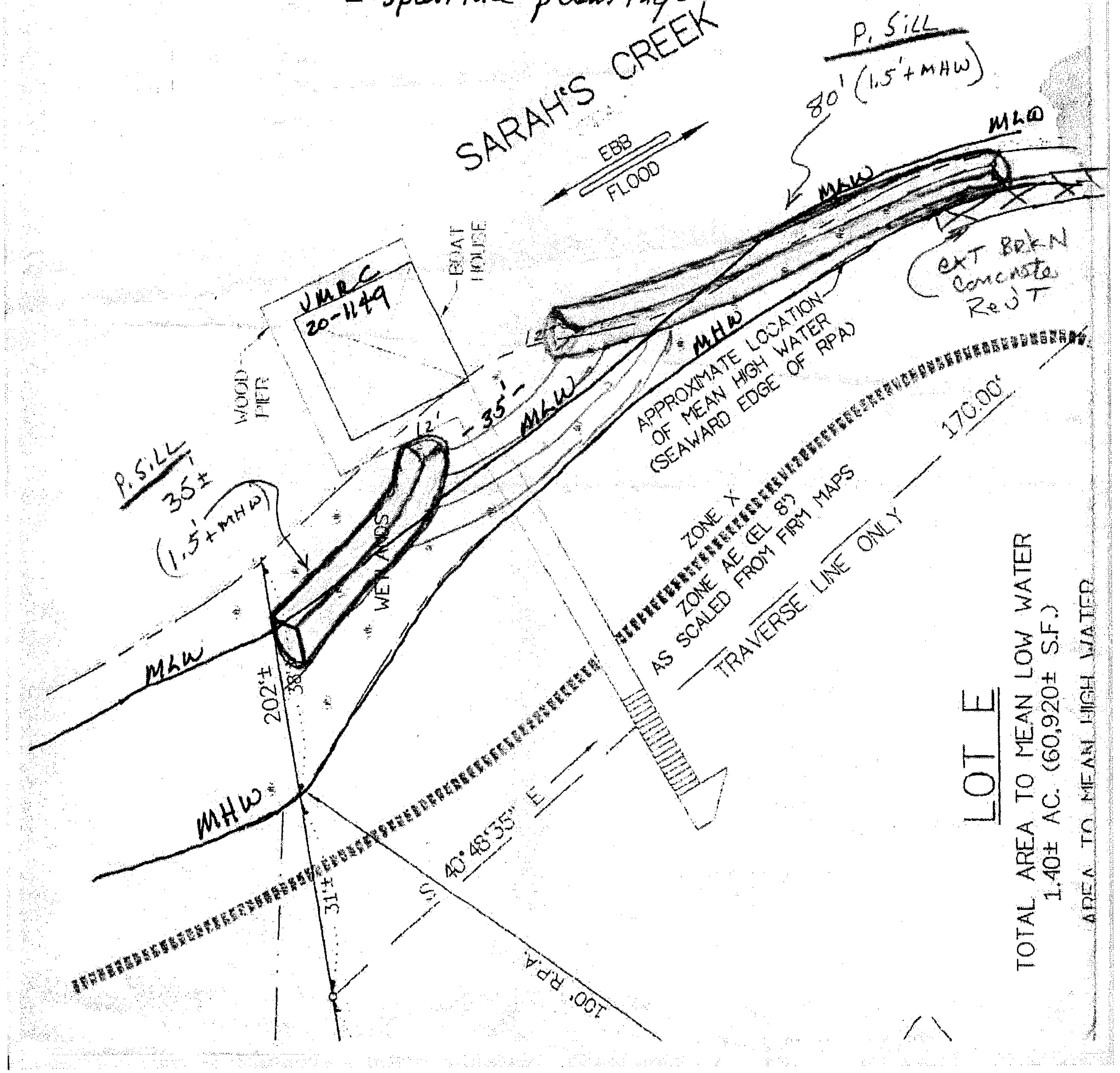
I, Kenna Schaller, Notary Public in and for said state and Gloucester County/City hereby certify that Jeff Watkins Whose name is signed on the foregoing, has acknowledged the same before me in my state and Gloucester County/City aforesaid.

Given under my hand this 3RD day of May, 2021
Notary Public ____________________
REG# 7909113
My Commission expires on 10/31/2024

KENNA JEAN SCHALLER
NOTARY PUBLIC
REG # 7909113
MY COMMISSION EXPIRES
10/31/2024

Todd Parker
Sarah Creek
Gloucester, Co.
Liv. Shoreline
- Rock Sills : 115 L.F.
- Sand Nourishment
- Spartina plantings

Plan View
1" = 20'
2-1-21

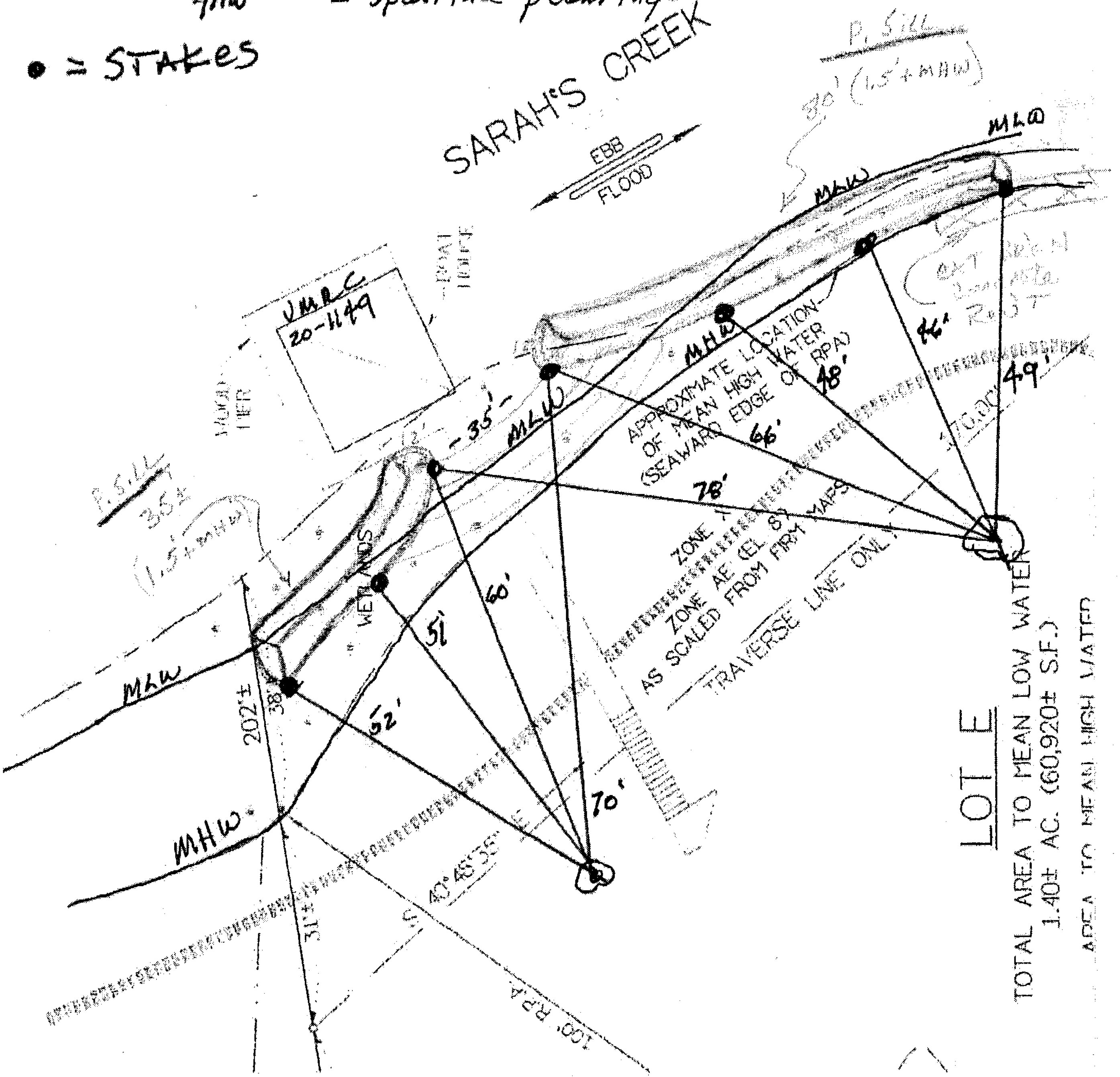


Plan View
1" = 20'
2-1-21

TODD PARKER
SARAH Creek
Gloucester, Co.
W.O. Shoreline
- Rock Sills : 115 L.F.
- Sand Nourishment
- Spartina plantings

Rev. 4-1-21
TMW

● = STAKES



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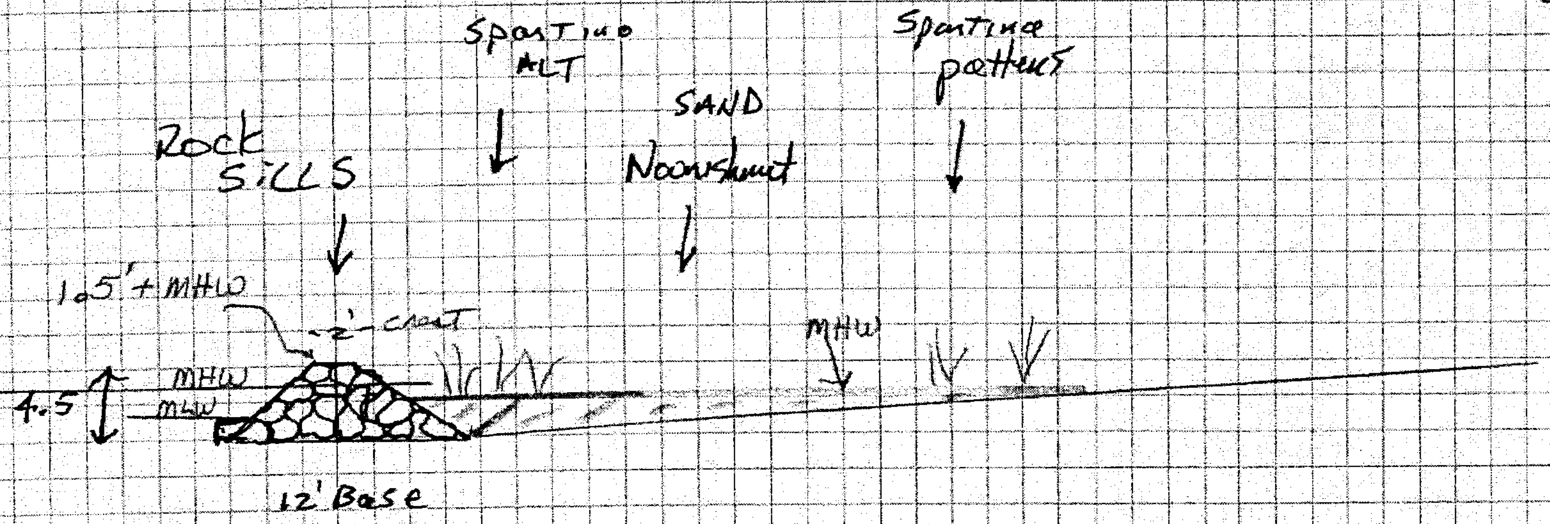
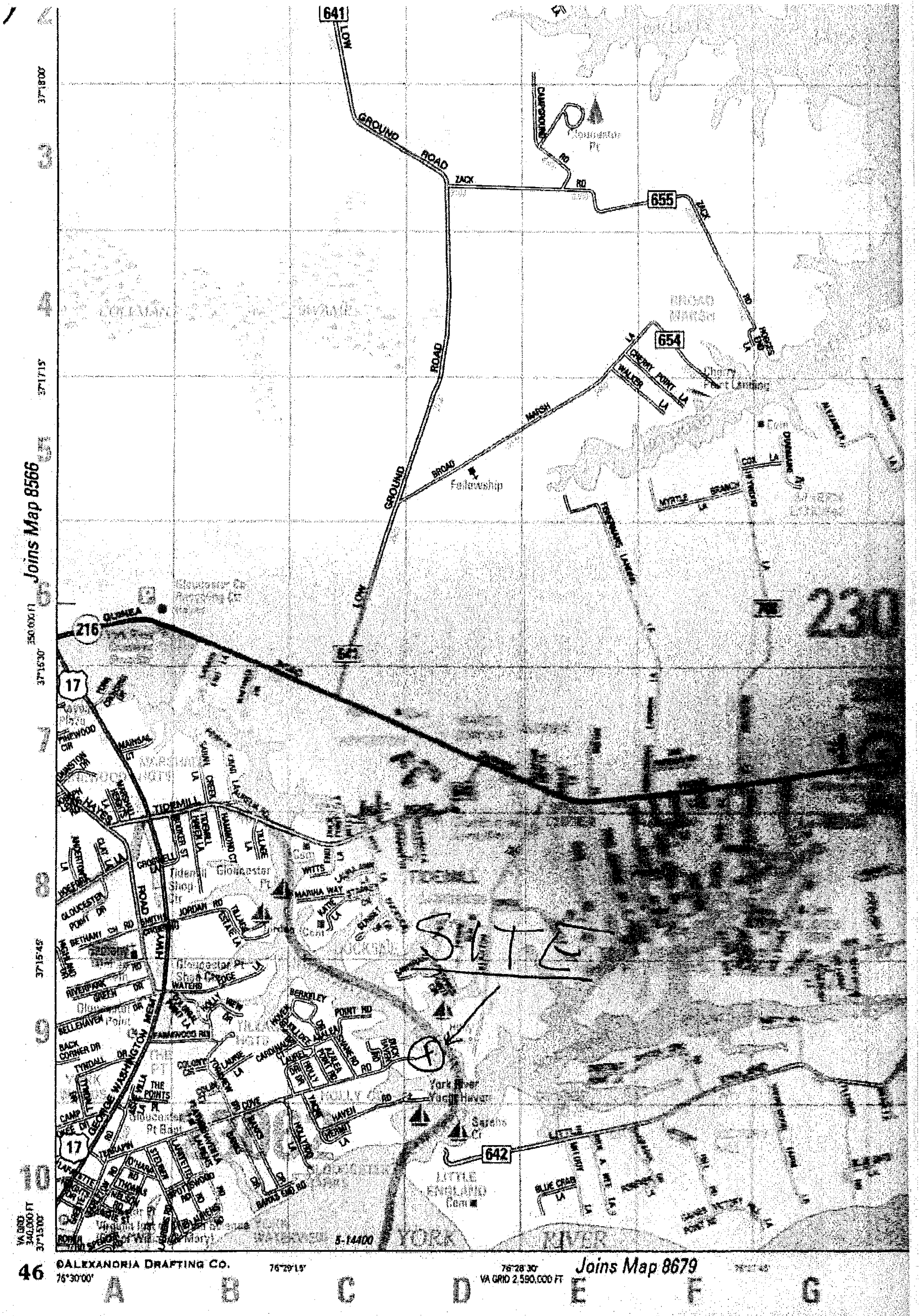


TODD Parker
SARAH Creek
2-1-21
Living Shoreline

Rock SILLS
Sand Nourishments
Spartina plantings

1" = 10'



©ALEXANDRIA DRAFTING CO.

Joins Map 8679

Attachment 6: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)

The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal

land use management/water quality and Onsite Sewage Disposal System (OSDS) and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in
which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in

cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

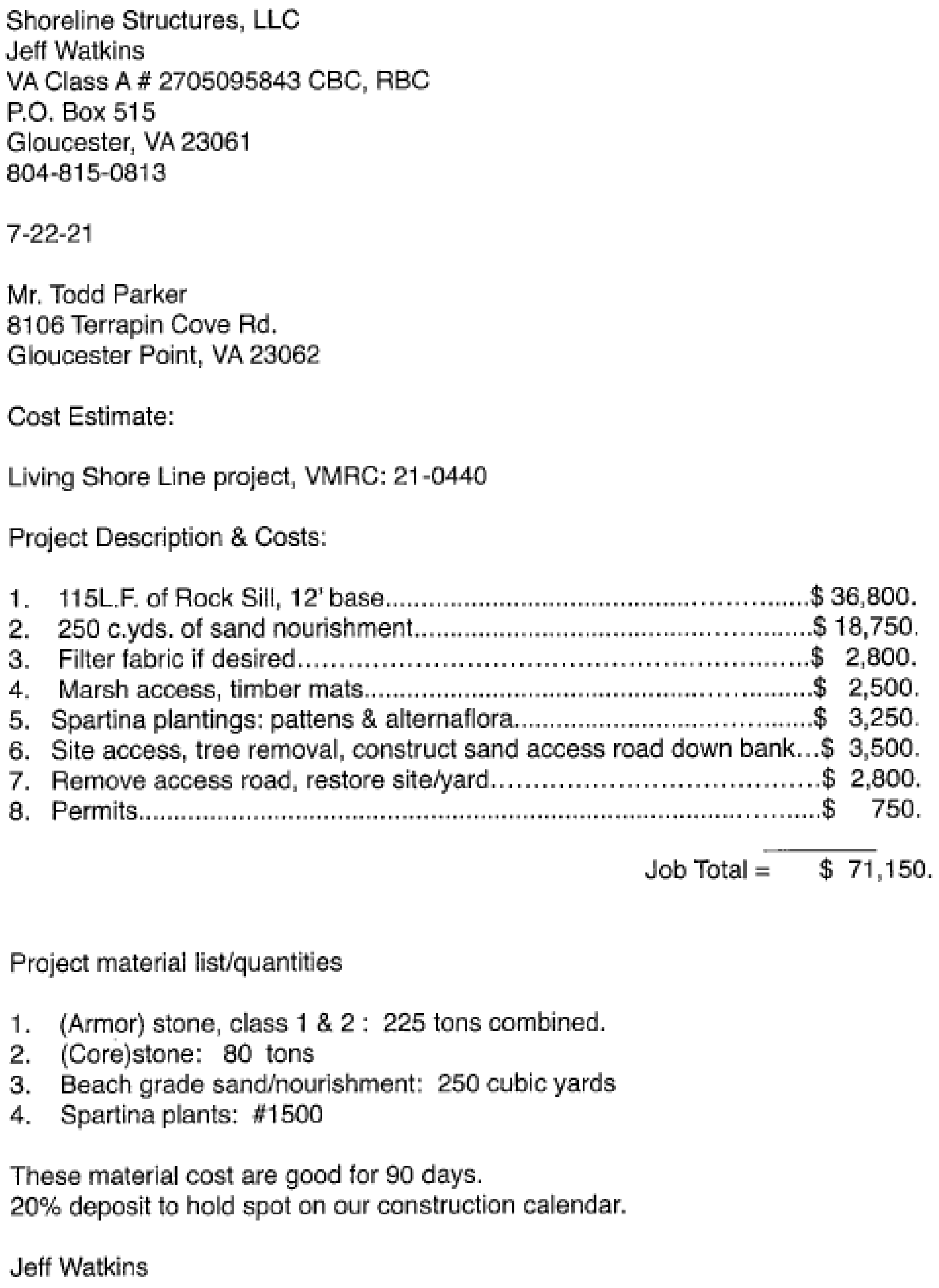
Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

Attachment 7: Project cost estimates



Shoreline Structures, LLC
Jeff Watkins
VA Class A # 2705095843 CBC, RBC
P.O. Box 515
Gloucester, VA 23061
804-815-0813

7-22-21

Mr. Todd Parker
8106 Terrapin Cove Rd.
Gloucester Point, VA 23062

Cost Estimate:

Living Shore Line project, VMRC: 21-0440

Project Description & Costs:

1.	115L.F. of Rock Sill, 12' base	$ 36,800.
2.	250 c.yds. of sand nourishment	$ 18,750.
3.	Filter fabric if desired	$ 2,800.
4.	Marsh access, timber mats	$ 2,500.
5.	Spartina plantings: pattens & alternaflora	$ 3,250.
6.	Site access, tree removal, construct sand access road down bank	$ 3,500.
7.	Remove access road, restore site/yard	$ 2,800.
8.	Permits	$ 750.
	Job Total =	$ 71,150.

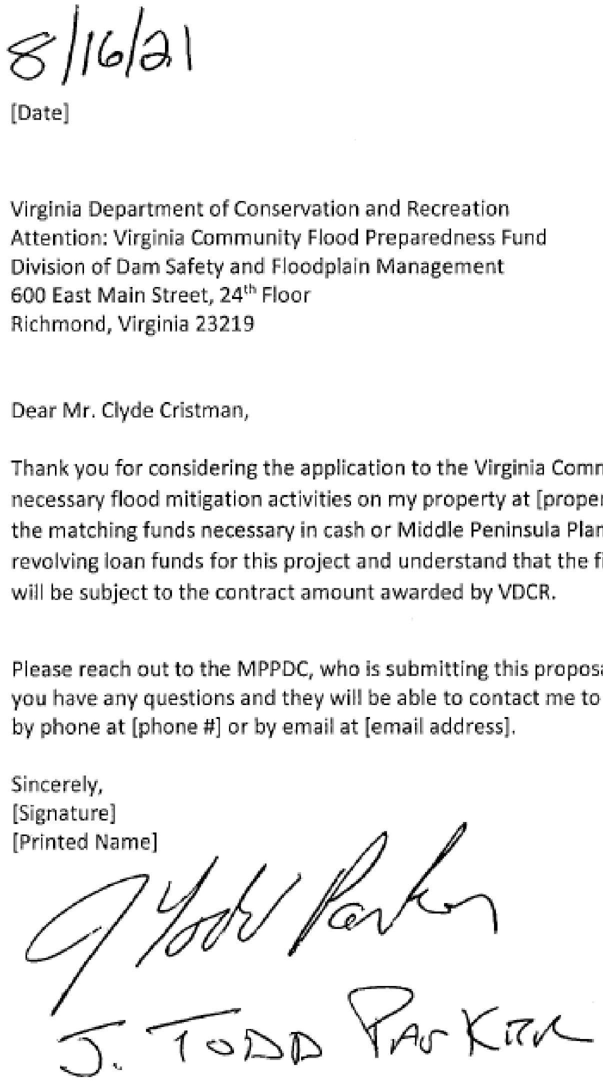
Project material list/quantities

1. (Armor) stone, class 1 & 2 : 225 tons combined.
2. (Core)stone: 80 tons
3. Beach grade sand/nourishment: 250 cubic yards
4. Spartina plants: #1500

These material cost are good for 90 days.
20% deposit to hold spot on our construction calendar.

Jeff Watkins

Attachment 8: Match Commitment Letters



8/16/21

[Date]

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

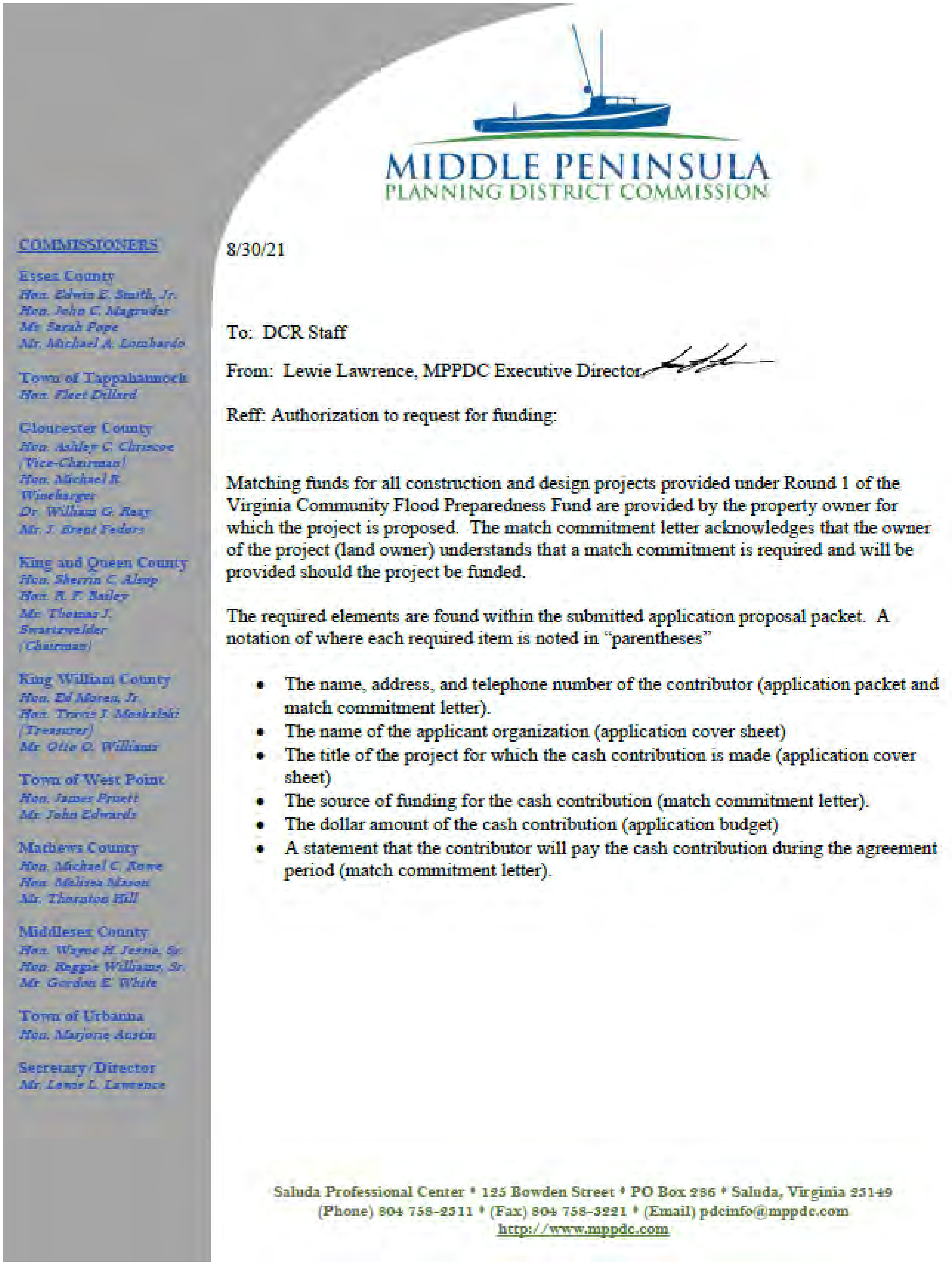
Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at [phone #] or by email at [email address].

Sincerely,
[Signature]
[Printed Name]

J Todd Parker

J. TODD PARKER

Attachment 9: Authorization to request for funding



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe (Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J. Swartzwelder (Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski (Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewie L. Lawrence

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center • 125 Bowden Street • PO Box 286 • Saluda, Virginia 23149
(Phone) 804 758-2311 • (Fax) 804 758-3221 • (Email) pdcinfo@mppdc.com
http://www.mppdc.com

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

March 28, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Matthew Wells,

Enclosed in this packet is one applications for flood protection and prevention projects that involve implementation of nature-based shoreline solutions on a public property.

This application is in the design stage. Design projects are requesting funds for professional designs and development of Joint Permit Applications which are needed before the property owner can move to construction of a nature-based flood protection solution.

Below is short summary of proposed projects in Gloucester County:

A. **Captain Sinclair's Recreation Area - Comprehensive Flood Mitigation for Improved Public Safety, Flood Management and Related Co-Benefits**
(CID): 510071 Total Cost (from individual project application): $180,993
This proposal focuses on wholeness of flood management for a compound of publicly owned land (9430 Whittaker Drive) and buildings located within feet of the Severn River in Gloucester, Virginia. This proximity places low lying publicly owned, multipurpose buildings, parking, wells, septic and the public unpaved dirt roads owned by Gloucester County at significant flood (tidal and stormwater) risk. The public dirt road (~6,000 ft) is a statutory dedication meaning the road is not under VDOT ownership and Gloucester has no legal responsibility over the road except by statutory deed ownership. The public dirt road is orphaned and suffers from flooding of multiple types. Multiple applications for FEMA funding under the Flood Mitigation Assistance (FMA) and Pre-Disaster Mitigation (PDM) programs have been submitted to date to mitigate flooding impacts on the public buildings at the property, but the public buildings do not score with enough need and the applications have proven unsuccessful. The public waterfront site remains at flood risk with no option for flood mitigation until recent action by the State Water Control Board authorizing flood management inside the Bay Act RPA area by using nature-based mitigation designs. This project will utilize and incorporate sustainable

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

> *planning, design, environmental management and engineering practices that weave natural features together and allow for floodwater inundation and stormwater flow to reduce the exposure to public facilities while promoting adaptation and resilience.*

The total project costs for Gloucester County Round 3 application on public property is **$180,993** and MPPDC staff are requesting **$144,795** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at llawrence@mppdc.com or by phone at 804-758-2311.

Lewis Lawrence
Executive Director

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

Captain Sinclair’s Recreation Area - Comprehensive Flood Mitigation for Improved Public Safety, Flood Management and Related Co-Benefits

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 2 Application
Flood Prevention and Protection Project

PROJECT TITLE: Captain Sinclair's Recreation Area - Comprehensive Flood Mitigation for Improved Public Safety, Flood Management and Related Co-Benefits

Name of Local Government: Middle Peninsula Planning District Commission
Category of Grant Being Applied for (check one):

____Capacity Building/Planning X Project _____Study

NFIP/DCR Community Identification Number (CID): Gloucester County (510071)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ____

Project Grants (Check All that Apply)

Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from

further development.

☐ Wetland restoration.

☐Floodplain restoration.

☐ Construction of swales and settling ponds.

☑ Living shorelines and vegetated buffers.

☑ Structural floodwalls, levees, berms, flood gates, structural conveyances.

☑ Storm water system upgrades.

☐ Medium and large-scale Low Impact Development (LID) in urban areas.

☐ Permanent conservation of undeveloped lands identified as having flood resilience value by Conserve Virginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

☐ Dam restoration or removal.

☐Stream bank restoration or stabilization.

☐ Restoration of floodplains to natural and beneficial function.

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Gloucester County
NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No
Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No Flood Zone(s) (If Applicable): AE Zone
Flood Insurance Rate Map Number(s) (If Applicable): 51073C0213E

Total Cost of Project: **$180,993**

Total Amount Requested: **$144,795**

INTRODUCTION –

This proposal focuses on wholeness of flood management for a compound of publicly owned land (9430 Whittaker Drive) and buildings located within feet of the Severn River in Gloucester, Virginia. This proximity places low lying publicly owned, multipurpose buildings, parking, wells, septic and the public unpaved dirt roads owned by Gloucester County at significant flood (tidal and stormwater) risk. The public dirt road (~6,000 ft) is a statutory dedication meaning the road is not under VDOT ownership and Gloucester has no legal responsibility over the road except by statutory deed ownership. The public dirt road is orphaned and suffers from flooding of multiple types. Multiple applications for FEMA funding under the Flood Mitigation Assistance (FMA) and Pre-Disaster Mitigation (PDM) programs have been submitted to date to mitigate flooding impacts on the public buildings at the property, but the public buildings do not score with enough need and the applications have proven unsuccessful. The public waterfront site remains at flood risk with no option for flood mitigation until recent action by the State Water Control Board authorizing flood management inside the Bay Act RPA area by using nature-based mitigation designs. This project will utilize and incorporate sustainable planning, design, environmental management and engineering practices that weave natural features together and allow for floodwater inundation and stormwater flow to reduce the exposure to public facilities while promoting adaptation and resilience.

FEMA, the Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula Planning District Commission (MPPDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com).

Specifically, this project proposes to:

1. Facilitate public access to this point of interest with road drainage improvements using stormwater management techniques such as crown and gravel for a 6,000 feet segment of public dirt road which has no flood management. The primary purpose of a road drainage system is to remove storm and flood water from the road and its surroundings. The road drainage system consists of two parts: dewatering and drainage. "Dewatering" means the removal of rainwater from the surface of the road. "Drainage" on the other hand covers all the different infrastructural elements to keep the road structure dry.
2. Design and build ~1,200 curve linear feet of nature-based flood berms around the Resource Protection Area as a landscape flood modification to mitigate sunny day flooding.

This project will be a partnership between the Middle Peninsula Public Access Authority, MPPDC and Gloucester County (see Community Support Letter, **Attachment 1**).

- A link or copy to the approved MPPDC resilience plan: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
- Gloucester County Comprehensive Plan: https://www.gloucesterva.info/DocumentCenter/View/5777/2016-Gloucester-County-Comprehensive-Plan

This project is consistent with multiple objectives and strategies outlined within the Regional All-Hazards Mitigation Plan. Relevant strategies include the following:

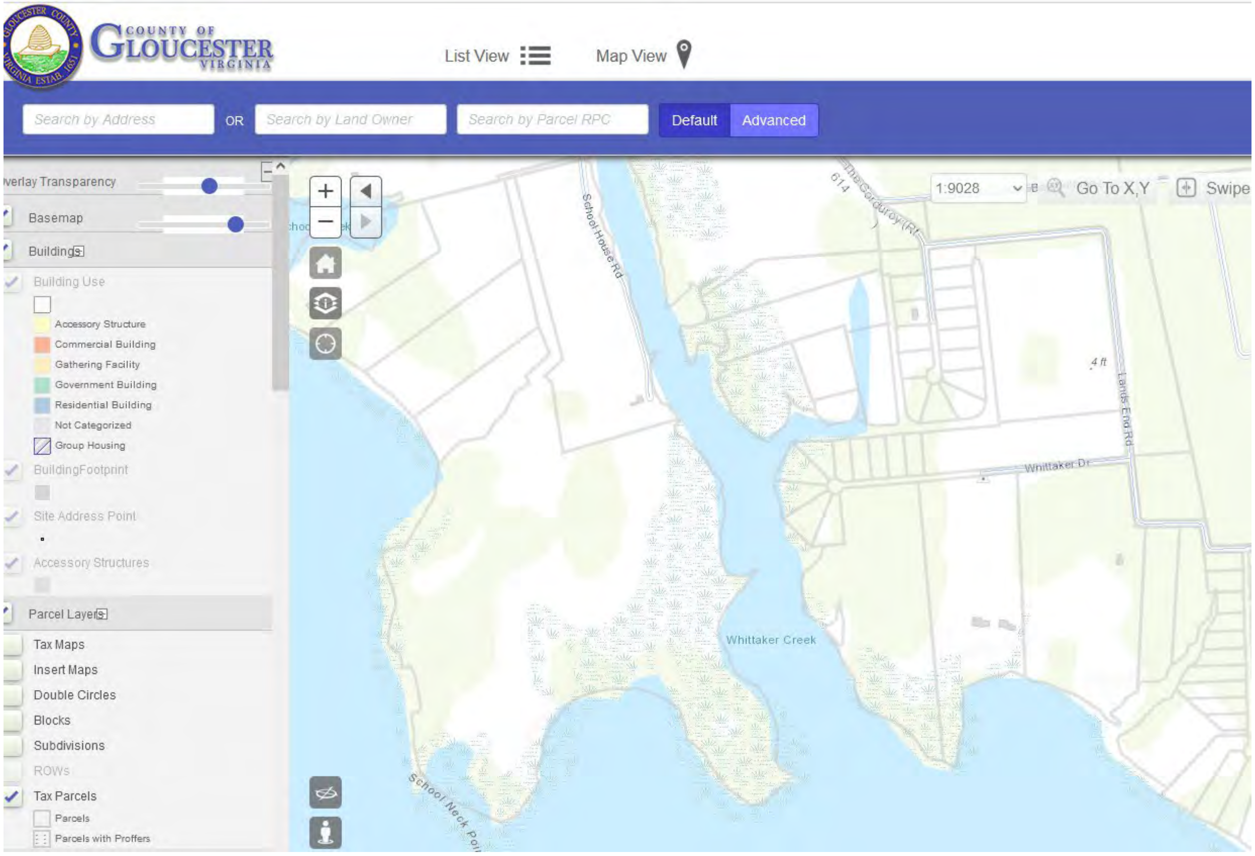
- Objective 1.1: Provide protection for future development to the greatest extent possible.
    - Strategy 1.1.1: Reduce or eliminate flood damage to residential/business structures that are highly vulnerable for continual flood damage.
    - Strategy 1.1.3: Protect public buildings and public infrastructure from flood waters resulting from 100-year flood storm events.
    - Strategy 1.3.1: Mitigation projects that will result in protection of public or private property from natural hazards.

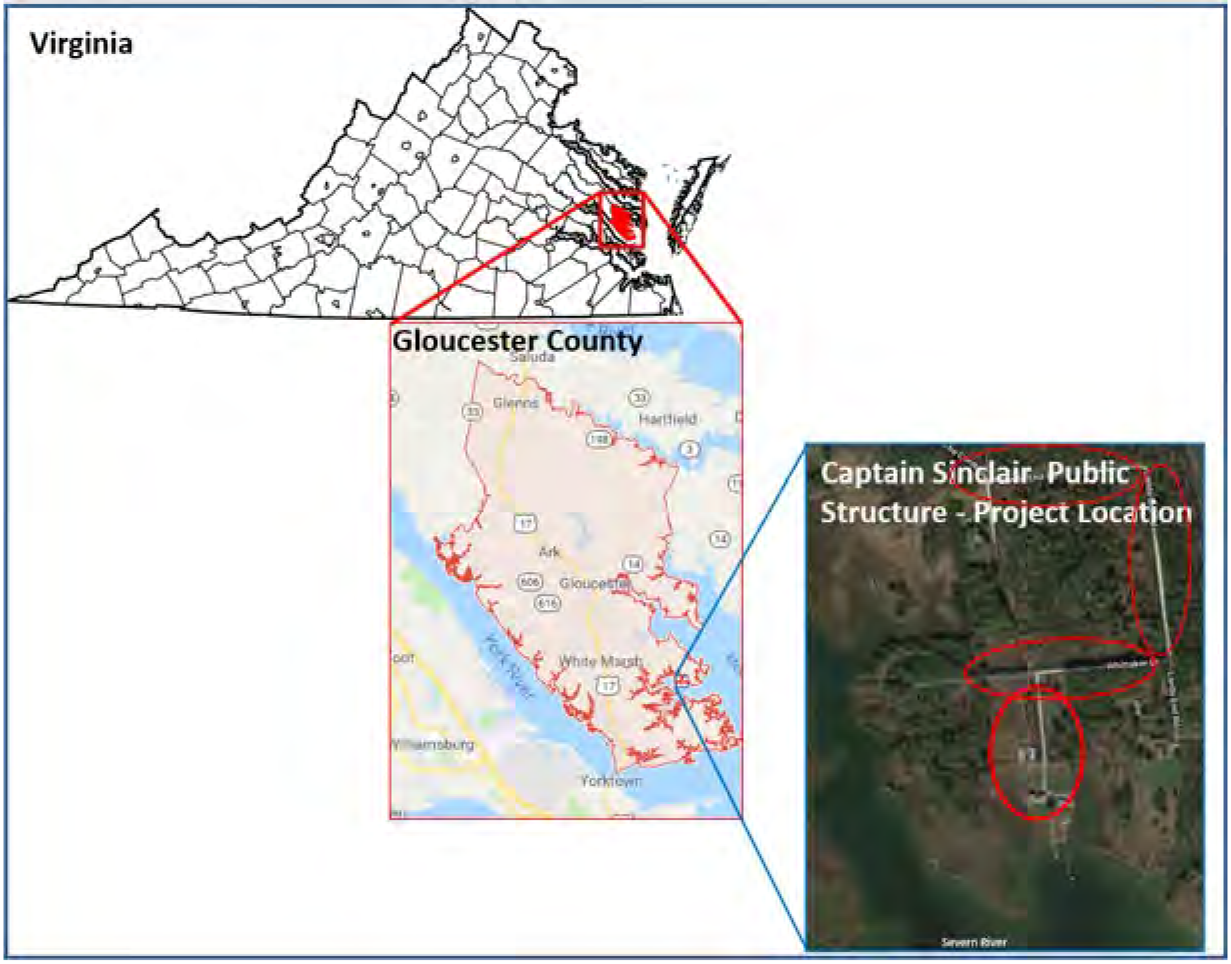
PROJECT LOCATION INFORMATION –

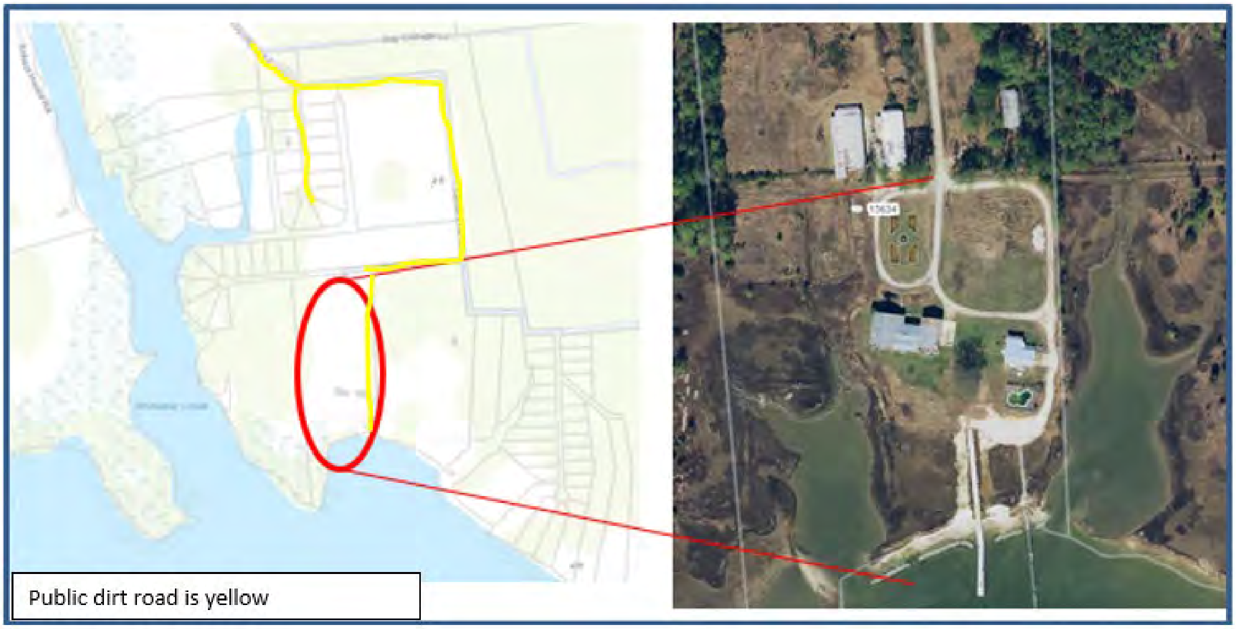
Project implementation would take place along the Severn River in an area of Gloucester County, Virginia known as Naxera (**Figures 1 and 2**).

FIGURE 1: COUNTY MAP OF PROJECT LOCATION.

FIGURE 2: PARCEL MAP OF PROJECT LOCATION.



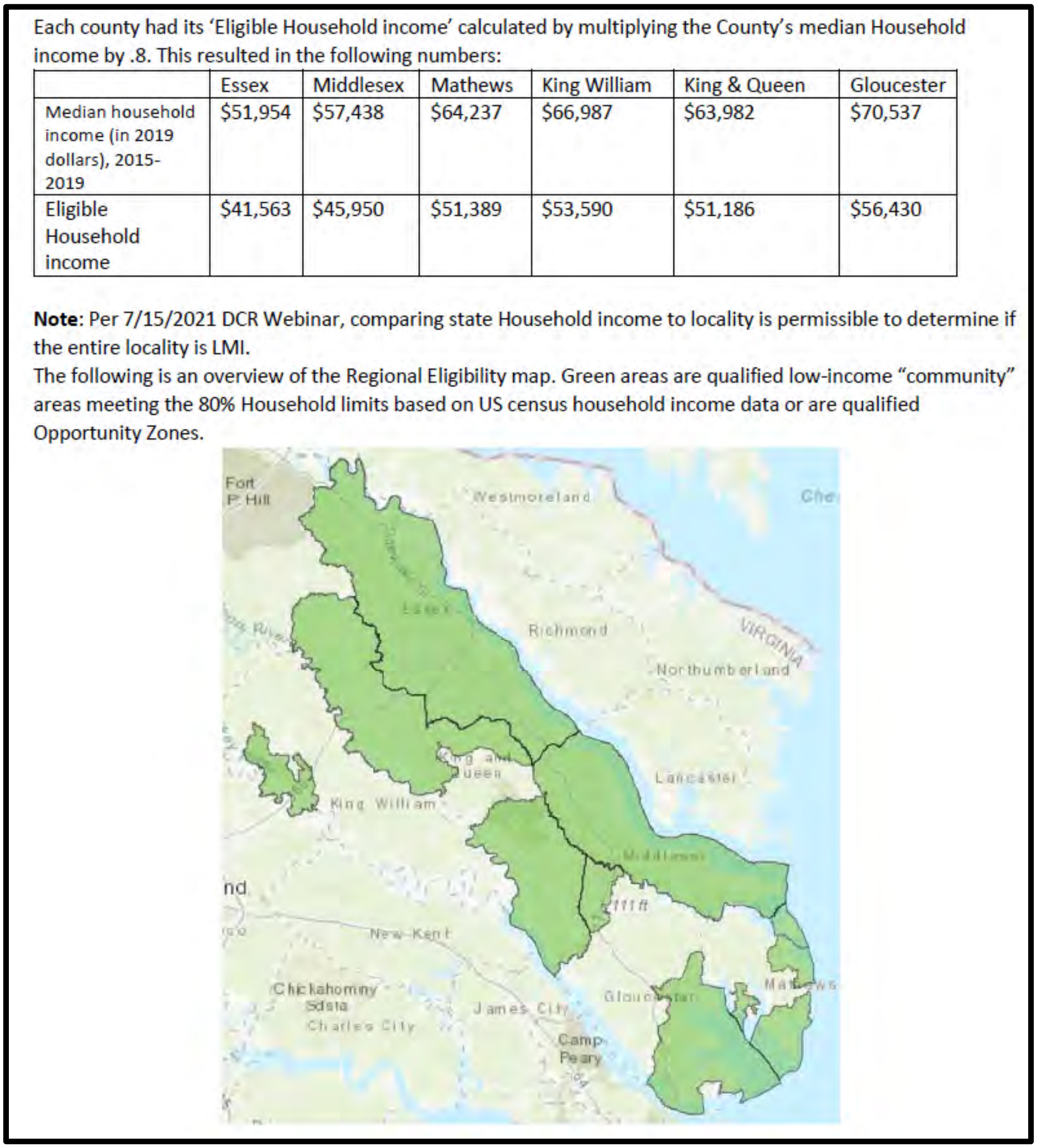

Virginia
Gloucester County
Saluda
Glenns
Hartfield
33
198
3
17
Ark
14
606
Gloucester
616
York River
White Marsh
17
Williamsburg
Yorktown
Captain Sinclair Public Structure - Project Location
Severn River



Public dirt road is yellow

Gloucester County is located at the southern tip of Virginia's Middle Peninsula and is an agriculture, forestry and water-based economy. The county is comprised of 218 square miles of land 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711, making it the largest of six Middle Peninsula localities. According to DCR guidelines, a portion of the county is considered a low-income geographic area. In **Figure 3,** the green areas depict qualified low-income "community" areas meeting the 80% Household limits

FIGURE 3: MAP OF MIDDLE PENINSULAS LOW INCOME GEOGRAPHIC AREAS QUALIFYING UNDER DCR GUIDELINES.



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

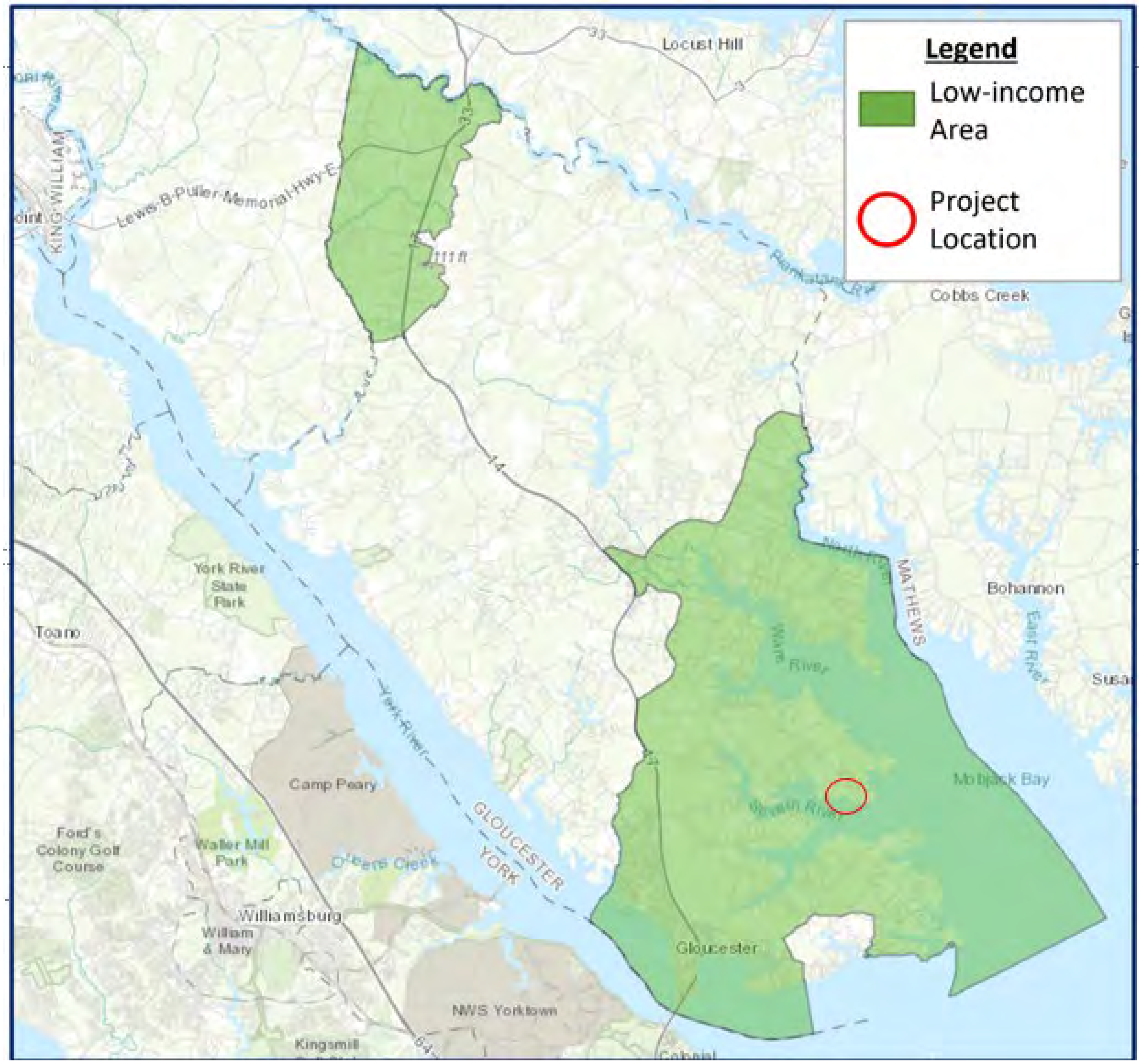
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 4** for a detailed map of the project location and the green low-income area overlay; this figure demonstrates that the project location is within the low-income area.

FIGURE 4: MAP OF THE PROJECT LOCATION WITHIN THE GREEN LOW-INCOME AREA.



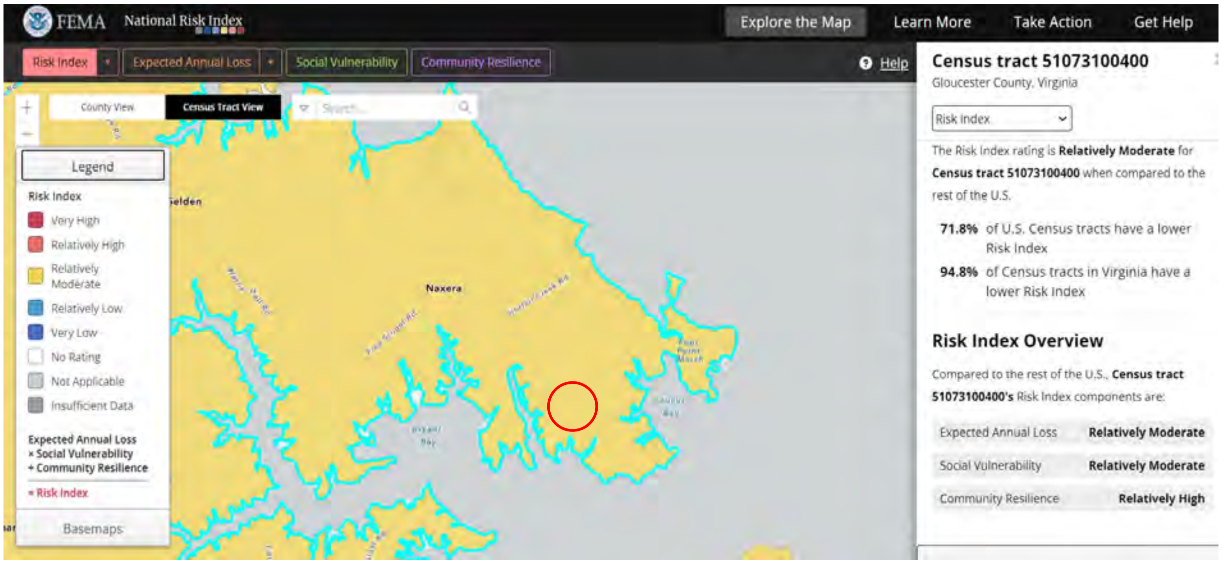
According to ADAPTVA's Social Vulnerability Index Score, this project location has a low social vulnerability score (**Figure 5**)

FIGURE 5: VIRGINIA’S SOCIAL VULNERABILITY INDEX SCORE MAP FOR THE PROJECT LOCATION.

Social Vulnerability Index

Social Vulnerability Index Classification: Low Social Vulnerability
Vulnerability Index Score: -0.0
Housing Vulnerability: fragile stock
Housing Characteristics: high pct. mobile homes/long-term renters
Tract Name: Census Tract 1004, Gloucester County, Virginia

FIGURE 5: FEMA NATIONAL RISK INDEX OF CENSUS TRACT WHERE THE PROJECT IS LOCATED.



Census tract 51073100400
Gloucester County, Virginia

Risk Index

The Risk Index rating is **Relatively Moderate** for **Census tract 51073100400** when compared to the rest of the U.S.

71.8% of U.S. Census tracts have a lower Risk Index

94.8% of Census tracts in Virginia have a lower Risk Index

Risk Index Overview

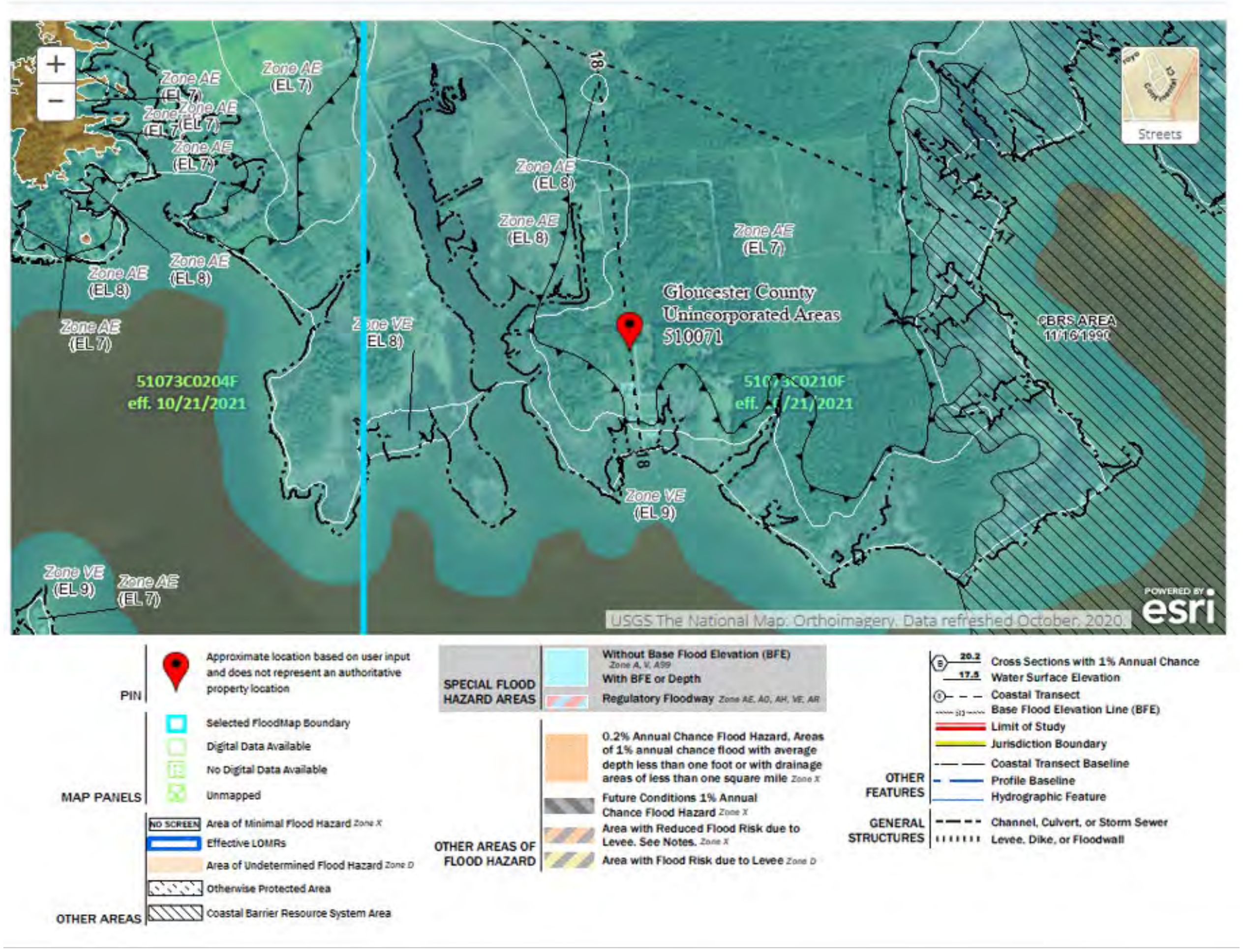
Compared to the rest of the U.S., **Census tract 51073100400's** Risk Index components are:

Expected Annual Loss	**Relatively Moderate**
Social Vulnerability	**Relatively Moderate**
Community Resilience	**Relatively High**

FEMA designates the site as a relatively moderate risk

Specifically, the project is located at 9430 Whittaker Drive Gloucester, VA 23061 (37.325513, -76.427268) – a site located within the AE FEMA Flood Zone (**Figure 6**). Please see **Attachment 2** for the FIRMettes (last mapped 11/19/2014).

Figure 6: Map of FEMA flood zones.



Due to the project site's proximity to the water and relatively low elevation (**Figure 7**), the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. For example, the project location has long been, and continues to be, impacted by tropical, sub-tropical, and Nor'easter events. **Attachment 3** lists 87 storm events dating to 1851 in the project location. According to NOAA's Coastal Flood Mapper, this project location is at the highest risk of coastal flooding (**Figure 8**). Collectively, these reoccurring and storm-related events have contributed to shoreline loss at site. **Figure 9** depicts the shoreline in 1937 and the 2017, based on historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program; illustrated are an approximate loss of 90,000 square feet of shoreline at the site location over an eighty-year period.

FIGURE 7: SITE TOPOGRAPHY (VCU CURA, 2015)

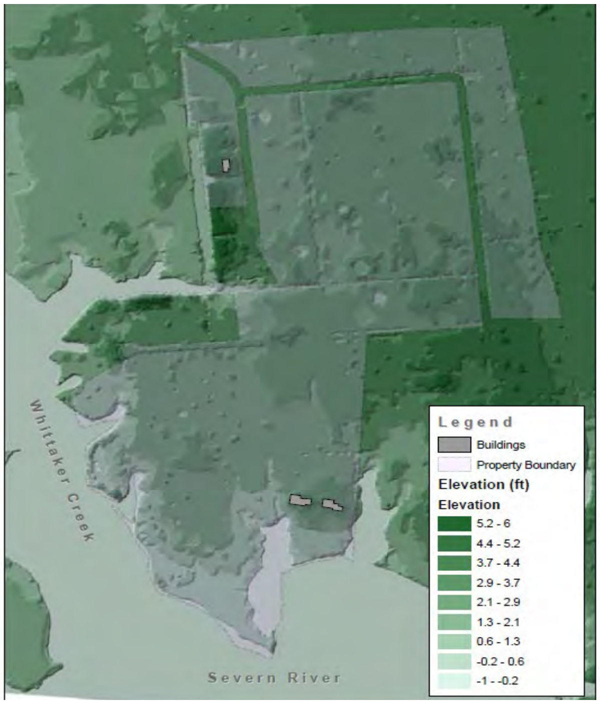


FIGURE 8. MAP OF PROJECT LOCATION AND RISK OF COASTAL FLOODING (NOAA, 2021).

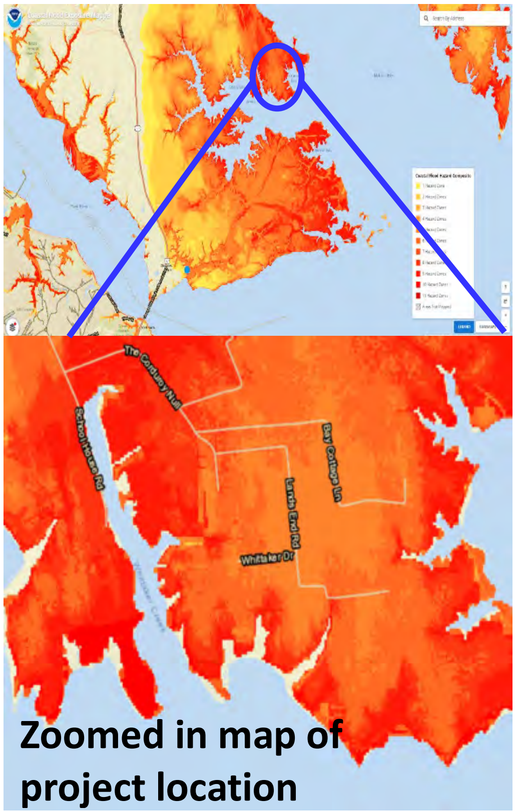
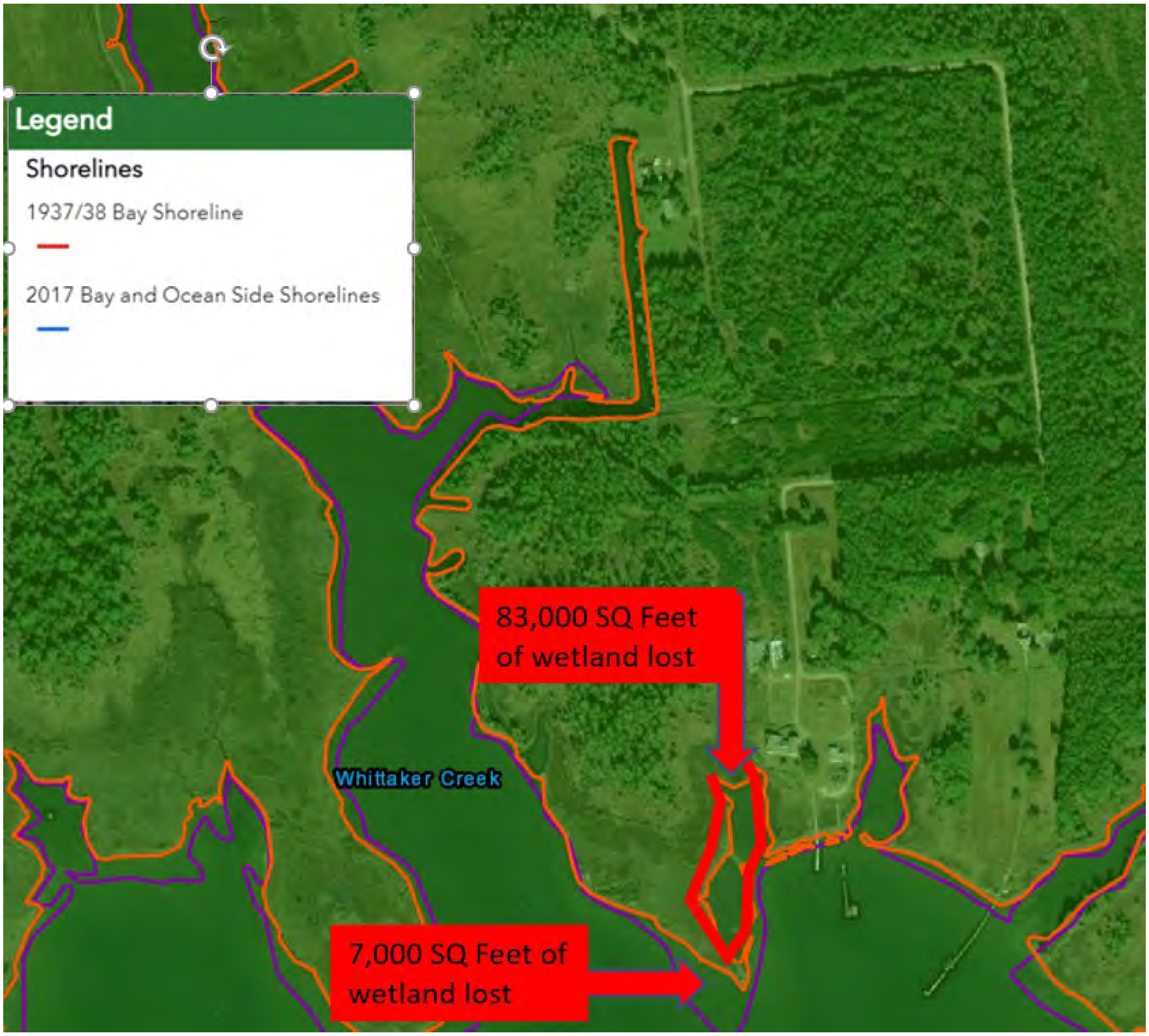


FIGURE 9: PROJECT LOCATION AND MAP OF ASSOCIATED SHORELINE CHANGE BETWEEN 1937 AND 2017.



For more information about this project area please see:

- **The Middle Peninsula All Hazards Mitigation Plan** - identifying all hazards that impact the region
  - https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
- **Gloucester County Building and Engineering Department**
  - NFIP administrators
  - Link to current floodplain ordinance: http://gloucestercounty-va.elaws.us/code/coor_ch8.5

BACKGROUND -

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex counties, as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened FTE staff. MPPDC staff consists of an Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, and clerical support staff; a Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, and Emergency Planner are co-operative procured; Housing, Community Development Planner and Public Relations staff are hourly.

The planning district staffing team assist localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scales - from grants in excess of $1,000,000 to small grants. MPPDC is an entrepreneurial-based government agency with an annual operating budget ranging from $750,000 to more than $1,000,000. Annually, the MPPDC manages 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software and other software (e.g. GIS, Microsoft Office) as required and/or necessitated by different grants. The MPPDC operates service centers in the topical areas of: coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance, as well as other areas determined by the Commission. MPPDC has more than 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission, no audit findings have occurred.

Facilitating the transition and enhancement of private lands in the interest of public access, is accomplished in the Middle Peninsula through the **Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA)**. Created in 2002 by the Virginia General Assembly as another political subdivision of the Commonwealth, MPCBPAA works to increase public water access to the waterways of the Middle Peninsula through access protection and creation in its nine member jurisdictions: the counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex, and the towns of Tappahannock, Urbanna, and West Point. The MPCBPAA's roles are to:

- identify land to be secured as a public access site;
- research the ownership of those lands;
- determine appropriate uses, develop mechanisms for transferring title to the MPPAA;
- develop acquisition and site management plans for public usage;
- determine which holdings should be sold; and

- perform other duties to fulfill their mission.

Presently, MPCBPPA's public facing operations are manifested through the Virginia's Coastal Wilds website.

The project site is the **Captain Sinclair's Recreational Area**, with approximately one mile of waterfront on the Severn River in Gloucester County, Virginia, was a gift to MPCBPAA in 2013 from a private landowner. The property, consisting of approximately 100 acres donated for public use, included a large main house (more than 7,000 sq. ft.), a pool house, a smaller ranch house (2,000 sq. ft.), numerous outbuildings (including a two-bay garage with workshop, an open-bay barn for horses or farm vehicles, and an enclosed barn), a dock, and more than one mile of waterfront; it is located adjacent to Land's End, the historic home of Revolutionary War hero Captain John Sinclair. A figure of importance to Gloucester County, Captain Sinclair rose to fame for being charged to carry dispatches to de Barras, the commander of the French fleet stationed in Newport, Rhode Island. This mission allowed the rendezvous of the colonial and allied navies near Yorktown which resulted in the defeat of Lord Cornwallis.

Following a request and subsequent use of the property by the Gloucester Rowing Association in the Spring of 2013, the need to improve boat launch access at the site became apparent; access at the time was inconvenient and unsafe, as well as potentially damaging to the coastal landscape and marsh. **The MPCBPAA thus partnered with the Middle Peninsula Planning District Commission (MPPDC) to develop an overall use plan for the property** compatible with the existing natural coastal landscape.

Despite the improvements, safe and well drained public access road to this site and its amenities remains a priority issue.

FIGURE 10: PHOTOS OF PUBLIC ACCESS ROAD LEADING TO CAPTAIN SINCLAIR'S.

The public unpaved gravel road owned by Gloucester County ranges from two to four feet above sea level and is the only land based access route to the site. Its low elevation makes the road susceptible to stormwater flooding and coastal flooding from high tides as well as category one and higher storm surges; flooding here makes the Sinclair site inaccessible and unsafe for unsuspecting visitors. During the rainy season, as illustrated in the photos, precipitation makes the road virtually impassable due to poor design and lack of a road crown. US Postal Mail is suspended for weeks or months at a time.

In December 2008, VDOT assessed a road-raising project in Gloucester County to mitigate flooding. A half mile segment of the road was to be raised ten inches; the cost of this project would have been $320,000 for materials and labor alone, a figure nearly 20% of Gloucester's road budget. While dimensions and location would be different for this project the cost would be a significant portion of the VDOT secondary Gloucester road budget if VDOT could work on the Captain Sinclair's road, which they cannot by law; therefore the "orphaned" status of this road has remained. **Figure 10** illustrates present road conditions.

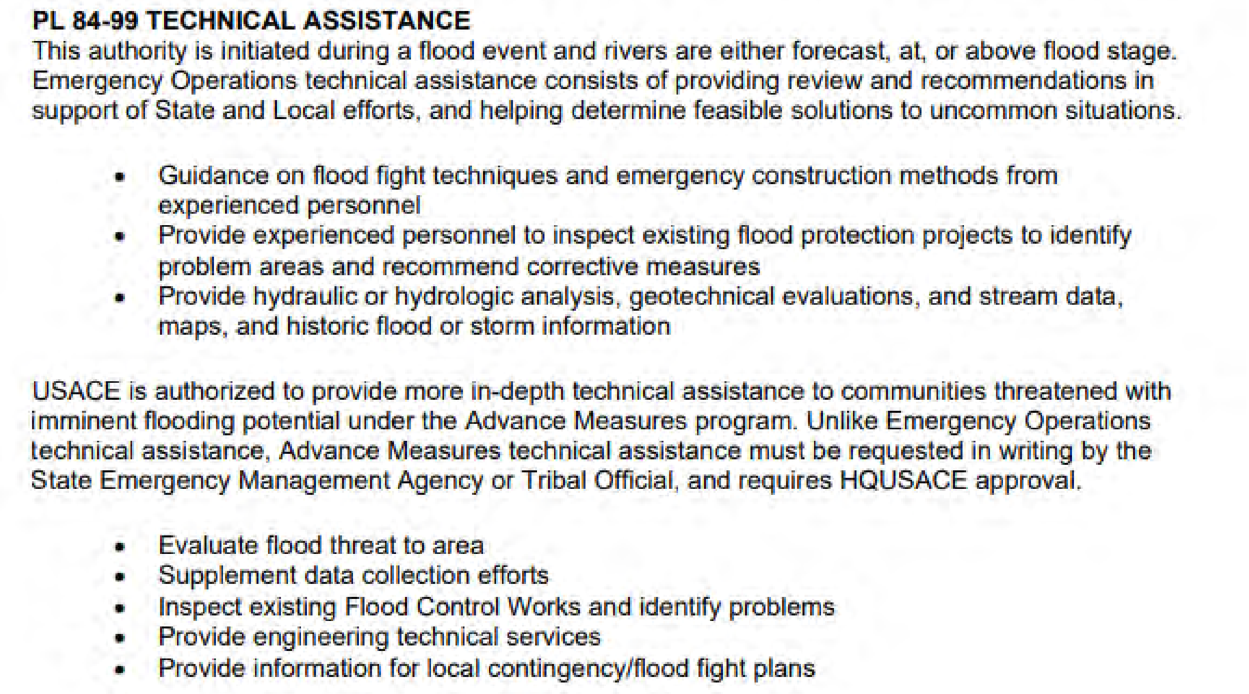
Access x Flooding

Without the flood protection measures proposed, the land, habitat and public infrastructure will be compromised, resulting in degradation of the environment and loss of public assets. Flooding propensity remains the biggest weakness of the Sinclair site – characterized as such in the CURA study. The area around the Sinclair site is prone to frequent flooding and lies within the floodplain of the Severn River. Any category of storm surge will hit the Sinclair site, flooding the property and soil and washing out the road, precluding any access. In their 2014 community outreach meetings, the CURA team discovered that while Gloucester County residents value the natural beauty, solitude, and waterfront access of the Captain Sinclair site, they recognize that the site faces the challenge of limited accessibility due to flooding.

Moreover, rising sea levels will have a negative impact on the property, inching the water closer to the public assets including houses, barns, roads, parking, wells, septic systems etc., increasing the likelihood of significant flooding. With ~1,200 linear feet of the Resource Protection Area running curve linear around the public assets, sunny day flooding further lessens the public's ability to use the facility. A design to manage sunny day flooding using a small ~6-12-inch-high nature-based flood berm is proposed (concept **Fig 10A**).

FIGURE 10-A: CONCEPT BERM

Given that this area contains tidal and non-tidal wetlands, it is anticipated that the public facility will require coordinating with the Army Corps of Engineers, possibly under Public Law (PL 84-99).



PL 84-99 TECHNICAL ASSISTANCE

This authority is initiated during a flood event and rivers are either forecast, at, or above flood stage. Emergency Operations technical assistance consists of providing review and recommendations in support of State and Local efforts, and helping determine feasible solutions to uncommon situations.

- Guidance on flood fight techniques and emergency construction methods from experienced personnel
- Provide experienced personnel to inspect existing flood protection projects to identify problem areas and recommend corrective measures
- Provide hydraulic or hydrologic analysis, geotechnical evaluations, and stream data, maps, and historic flood or storm information

USACE is authorized to provide more in-depth technical assistance to communities threatened with imminent flooding potential under the Advance Measures program. Unlike Emergency Operations technical assistance, Advance Measures technical assistance must be requested in writing by the State Emergency Management Agency or Tribal Official, and requires HQUSACE approval.

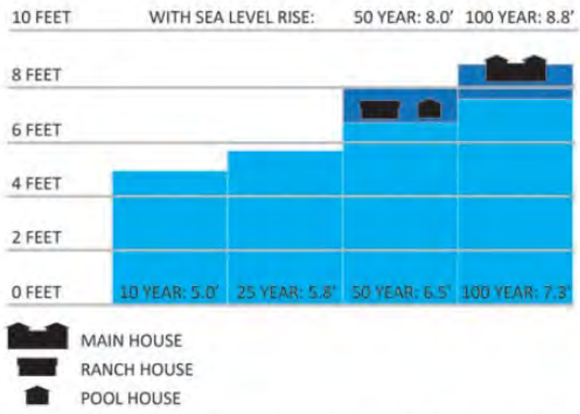
- Evaluate flood threat to area
- Supplement data collection efforts
- Inspect existing Flood Control Works and identify problems
- Provide engineering technical services
- Provide information for local contingency/flood fight plans

There are two public residential structures on the site, but these are not identified as severe repetitive loss or repetitive loss structures as the last owner self-insured. However, both structures were flooded during Hurricane Isabel in 2003 and this was a heavily weighted consideration of the owner when the site was donated for public use. Presently, flood insurance premiums are becoming cost prohibitive.

Figure 11 illustrates flood levels combined with sea-level rise and their effects on inhabitable structures on site. Notably, floods in 50 years pose an issue to the two structures on site; key construction techniques will need to be employed to retrofit each structure in order to mitigate the effects of exceptional floods and sea level rise 50 years and out.

FIGURE 11: SEA LEVEL AND FLOOD ELEVATION

(VCU CURA, 2015).



NEED FOR ASSISTANCE -

The need for assistance is two-fold. **First, Gloucester County is near the Chesapeake Bay and numerous tidal rivers that contribute to the area's high risk to coastal flooding, sea-level rise, and storm surge.** Based on tidal gauge data from the Virginia Institute of Marine Science (VIMS), relative sea-level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Gloucester County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds as storm surge. Strong East and Northeast winds in Gloucester County can push water from the Chesapeake Bay into the mouth of the York and Rappahannock rivers, as well as Mobjack Bay, flooding much of the county's low-lying areas (MPPDC, 2005). When a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide". In Gloucester County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below (FEMA 1987, 6). If a severe hurricane were to make landfall during high tide, an additional 1.2 feet of water would be added to the highest storm surge possible, potentially creating a storm tide of 16.2 feet (Rygel, 2005).

Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and produce hurricane-force winds that push large amounts of seawater inland. According to a recent study conducted by the Center for Coastal Resources Management, a one-and-a-half-foot rise in sea level coupled with a three-foot storm surge - similar to what would be experienced in a strong tropical storm - would lead to 13% of Gloucester County's land mass being flooded – including 118 miles of roads. Notably, only 3% of this projected flood area is currently developed.

A strong indicator that Gloucester County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, Gloucester County had 147 repetitive loss properties with claims topping $3.3 Million and 13 severe repetitive loss properties with claims totaling nearly $1.9 Million. The county has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on its communities. This project will therefore build on local efforts moving toward a more resilient community.

Second, this project location is primed for co-benefits derived from flood mitigation efforts. While the proposed application of gravel will facilitate the flow of stormwater toward lateral ditches, providing increased public access to the infrastructure at this point of interest, secure public access and the sustainability of site infrastructure has implications that will reverberate throughout the community and a flood berm will help to protect public assets. Strategic protection of the infrastructure and landscape at this point of interest will, for example, facilitate multiple, simultaneous activities that will contribute to economic growth in the area while fostering innovation.

Innovative Research
As it stands, Sinclair's promises to be a central hub for fostering, implementing and evaluating innovative ideas providing solutions to the coastal zone's most pressing challenges. Complementing this vision is the recent Virginia Sea Grant GO Virginia Water Management economy program grant, established to cultivate resilient economies by fostering innovative and marketable solutions through small business grants targeting topics like septic systems, stormwater flooding, and beneficial use of dredge material. Research desired at the national level (and therefore, likely to receive funding) would make this facility revenue-generating. Notably, demonstration of innovative coastal practices on site would continue with the implementation of the proposed berm associated with this project, an application designed to mitigate infrastructure flooding. These research efforts will occur on the Captain Sinclair's site, furthering the need to protect the public assets.

GO VIRGINIA APPROVES $2.9 MILLION COLLABORATIVE COASTAL RESILIENCE AND ADAPTATION ECONOMY INITIATIVE

A $2.9 million grant was recently awarded to the Coastal Resilience and Adaptation Economy initiative that will foster innovation and growth in Virginia's water economy. The project will launch a resilience entrepreneurship competition and establish a business-focused network to engage businesses and facilitate resilient practices.

The project is a collaboration between **Virginia Sea Grant**, the nonprofit **RISE**, the **Middle Peninsula Chesapeake Bay Public Access Authority**, and **Old Dominion University**.

https://vaseagrant.org/go-virginia-adaptation-economy/

Next Generation Coastal Housing- Capital Sinclair's
With development centers to the south extending into Gloucester County, the county's population has been increasing more rapidly in recent years, and with it, a rising demand for housing. Proximity to recreational areas increases this demand; as an asset of the Sinclair's property is public waterfront access, it has the potential to increase the value of nearby residences. Ultimately, this may increase county tax revenue in a county where real estate taxes and personal property taxes are by far the two largest sources of revenue in the general fund.

Moreover, to address next generation resiliency and support beneficial uses receiving flood protection, rental housing would be leveraged as a market-based strategy primed to address the increasing threat of rising waters. Specifically, VA Housing has provided the MPPDC a $1 million grant for resilient public housing design and construction to be located at Captain Sinclairs site that will be used to develop affordable workforce housing units. The idea here being that watermen can live and work on mixed use property, closest to the natural resources to which they have historical ties – and now affordable access. Likewise, the site staff who work to maintain and sustain this public infrastructure, and who are perhaps engaged in low-wage seasonal work through planned oyster gardening or a native plant nursery, can live on waterfront property at a reasonable rate, enjoying in their down time the proximity to the coastal resources they work to protect and share. This housing may also serve to provide what could be in effect, low income AirBnB opportunities creating accessible recreation and tourism opportunities for the geography's target audience. Such an effort would leverage the Sinclair site and its amenities, returning every possible dollar to communities with the understanding that the operation would be mobile as needed – physically and figuratively; an application designed to provide a market-based solution based on a 2050 design horizon.

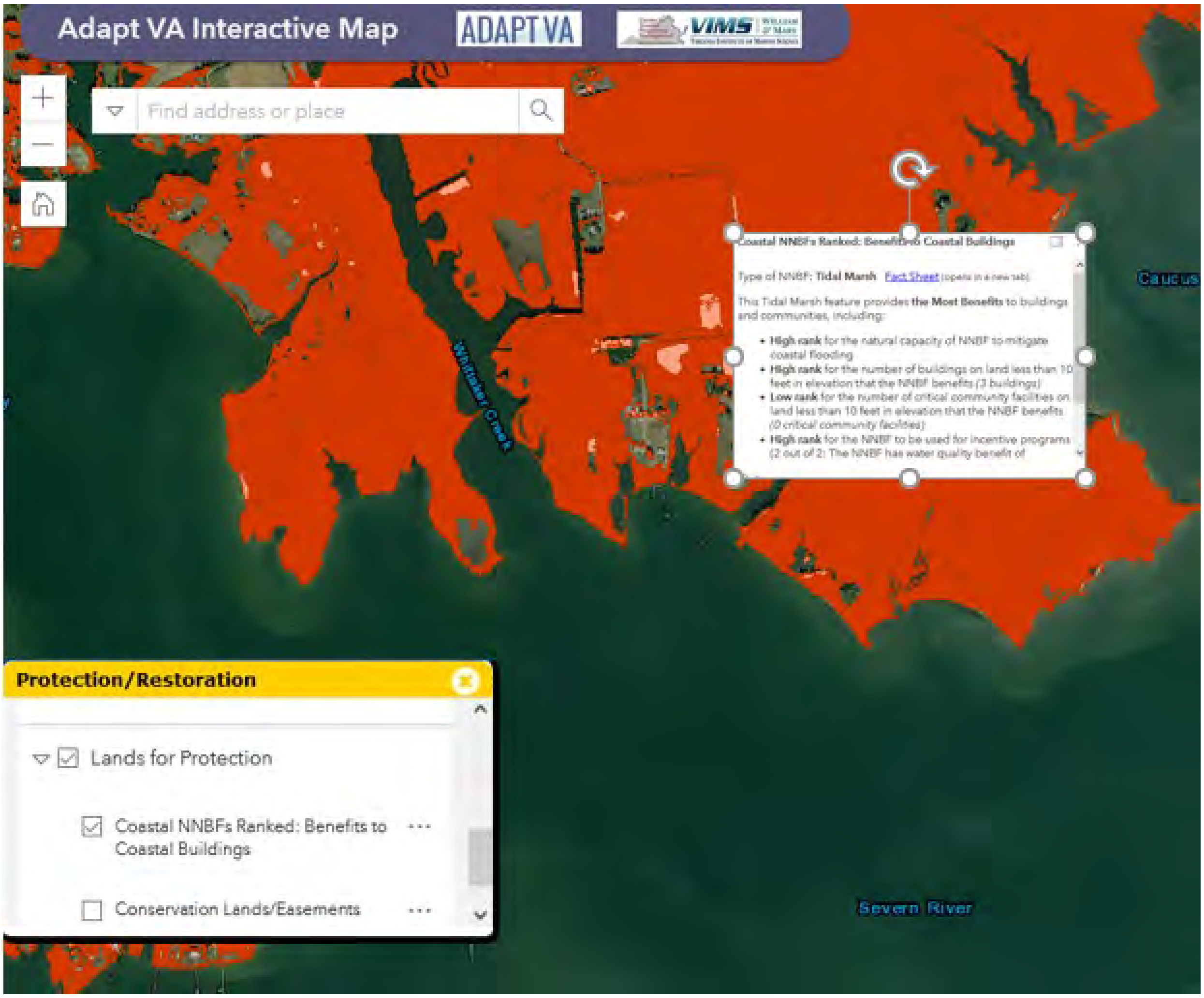
Business Development
The potential of increased tourism drawn to the recreational site is significant. Visitors seeking a variety of outdoor activities could be drawn to activities available at Captain Sinclair's, supporting the local economy with outside revenue in their pursuits. Close proximity to recreational opportunities has increasingly become a factor in where businesses decide to locate. The provision of a public access site with enhanced amenities thus has the potential to drive continued economic growth through business development in the area. Moreover, VIMS' faculty endeavors offer the potential for research and development on site leading to new start-up businesses within the county. Notably, the Gloucester County Economic Development Authority is identifying Virginia Institute of Marine Science (VIMS)-related businesses as a strategy to actively expand existing businesses and recruit new ones to the county.

Community Scale Benefits
Due to the multitude of public investment for flood research and innovation, we believe this site meets the test of "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk." The Captain Sinclair's site serves as one of the Commonwealth's best chances to innovate flood projects in "live time" so that all of coastal Virginia can benefit.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels.

Benefit of Natural Based solutions
Adapt VA contains a data layer illustrating areas of less than ten feet in elevation that show locations in the Middle Peninsula offering benefits of NNBF to coastal buildings, habitat, and community protection (see **Figure 12**). The project site offers multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.

FIGURE 12: NATURAL AND NATURE-BASED FEATURES AT THE PROJECT SITE.



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits (3 buildings)
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits (0 critical community facilities)
- **High rank** for the NNBF to be used for incentive programs (2 out of 2): The NNBF has water quality benefit of

ALTERNATIVES –

Alternatives are not applicable according to the grant manual guidelines.

GOALS AND OBJECTIVES –

This proposal in effect, will develop a comprehensive strategy to mitigate multiple flooding inputs while providing co-benefits that foster resilience at the Captain Sinclair's Recreational Area.

There are two main components of this proposal:

- Facilitated public access to this point of interest through road flooding improvements.
- Design and construction of a nature-based flood mitigation berm of approximate ~1,200 curve linear feet around the Resource Protection Area to limit sunny day flooding

The goals and objectives of this project are as follows:

Goal 1: Improve public access to local coastal waterways.

- Objective A: Increase public access to the Severn River with improved road conditions and mitigation of recurrent and repetitive flooding using NNBF on site.
- Objective B: Enhance quality of life for local residents and visitors alike through recreation, education and cultural opportunities at the point of interest.
- Objective C: Leverage improved public access and coastal resiliency for economic growth within Gloucester County.

Goal 2: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Mitigate recurrent and repetitive flooding alongside storm surge and sea level rise using natural and nature-based solutions that benefit people and the economy as well as the environment.

Goal 3: Transferability to other communities.

- Objective A: Model natural and nature-based solutions for coastal sites exploring development potential.
- Objective B: Foster innovative research and solutions-oriented studies on site focused on coastal adaptation and mitigation for external transfer.
- Objective C: Improve the implementation of Fight the Flood as a model program to be replicated in other communities within the region and/or Commonwealth.

The MPPDC anticipates that these comprehensive enhancements on site will:

1. **Foster economic growth in the area over the useful life of site infrastructure and most likely, beyond. at the project location**. Enabling public access to this county asset while ensuring its sustainability will protect and enhance the area’s recreational economies and has the potential to positively impact related commercial endeavors.

2. **Prevent loss of property without cementing an alternative.** Mitigating flood risk at the project site as outlined will help prevent loss of property and property value, while capitalizing on the useful life of the site as much as possible.

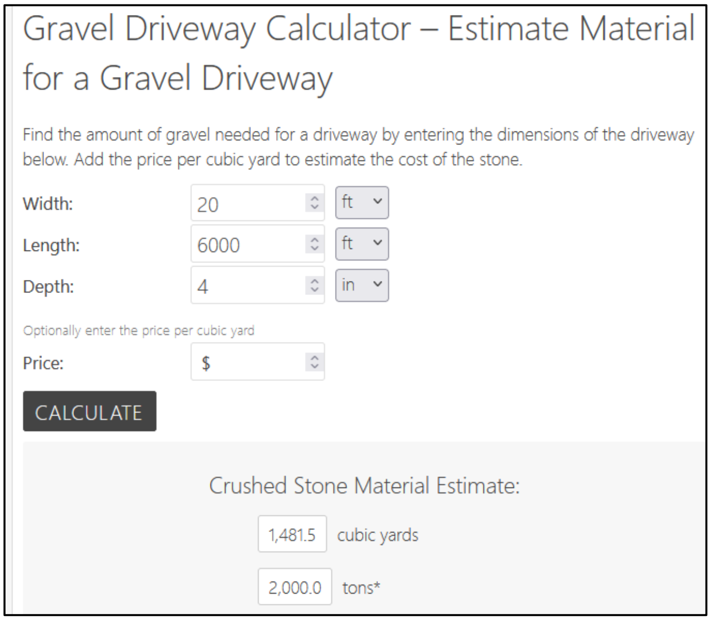
3. **Provide ecosystem services to the community toward increased quality of life.** Increased public access to recreational, educational and cultural opportunities leverage the provisioning and cultural services associated with the site’s natural resources, services that provide benefits to safety, health and well-being for all visitors.

APPROACH, MILESTONES, AND DELIVERABLES –

Each aspect of this multi-pronged plan will include nature-based mitigation designs where possible, and will utilize and integrate sustainable planning, design, environmental management and engineering practices that capitalize on natural features while allowing for floodwater inundation and reducing the exposure to public facilities, promoting adaptation and resilience in the process. Ultimately, the site will provide the public with access to a natural space designed to let flood water pass over, under and through the public facility. All construction on site will follow required permitting process that address best practices for construction in vulnerable coastal locations.

Facilitation of public access to this point of interest through road improvements. Beginning at the end of VDOT maintained road, a 4" base of gravel (**Figure 13**) would be added to the existing publicly owned dirt road with a crown to better direct the rain flood water off the road. Ideally, (per 2015 CURA report), the road should be elevated to the 8.8' above sea level standard adopted by this plan to account for both flooding and sea level rise.

Figure 13: Calculation for Material Estimate for Gravel Road



Gravel Driveway Calculator – Estimate Material for a Gravel Driveway

Find the amount of gravel needed for a driveway by entering the dimensions of the driveway below. Add the price per cubic yard to estimate the cost of the stone.

Width: 20 ft

Length: 6000 ft

Depth: 4 in

Optionally enter the price per cubic yard

Price: $

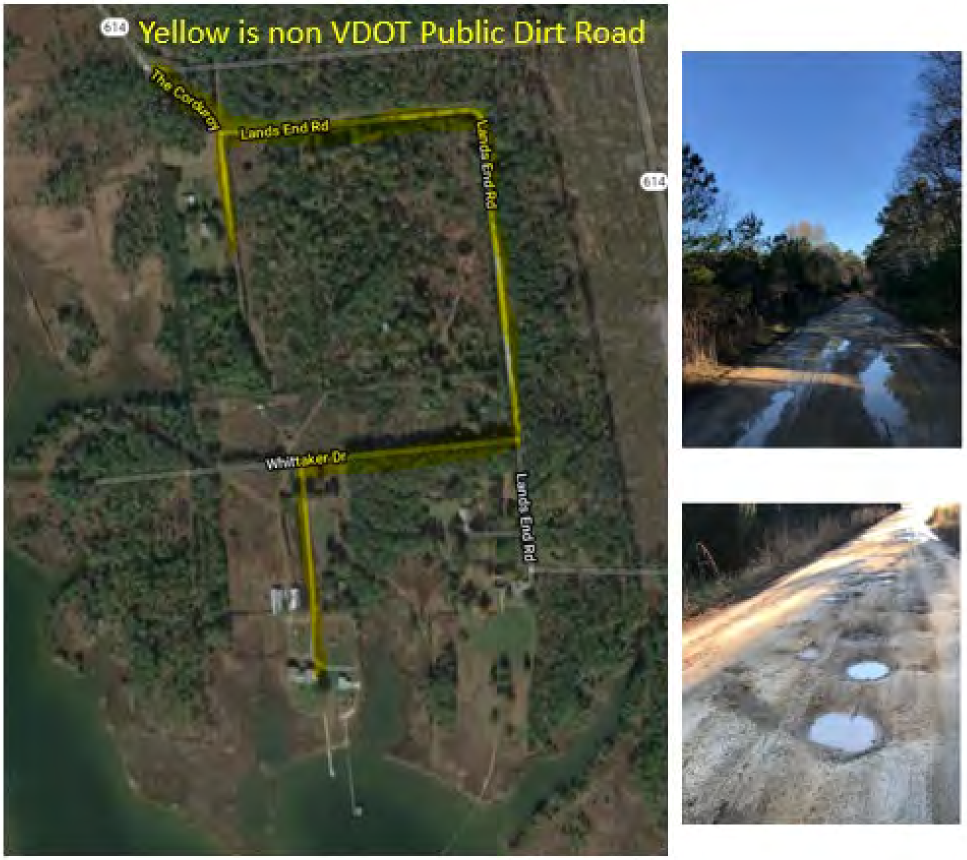
Crushed Stone Material Estimate:

1,481.5 cubic yards

2,000.0 tons*

Recognizing that the road should be elevated as high as practical for the improvements programmed for the site, and that significant active development of the site warrants an elevated access road be constructed as close as feasible to 8.8' (the national flood protection standard), alternative engineering designs should be prepared comparing cost and future flood risk and presented for public discussion. The MPCBPAA recognized the cost of flood mitigation and is comfortable with a 4-inch base (**Figure 14**).

FIGURE 14: GRAVEL ROAD LOCATION AND PHOTOS



Design plan and construction of a berm around the Resource Protection Area.

Approximately 1,200 curve linear feet of nature-based flood berms are to be designed and built around the Resource Protection Area as a landscape flood modification to combat current sunny day flooding and future sea level rise. If possible, innovative and resilient designs will be encouraged, and connections related to VA Sea Grant Go VA projects and materials (e.g., dredge spoils) could be used to facilitate and complement the project. Berm construction would be authorized under the newly enacted regulations promulgated by the State Water Control Board. It is estimated that 200 cubic yards of supplemental sediments will be needed (**Figure 15**).

Figure 15: Berm location and Material Estimate Calculation

200.00 cu yds

Length: 1200 feet

Width: 3 feet

Height: 1.5 feet

Concerning Adverse Impacts

MPPDC and the MPCBPAA recognize the complexity of permitting a project in and around sensitive environmental sites and will work with all permitting entities as required by law. MPPDC and MPCBPAA also proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design solution to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted are lessened to a degree that is satisfactory by DCR.

Enabling legislation

- Codes relevant to the Middle Peninsula Chesapeake Bay Public Access Authority can be found in Title 15.2 Chapter 66
- This project will follow the designs outlined and approved in the Joint Permit Application and or local CBPA regulations.

Deliverables and timeline

The below table outlines the four components of the project and what will be installed at the project location,

Action Item	M1	M2	M3	M4	M5	M6
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits- advance forward any construction aspects when ready	X	X	X	X	X	X
Phase 2 – Solution Design						
Discuss nature-based design solutions with contractor and property owner		X	X			
Select which nature-based solution is most appropriate		X	X			
Have contractor develop selected nature-based design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based design solution.					X	X
Provide a digital close out report and copy of the completed nature-based design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

For the holistic schedule of projects to be completed, the anticipated timeline could span three years. The timeline range is due to the potential delays in the construction industry and/or delays caused by COVID, including supply shortages. Having a three-year timeline will ensure that 1) adequate exploration of the site is informing the design of quality, innovative and resilient solutions to mitigate flooding; 2) that the most effective iteration is selected for subsequent implementation; and 3) that the contractor selected to construct the project is the best fit for the job.

RELATIONSHIP TO OTHER PROJECTS –

For more than 40 years, the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (e.g. hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR in August of 2021. This Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents. These documents frame the foundation and implementation of the Middle Peninsula flood protection approach, and are indirectly and directly supported by specific regional planning documents each approved by federal, regional, and/or local partners as required by statute.

Other plans and resources integral to the implementation of the Flood Resiliency Plan include:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan - FEMA and Middle Peninsula locality, approved 2016 (MPPDC Website)
    - This overarching project provides updates every five years on the hazards within the region; it identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – MPPDC, approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – MPPDC, approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design - MPPDC Commission, approved June 2020; Chairman approved update 8/6/21
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program - Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

The MPPDC has a history of continuous work on flooding and coastal resiliency topics; **Attachment 6** described relevant projects. These projects have built upon each other to establish within the MPPDC a solid foundation of regional expertise in flooding and coastal resiliency. Now, given this history of accumulated information and knowledge, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One such effort, launched in 2020 following the Commission's authorization, was developed in response to emerging flood challenges. This effort, the **Middle Peninsula Fight the Flood (FTF) Program**, leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built and natural environments with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. MPPDC staff have partnered with private property owners registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that their outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN –

Maintenance requirements are not anticipated for the types of flood mitigation solutions proposed.

CRITERIA –

Describe how the project meets each of the applicable scoring criteria contained in ***Appendix B*** *and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application.* ***Appendix B*** *must be completed and submitted with the application.*

For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

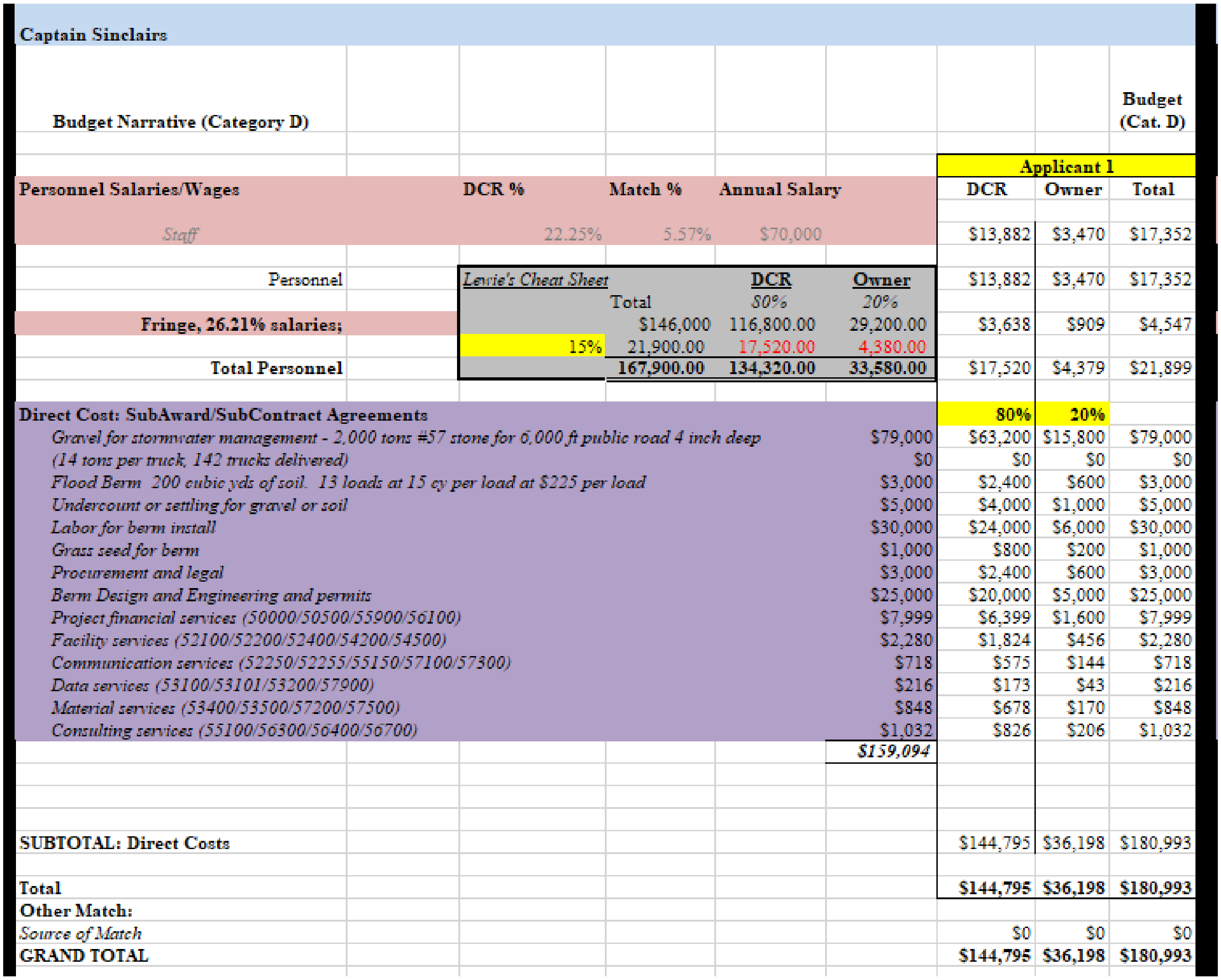
1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
    - YES.
2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
    - YES.
    - Link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
    - YES. Please see **Attachment 1**

4. **Has the applicant provided evidence of an ability to provide the required match funds?**
    - YES. Please see the match commitment letter in **Attachment 8**
5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
    - YES.

BUDGET NARRATIVE –

Below is the estimated budget for the proposed flood prevention and construction projects resulting in nature-based solutions supporting quality of life and safety in a low-income geographic area. MPPDC staff request 80% funding from DCR and will provide 20% match. Please see match commitment letters from the property owners in **Attachment 8**.

Estimated total project cost: $180,993
Amount of funds requested from the Fund (80% project total): $144,795
Amount of match funds available (20% project total): $ 36,198



Captain Sinclairs								
Budget Narrative (Category D)								**Budget (Cat. D)**
						Applicant 1		
Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		22.25%	5.57%	$70,000		$13,882	$3,470	$17,352
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$13,882	$3,470	$17,352
			Total	*80%*	*20%*			
Fringe, 26.21% salaries;			$146,000	116,800.00	29,200.00	$3,638	$909	$4,547
		15%	21,900.00	17,520.00	4,380.00			
Total Personnel			**167,900.00**	**134,320.00**	**33,580.00**	$17,520	$4,379	$21,899
Direct Cost: SubAward/SubContract Agreements						**80%**	**20%**	
Gravel for stormwater management - 2,000 tons #57 stone for 6,000 ft public road 4 inch deep					$79,000	$63,200	$15,800	$79,000
(14 tons per truck, 142 trucks delivered)					$0	$0	$0	$0
Flood Berm 200 cubic yds of soil. 13 loads at 15 cy per load at $225 per load					$3,000	$2,400	$600	$3,000
Undercount or settling for gravel or soil					$5,000	$4,000	$1,000	$5,000
Labor for berm install					$30,000	$24,000	$6,000	$30,000
Grass seed for berm					$1,000	$800	$200	$1,000
Procurement and legal					$3,000	$2,400	$600	$3,000
Berm Design and Engineering and permits					$25,000	$20,000	$5,000	$25,000
Project financial services (50000/50500/55900/56100)					$7,999	$6,399	$1,600	$7,999
Facility services (52100/52200/52400/54200/54500)					$2,280	$1,824	$456	$2,280
Communication services (52250/52255/55150/57100/57300)					$718	$575	$144	$718
Data services (53100/53101/53200/57900)					$216	$173	$43	$216
Material services (53400/53500/57200/57500)					$848	$678	$170	$848
Consulting services (55100/56300/56400/56700)					$1,032	$826	$206	$1,032
					$159,094			
SUBTOTAL: Direct Costs						$144,795	$36,198	$180,993
Total						**$144,795**	**$36,198**	**$180,993**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$144,795**	**$36,198**	**$180,993**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles. This project involves many different funding partners contributing cash to many different flooding and related resiliency aspects. Match will be provided from a single or multiple combination of participating partners including MPPDC loan funds, Gloucester County cash, Public Access Authority cash, Virginia Housing cash, and other cash sources

Finally, please see the authorization to request for funding in **Attachment 9.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X

No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		☑ **Yes** ☐ **No**
Applicant Name:	Middle Peninsula Planning District Commission	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45

1.b. any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (**Based on** **ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

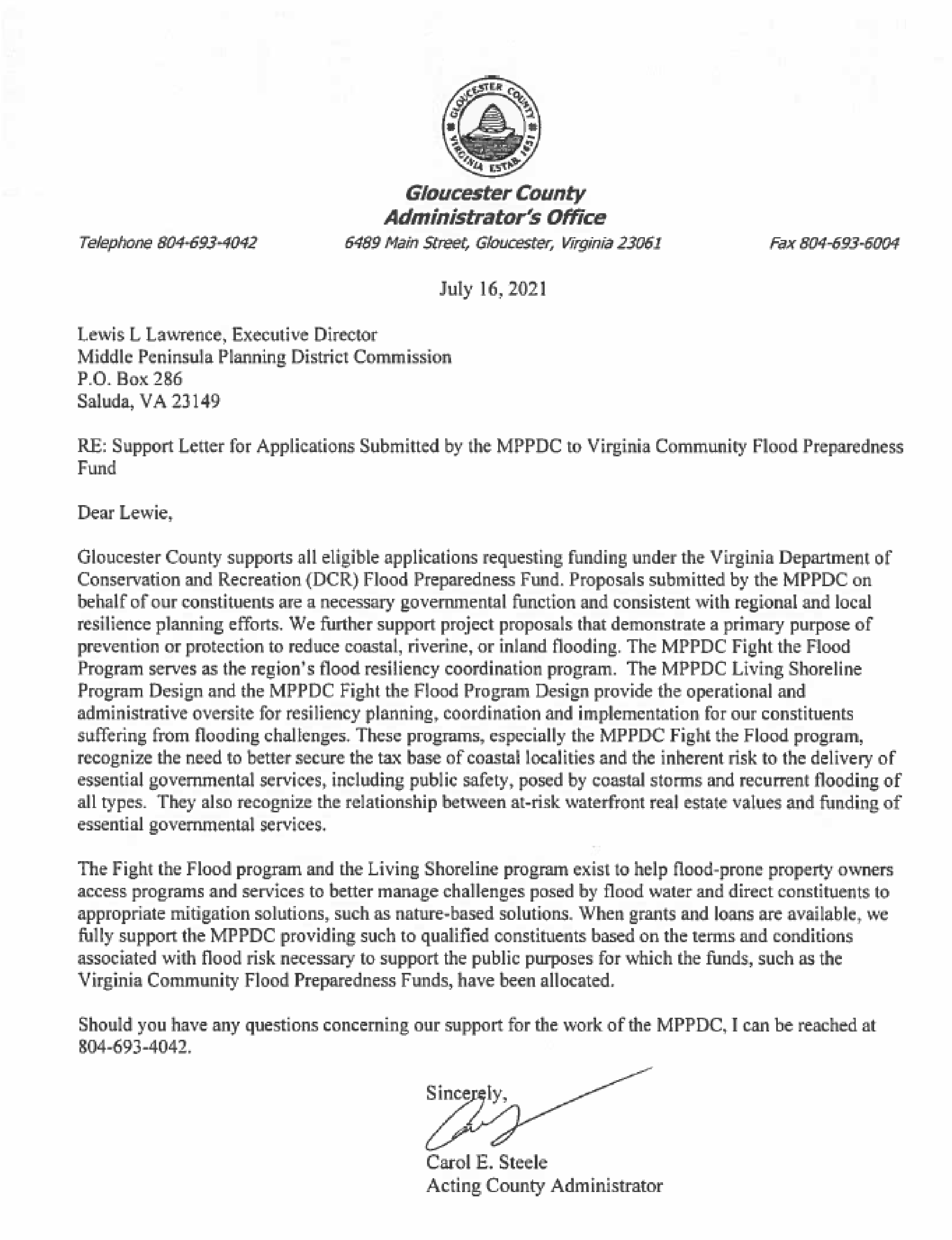
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		120

Appendix D: Checklist All Categories

Virginia Department of Conservation and RecreationCommunity Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from [ADAPT VA's Virginia Vulnerability Viewer]()	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter



Gloucester County
Administrator's Office

Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

July 16, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Applications Submitted by the MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Gloucester County supports all eligible applications requesting funding under the Virginia Department of Conservation and Recreation (DCR) Flood Preparedness Fund. Proposals submitted by the MPPDC on behalf of our constituents are a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine, or inland flooding. The MPPDC Fight the Flood Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially the MPPDC Fight the Flood program, recognize the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types. They also recognize the relationship between at-risk waterfront real estate values and funding of essential governmental services.

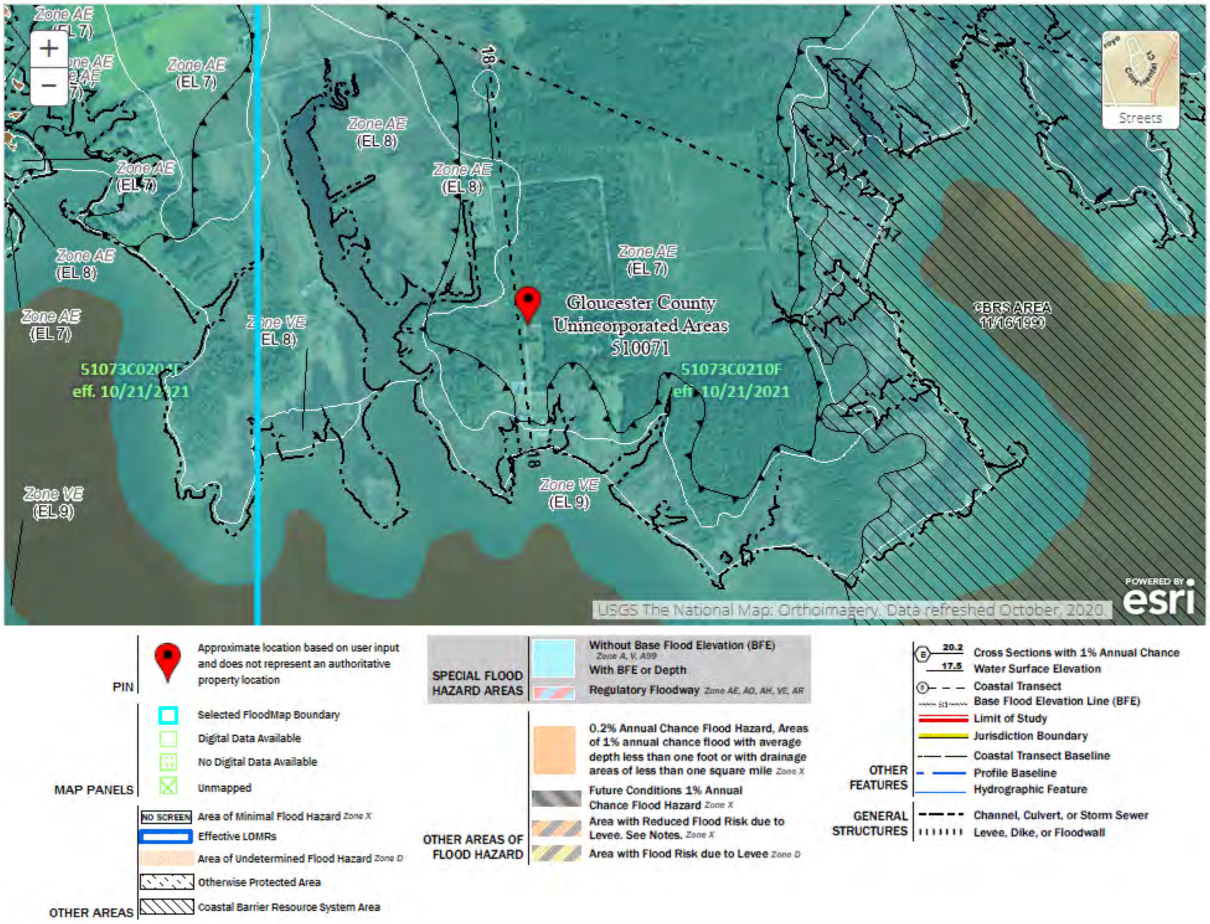
The Fight the Flood program and the Living Shoreline program exist to help flood-prone property owners access programs and services to better manage challenges posed by flood water and direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC providing such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purposes for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-693-4042.

Sincerely,

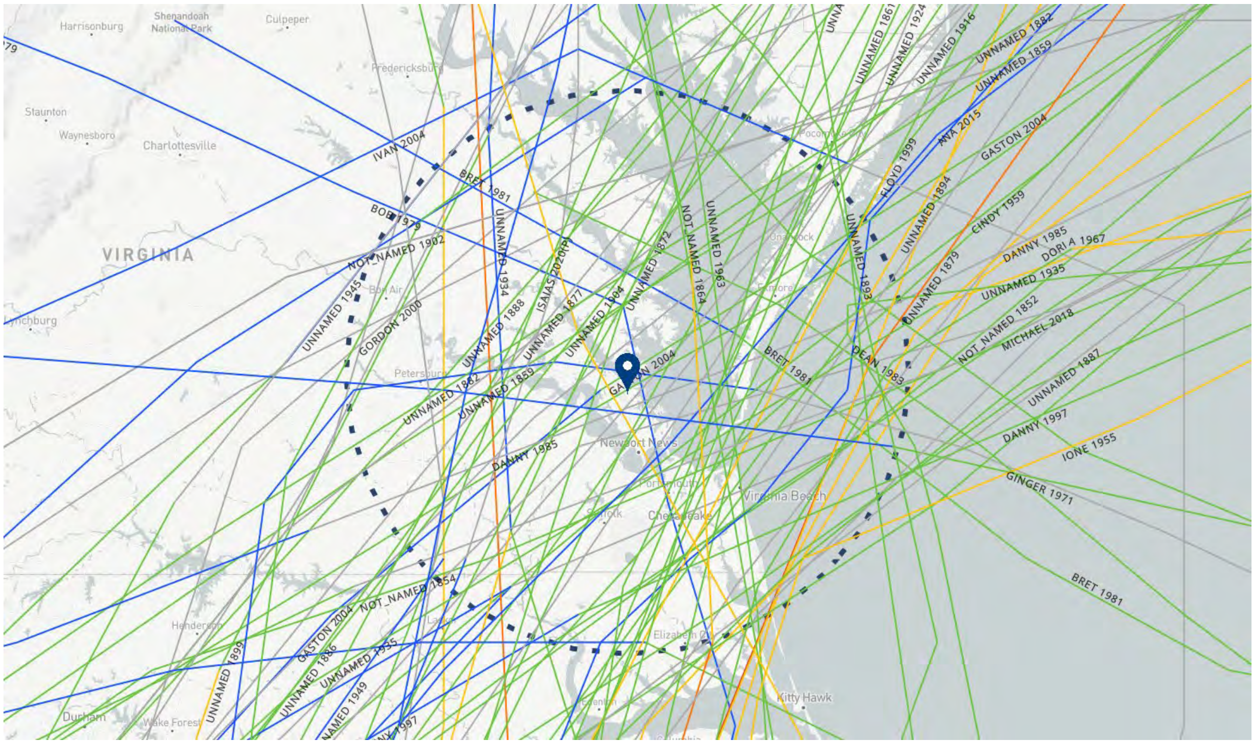
Carol E. Steele
Acting County Administrator

Attachment 2: Project Location FIRMette



Attachment 3: List of historic hurricanes impacting the project area 1851 to present per NOAA.

Hurricane List



Search Filter Criteria

Location: 37.257538, -76.480435

Categories queried: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
CLEO 1964	Aug 20, 1964 to Sep 11, 1964	130	938	H4
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1949	Sep 11, 1949 to Sep 14, 1949	45	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17,	50	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
	1902			
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

Attachment 4: Photos of the Captain Sinclair property.

https://www.flickr.com/photos/virginiaseagrant/albums/72157718932368651/page2 - VA Sea Grant

Attachment 5: Sinclair JPA, Design, and Permit Package

To be developed as part of the project.

Attachment 6: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)
The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (i.e., Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc., staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and

community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

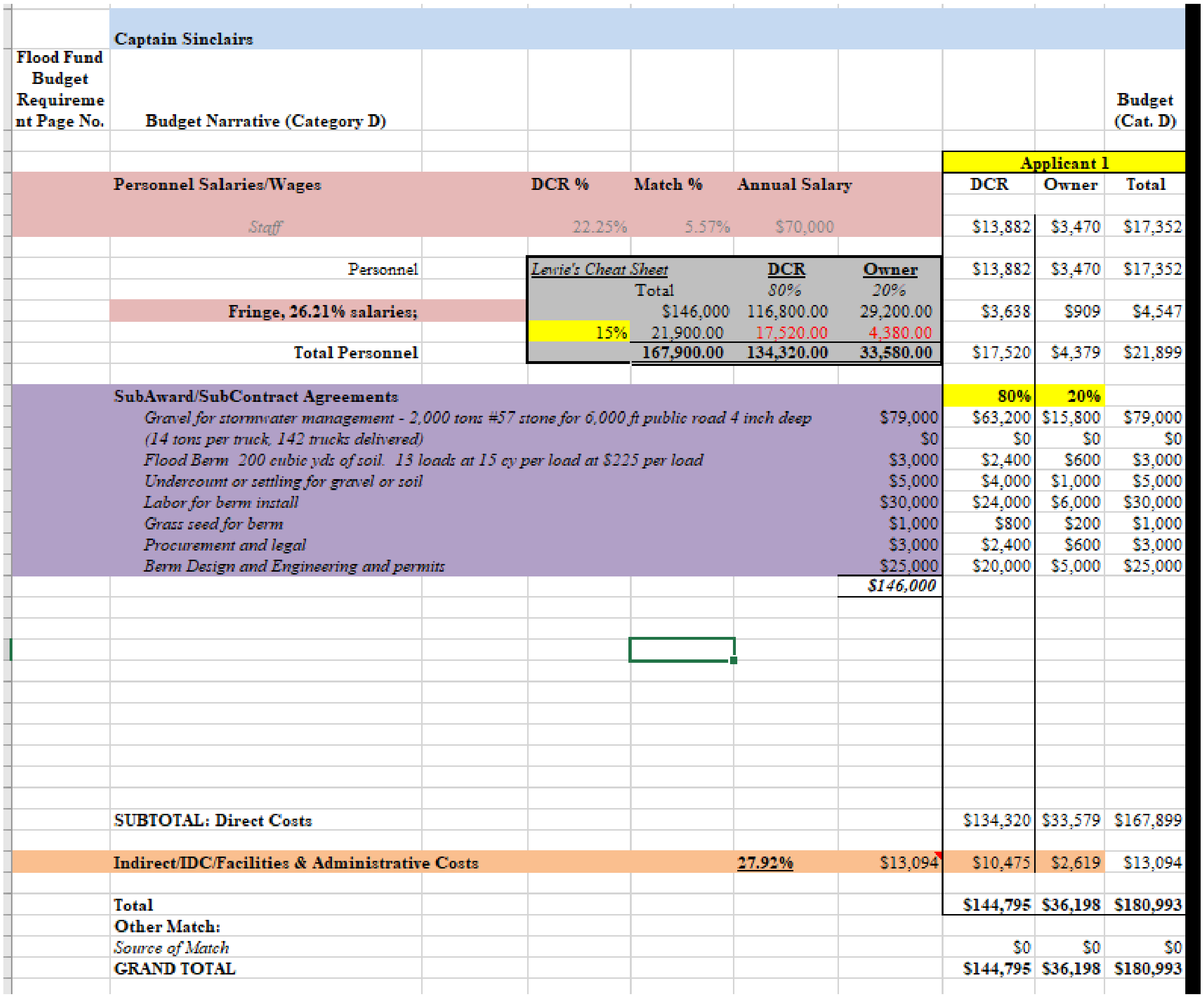
Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines

Attachment 7: Project cost estimates



	Captain Sinclairs								
Flood Fund Budget Requirement Page No.	**Budget Narrative (Category D)**								**Budget (Cat. D)**
							Applicant 1		
	Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
	Staff		22.25%	5.57%	$70,000		$13,882	$3,470	$17,352
	Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$13,882	$3,470	$17,352
				Total	*80%*	*20%*			
	Fringe, 26.21% salaries;			$146,000	116,800.00	29,200.00	$3,638	$909	$4,547
			15%	21,900.00	17,520.00	4,380.00			
	Total Personnel			**167,900.00**	**134,320.00**	**33,580.00**	$17,520	$4,379	$21,899
	SubAward/SubContract Agreements						**80%**	**20%**	
	Gravel for stormwater management - 2,000 tons #57 stone for 6,000 ft public road 4 inch deep					$79,000	$63,200	$15,800	$79,000
	(14 tons per truck, 142 trucks delivered)					$0	$0	$0	$0
	Flood Berm 200 cubic yds of soil. 13 loads at 15 cy per load at $225 per load					$3,000	$2,400	$600	$3,000
	Undercount or settling for gravel or soil					$5,000	$4,000	$1,000	$5,000
	Labor for berm install					$30,000	$24,000	$6,000	$30,000
	Grass seed for berm					$1,000	$800	$200	$1,000
	Procurement and legal					$3,000	$2,400	$600	$3,000
	Berm Design and Engineering and permits					$25,000	$20,000	$5,000	$25,000
						$146,000			
	SUBTOTAL: Direct Costs						$134,320	$33,579	$167,899
	Indirect/IDC/Facilities & Administrative Costs				**27.92%**	$13,094	$10,475	$2,619	$13,094
	Total						**$144,795**	**$36,198**	**$180,993**
	Other Match:								
	Source of Match						$0	$0	$0
	GRAND TOTAL						**$144,795**	**$36,198**	**$180,993**

Estimates provided from research, local companies, and internet calculators as described in the narrative.

Attachment 8: Match Commitment Letters

MIDDLE PENINSULA CHESAPEAKE BAY PUBLIC ACCESS AUTHORITY

10/29/21

To: DCR Flood Fund Program Staff

From: Middle Peninsula Chesapeake Bay Public Access Authority

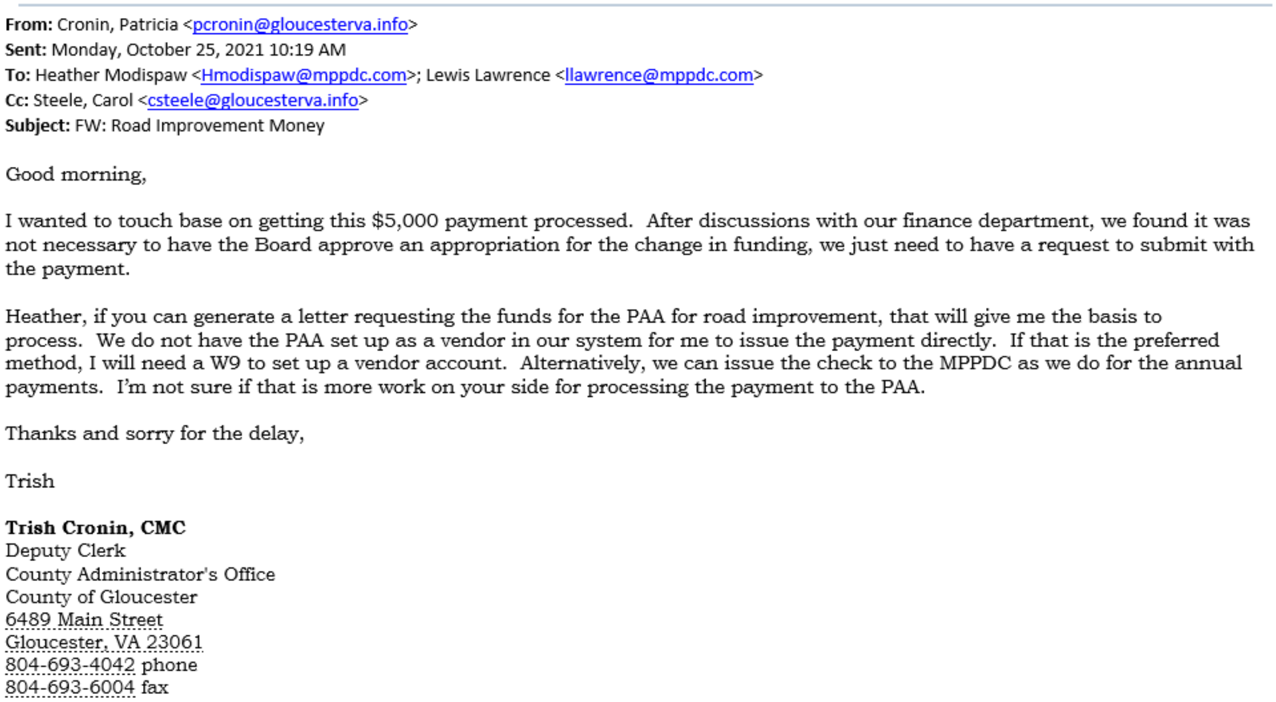
Reff: Match Funds

The Middle Peninsula Chesapeake Bay Public Access Authority owns a 125+ acre waterfront complex offering the public recreational access opportunities. The site is subject to recurrent flooding from both storms and rain. The public dirt road serving the facility is owned by Gloucester County as a statutory dedicated road, a complex legal issue originating from the late 1960's. This is the only public access road to the facility.

The facility also has a current multimillion dollar resiliency design build grant from Go Virginia to Virginia Sea Grant/VIMS as well as a one million resiliency housing grant concurrently underway at the facility. Both grants are impacted by the site flooding conditions.

The Authority and its resiliency partners working on resiliency solutions at Captain Sinclairs are committed to providing the match to improve Captain Sinclairs to better manage flooding at the site and for the Commonwealth to benefit and learn from

Gloucester County $5,000 cash committed.



From: Cronin, Patricia <pcronin@gloucesterva.info>
Sent: Monday, October 25, 2021 10:19 AM
To: Heather Modispaw <Hmodispaw@mppdc.com>; Lewis Lawrence <llawrence@mppdc.com>
Cc: Steele, Carol <csteele@gloucesterva.info>
Subject: FW: Road Improvement Money

Good morning,

I wanted to touch base on getting this $5,000 payment processed. After discussions with our finance department, we found it was not necessary to have the Board approve an appropriation for the change in funding, we just need to have a request to submit with the payment.

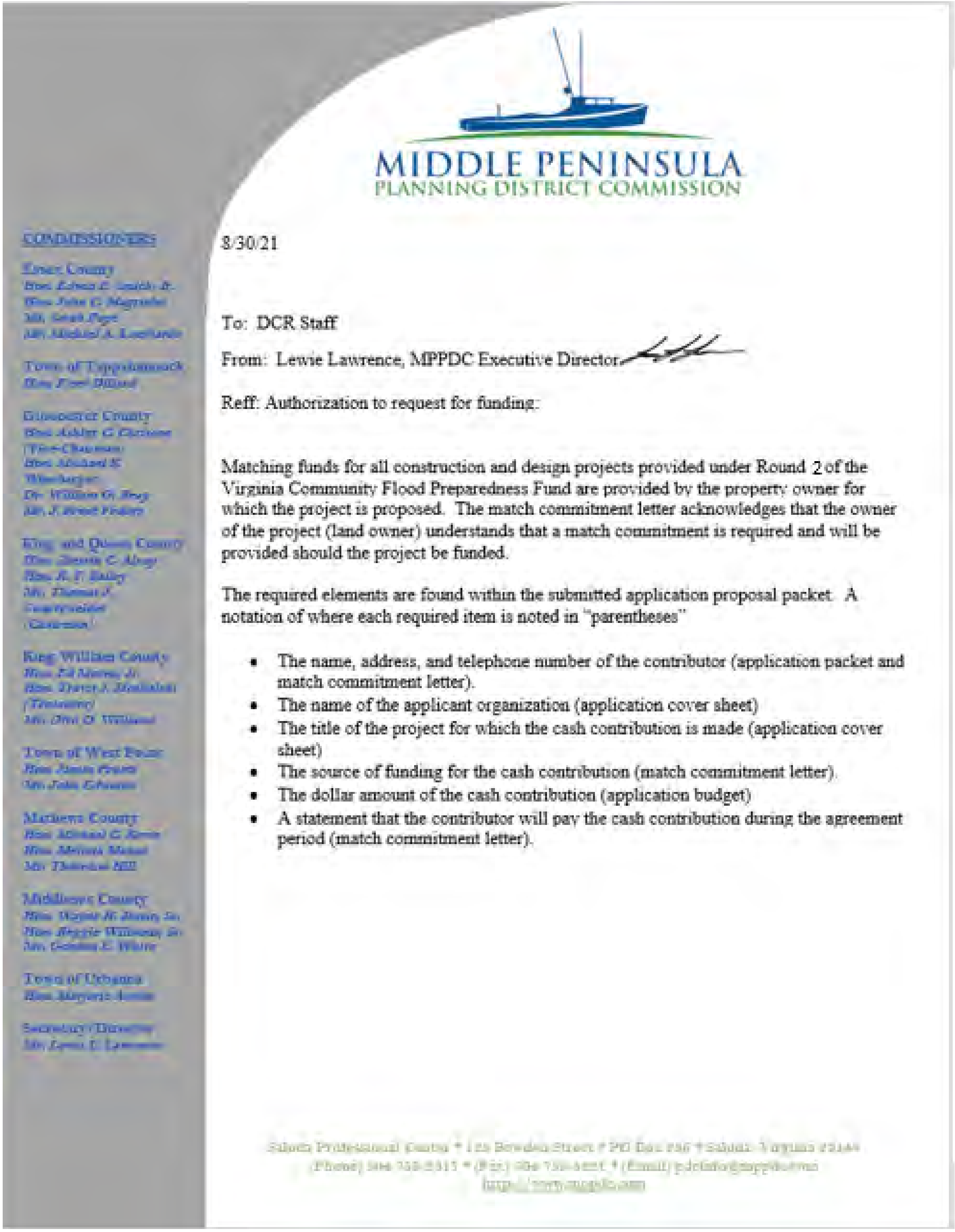
Heather, if you can generate a letter requesting the funds for the PAA for road improvement, that will give me the basis to process. We do not have the PAA set up as a vendor in our system for me to issue the payment directly. If that is the preferred method, I will need a W9 to set up a vendor account. Alternatively, we can issue the check to the MPPDC as we do for the annual payments. I'm not sure if that is more work on your side for processing the payment to the PAA.

Thanks and sorry for the delay,

Trish

Trish Cronin, CMC
Deputy Clerk
County Administrator's Office
County of Gloucester
6489 Main Street
Gloucester, VA 23061
804-693-4042 phone
804-693-6004 fax

Attachment 9: Authorization to request for funding



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 2 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

March 28, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Matthew Wells,

Enclosed in this packet are nine applications for flood protection and prevention projects that involve implementation of nature-based shoreline solutions.

Among the applications are projects which are currently at the design stage. Design projects are requesting funds for professional designs and development of Joint Permit Applications which are needed before the property owner can move to construction of a nature-based flood protection solution.

Below is short summary of proposed flood protection and prevention design projects in Mathews County:

A. **Flood Prevention and Protection for Rigby Lane for Abbassi**
(CID): 510096 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This applicant is part of a series of adjoining parcels requesting funding. There is one SRL/RL structure south of the site. DCR SEAS recommendation for the project is included.

B. **Flood Prevention and Protection for Queens Creek Road for Fletcher**
(CID): 510096 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. Significant erosion is now occurring along the bottom of the bank and undercutting the bank. With the recent Nor-easter, the bank is caving and close to collapse if nothing is done. The length of the shoreline is approximately 100 feet. Additionally, the septic system is 35 yards from the water's edge. The well about six yards away from the bank. The

applicant would like to install a nature-based design solution of a living shoreline to mitigate these immediate issues.

C. **Flood Prevention and Protection for Diggs Wharf Road for Morley**
(CID): 510096 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. The applicant has lost ~17,000 square feet of shoreline according to VIMS Shoreline Studies Program historical shoreline data. The site is a significantly high erosion shoreline warranting immediate mitigation.

D. **Flood Prevention and Protection for Chesapeake Shore Road for Stanley**
(CID): 510096 Total Cost (from individual project application): $24,963
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, on private property located on Chesapeake Shore Road in Mathews County. The applicant is one of 6 applicants joining together to submit Flood Fund applications under Round 1 and 2 within the Chesapeake Shores community to make a demonstrable impact on shoreline protection.

E. **Flood Prevention and Protection for Chesapeake Bay Road for Carr**
(CID): 510096 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a naturae based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This project proposes to investigate nature-based design solutions or, if necessary, hybrid designs solutions when nature-based design solutions are not preferable to a living shoreline on a private property located on Chesapeake Bay Road in Mathews County.

F. **Flood Prevention and Protection for Chesapeake Bay Road for Gray**
(CID): 510096 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a naturae based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This property is currently experiencing high erosion rates.

G. **Flood Prevention and Protection for Green Plains**
(CID): 510096 Total Cost (from individual project application): $24,963
This proposal request funding for a shoreline site evaluation and recommendation and development of an appropriate nature-based shoreline design or hybrid solution if nature based isn't possible and draft JPA permit application for up to two miles of shoreline. The design is intended to reduce the impacts of storm events, flooding, and wetland loss. The site is a large waterfront estate with several parcels suffering from flooding and storm damage

causing failure to the bulkhead which holds the septic drain field and tank in place, hundred-year-old trees, and loss of tidal wetlands protecting the road.

H. Flood Prevention and Protection for Bayshore Avenue
(CID): 510096 Total Cost (from individual project application): $6,807
This proposal requests funding for the development of a naturae based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This project will take place on a private property located on Bayshore Road in Mathews County experiencing significant erosion behind the bulkhead.

I. Flood Prevention and Protection for Chesapeake Shore Road for Vida
(CID): 510096 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a naturae based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This project design will address the escalating erosion issues that threaten the land and several large trees along the shoreline.

The total project costs for Mathews County Round 3 design applications are **$161,127** and MPPDC staff are requesting **$112,795** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at llawrence@mppdc.com or by phone at 804-758-2311.

Lewis Lawrence
Executive Director

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Rigby Lane for Abbassi

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0060E

Total Cost of Project: ___________$17,399____

Total Amount Requested: _______$12,180_____________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This applicant is part of a series of adjoining parcels requesting funding. There is one SRL/RL structure south of the site. DCR SEAS recommendation for the project is included.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Rigby Lane in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fighttheflooodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

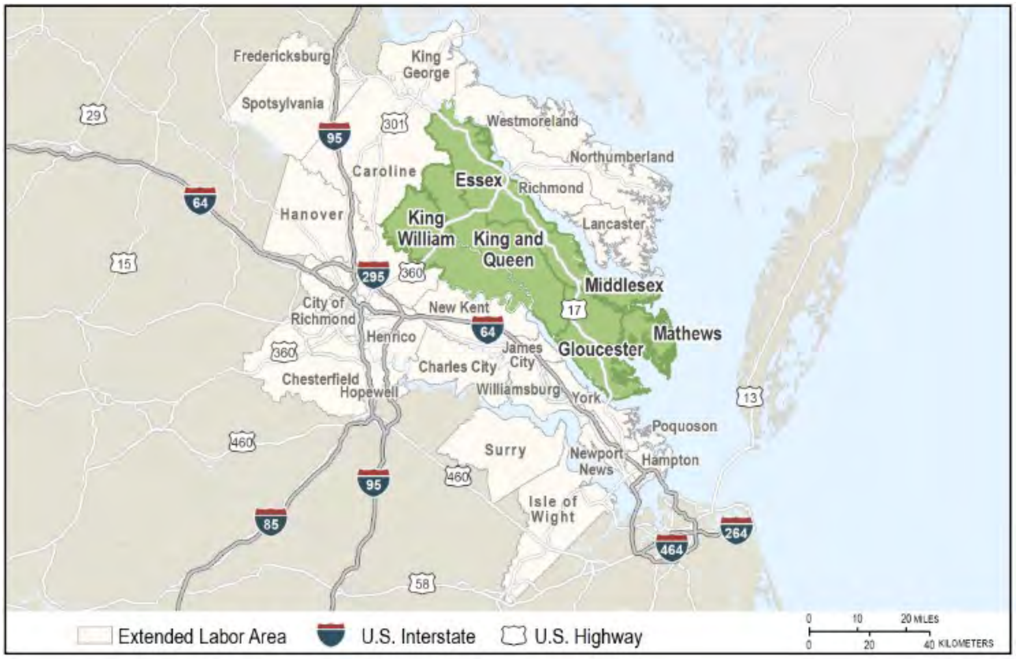


Figure 2. Middle Peninsula Population

CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature-based shoreline solution on one private property on Rigsby Lane in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

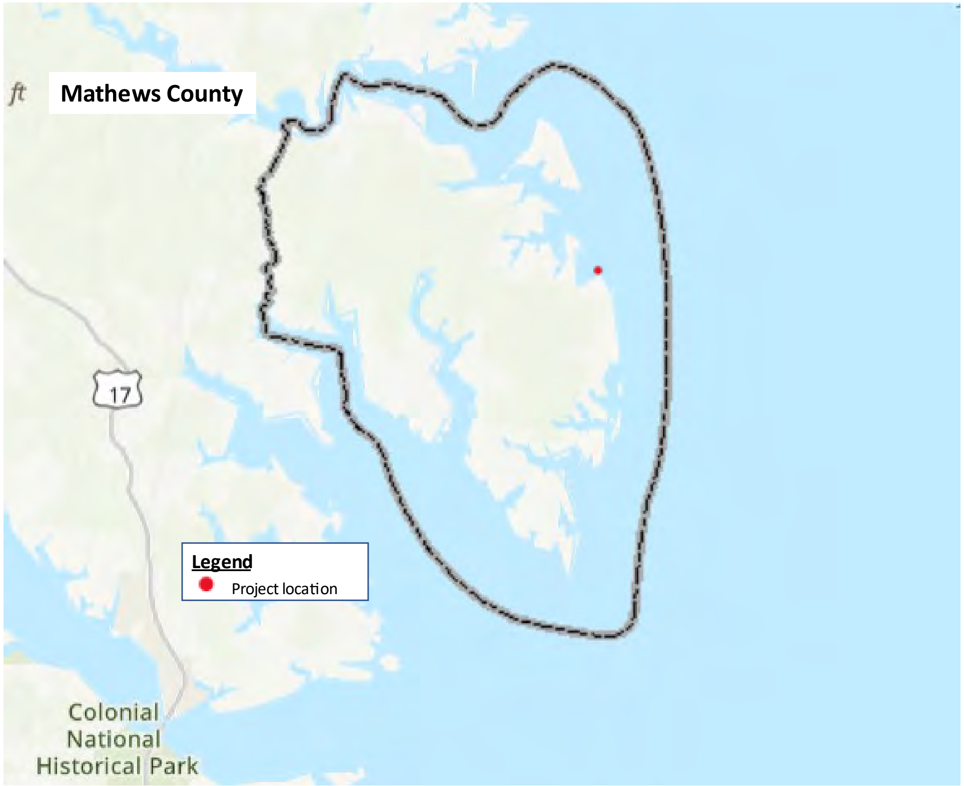
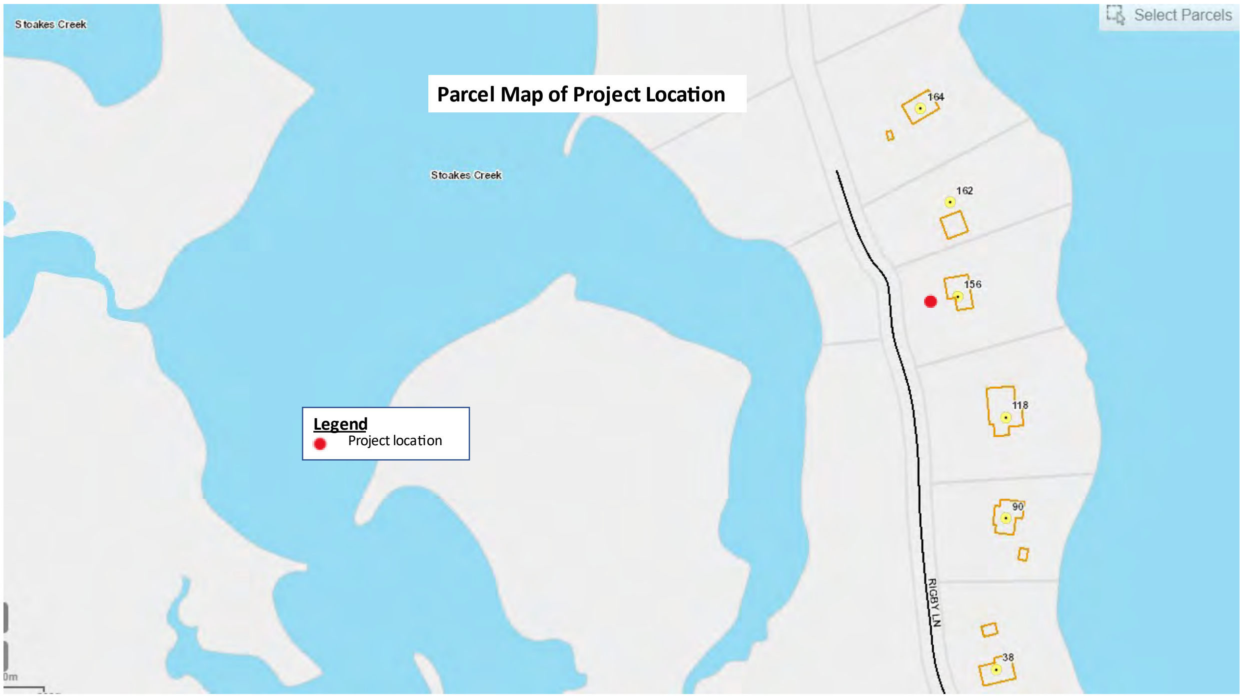


Figure 4. Parcel Map of Project Location



Mathews County is located on Virginia’s Middle Peninsula and has an economy based upon agriculture, forestry, and the water. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County’s population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

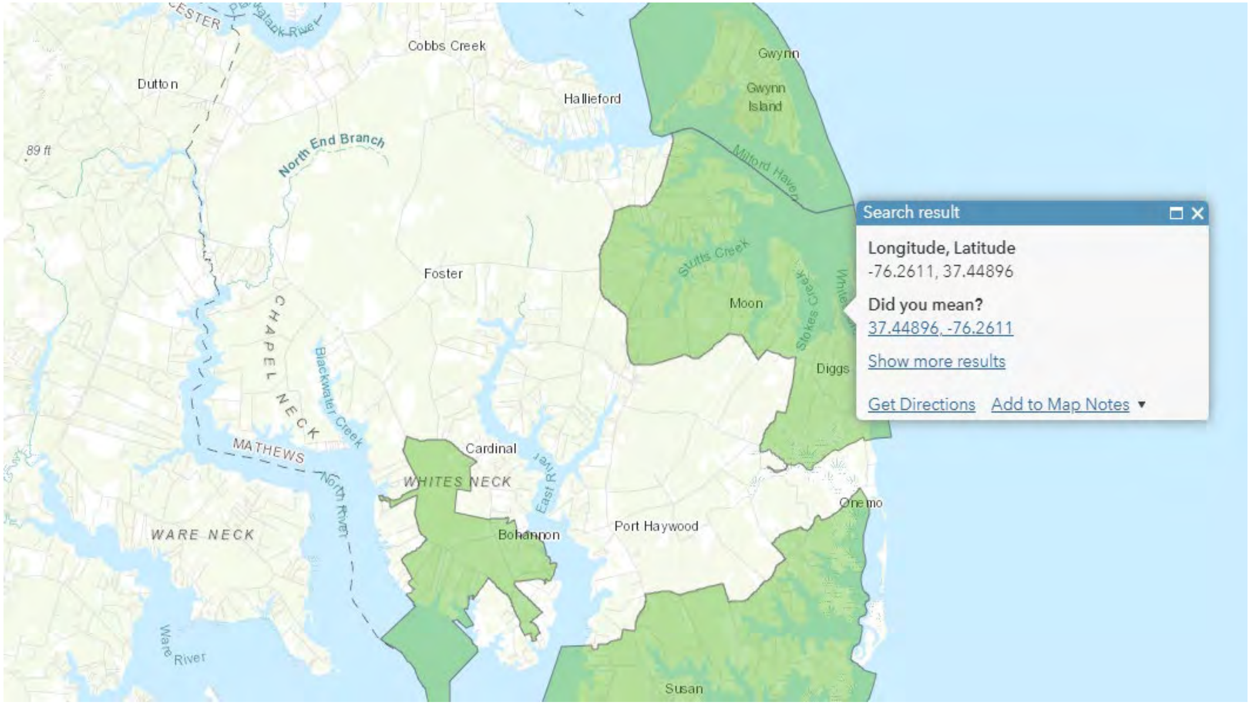
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



Search result

Longitude, Latitude
-76.2611, 37.44896

Did you mean?
37.44896, -76.2611

Show more results

Get Directions Add to Map Notes ▾

According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

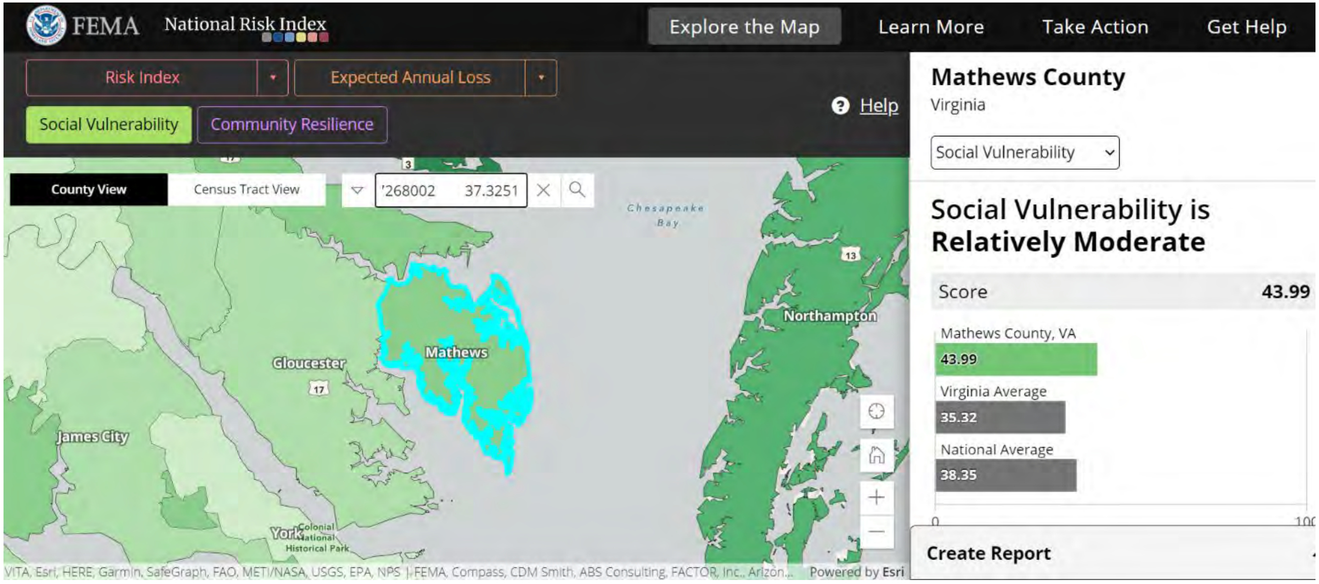

-76.2611 37.44896

Social Vulnerability (1 of 2)

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Zoom to

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Moderate

Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

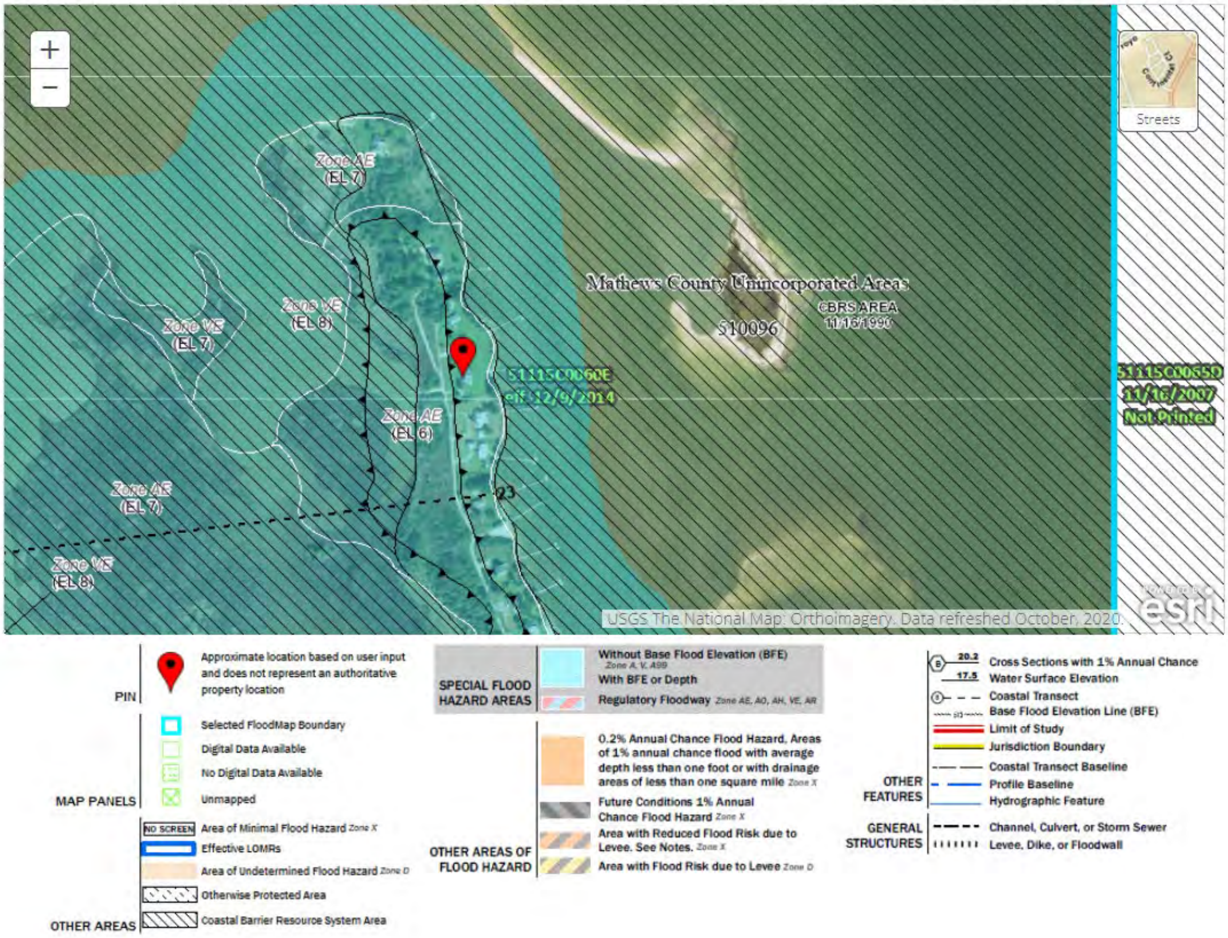
Create Report

The project is located at 156 Rigby Lane, Diggs VA 23045 (-76.2611, 37.44896). The property was purchased in 2000 and has experienced a number of issues. The historical erosion rate of the shoreline, formerly on White's Creek, is less than 1 foot per year (length of shoreline is 189.41 feet). **However, the erosion rate for the Rigby Island project site shoreline is 5 to 10 feet per year**. It is reasonable to assume the historic erosion rate of the shoreline will increase as the island continues to erode. Erosion on the property appears to be caused by elevated water levels and wave action associated with storms. Across from the property is Rigby Island – the island is now disappearing, and wave action is causing more damage. Live trees are very close to the water, with roots exposed to salt water, increasing the chances of these trees dying and the trees being lost in the near future. The septic tank and distributions are all close to the shoreline and the additional impact of erosion is very concerning, with the possibility of sewage effluent entering the Bay. On the water side of the property, there is water and wind erosion. As with many other properties, the last year has been more damaging than in the past decade. Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included as **Appendix 2**. This recommendation is valued highly, especially the permitting process in following the recommendation of the Shoreline Engineer to construct a riprap marsh sill and breakwater. See accompanying pictures.

Please see **Appendix 3** for additional property photos.

This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 4** for the FIRMettes (last mapped 12/9/2014).

Figure 9: Map of FEMA Flood Zones

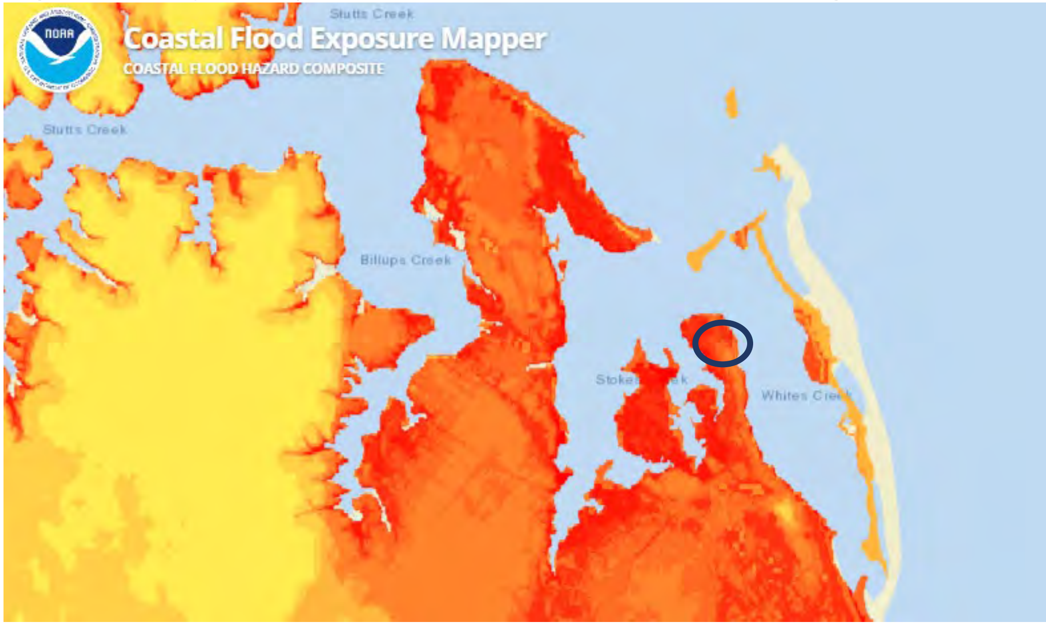


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate change of 4,001.9 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 5** lists 82 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

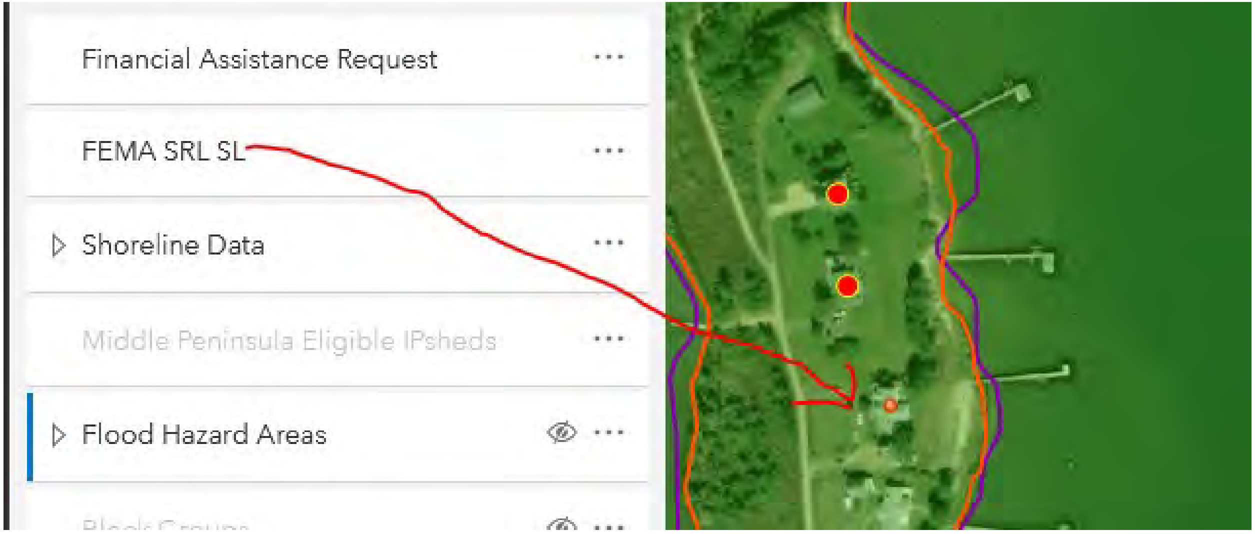
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

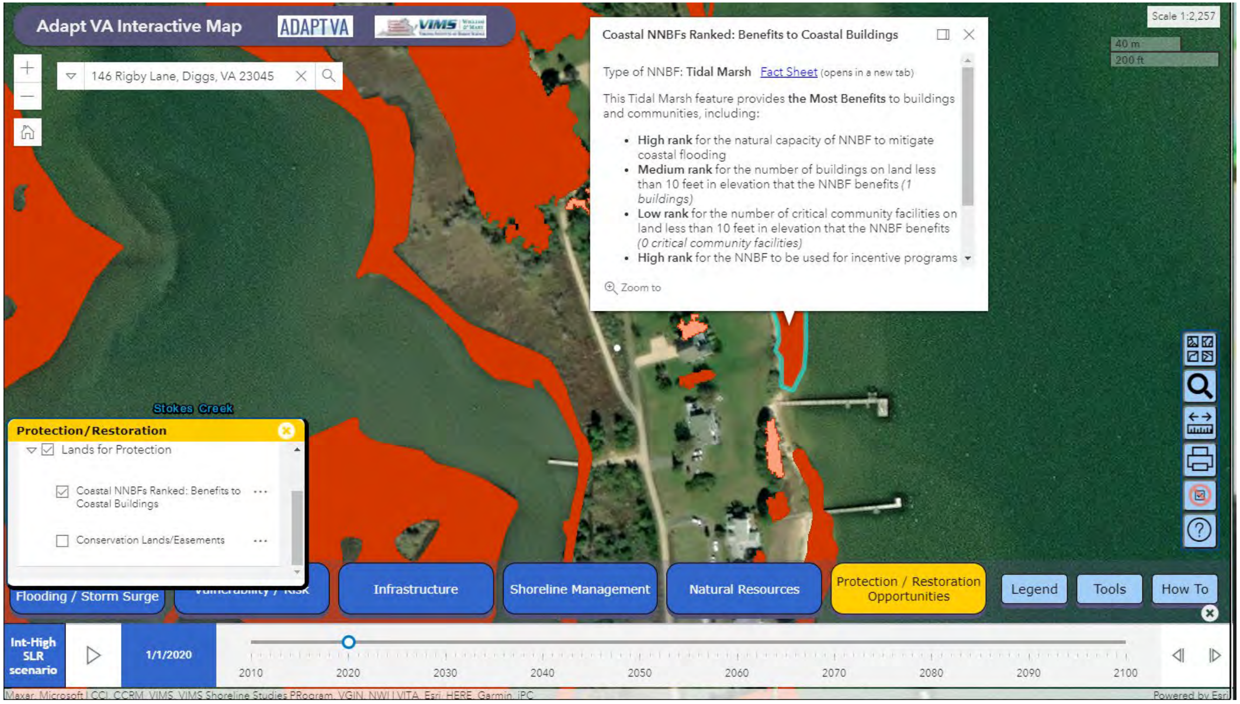
Fig 11a shows Round 1 and 2 applicants partnering and the downstream SRL/RL home location.

Fig 11A- Location of applicants



Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Medium rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(1 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants,* *stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

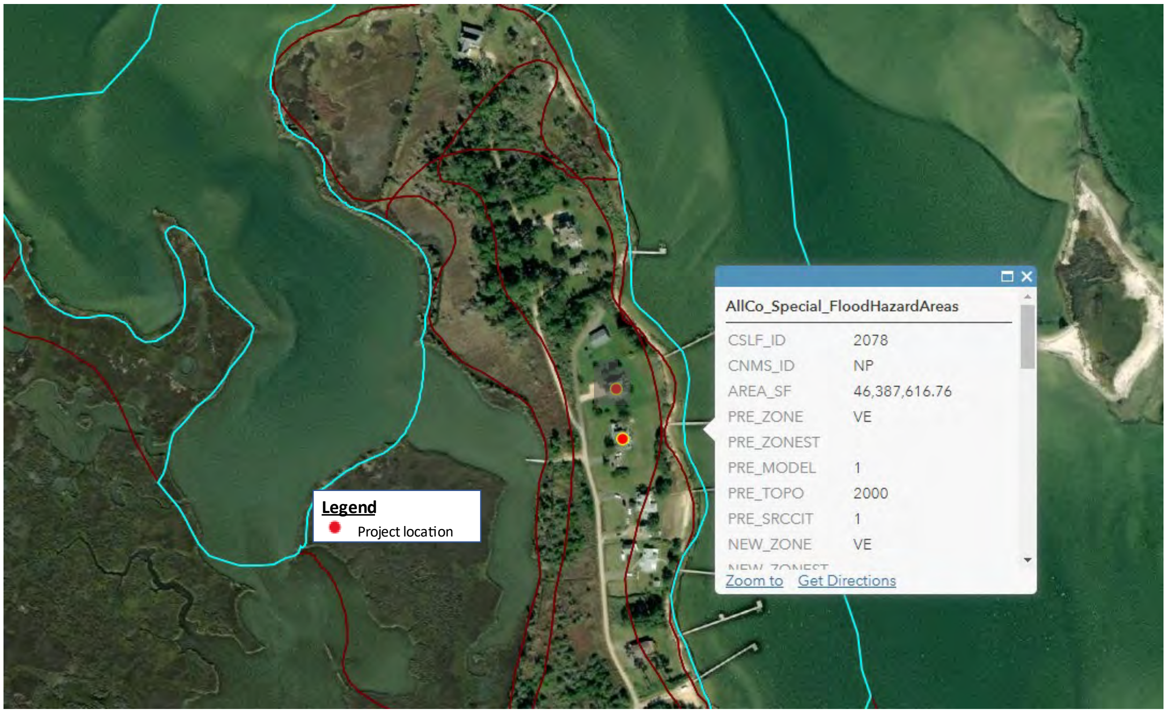
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	2078
CNMS_ID	NP
AREA_SF	46,387,616.76
PRE_ZONE	VE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	1
NEW_ZONE	VE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 6.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 7.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)]		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

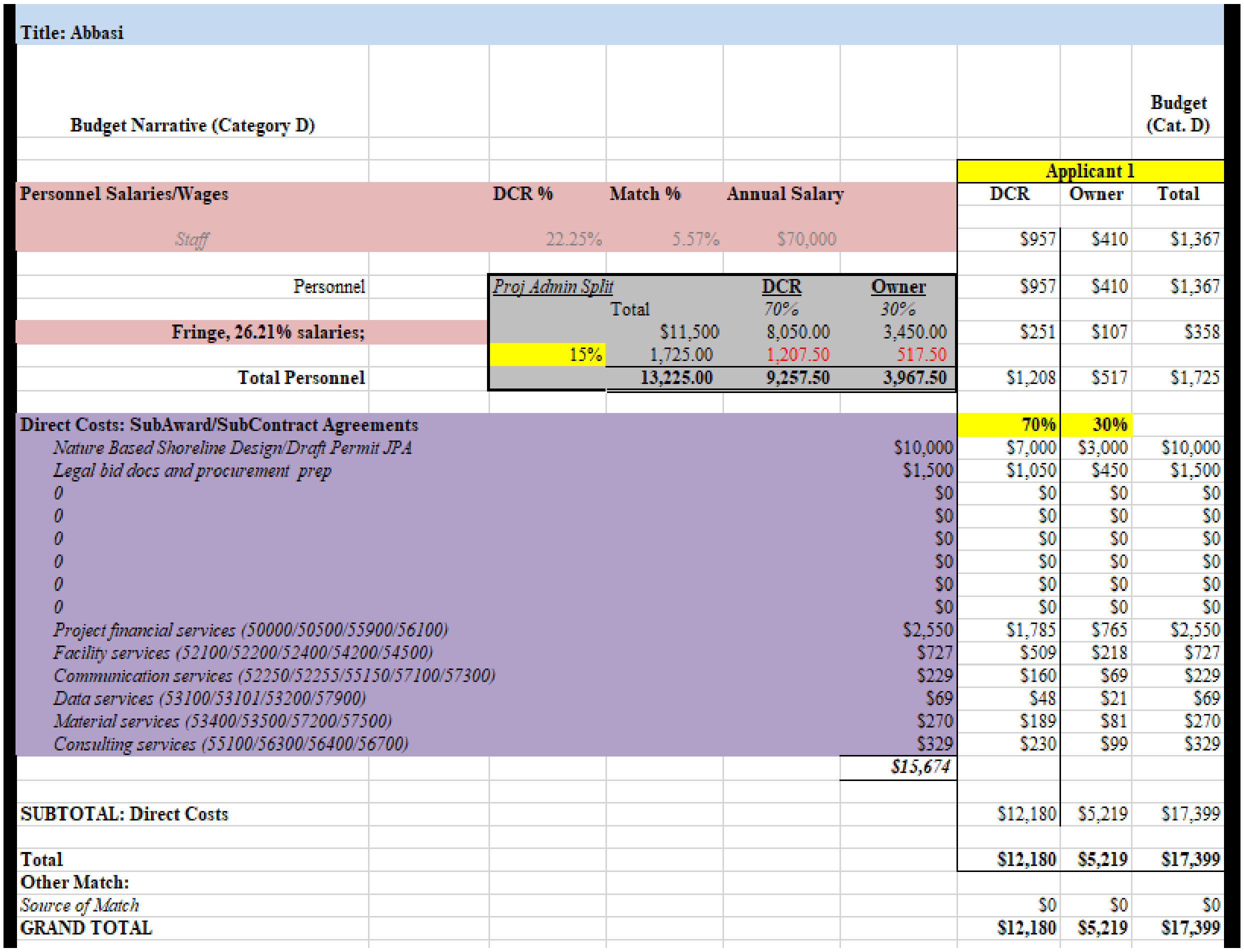
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply. For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being located in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

The proposed project budget is:

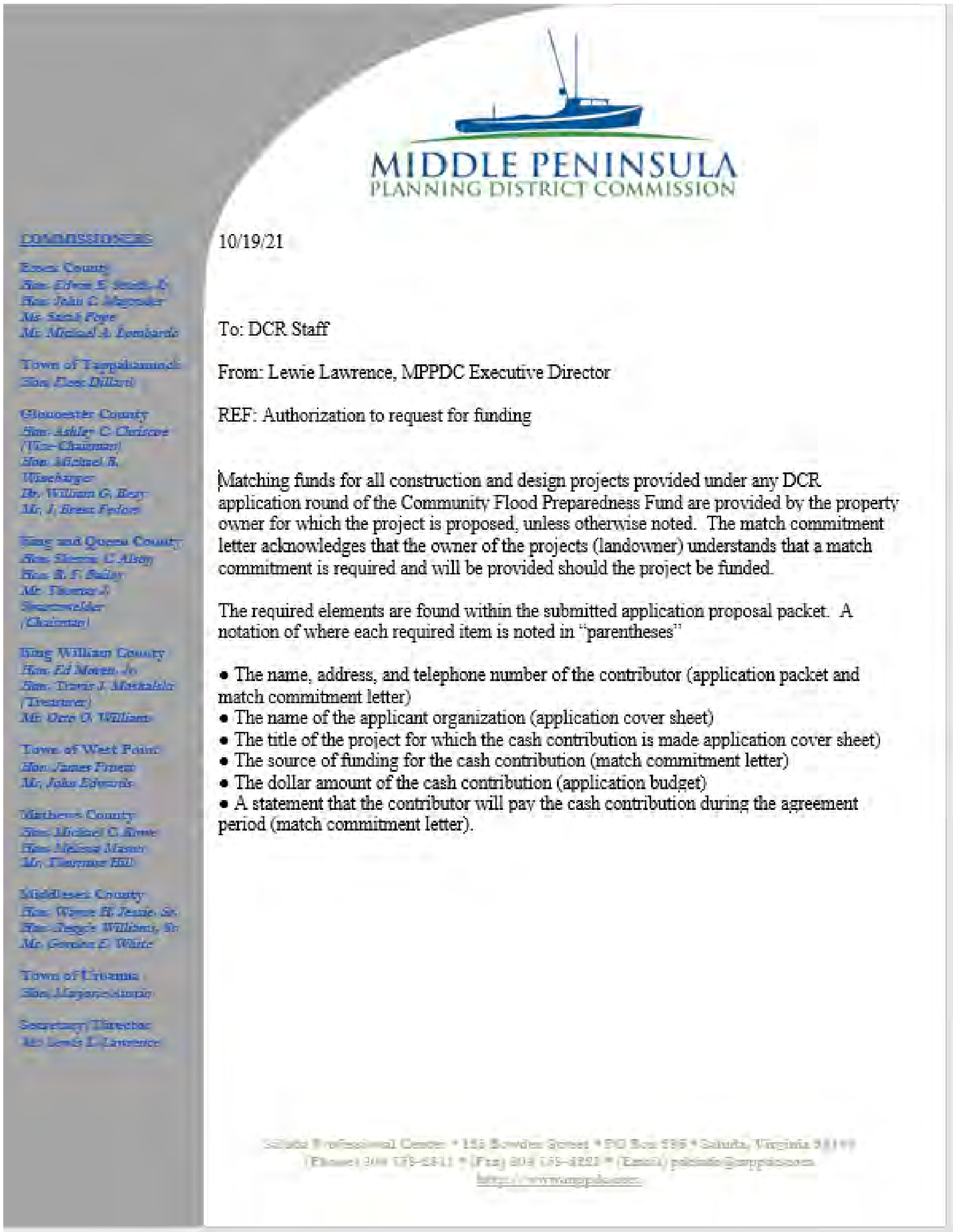
- **Estimated total project cost*: $17,399***
- ***Amount of funds requested from the Fund: $12,180***



Title: Abbasi								
Budget Narrative (Category D)								**Budget (Cat. D)**
						Applicant 1		
Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		22.25%	5.57%	$70,000		$957	$410	$1,367
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			$11,500	8,050.00	3,450.00	$251	$107	$358
		15%	1,725.00	1,207.50	517.50			
Total Personnel			**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)					$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)					$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)					$229	$160	$69	$229
Data services (53100/53101/53200/57900)					$69	$48	$21	$69
Material services (53400/53500/57200/57500)					$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)					$329	$230	$99	$329
					$15,674			
SUBTOTAL: Direct Costs						$12,180	$5,219	$17,399
Total						**$12,180**	**$5,219**	**$17,399**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$12,180**	**$5,219**	**$17,399**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:

10/4/2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at [804-852-4444] or by email at ali23060@yahoo.com.

Sincerely,

[Signature]
Ali Abbasi

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter

DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B668C2DAE00C

County Administration

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

DocuSigned by:
Mindy Conner

Melinda Conner
County Administrator

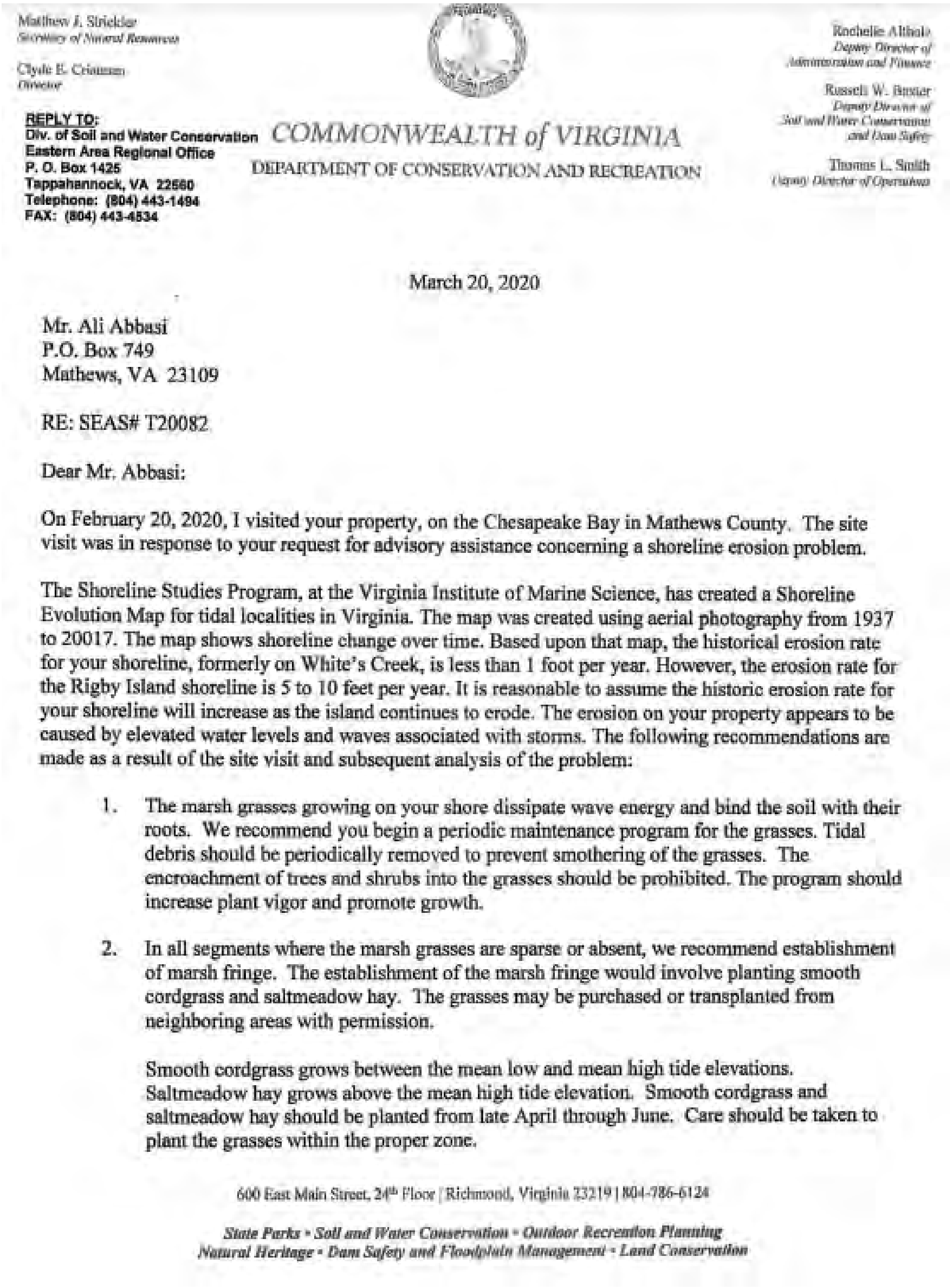
804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE
MATHEWS

APPENDIX 2

DCR Site Visit Letter



Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

REPLY TO:
Div. of Soil and Water Conservation
Eastern Area Regional Office
P. O. Box 1425
Tappahannock, VA 22560
Telephone: (804) 443-1494
FAX: (804) 443-4534

COMMONWEALTH *of* VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

March 20, 2020

Mr. Ali Abbasi
P.O. Box 749
Mathews, VA 23109

RE: SEAS# T20082

Dear Mr. Abbasi:

On February 20, 2020, I visited your property, on the Chesapeake Bay in Mathews County. The site visit was in response to your request for advisory assistance concerning a shoreline erosion problem.

The Shoreline Studies Program, at the Virginia Institute of Marine Science, has created a Shoreline Evolution Map for tidal localities in Virginia. The map was created using aerial photography from 1937 to 20017. The map shows shoreline change over time. Based upon that map, the historical erosion rate for your shoreline, formerly on White's Creek, is less than 1 foot per year. However, the erosion rate for the Rigby Island shoreline is 5 to 10 feet per year. It is reasonable to assume the historic erosion rate for your shoreline will increase as the island continues to erode. The erosion on your property appears to be caused by elevated water levels and waves associated with storms. The following recommendations are made as a result of the site visit and subsequent analysis of the problem:

1. The marsh grasses growing on your shore dissipate wave energy and bind the soil with their roots. We recommend you begin a periodic maintenance program for the grasses. Tidal debris should be periodically removed to prevent smothering of the grasses. The encroachment of trees and shrubs into the grasses should be prohibited. The program should increase plant vigor and promote growth.

2. In all segments where the marsh grasses are sparse or absent, we recommend establishment of marsh fringe. The establishment of the marsh fringe would involve planting smooth cordgrass and saltmeadow hay. The grasses may be purchased or transplanted from neighboring areas with permission.

   Smooth cordgrass grows between the mean low and mean high tide elevations. Saltmeadow hay grows above the mean high tide elevation. Smooth cordgrass and saltmeadow hay should be planted from late April through June. Care should be taken to plant the grasses within the proper zone.

To transplant the grasses, dig healthy plants and be sure to obtain an adequate root mass. Plant the grasses on an 18-inch by 18-inch grid. We recommend fertilization at the time of planting. A slow release fertilizer such as Osmocote can be placed in the hole with the plant. You should use approximately one ounce per plant. An alternative to Osmocote is any available fertilizer such as 10-10-10. Approximately two ounces of the alternate fertilizer should be side-dressed about six inches from the plant. To prevent damage to the source area, do not remove large numbers of plants from one section. The source area should be fertilized after plugging. If you wish to purchase plants or have someone do the planting for you, see the enclosed list of suppliers and contractors. See the enclosed information concerning descriptions of the grasses.

3. Along with enhancing the existing marsh fringe, you may consider the construction of a riprap marsh sill. The structure should have a trapezoidal cross section with 2:1 side slopes. It should have a top elevation at least 2-foot above the mean high water elevation. A minimum of two layers of armor rock should be used. Each armor rock should weigh a minimum of 500 pounds. Install the rock so that a "V" notch is placed about every 100 feet along the improved section to allow tidal flushing to occur. A layer of filter cloth should be used under the riprap. See the enclosed cross-sectional view of a typical riprap breakwater (modified).

   Immediately following construction, we recommend filling the area landward of the sill with good-quality, medium to coarse grain sand. The height of the sand fill against the bank should be such that mean high water no longer reaches the base of the bank. The slope of the sand nourishment should be 10:1 (horizontal:vertical). This slope will help promote positive drainage and mimics natural fringe marsh elevations. Moving mean high water off the base of the bank will should greatly reduce the under cutting of the bank. This sand will also provide an excellent planting media for marsh grasses.

4. An alternative to constructing a sill to stabilize the eroding marsh fringe is a properly designed and constructed riprap (large rock) wedge. The riprap should be constructed on a 2:1 (horizontal/vertical) slope or flatter. The wedge should be installed against the eroding scarp. Care should be taken not to build the wedge higher than the marsh peat surface. A minimum of two layers of armor rock should be used. Each armor rock should weigh a minimum of 150 pounds. Installation of the wedge may be difficult due to the dimensions of the recommended rock size. The toe of the riprap should be buried a minimum of 2 foot below the mean low water elevation. An alternative to the buried toe is a riprap apron. The apron consists of 2 layers of armor rock extending a minimum of 4 feet onto the bottom. A layer of filter cloth should be used under and behind the riprap. The riprap should be extended inland or properly connected to neighboring structures to prevent erosional flanking. The lists for filter cloth and riprap suppliers have been enclosed for your use. See the enclosed cross-sectional view of a typical riprap wedge for an eroding marsh fringe.

5. To protect the beach area of your shoreline you should consider a nearshore breakwater system that includes beach nourishment. The breakwaters provide protection for the beach by reducing the wave energy reaching the shoreline. Additionally, breakwaters will interrupt the along shore transport of sand causing it to be deposited in the lee of the

structures. This process helps maintain the beach over time. The height, length and placement of the structures can vary depending on the desired results. In general, the structures are placed parallel to the shoreline. Angular quarry stone is the most commonly used material for breakwater construction. The breakwaters should be constructed with a trapezoidal cross section. The side slopes should be 2:1 (horizontal:vertical) or flatter. A minimum of two layers of armor stone should be used. Each armor stone should weigh a minimum of 1,500 pounds. A layer of filter cloth should be used under the breakwater. See the enclosed cross-sectional view of a typical riprap breakwater.

The above recommendations are made in my capacity as an advisory agent in shoreline erosion control matters. The suggestions should not be considered as binding you to any particular course of action, as they are intended to indicate what we think would be the best solution in terms of cost and effectiveness. Our examination of the site or this report does not constitute permission by the Commonwealth, or its agencies, to proceed with implementation of control measures. Permits from State and Federal agencies are generally required for shoreline modification.

You should also be aware that success in shoreline erosion control cannot be guaranteed, as there are many variables involved. In this regard, we suggest care in selecting a contractor. Our comments concerning construction are intended as guidelines developed from our experience in viewing structures that have been successful or have failed.

If you decide to construct a control measure, an assessment of the impacts of the project on the environment will be given by the regulatory agencies. Our advice is given with the idea of reducing environmental impacts associated with our recommendations. Although this has been considered in our recommendations, the permit reviewing agencies may desire additional information or measures.

Services available through this office include: review of the permit application; review of design and construction plans; and inspection of structures under construction when plans have been reviewed by this office. We recommend that a copy of this report be attached to the permit application.

If we may be of further assistance or if you have any questions, please let me know.

Sincerely,

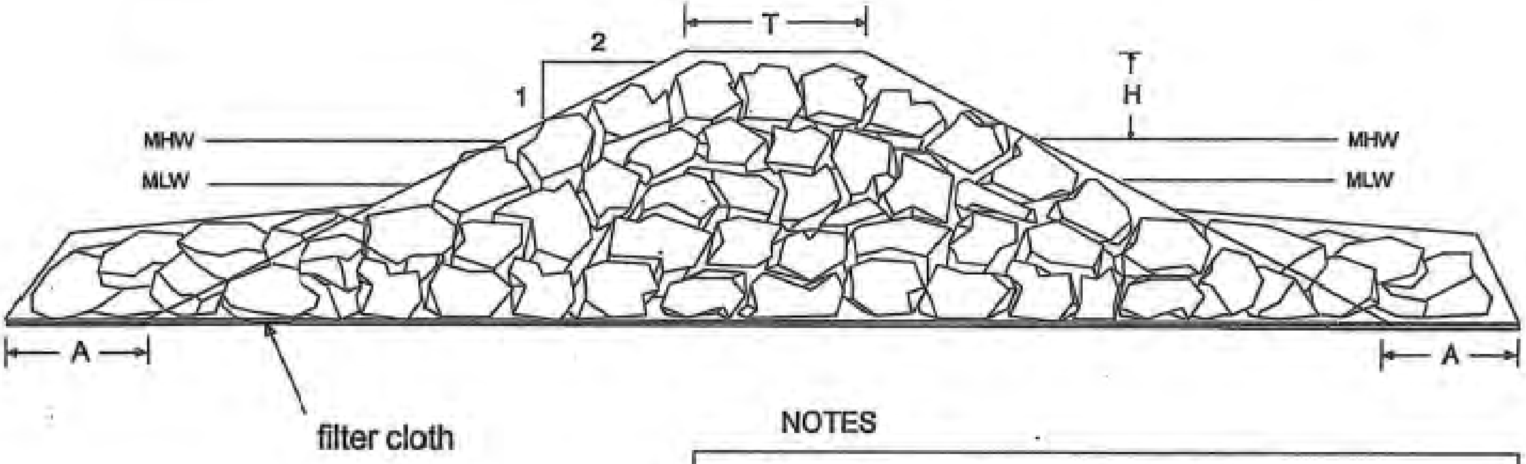
Michael L. Vanlandingham

Michael L. Vanlandingham
Shoreline Engineer

Enclosures (9)

Dept. of Conservation and Recreation
P. O. Box 1425
Tappahannock, VA 22560

REPRESENTATIVE CROSS SECTION
RIPRAP BREAKWATER

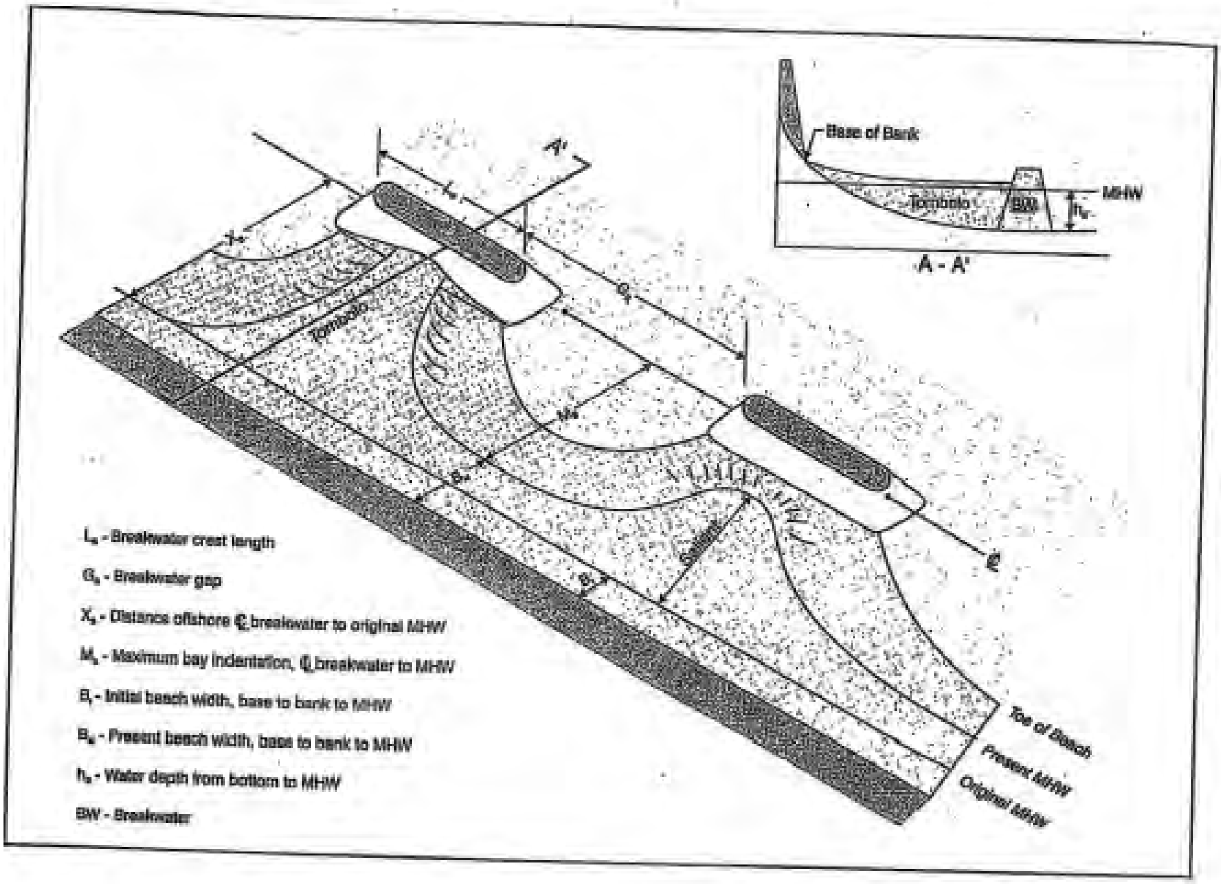


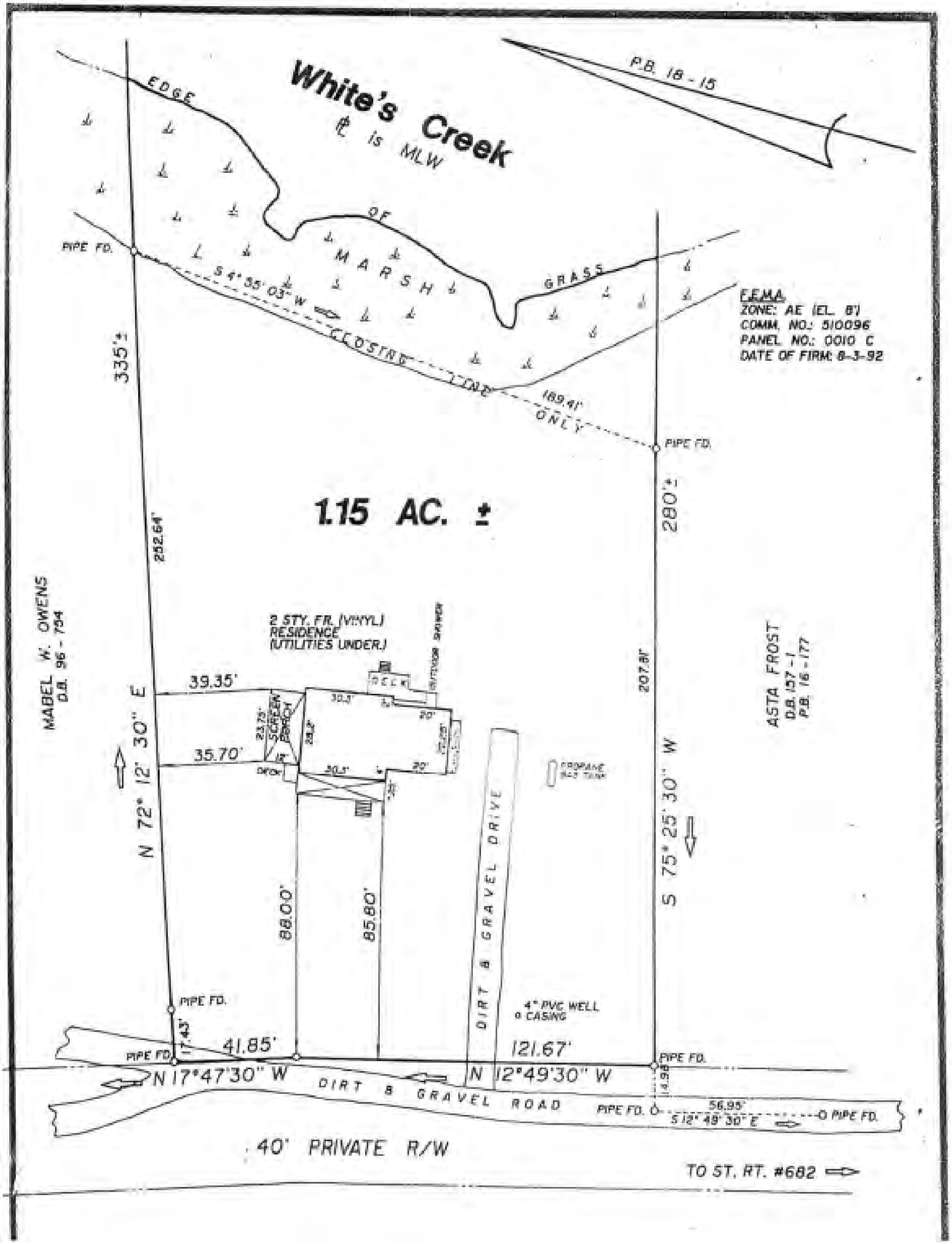
NOTES

T = Minimum top width based on rock size

H = Minimum height above MHW

A = Minimum apron width


A'
L_s
X_s
G_s
Tombolo
M_s
B_s
B_i
Salient
℄
Toe of Beach
Present MHW
Original MHW
Base of Bank
Tombolo
BW
MHW
h_s
A - A'
L_s - Breakwater crest length
G_s - Breakwater gap
X_s - Distance offshore ℄ breakwater to original MHW
M_s - Maximum bay indentation, ℄ breakwater to MHW
B_i - Initial beach width, base to bank to MHW
B_s - Present beach width, base to bank to MHW
h_s - Water depth from bottom to MHW
BW - Breakwater


White's Creek
℄ is MLW
P.B. 18 - 15
EDGE OF MARSH GRASS
PIPE FD.
S 4° 55' 03" W
CLOSING LINE ONLY
189.41'
F.E.M.A.
ZONE: AE (EL. 8')
COMM. NO.: 510096
PANEL NO.: 0010 C
DATE OF FIRM: 6-3-92
335'±
252.64'
1.15 AC. ±
280'±
207.81'
MABEL W. OWENS
D.B. 96 - 754
ASTA FROST
D.B. 157 - 1
P.B. 16 - 177
2 STY. FR. (VINYL)
RESIDENCE
(UTILITIES UNDER.)
OUTDOOR SHOWER
DECK
SCREEN PORCH
39.35'
35.70'
30.3'
20'
23.75'
25.2'
12'
DECK
PROPANE GAS TANK
N 72° 12' 30" E
S 75° 25' 30" W
88.00'
85.80'
DIRT & GRAVEL DRIVE
4" PVC WELL
CASING
PIPE FD.
17.43'
41.85'
121.67'
N 17°47'30" W
N 12°49'30" W
14.98'
DIRT & GRAVEL ROAD
56.95'
S 12° 49' 30" E
40' PRIVATE R/W
TO ST. RT. #682

January 27, 2020

▭ Parcels
— Road Centerlines
● Address Points
☐ County Boundary

1:2,257

Virginia Geographic Information Network (VGIN)

Abbasi Concept

Breakwater, Marsh sills & Sand Nourishment

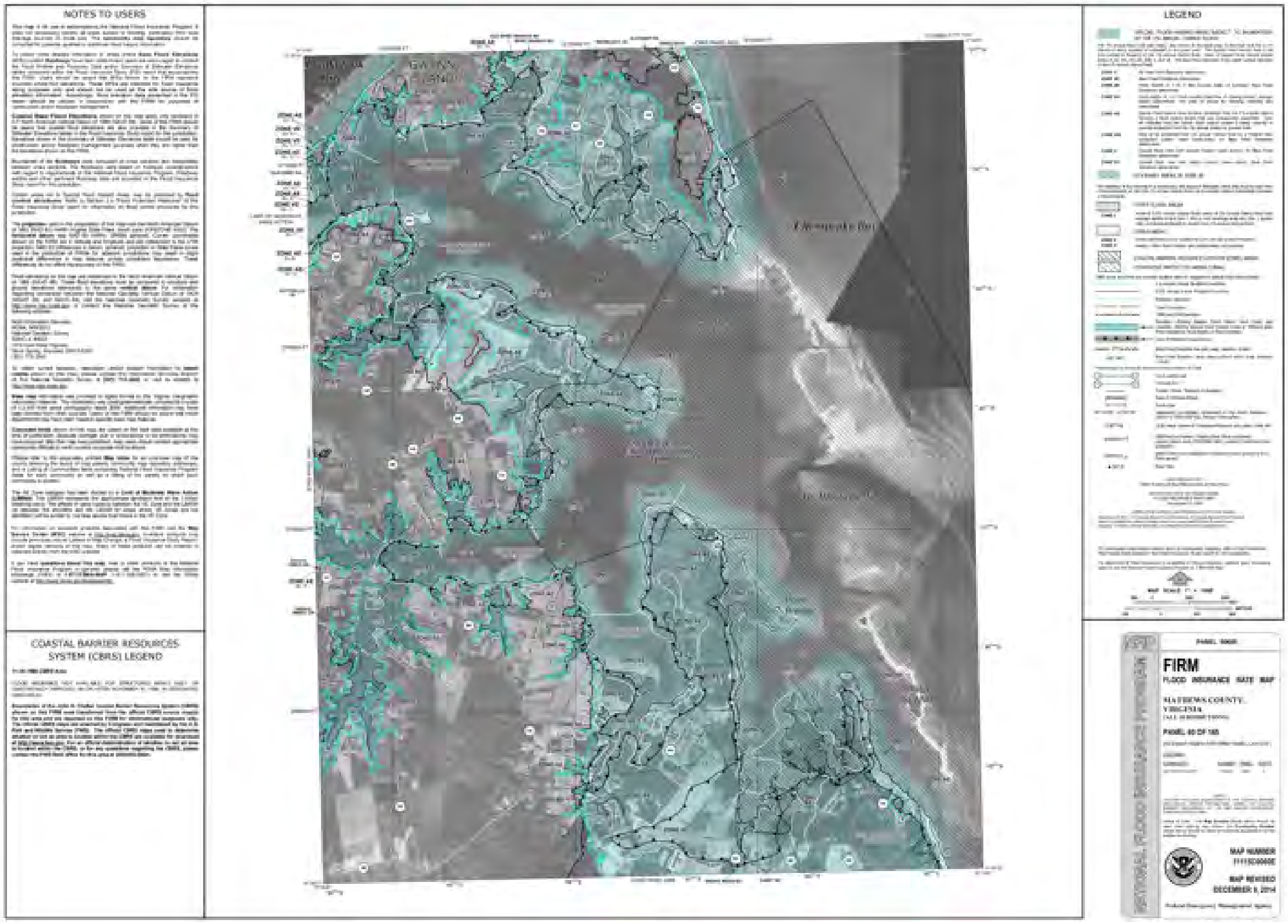
APPENDIX 3

Additional Property Photos

APPENDIX 4

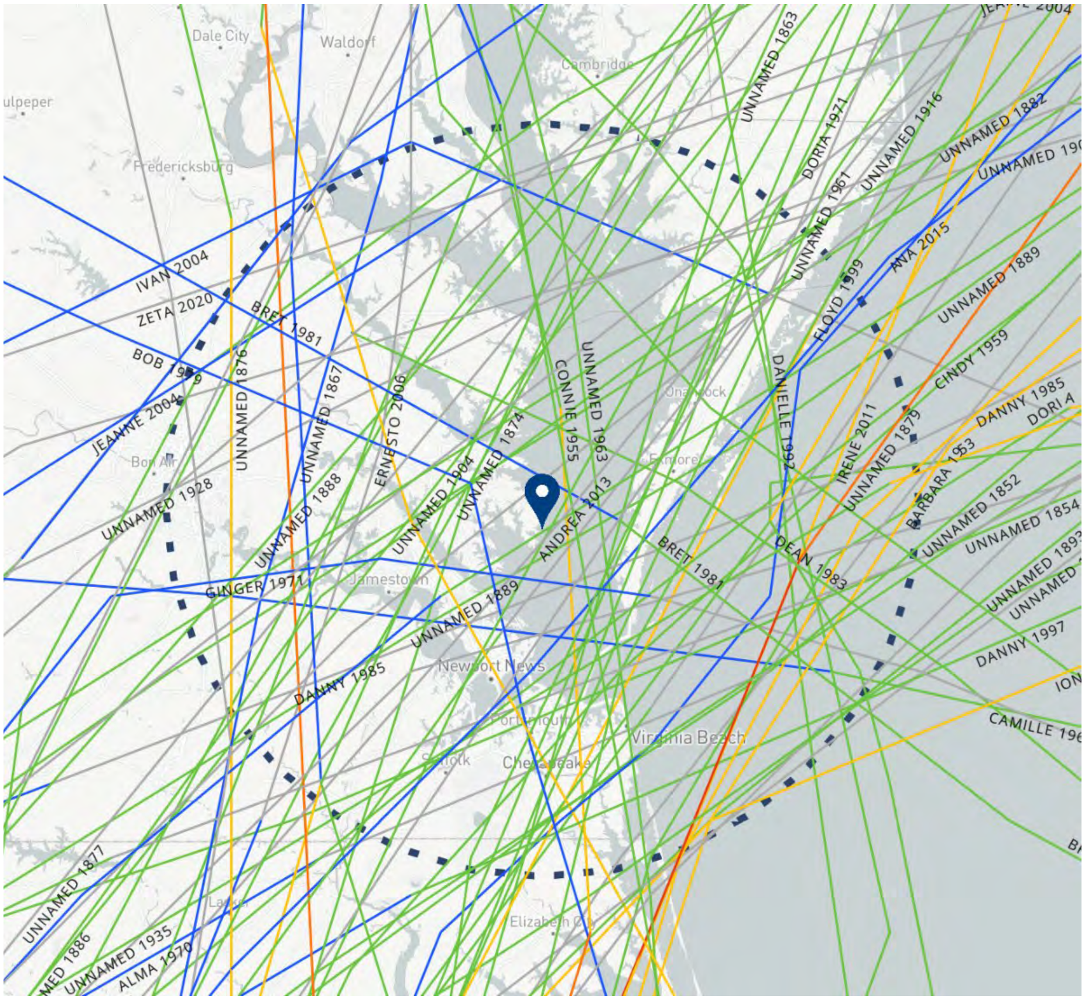
Project Location FIRMette

(FIRMette #: 51115C0060E)



APPENDIX 5

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.44896, -76.2611

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 6

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 7

Match Commitment Letter

10/4/2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at [804-852-4444] or by email at ali23060@yahoo.com.

Sincerely,

[Signature]
Ali Abbasi

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Queens Creek Road for Fletcher

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ________________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X___

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0055E

Total Cost of Project: _____________$17,399_____________________________________

Total Amount Requested: __________$12,180_________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. Significant erosion is now occurring along the bottom of the bank and undercutting the bank. With the recent Nor-easter, the bank is caving and close to collapse if nothing is done. The length of the shoreline is approximately 100 feet. Additionally, the septic system is 35 yards from the water's edge. The well about six yards away from the bank. The applicant would like to install a nature-based design solution of a living shoreline to mitigate these immediate issues.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Queens Creek Road in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan*

(2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.
  - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
  - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

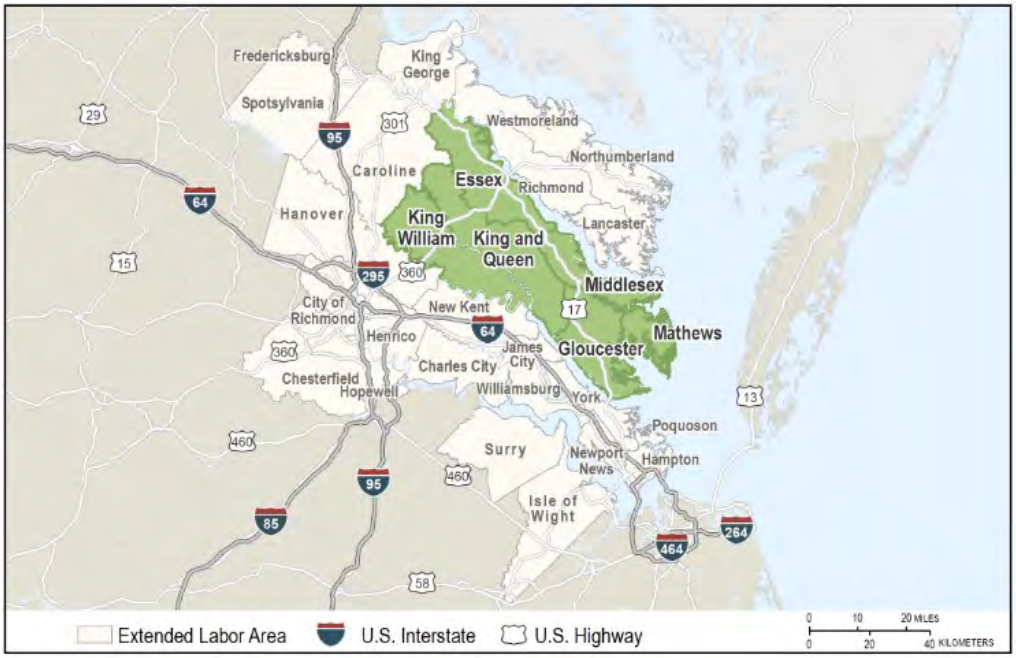
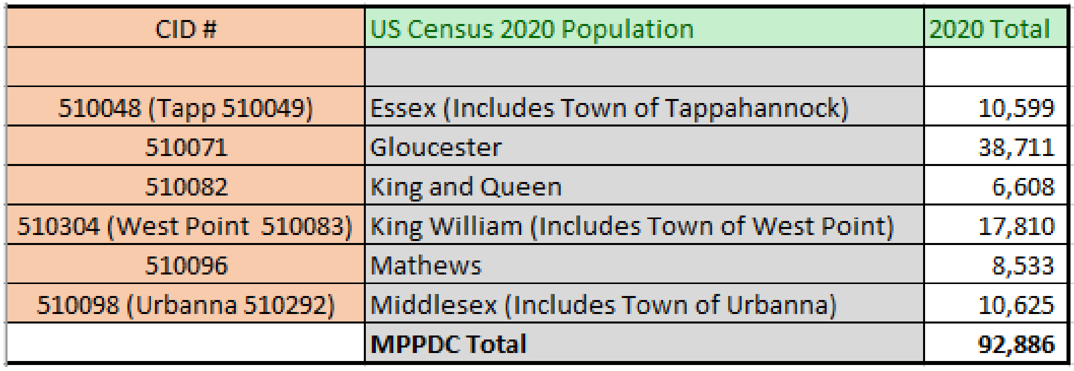


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature-based shoreline solution on one private property on Queens Creek Road in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

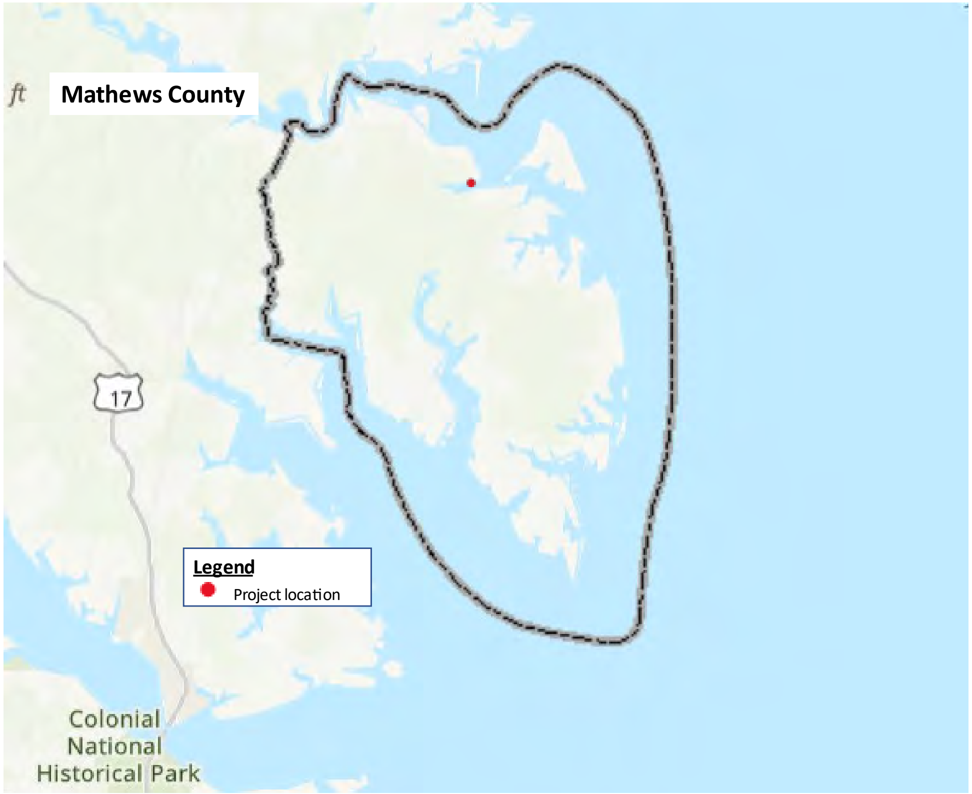
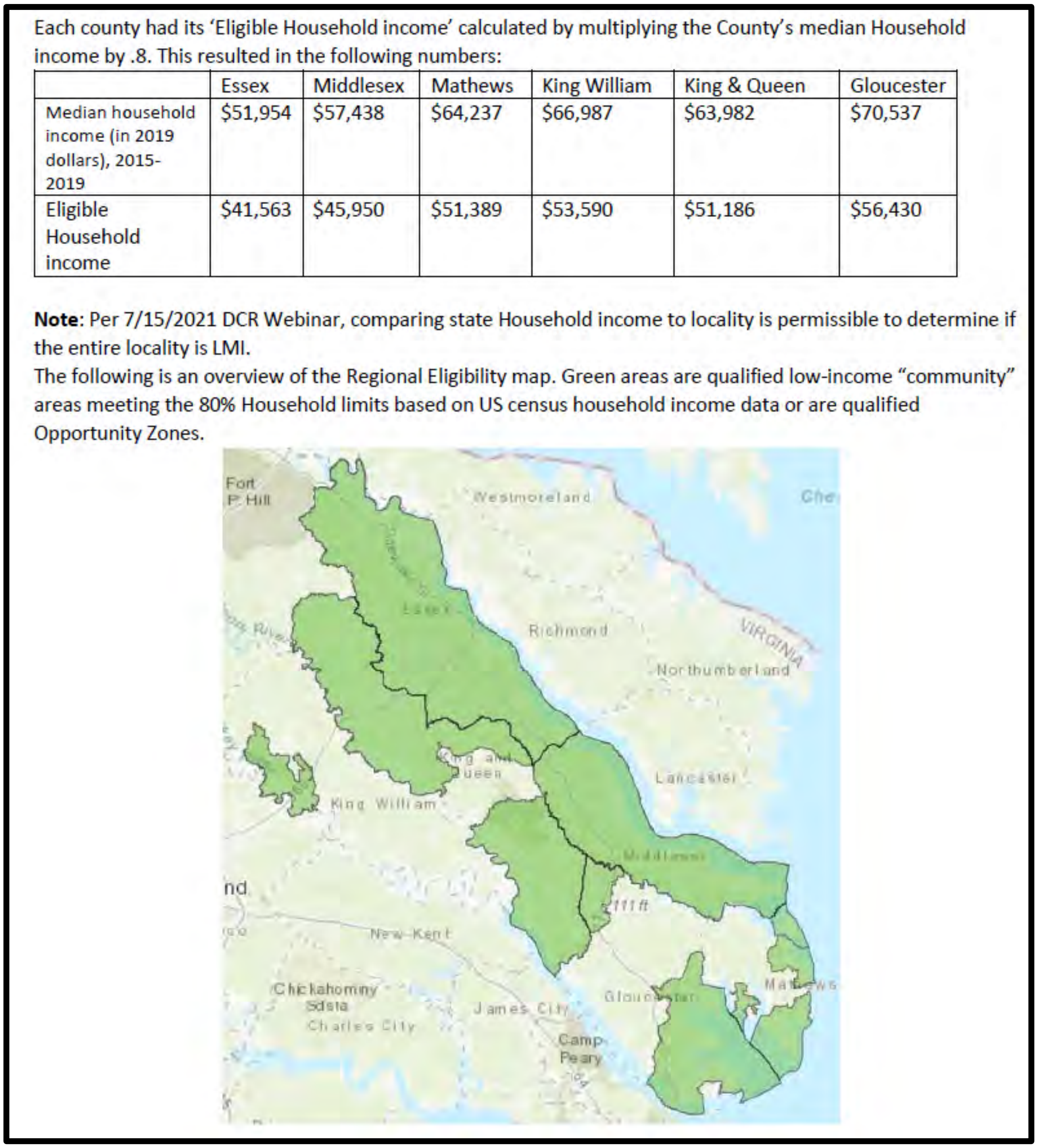


Figure 4. Parcel Map of Project Location

Mathews County is located on Virginia’s Middle Peninsula and has an economy based upon agriculture, forestry, and the water. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County’s population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

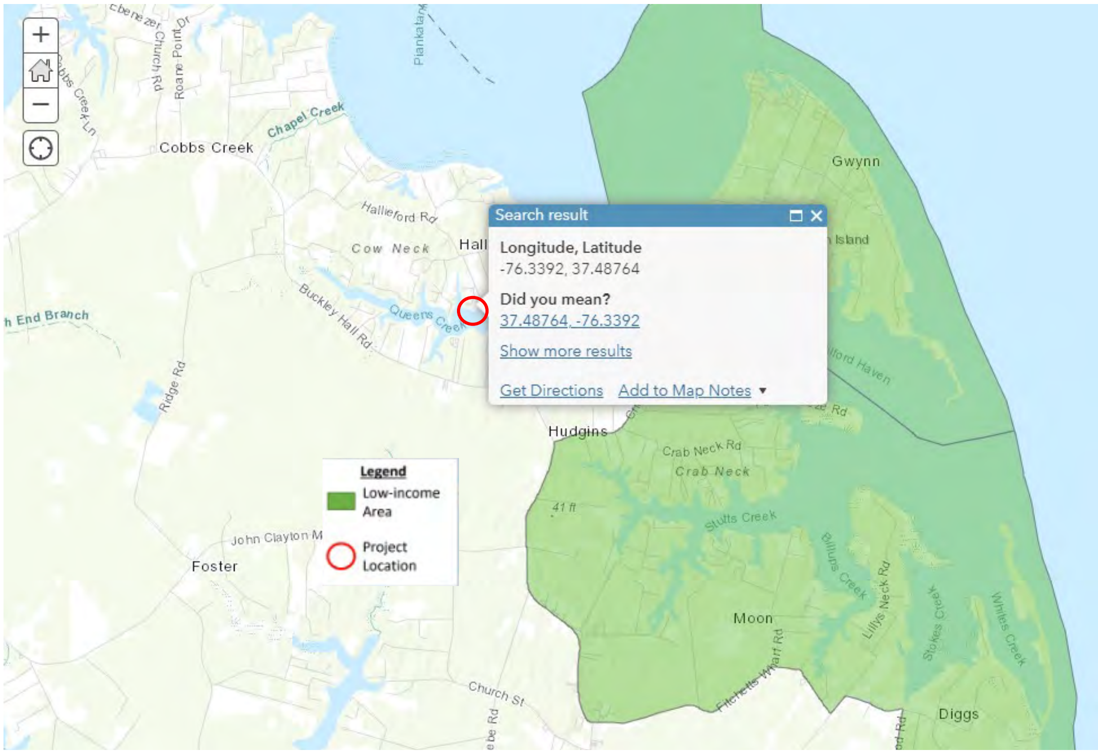
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is not within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area

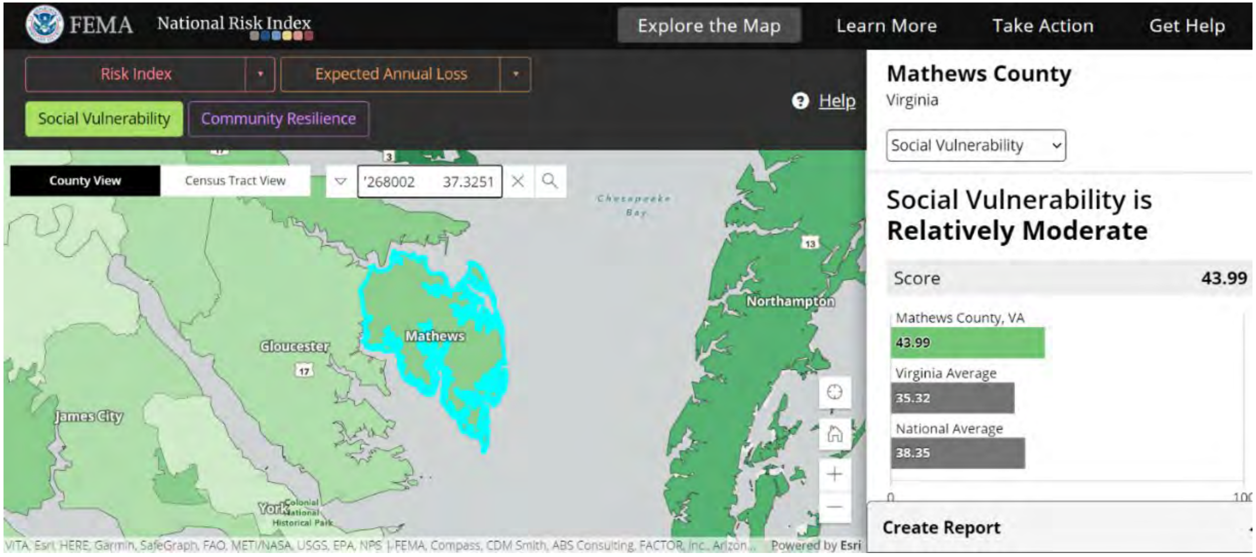


According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.1
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9513, Mathews County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Moderate

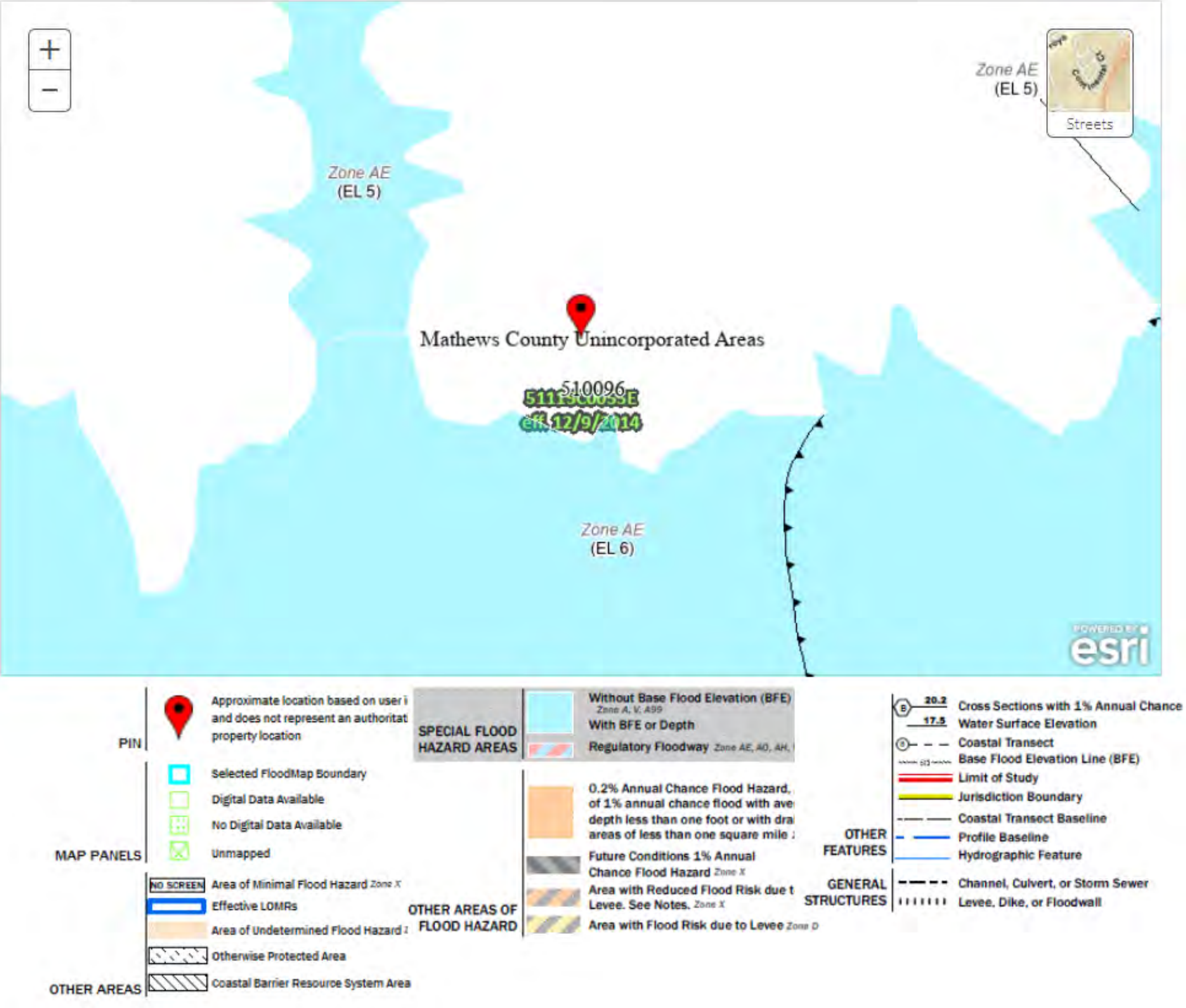
Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

When the property was purchased in 2017, the owners found several trees that had fallen into the water from the bank. The bank had many other trees on it, and they were pulling the bank down. They removed the other trees except for two that were standing upright and felt the root structure was helping the bank. There was a very small area where the bank was being undercut and almost no seagrass growing due to the shade from the many trees. The property owners now have more seagrass growing but the undercut is getting noticeably worse by the year. It is now running along the bottom of the bank and expanding each month. Now, the bank is caving in and every few months it becomes drastically more noticeable. It will eventually collapse if nothing is done. The length of the shoreline is approximately 100 feet. Additionally, the septic system is located just 35 yards from the bank. The well is very close and just about six yards away from the bank. The property owner would like to install a nature-based solution of a living shoreline including seagrass where feasible, as it is the best for the environment and for the bank. Seagrass is now growing but it is not helping mitigate erosion to the extent which is desperately needed. See accompanying pictures below.


Please see **Appendix 2** for additional property photos.

This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 12/9/2014).

Figure 9: Map of FEMA Flood Zones

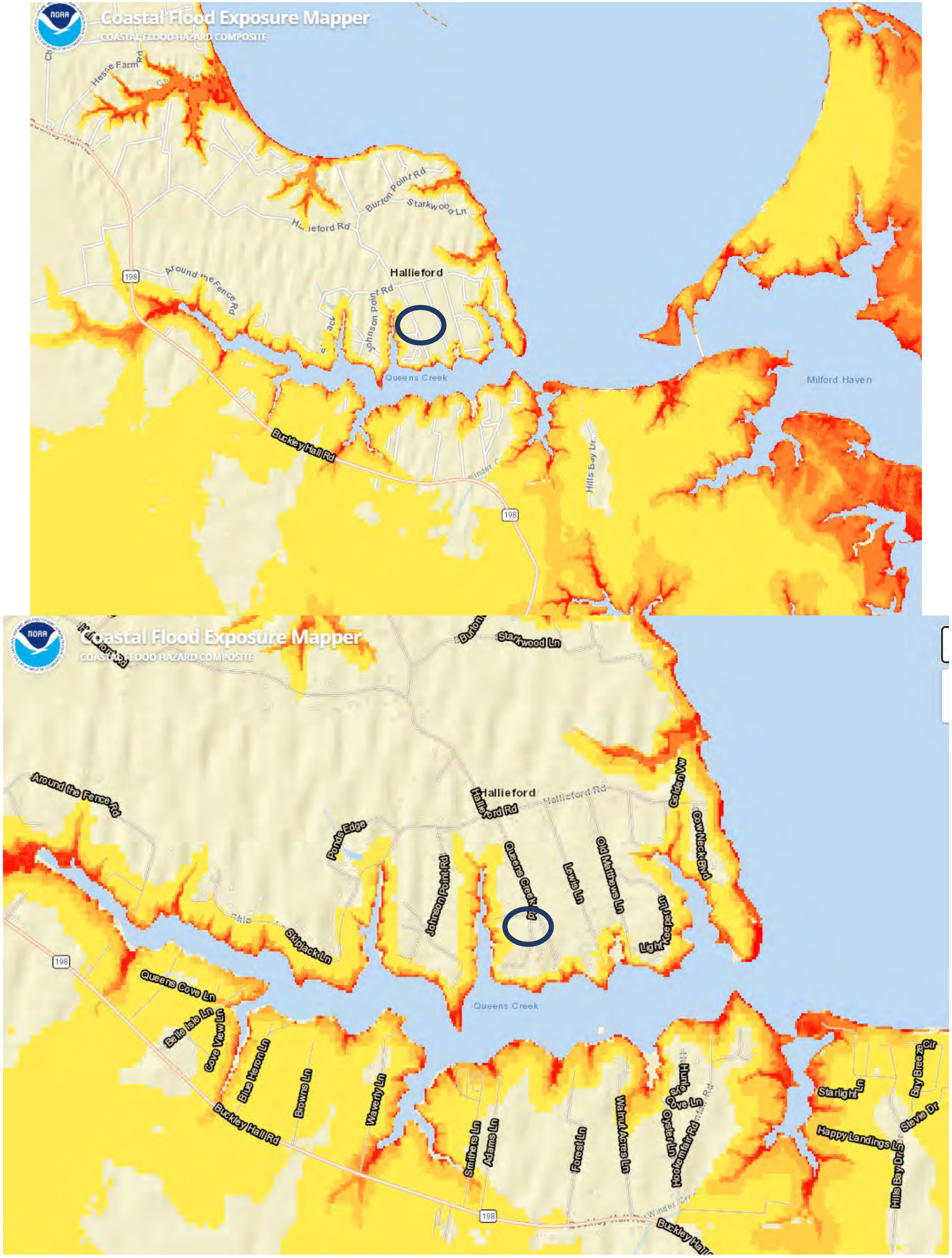


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 5,641.8 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 80 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*

- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

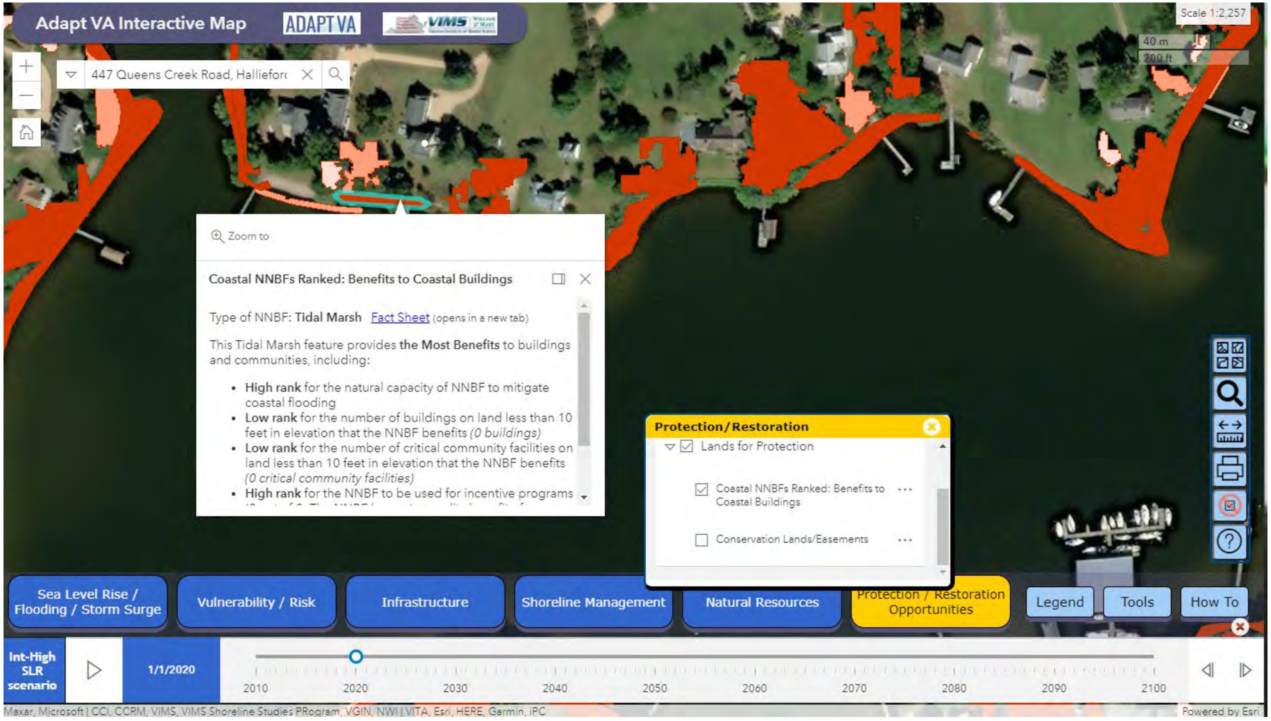
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12.** All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Low rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(0 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs

Protection/Restoration

☑ Lands for Protection
- ☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings
- ☐ Conservation Lands/Easements

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural*

shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, <u>Removal Rates of Shoreline Management Project</u>, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

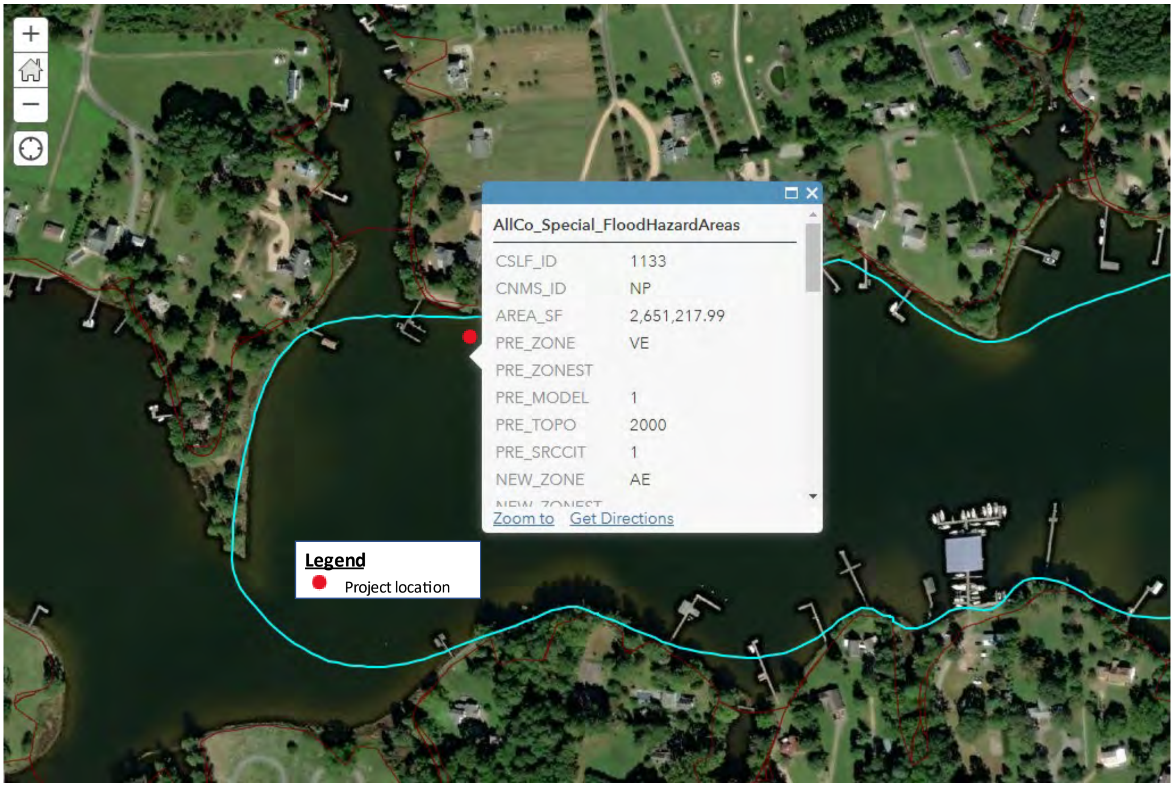
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	1133
CNMS_ID	NP
AREA_SF	2,651,217.99
PRE_ZONE	VE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	1
NEW_ZONE	AE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fighttheffloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?
   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		73

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

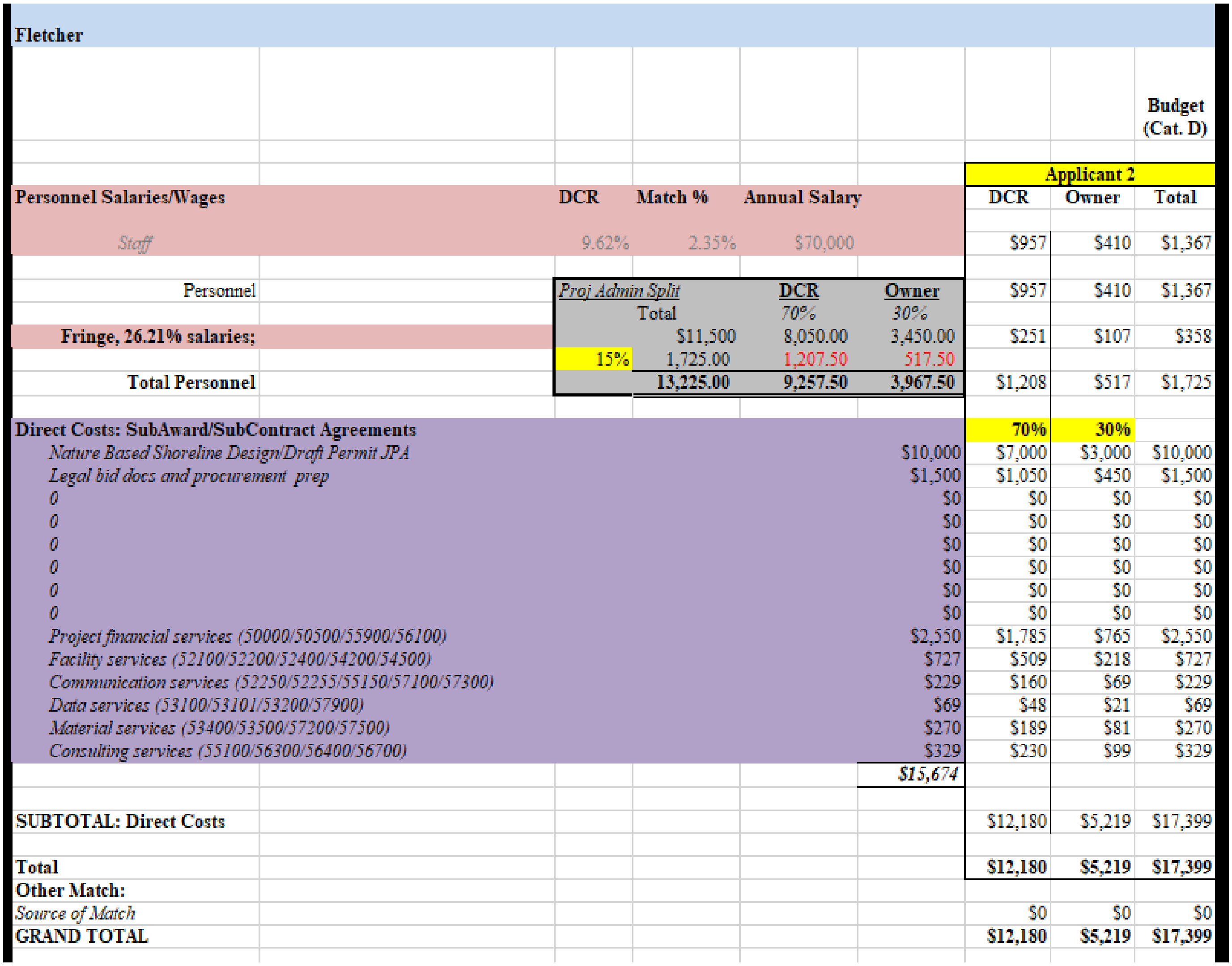
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

The proposed project budget is:

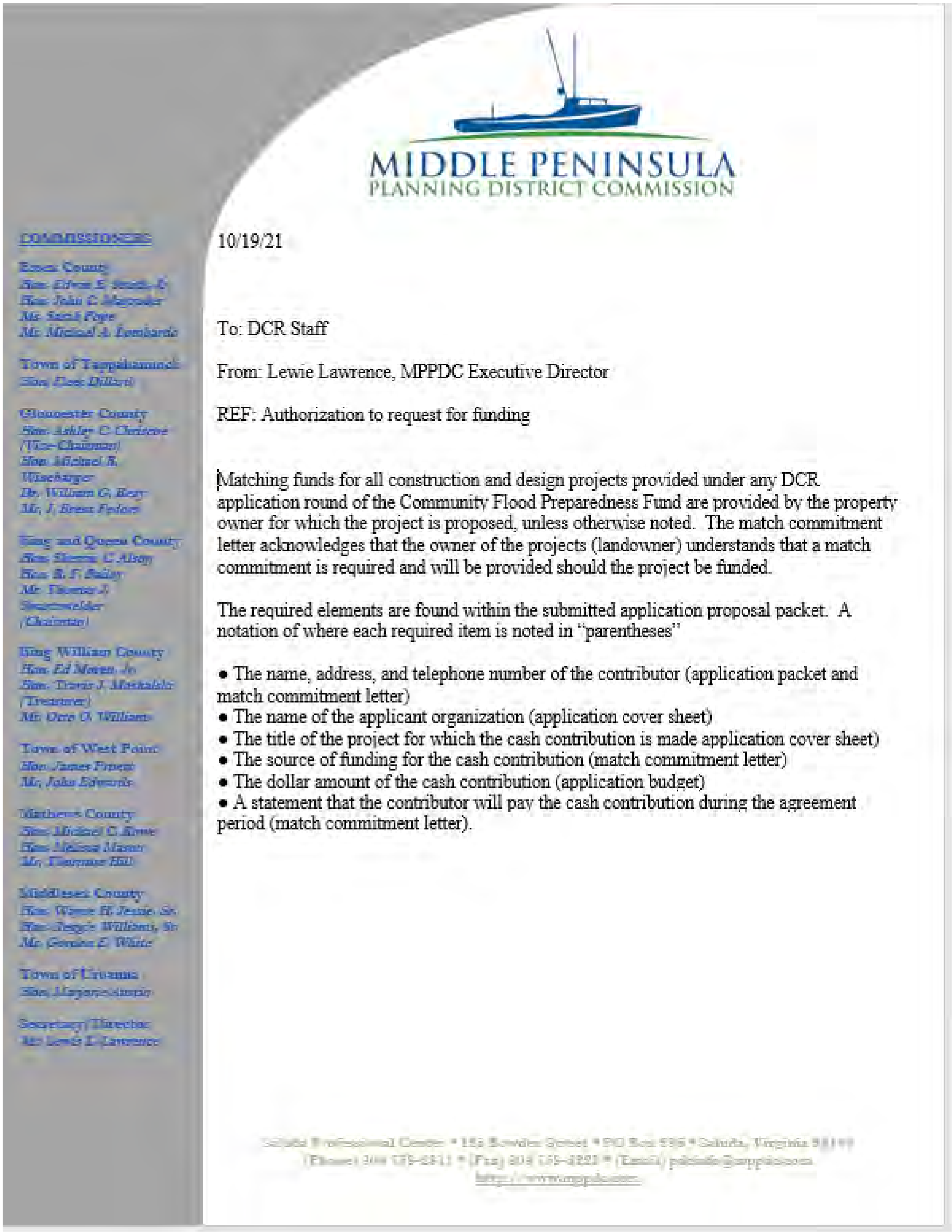
- ***Estimated total project cost:*** *$17,399*
- ***Amount of funds requested from the Fund: $12,180***



Fletcher							
							Budget (Cat. D)
					Applicant 2		
Personnel Salaries/Wages	**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	9.62%	2.35%	$70,000		$957	$410	$1,367
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		$11,500	8,050.00	3,450.00	$251	$107	$358
	15%	1,725.00	1,207.50	517.50			
Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)				$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)				$229	$160	$69	$229
Data services (53100/53101/53200/57900)				$69	$48	$21	$69
Material services (53400/53500/57200/57500)				$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)				$329	$230	$99	$329
				$15,674			
SUBTOTAL: Direct Costs					$12,180	$5,219	$17,399
Total					**$12,180**	**$5,219**	**$17,399**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,180**	**$5,219**	**$17,399**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

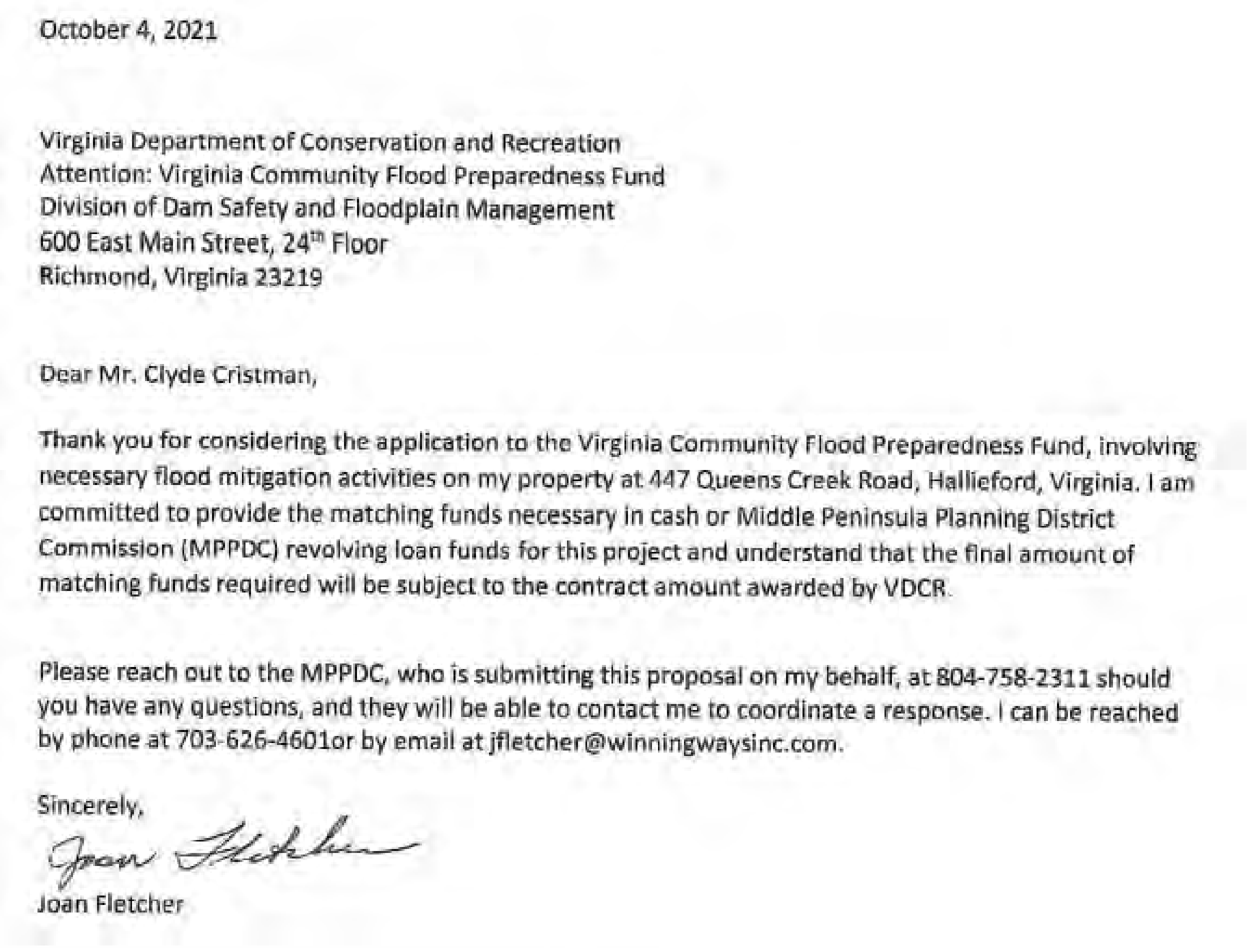
REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:



October 4, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 447 Queens Creek Road, Hallieford, Virginia. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 703-626-4601or by email at jfletcher@winningwaysinc.com.

Sincerely,

Joan Fletcher

Joan Fletcher

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter

DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B668C2DAE00C

County Administration

Mathews County
Virginia

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

DocuSigned by:
Mindy Conner
Melinda Conner
County Administrator

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE
MATHEWS

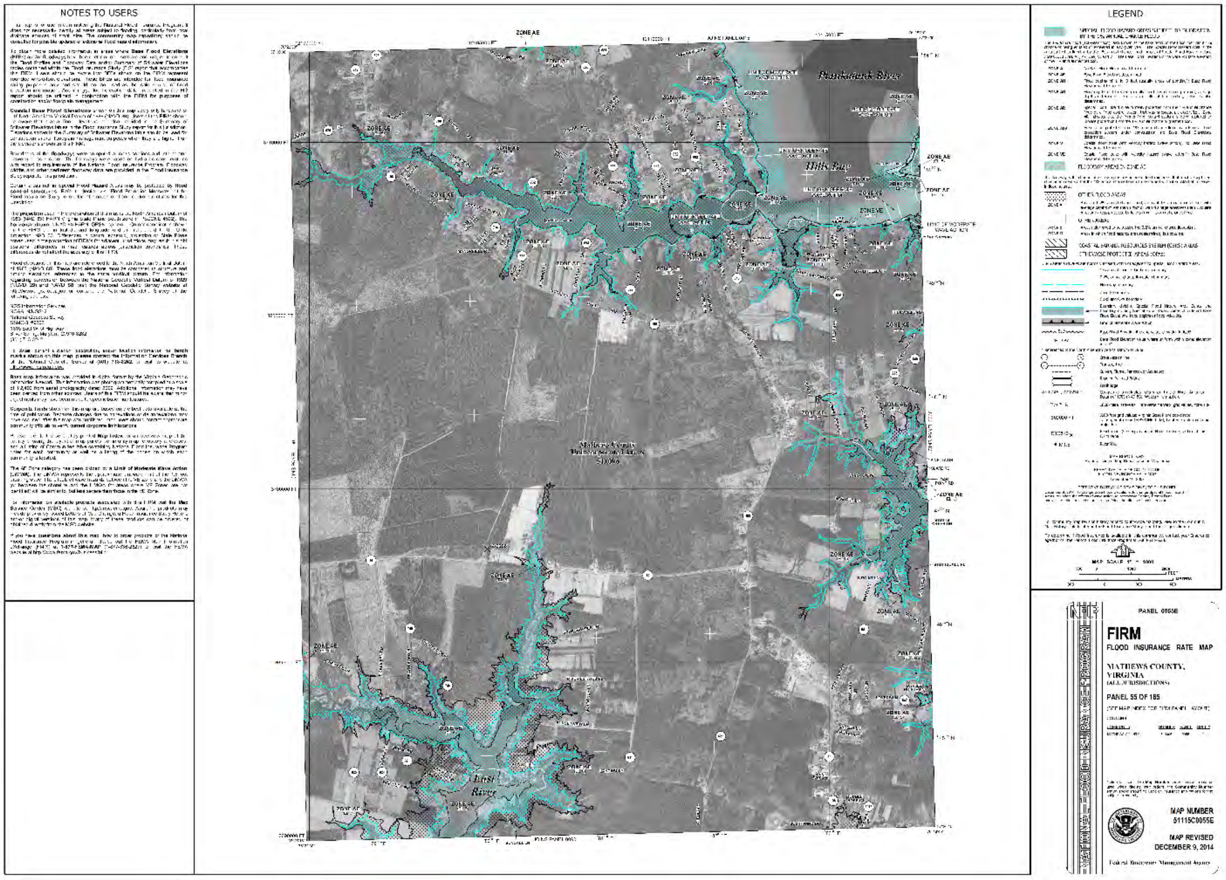
APPENDIX 2

Additional Property Photos

APPENDIX 3

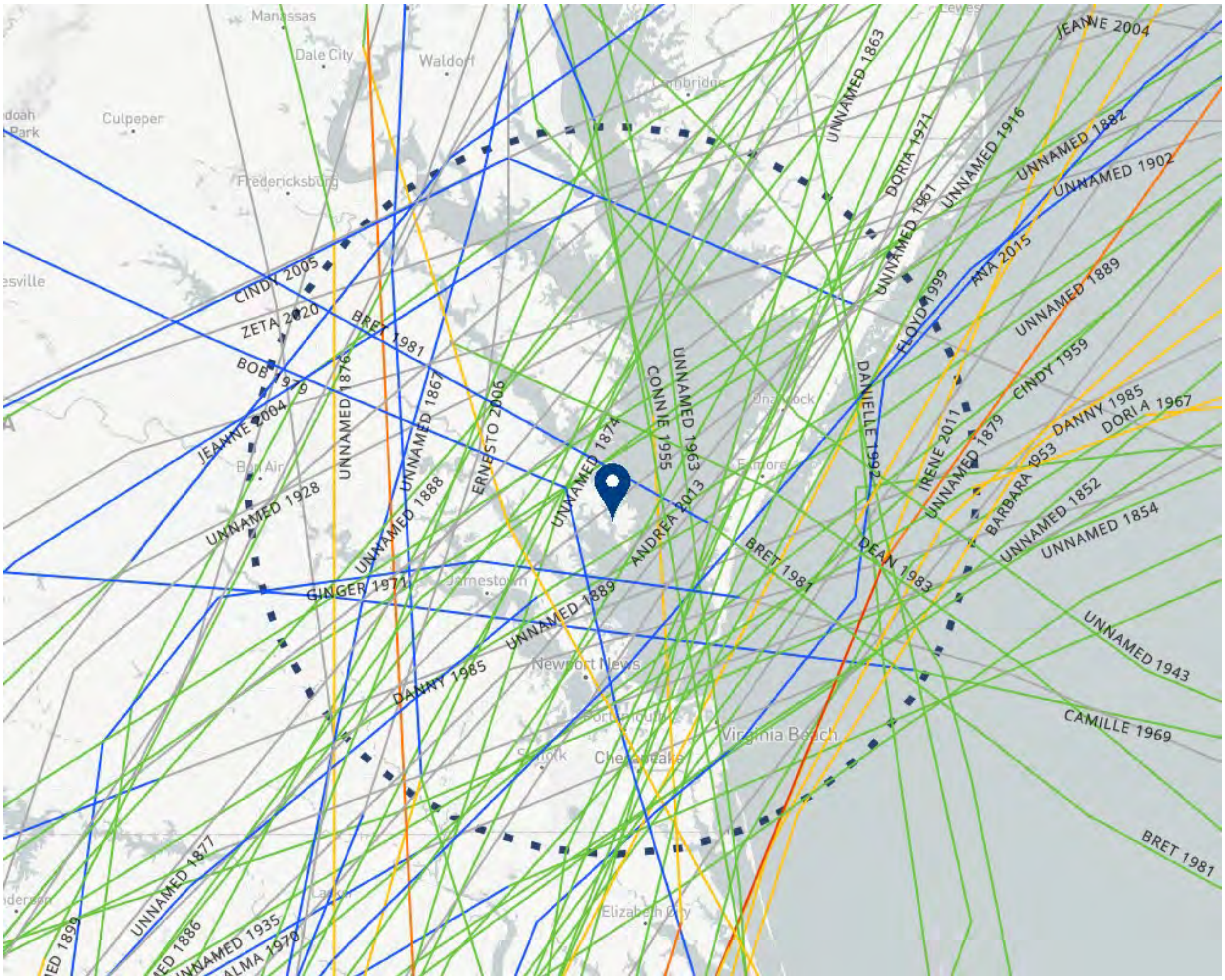
Project Location FIRMette

(FIRMette #: 51115C0055E)



APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.48764 -76.3392

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)
The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)
Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)
In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

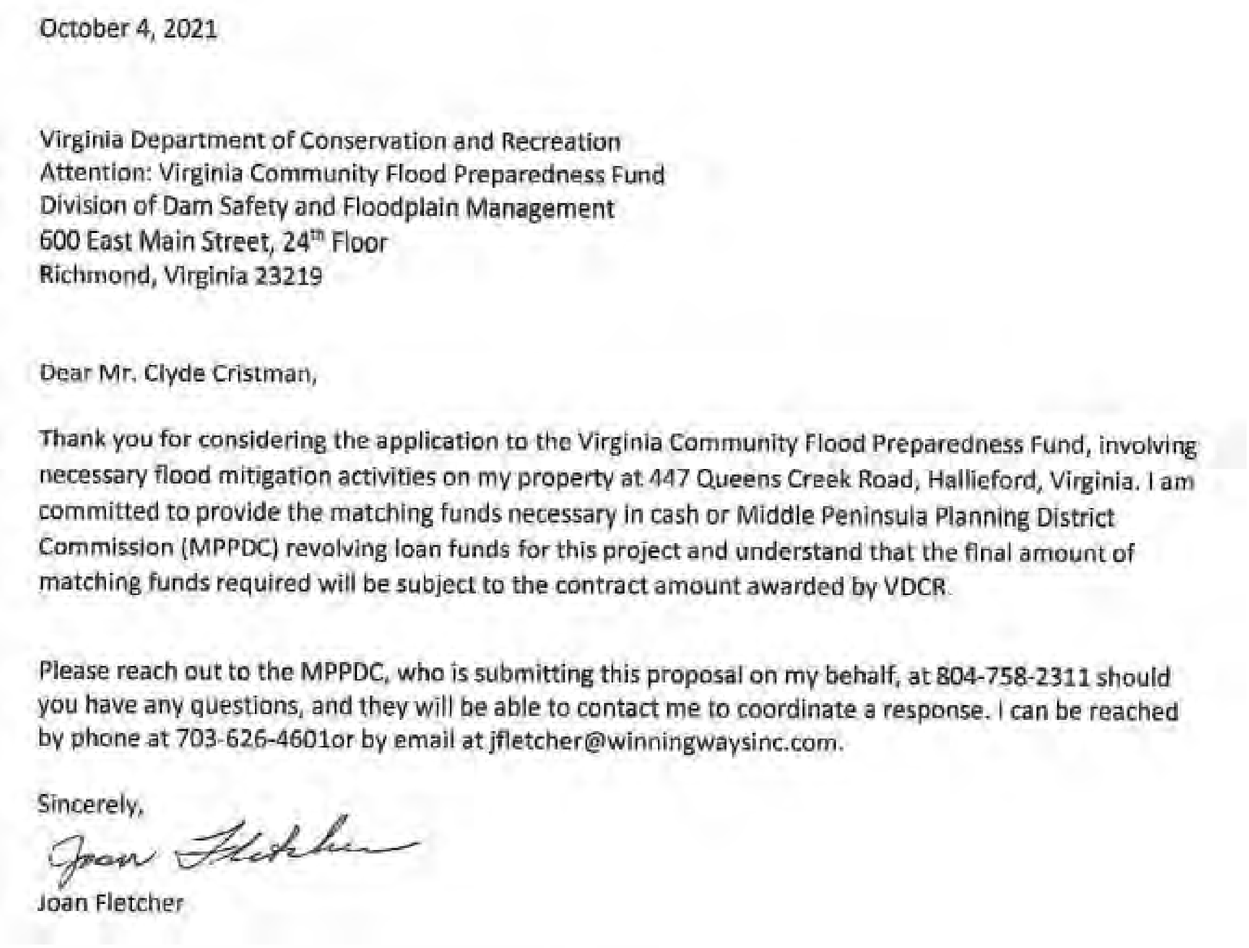
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



October 4, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

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Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 703-626-4601or by email at jfletcher@winningwaysinc.com.

Sincerely,

Joan Fletcher

Joan Fletcher

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Diggs Wharf Road for Morley

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ____
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X____ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0120E

Total Cost of Project: _____________$17,399____

Total Amount Requested: _________$12,180__________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. The applicant has lost ~17,000 square feet of shoreline according to VIMS Shoreline Studies Program historical shoreline data. The site is a significantly high erosion shoreline warranting immediate mitigation.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem-based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Diggs Wharf Road in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, which notates the need to respond to emerging flood*

    challenges.

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

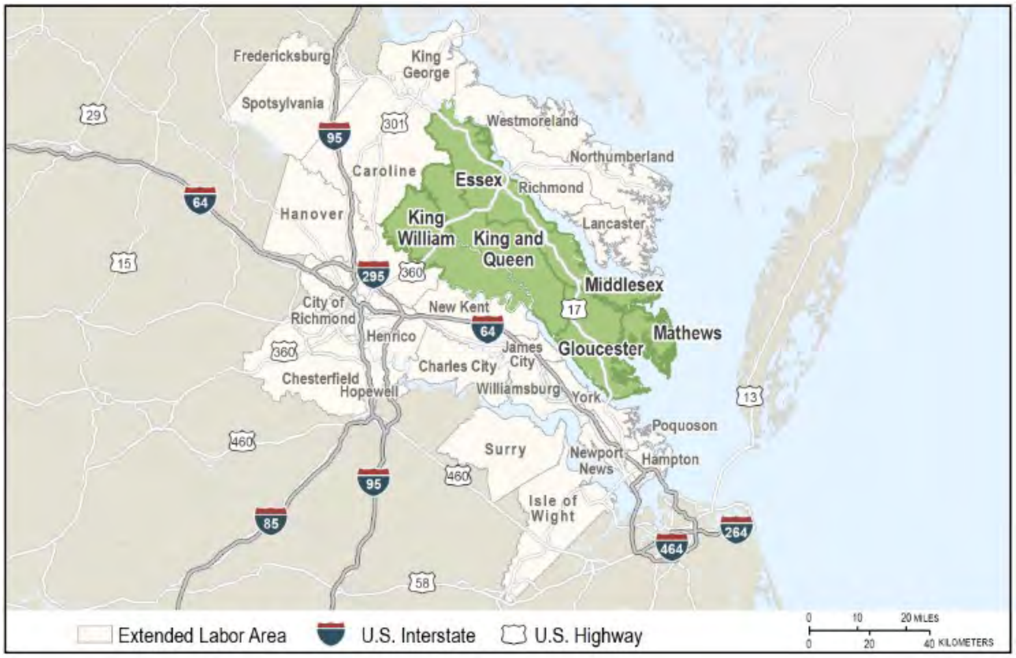


Figure 2. Middle Peninsula Population

CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Diggs Wharf Road in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

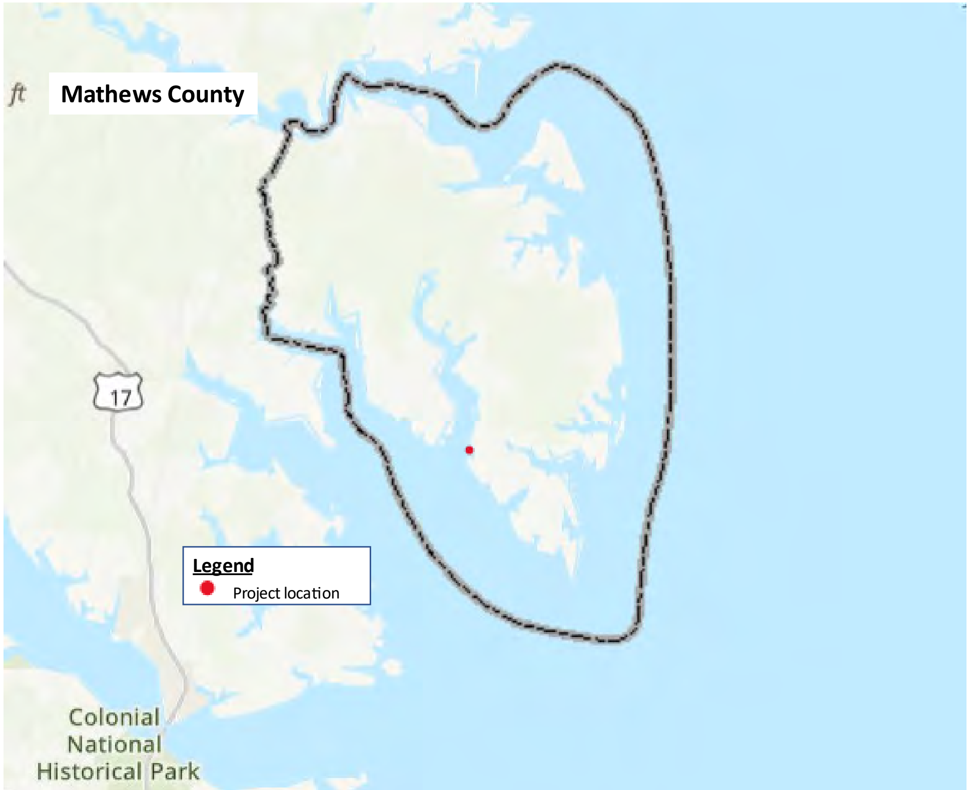
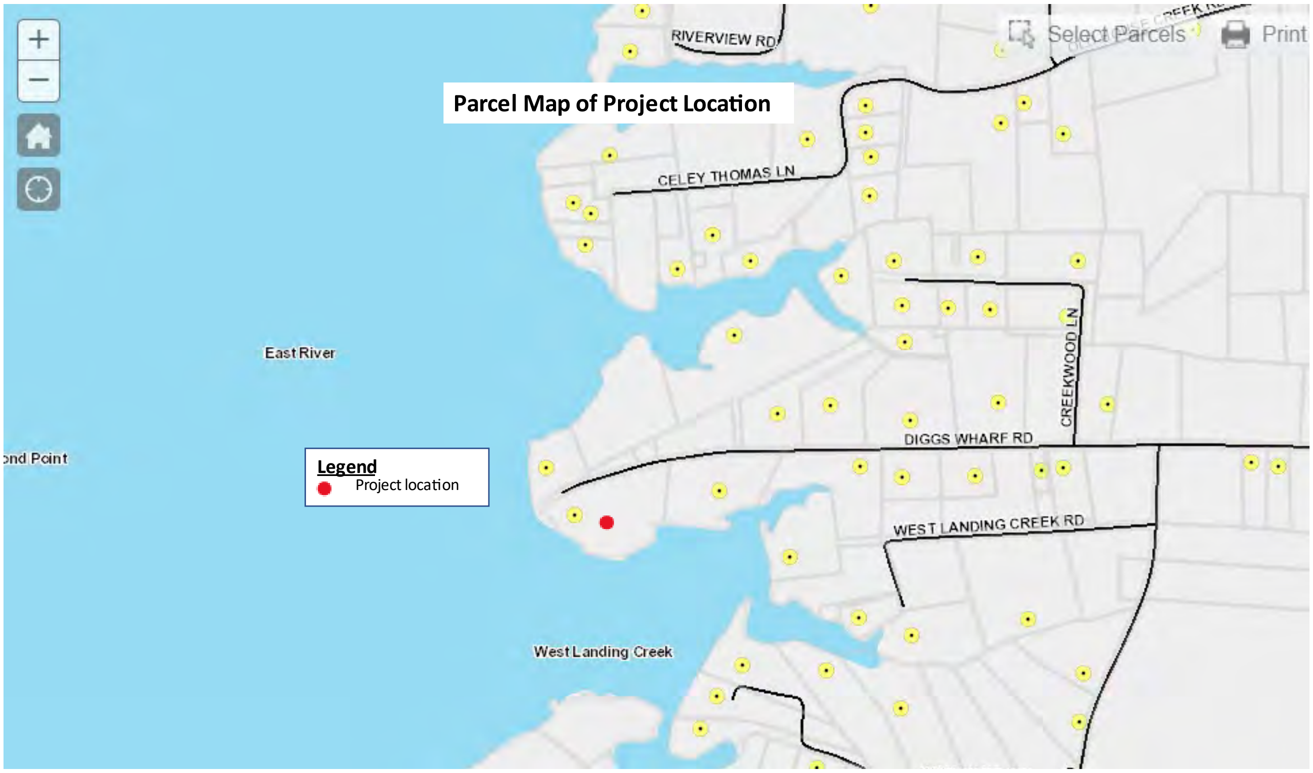


Figure 4. Parcel Map of Project Location



Mathews County is located on Virginia's Middle Peninsula and has an economy based upon agriculture, forestry, and the water. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

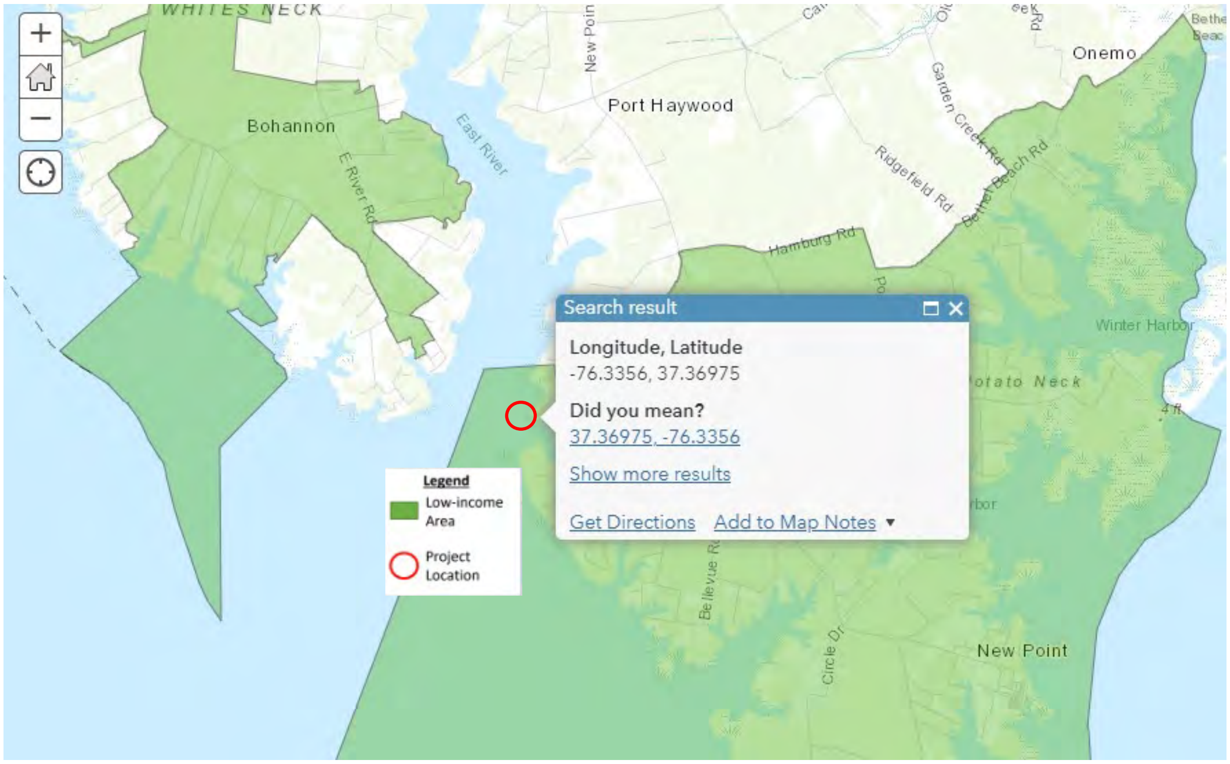
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is not within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



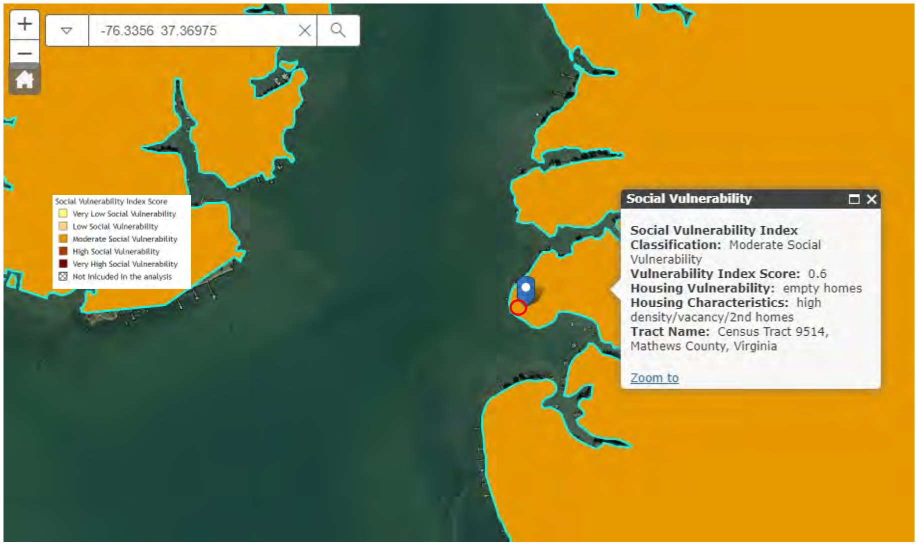
Search result

Longitude, Latitude
-76.3356, 37.36975

Did you mean?
37.36975, -76.3356

According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

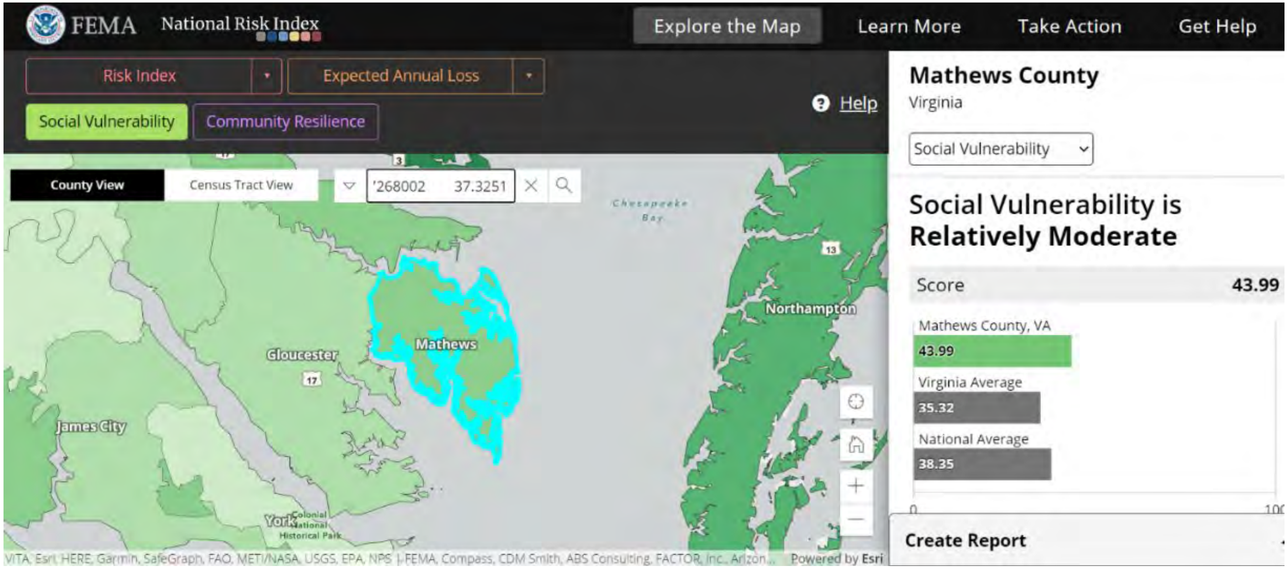
Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Moderate

Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

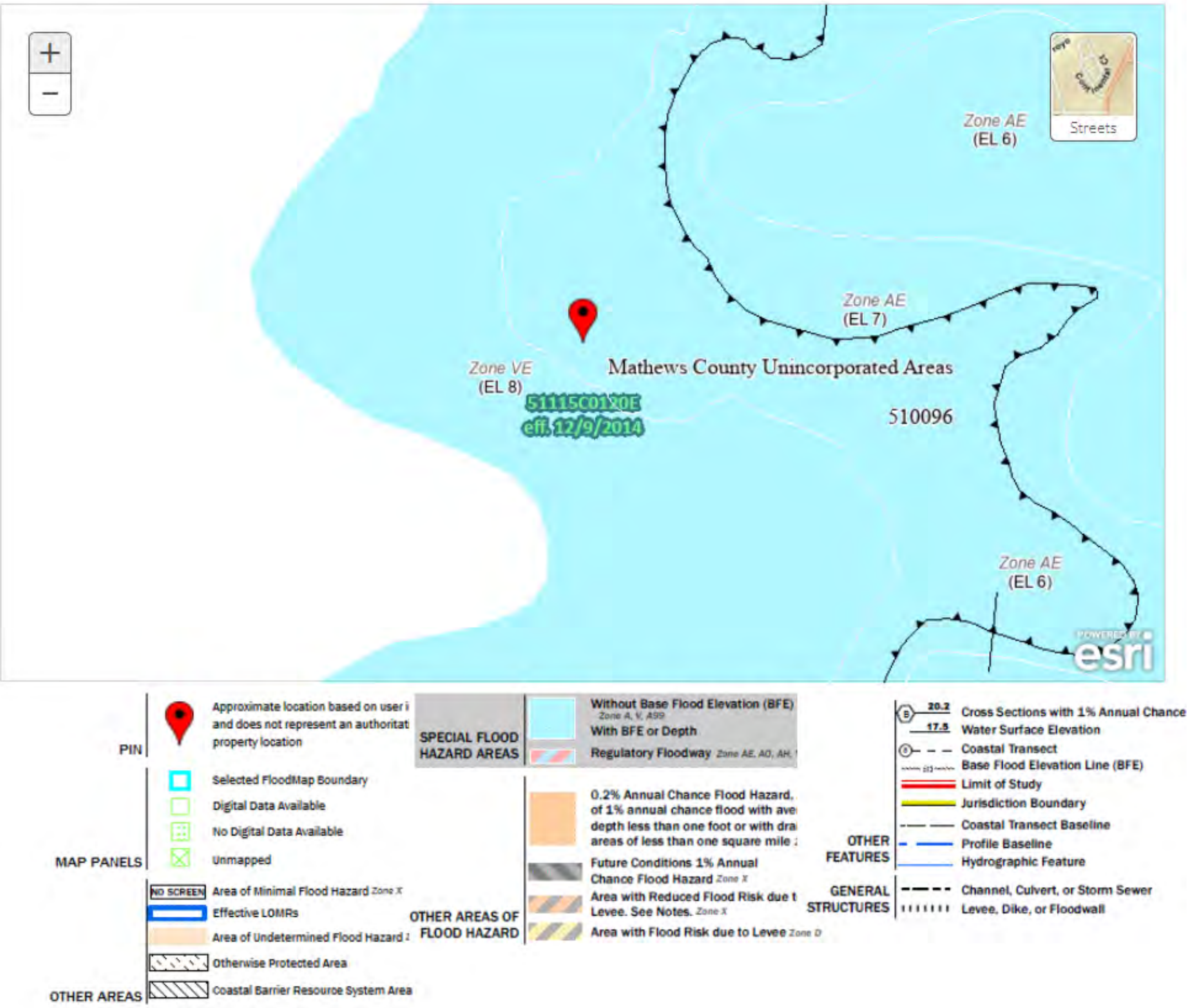
Create Report

The property was purchased in 1987 and has experienced significant erosion of the shoreline. The length of the shoreline is approximately 400 feet along the creek plus approximately 350 feet along the East River and Mobjack Bay, for a total of approximately 750 feet or ~17,000 sq ft of historic shoreline loss. The Oak Trees are dying from saltwater intrusion and at least one is severely leaning. There has been prior and/or current contact with contractor/engineer for solution design work. Two bids have been received from two different contractors in December 2020, one of which has expired and the other is still active. They do not include actual designs, just construction ideas. See accompanying pictures below. The house is elevated on concrete pilings thus the high angle of photos. They are not typical as they were taken at high tide during a flash flood watch, but they do show shoreline erosion.

Please see **Appendix 2** for additional property photos.

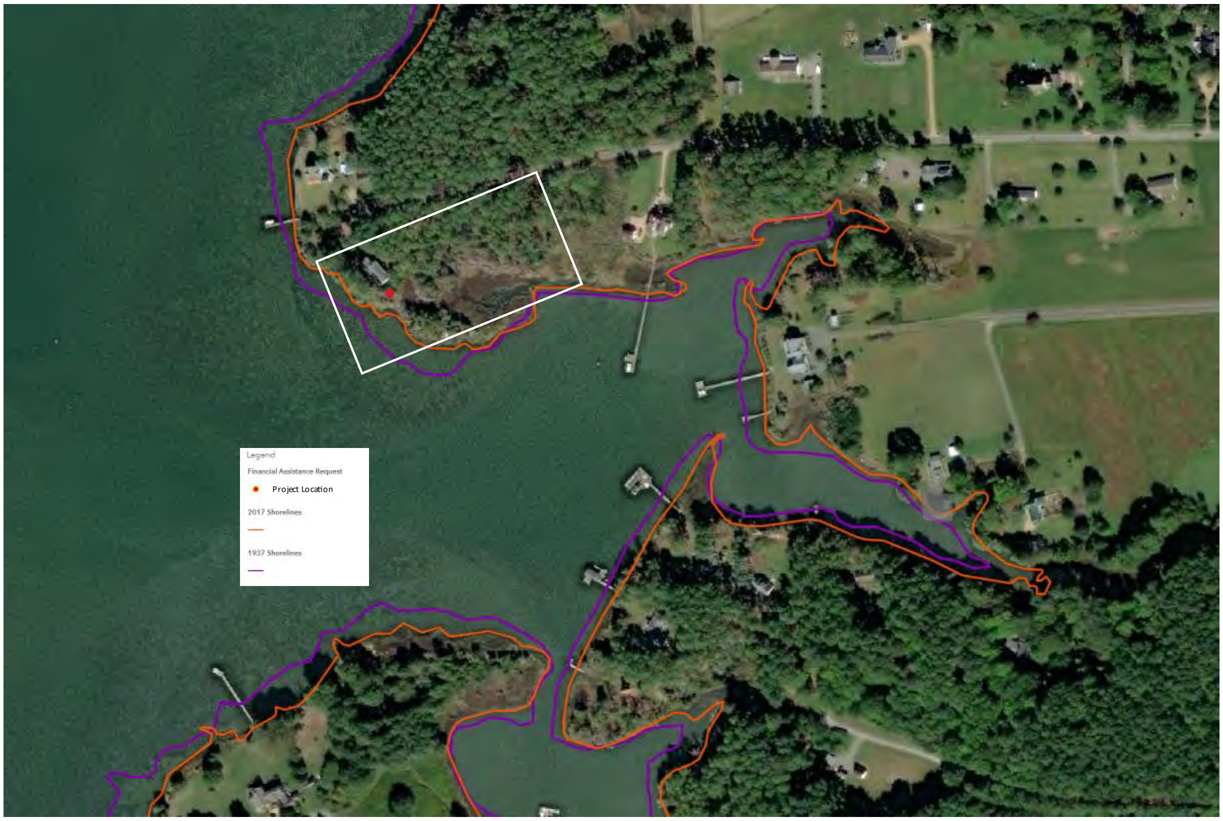
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 12/9/2014).

Figure 9: Map of FEMA Flood Zones



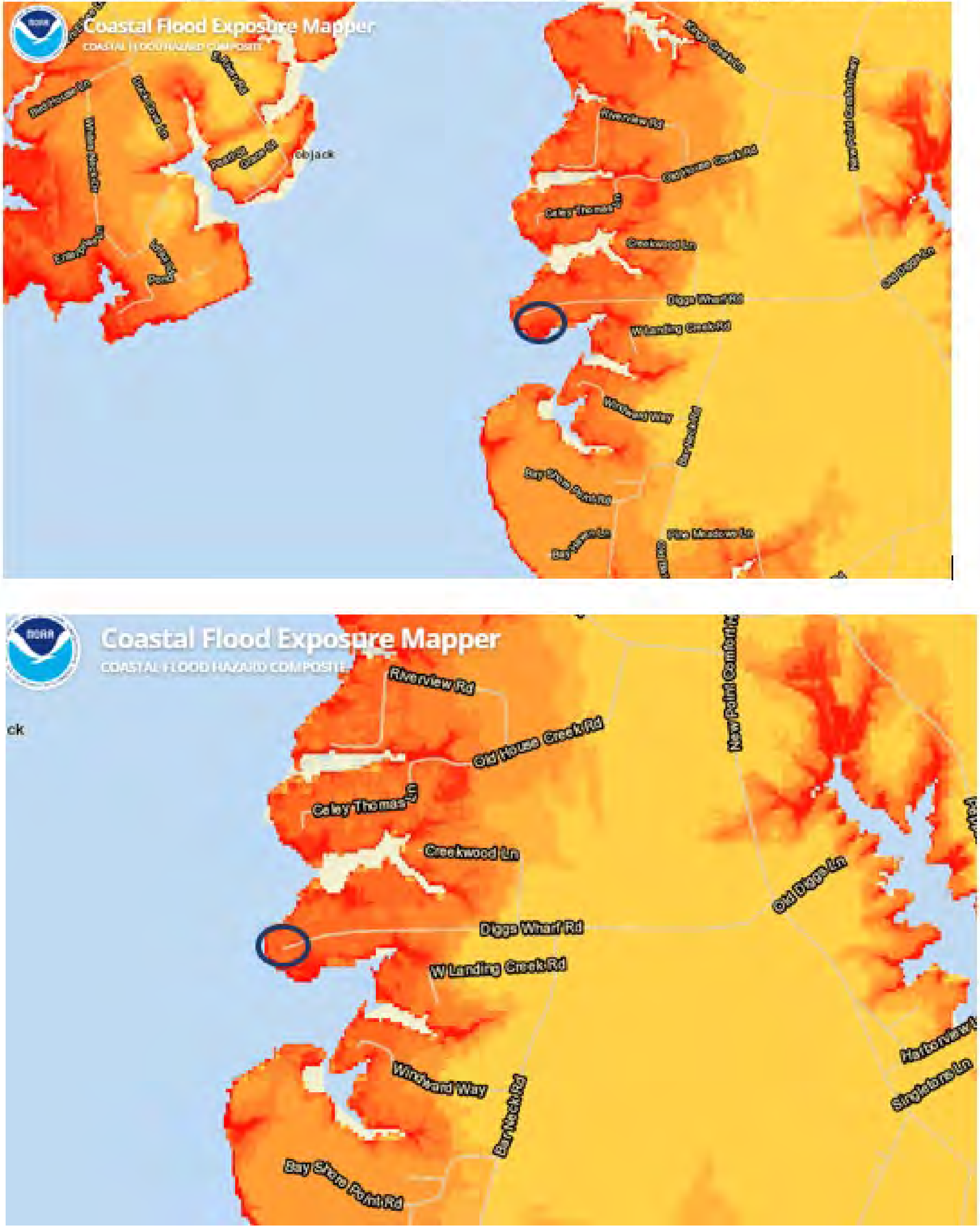
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shoreline with 17,000 sq feet of loss. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 81 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017



Finally, according to NOAA’s Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

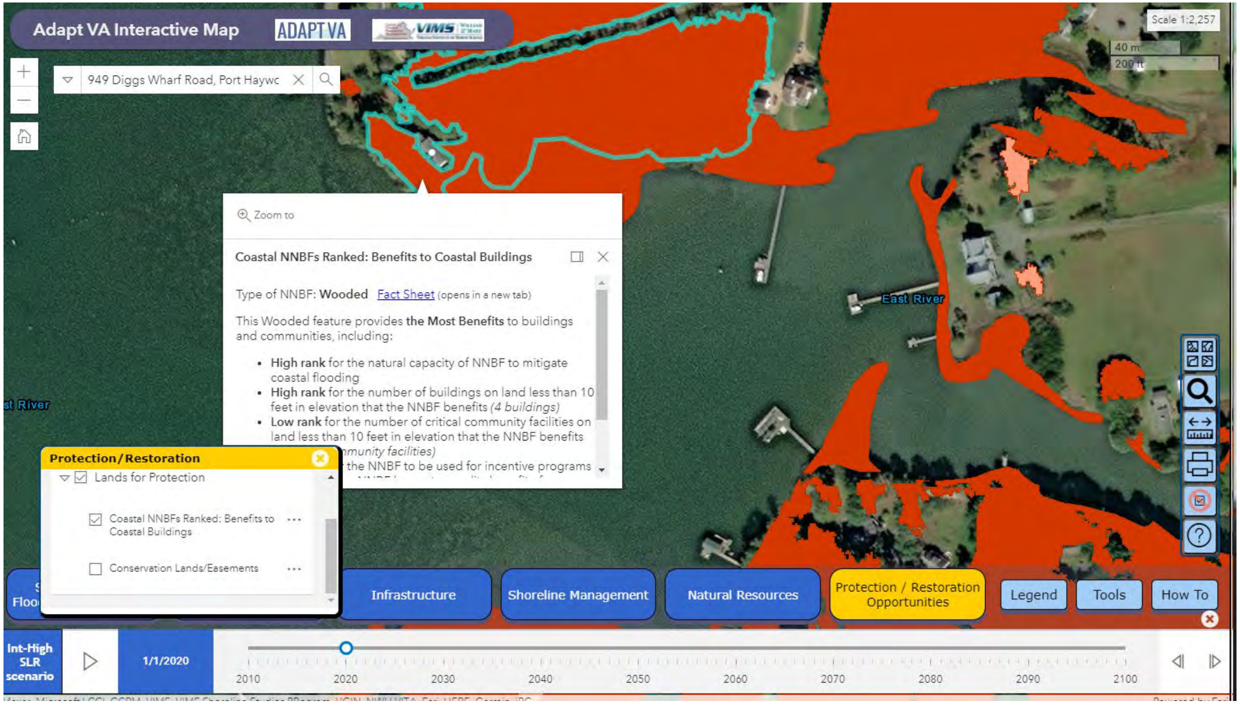
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12.** All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(4 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *mmunity facilities)*
- the NNBF to be used for incentive programs

Protection/Restoration

☑ Lands for Protection

☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

☐ Conservation Lands/Easements

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural*

shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the Oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, <u>Removal Rates of Shoreline Management Project</u>, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300

pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

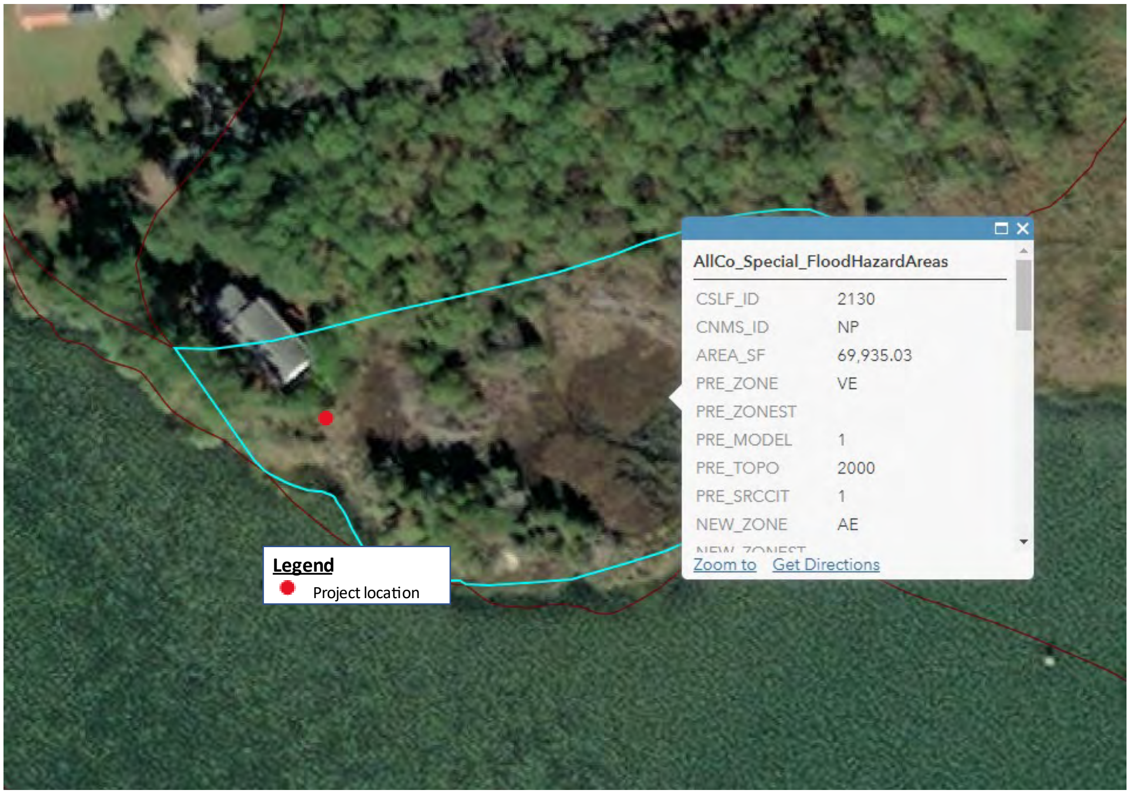
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	2130
CNMS_ID	NP
AREA_SF	69,935.03
PRE_ZONE	VE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	1
NEW_ZONE	AE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS**.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.
Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

A maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?
   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of

the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration X Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. Any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	10
No	**0**	

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

SCOPE OF WORK CHECKLIST.

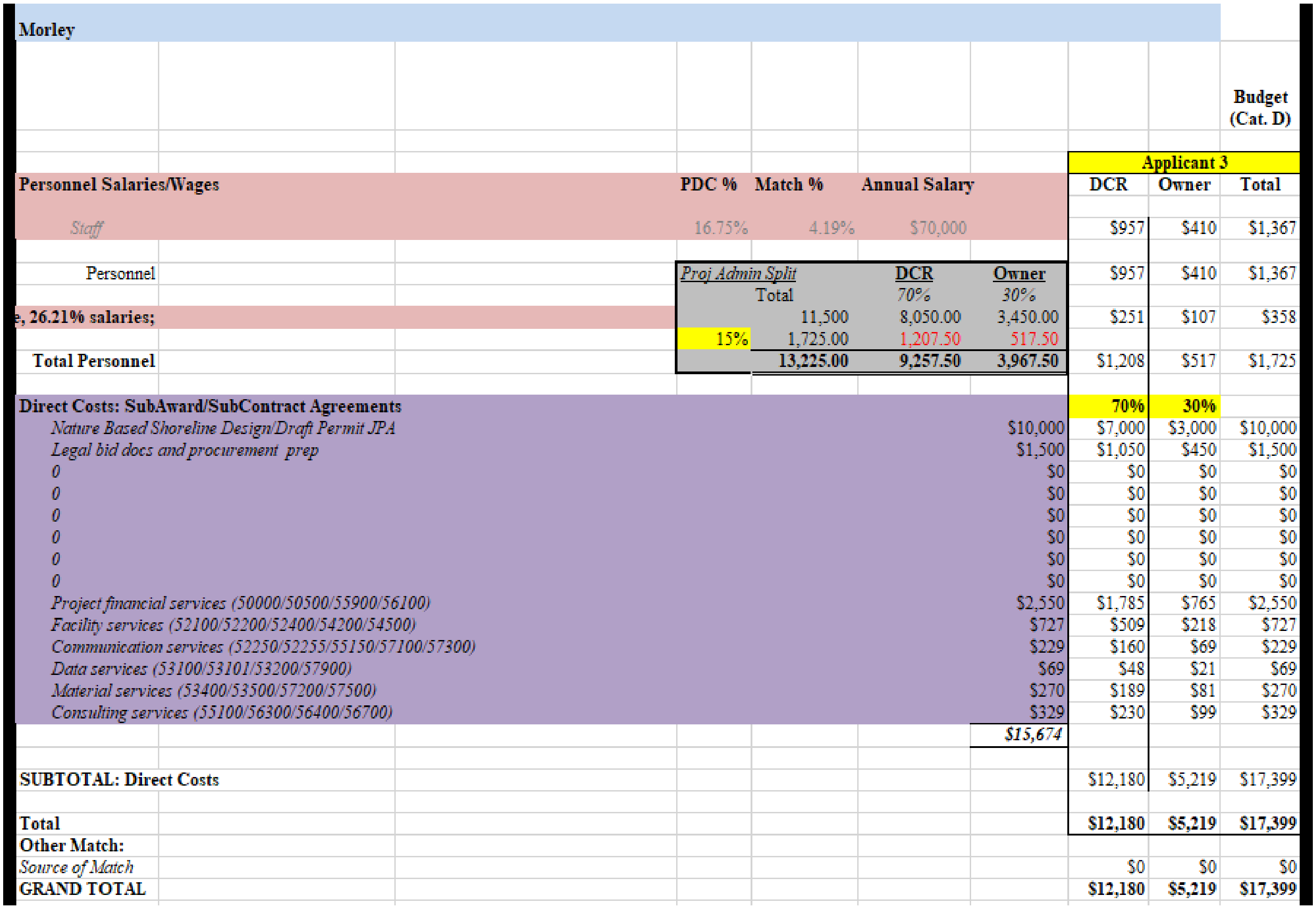
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

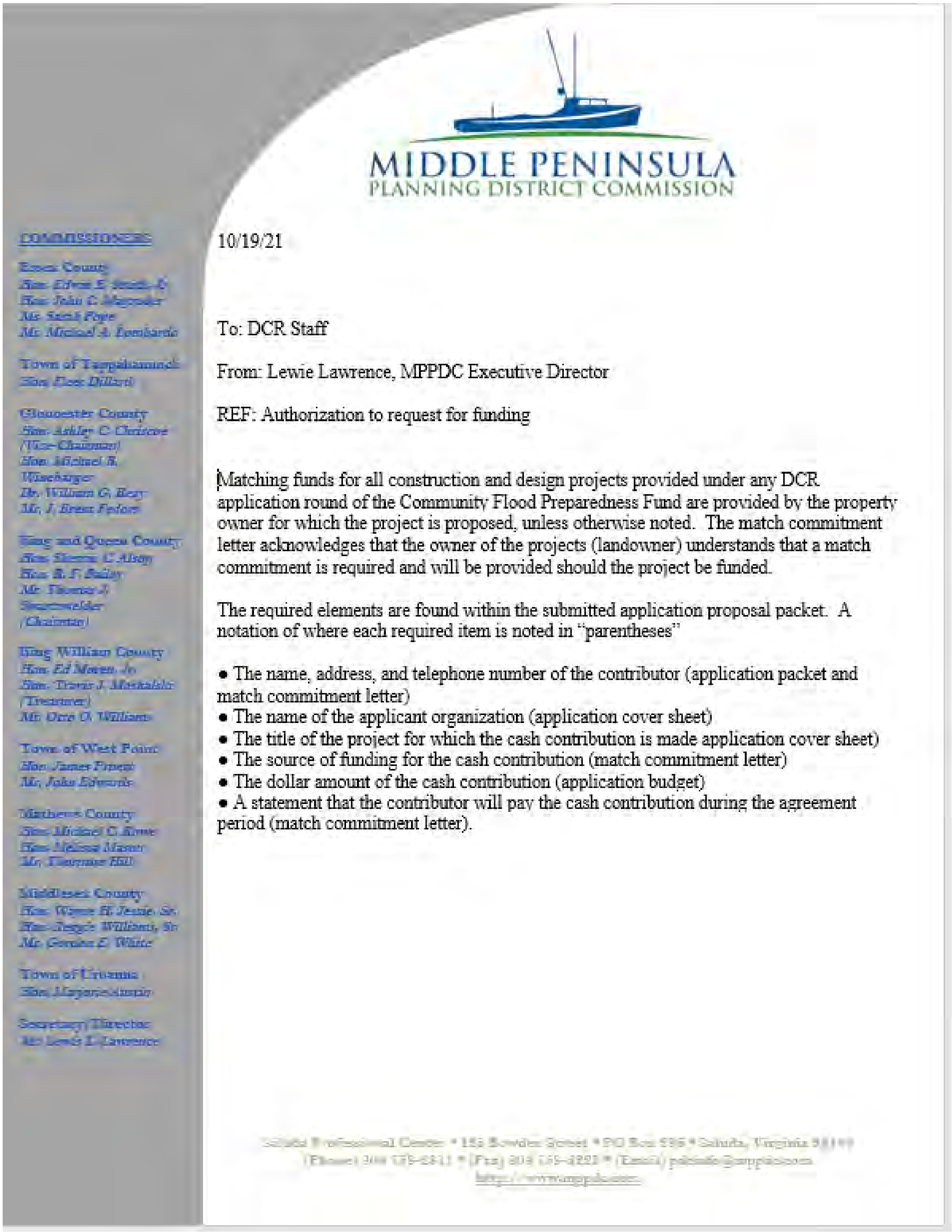
Estimated total project cost: $17,399
Amount of funds requested from the Fund: $12,180



Morley							
							Budget (Cat. D)
					Applicant 3		
Personnel Salaries/Wages	**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	16.75%	4.19%	$70,000		$957	$410	$1,367
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
		Total	*70%*	*30%*			
e, 26.21% salaries;		11,500	8,050.00	3,450.00	$251	$107	$358
	15%	1,725.00	1,207.50	517.50			
Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)				$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)				$229	$160	$69	$229
Data services (53100/53101/53200/57900)				$69	$48	$21	$69
Material services (53400/53500/57200/57500)				$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)				$329	$230	$99	$329
				$15,674			
SUBTOTAL: Direct Costs					$12,180	$5,219	$17,399
Total					**$12,180**	**$5,219**	**$17,399**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,180**	**$5,219**	**$17,399**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

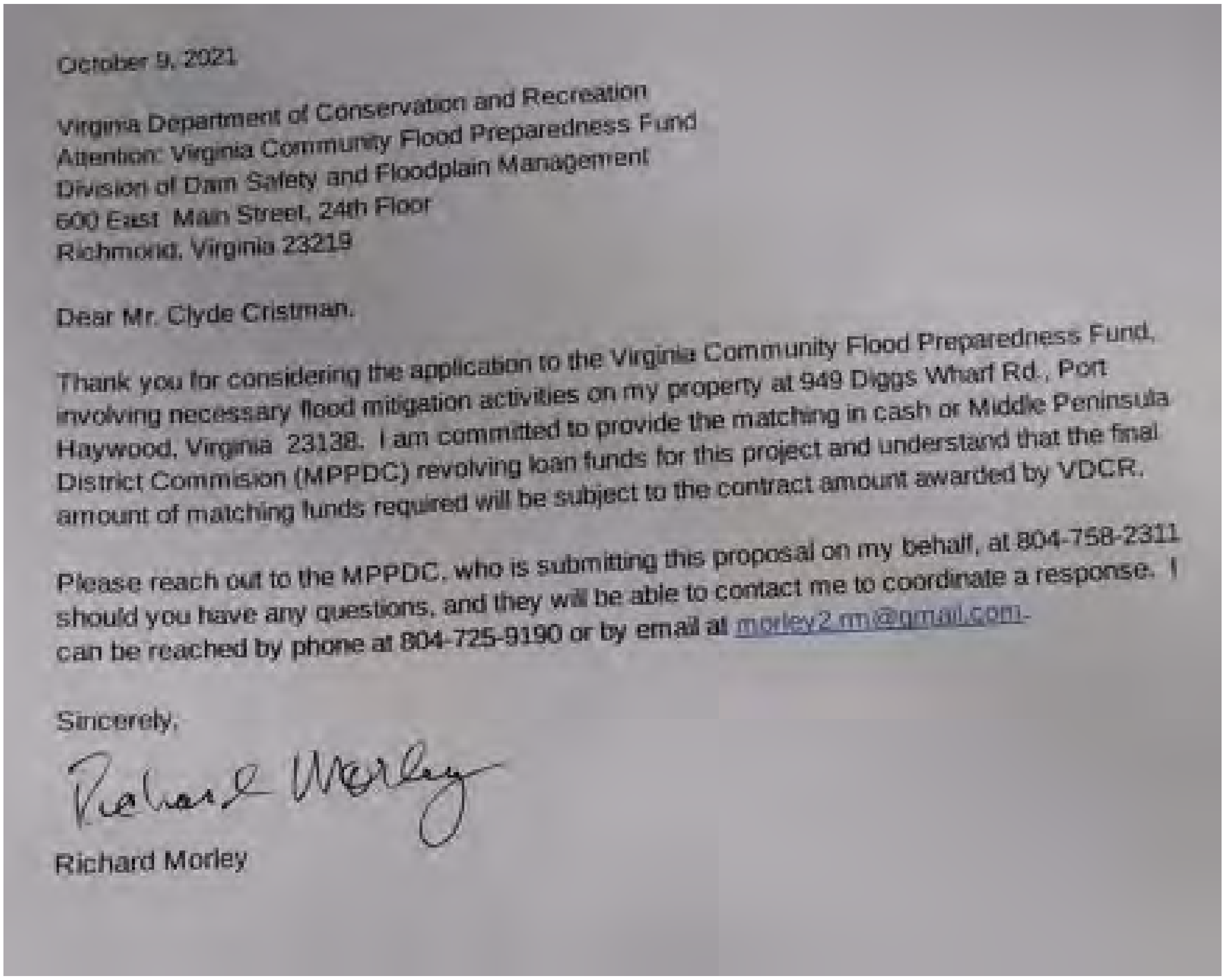
REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:



October 9, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 949 Diggs Wharf Rd., Port Haywood, Virginia 23138. I am committed to provide the matching in cash or Middle Peninsula District Commision (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804-725-9190 or by email at morley2.rm@gmail.com.

Sincerely,

Richard Morley

Richard Morley

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter

DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B668C2DAE00C

County Administration

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

DocuSigned by:
Mindy Conner
Melinda Conner
County Administrator

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE
MATHEWS

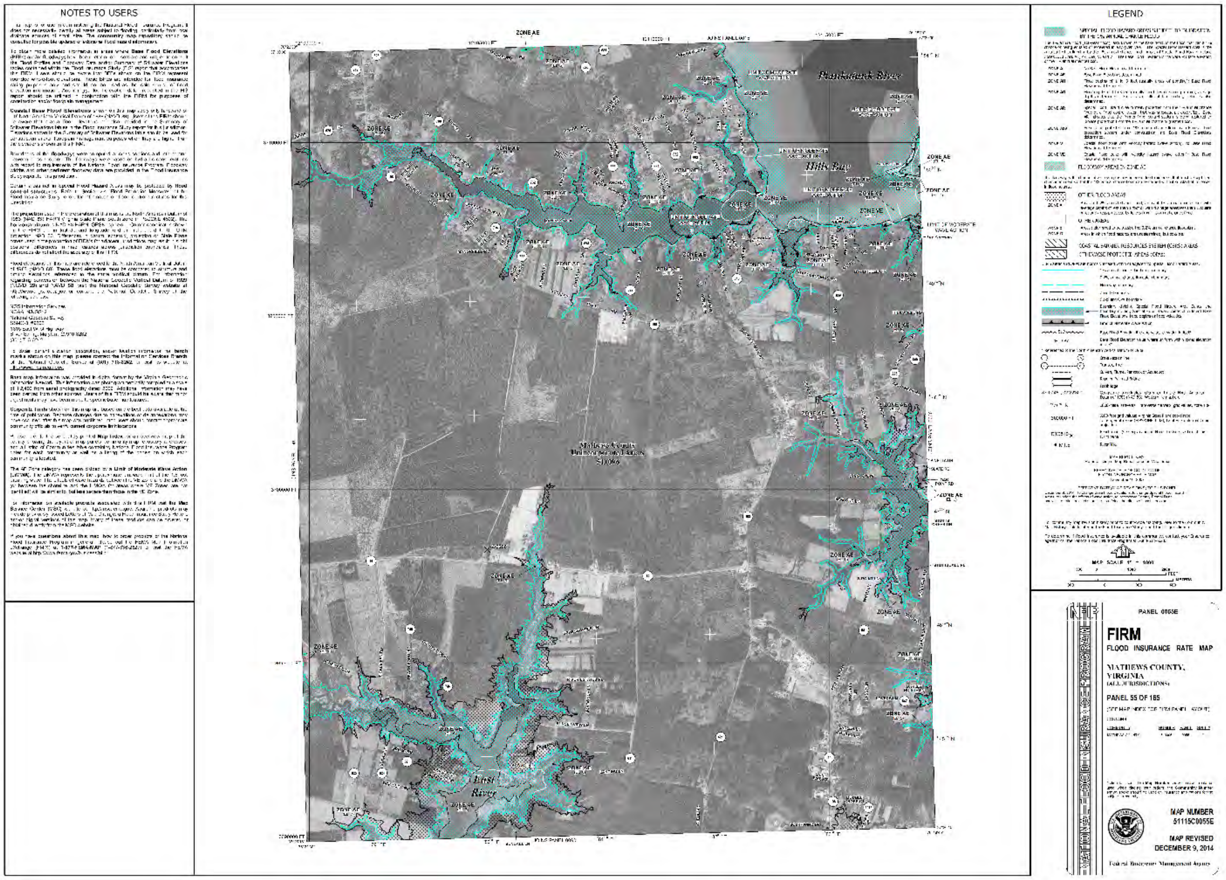
APPENDIX 2

Additional Property Photos

APPENDIX 3

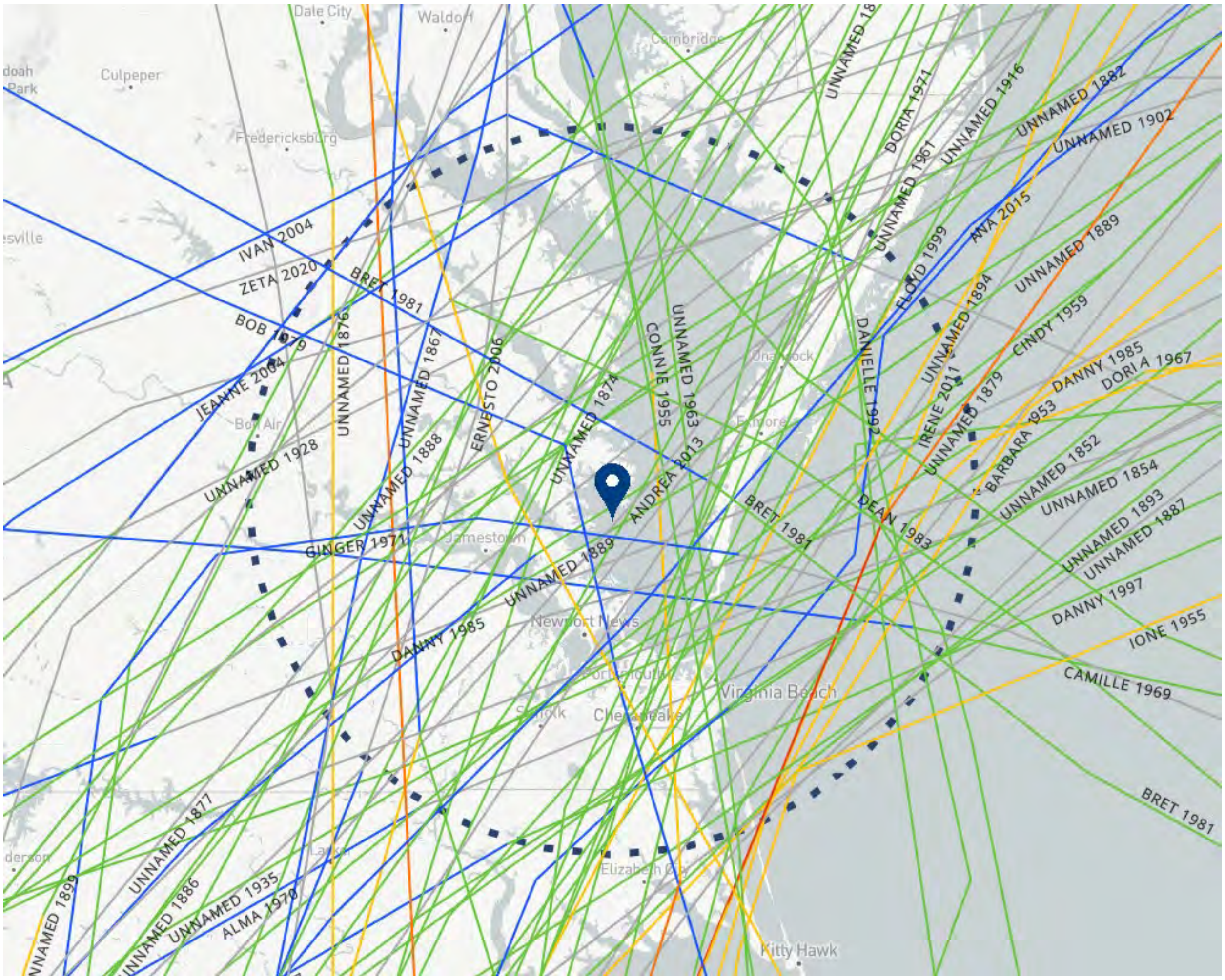
Project Location FIRMette

(FIRMette #: 51115C0055E)



APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.36975 -76.3356

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30,	70	980	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
	1986			
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED	Oct 12, 1944 to Oct 24, 1944	125	937	H4

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
1944				
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

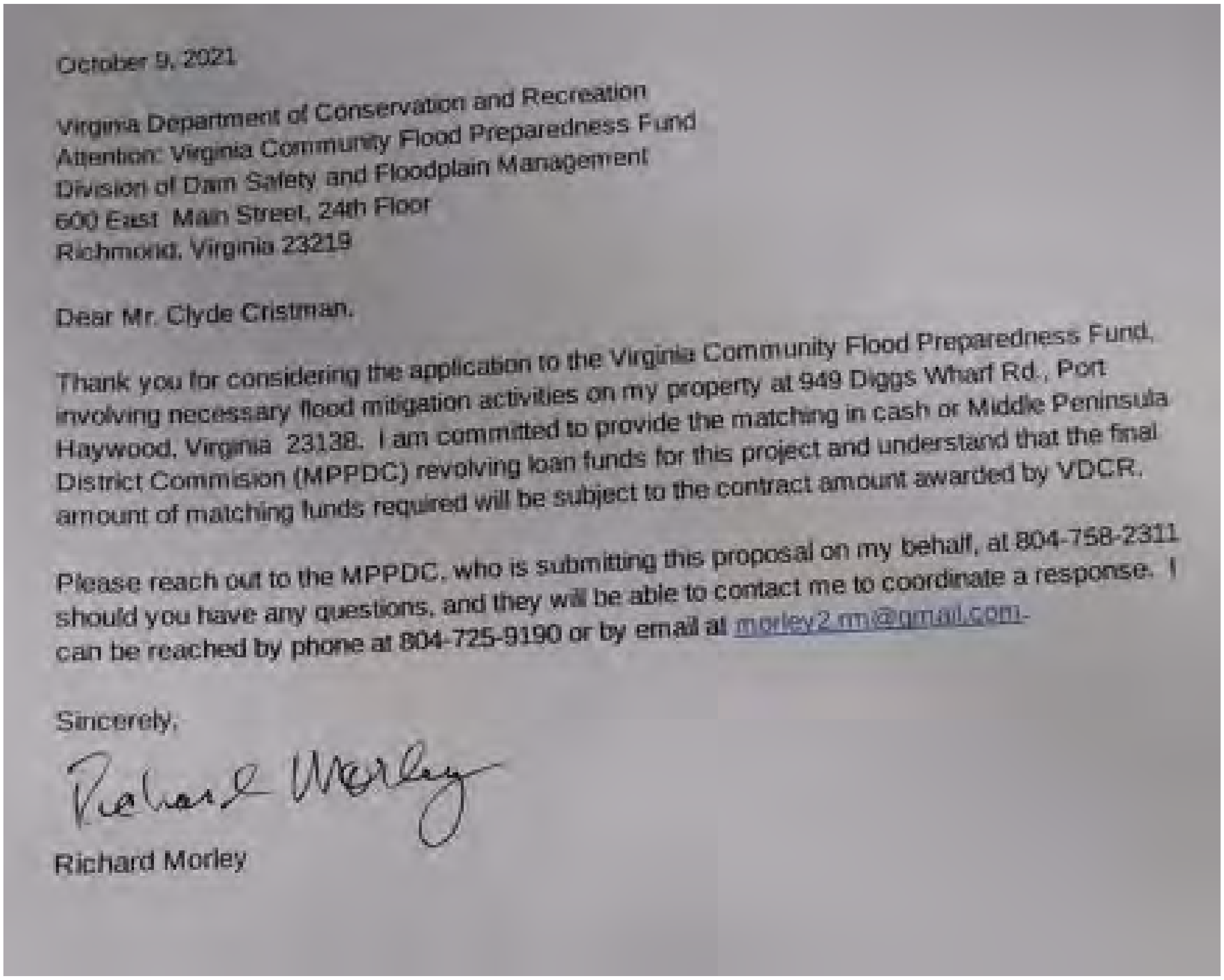
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



October 9, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 949 Diggs Wharf Rd., Port Haywood, Virginia 23138. I am committed to provide the matching in cash or Middle Peninsula District Commision (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804-725-9190 or by email at morley2.rm@gmail.com.

Sincerely,

Richard Morley

Richard Morley

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Chesapeake Shore Road for Stanley

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ________________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0130E

Total Cost of Project: ___________$24,963______________________________________

Total Amount Requested: _______$17,475_____________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, on private property located on Chesapeake Shore Road in Mathews County. The applicant is one of 6 applicants joining together to submit Flood Fund applications under Round 1 and 2 within the Chesapeake Shores community to make a demonstrable impact on shoreline protection.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem-based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Chesapeake Shore Road in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at:* https://fightthefloodva.com/wp-

content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan*.

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

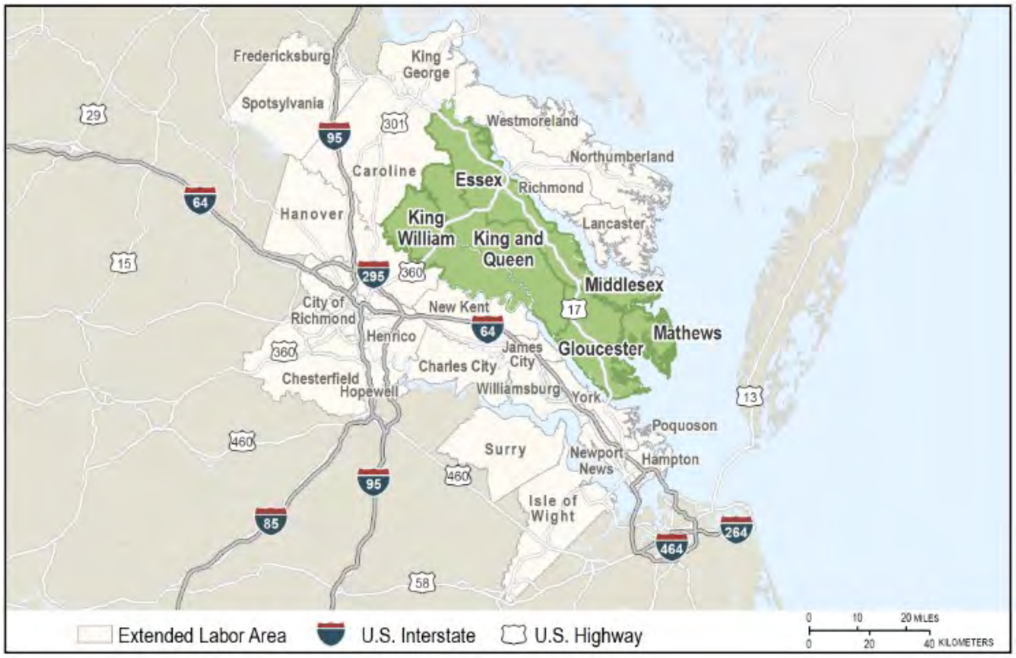
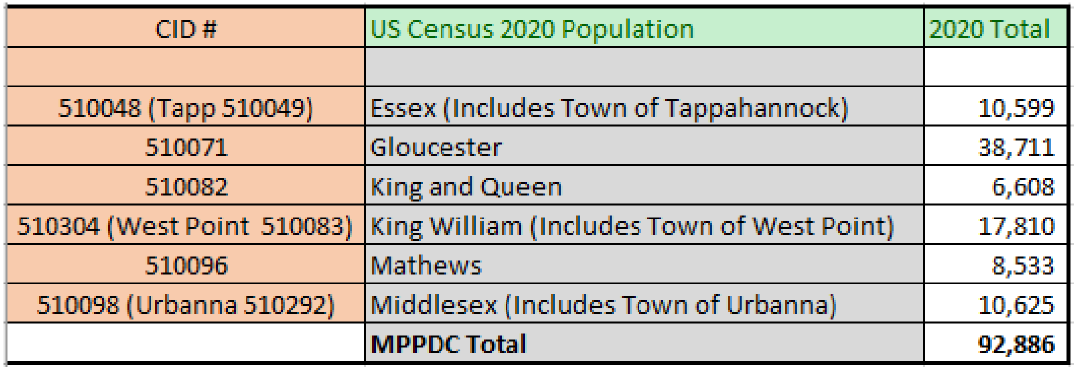


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design nature-based shoreline solution on one private property on Chesapeake Shore Road in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

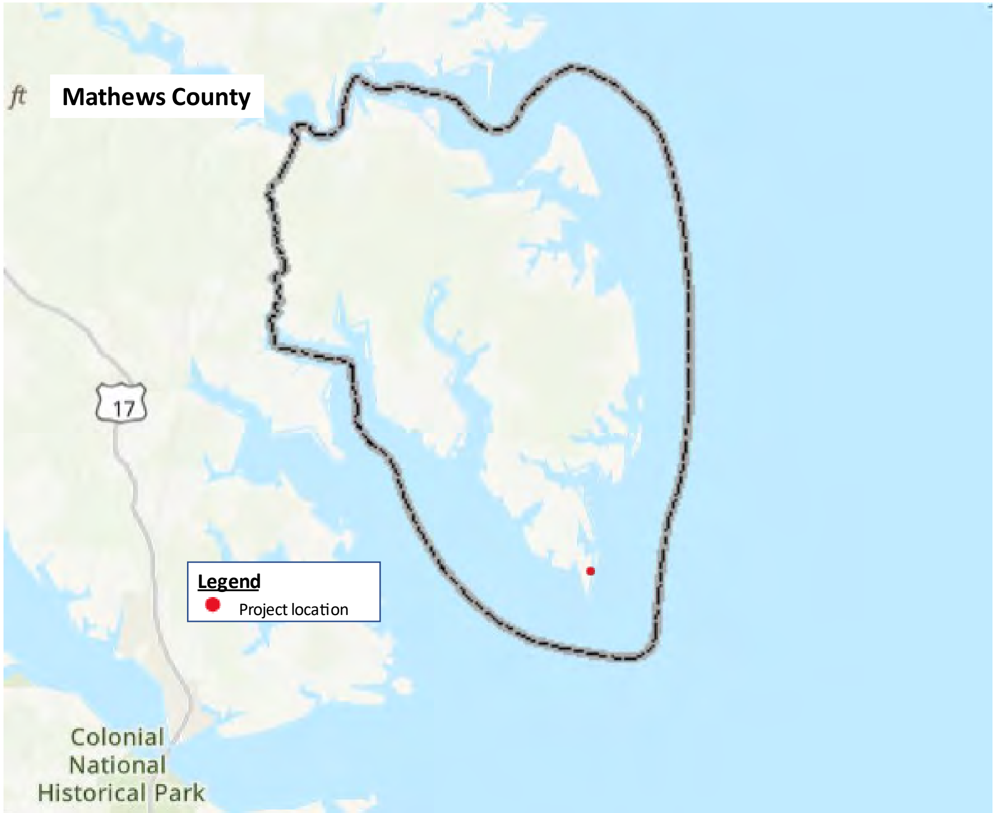
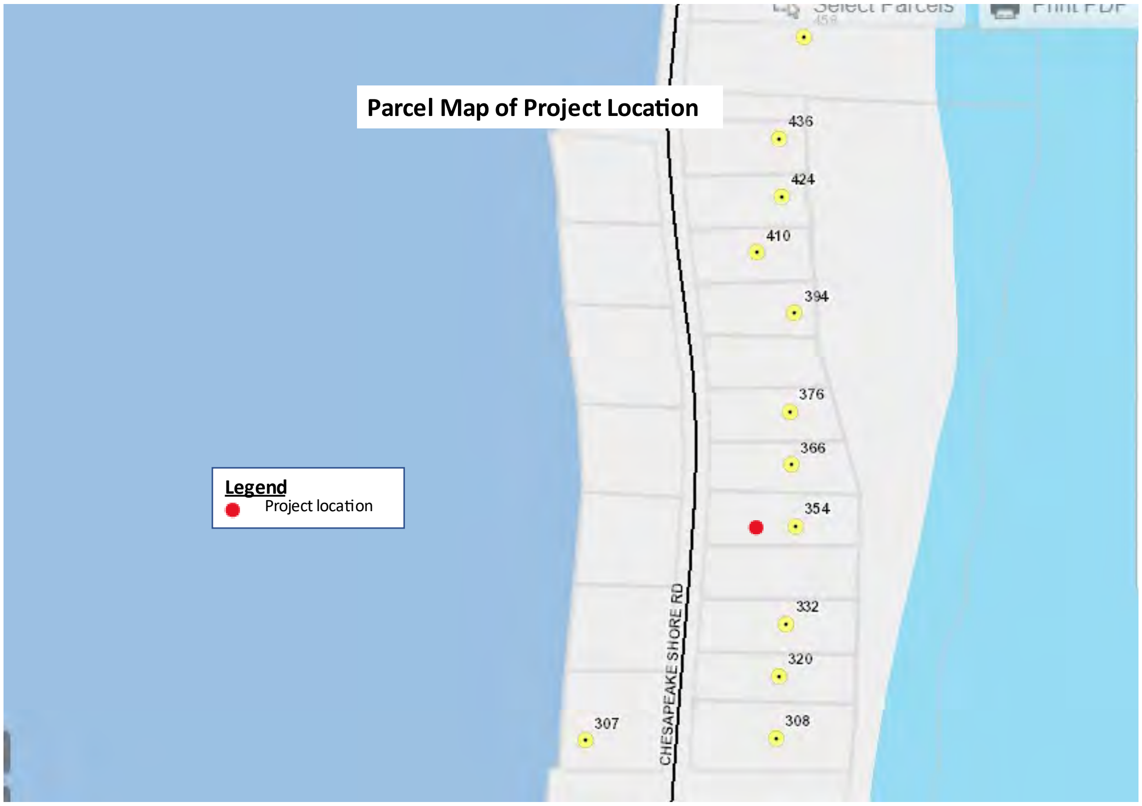


Figure 4. Parcel Map of Project Location



Mathews County is located on Virginia's Middle Peninsula and has an economy based upon agriculture, forestry, and the water. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

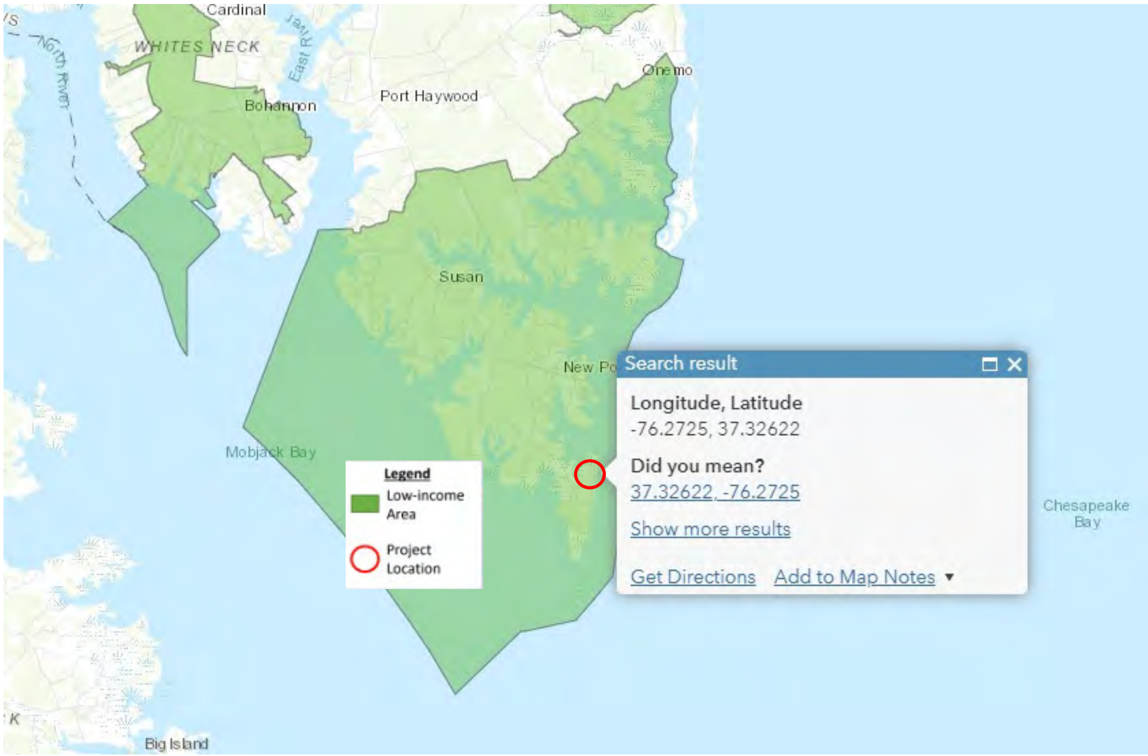
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

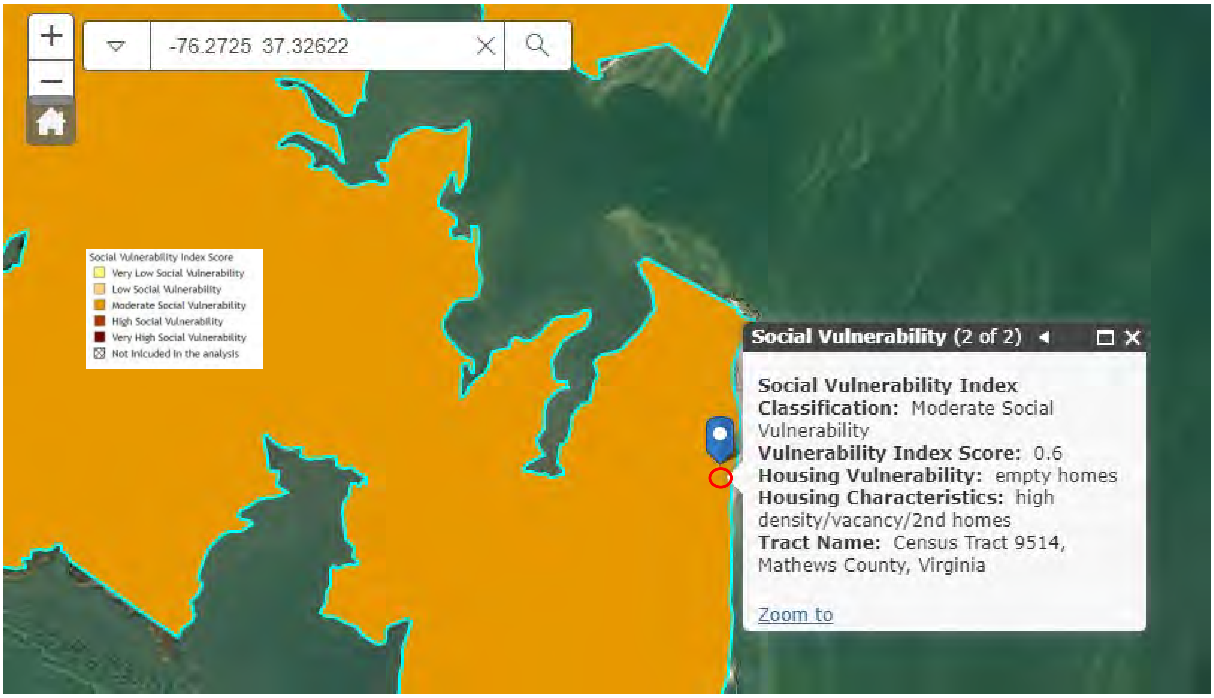
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



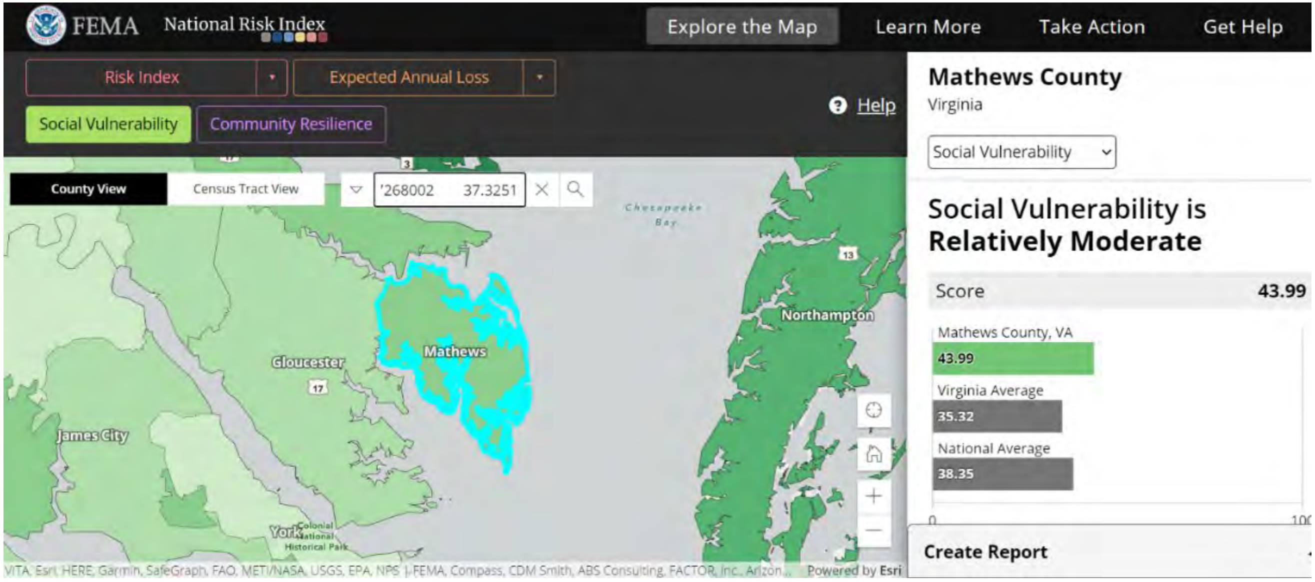
According to the VDAPT Virginia’s Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA’s National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index
Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Moderate

Score 43.99

Mathews County, VA 43.99
Virginia Average 35.32
National Average 38.35

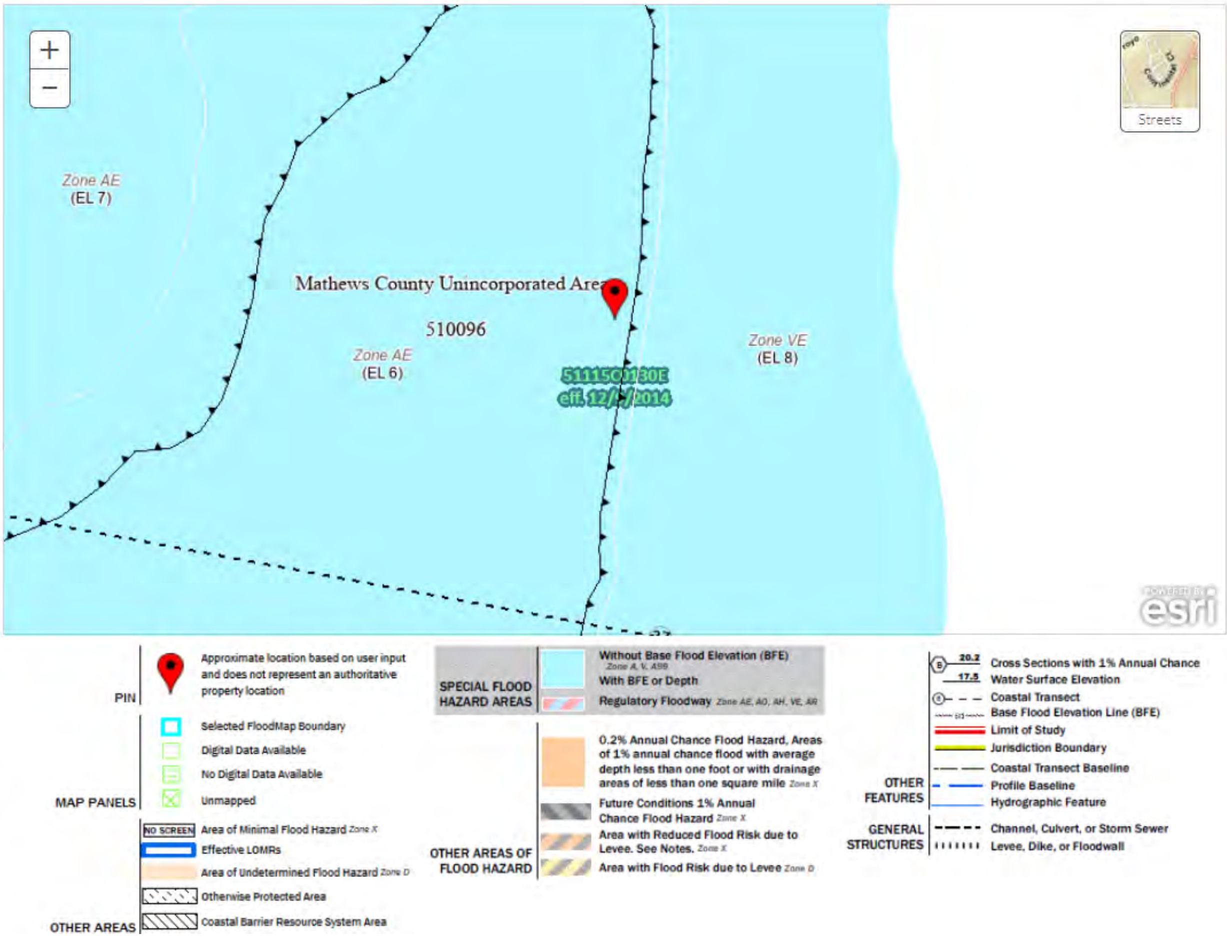
The property owners have owned the residence and the approximately 120 feet of shoreline since the summer of 2008. Since that time, the property has been constantly accruing sand. About seven to 10 years ago, the deck was raised since sand was significantly intruding the area and it became cumbersome to continue shoveling the sand off the deck. During that period, one could take one step off the once lower deck and would be immediately at the "beach" – it was a relatively flat landing at the time. There is some dune but it, too, is eroding away. The snow fences have also been dramatically covered by the massive amount of sand accumulating.

Even with the recent storms that washed away some of the sand, one can still barely see the fences. As a solid measurement in calculating the rise of sand, the property owner put a sturdy 2x4 post in to hold a wench at waist height. It was intended to pull the owner's Hobie Cat on the dune to give it leverage to hold onto. The post has since been almost completely covered by sand. Complicating matters further, they have a clearstream system for septic and the drain field is in the dune. Additionally, in speaking with others about their erosion problems, other non-nature-based solution designs constructed nearby have negatively impacted the area. It has been claimed that the sand comes and the sand goes, but in this particular area, the sand is staying and may potentially become a sandspit. Most in the area have only attempted individual solutions and a collective, communal approach is lacking; therefore, a holistic nature-based solution is not only desired but also needed. See accompanying pictures below.

Please see **Appendix 2** for additional property photos.

This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 12/9/2014).

Figure 9: Map of FEMA Flood Zones



Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 5,125.7 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 84 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)

For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

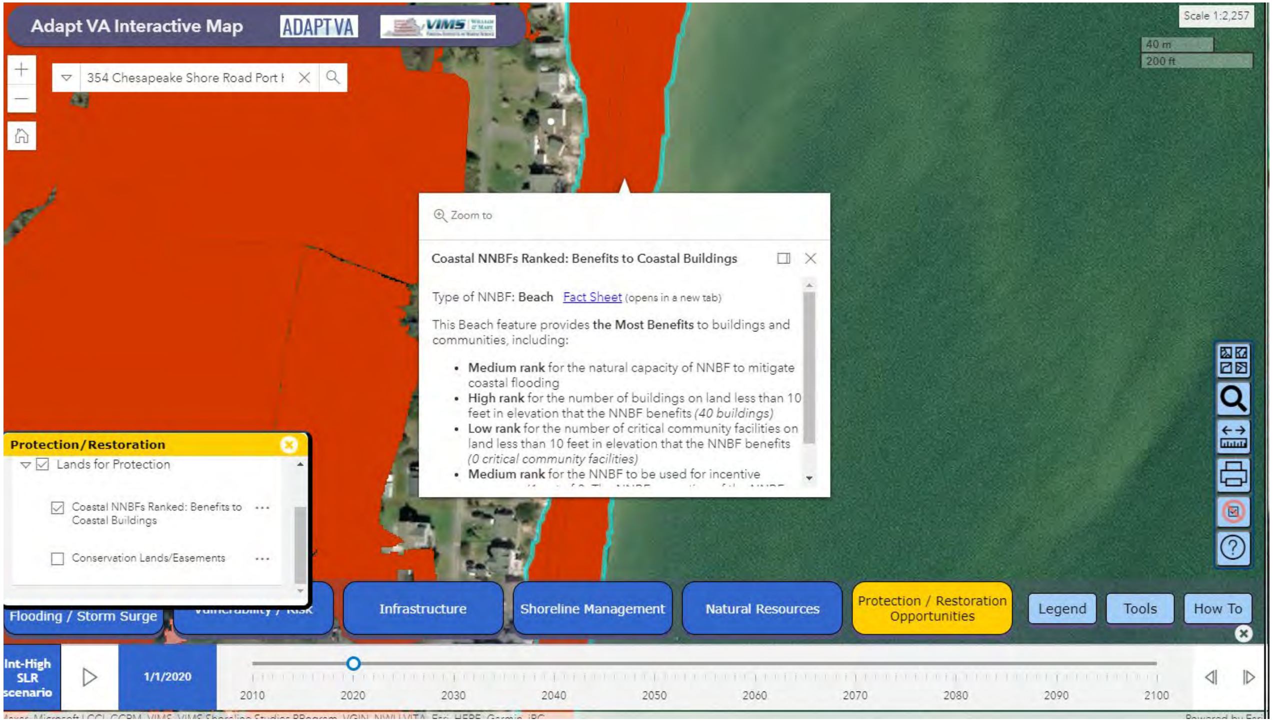
The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Figure 11A shows the community reach of the Fight the Flood Program. 6 citizens have applied for funding from DCR under Round 1 and 2 to work collaboratively to address their flooding problems.

Figure 11A - FTF Chesapeake Shore participants

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Beach** Fact Sheet (opens in a new tab)

This Beach feature provides **the Most Benefits** to buildings and communities, including:

- **Medium rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(40 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **Medium rank** for the NNBF to be used for incentive

Protection/Restoration

☑ Lands for Protection

☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

☐ Conservation Lands/Easements

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural*

shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

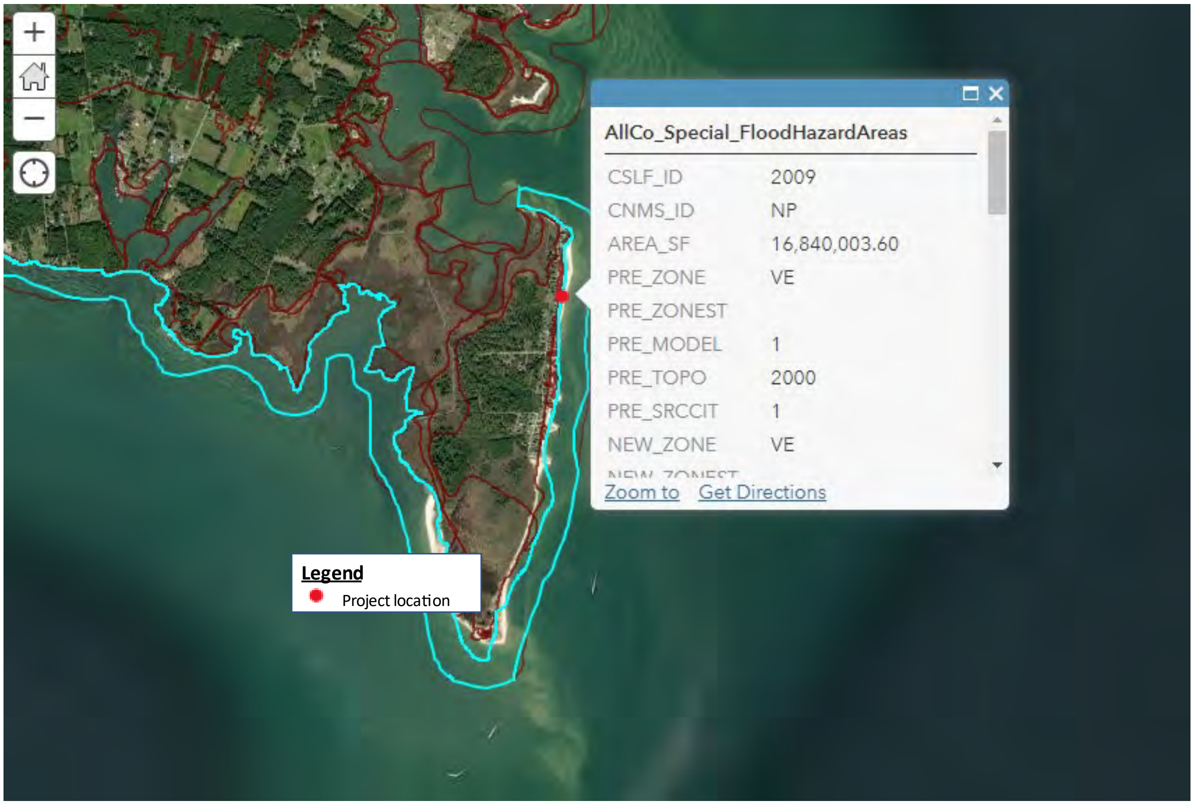
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	2009
CNMS_ID	NP
AREA_SF	16,840,003.60
PRE_ZONE	VE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	2000
PRE_SRCCIT	1
NEW_ZONE	VE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

<u>Long Term Planning</u>

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

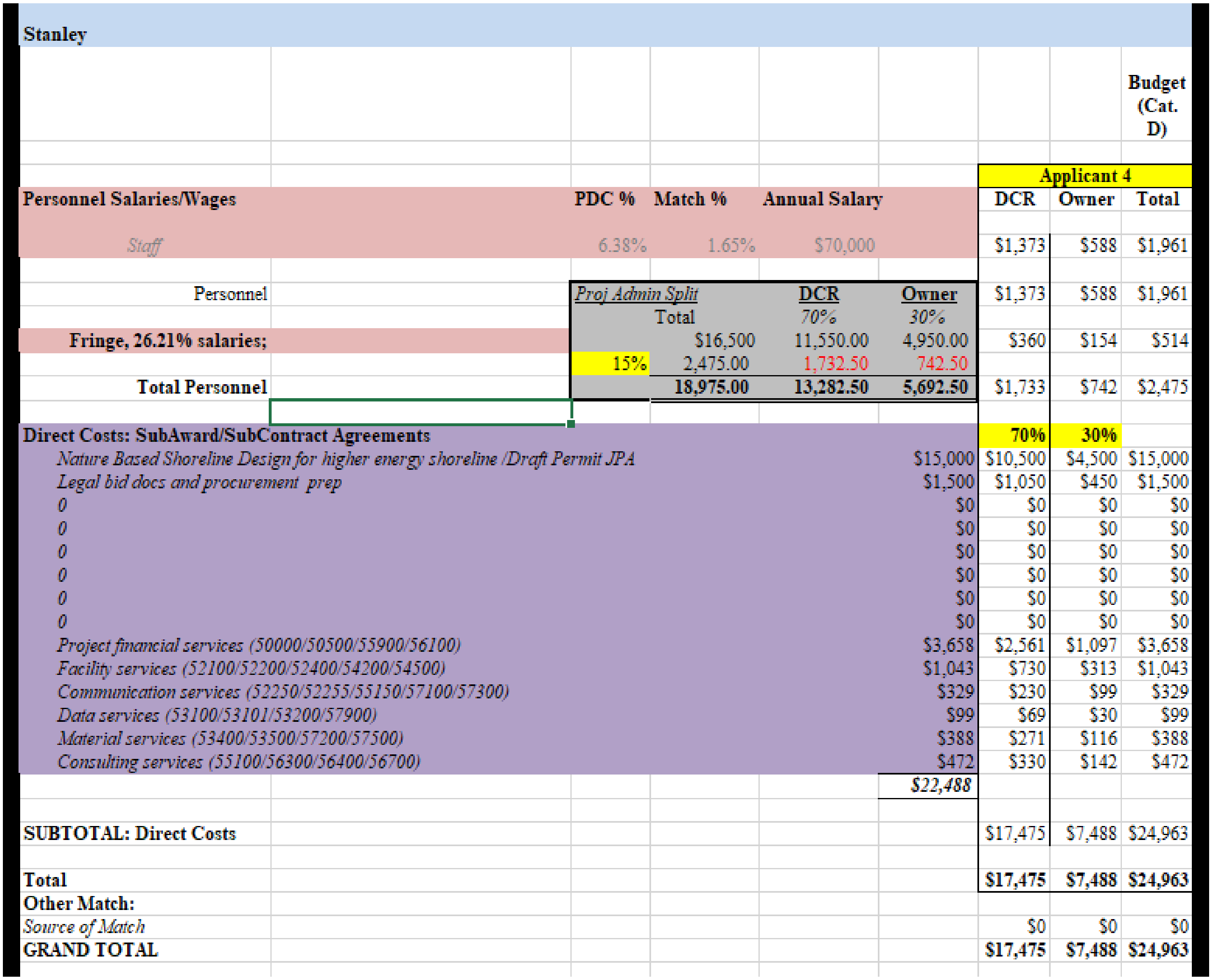
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

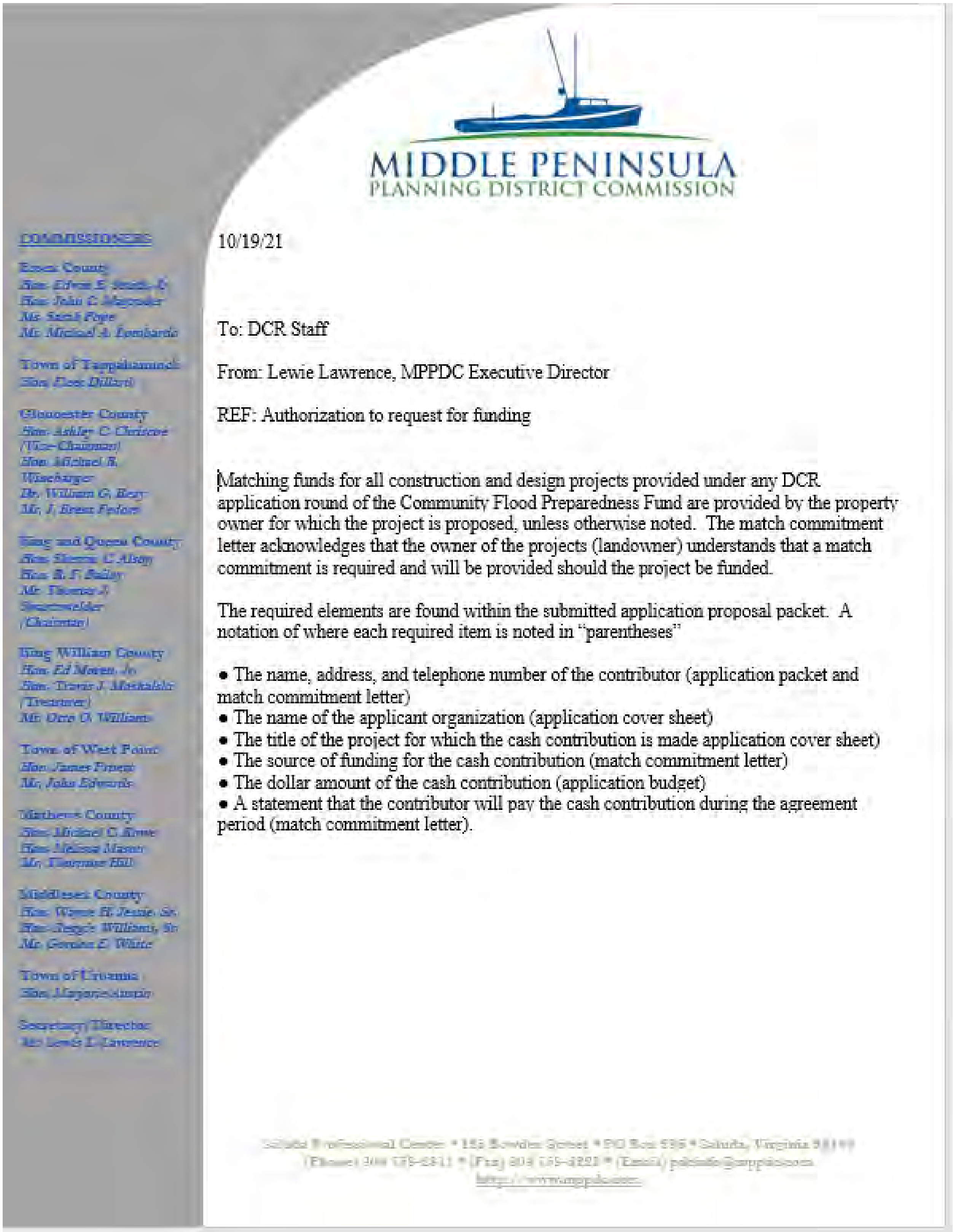
- ***Estimated total project cost: $24,963***
- ***Amount of funds requested from the Fund: $17,475***



Stanley								
								Budget (Cat. D)
						Applicant 4		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		6.38%	1.65%	$70,000		$1,373	$588	$1,961
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$1,373	$588	$1,961
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			$16,500	11,550.00	4,950.00	$360	$154	$514
		15%	2,475.00	1,732.50	742.50			
Total Personnel			**18,975.00**	**13,282.50**	**5,692.50**	$1,733	$742	$2,475
Direct Costs: SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Shoreline Design for higher energy shoreline /Draft Permit JPA					$15,000	$10,500	$4,500	$15,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)					$3,658	$2,561	$1,097	$3,658
Facility services (52100/52200/52400/54200/54500)					$1,043	$730	$313	$1,043
Communication services (52250/52255/55150/57100/57300)					$329	$230	$99	$329
Data services (53100/53101/53200/57900)					$99	$69	$30	$99
Material services (53400/53500/57200/57500)					$388	$271	$116	$388
Consulting services (55100/56300/56400/56700)					$472	$330	$142	$472
					$22,488			
SUBTOTAL: Direct Costs						$17,475	$7,488	$24,963
Total						**$17,475**	**$7,488**	**$24,963**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$17,475**	**$7,488**	**$24,963**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

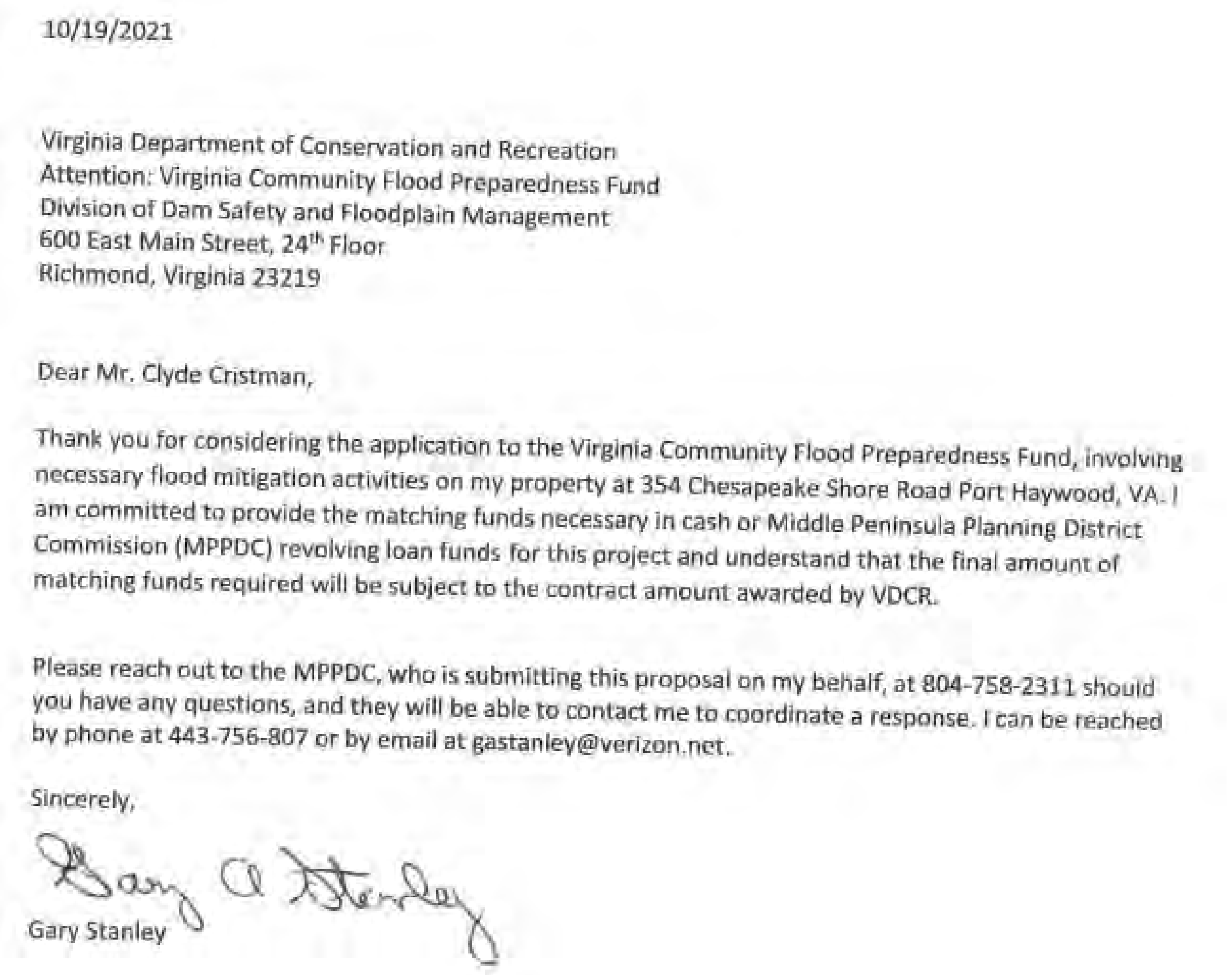
REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:



10/19/2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 354 Chesapeake Shore Road Port Haywood, VA. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 443-756-807 or by email at gastanley@verizon.net.

Sincerely,

Gary A Stanley

Gary Stanley

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter

DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B668C2DAE00C

County Administration

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

DocuSigned by:
Mindy Conner
Melinda Conner
County Administrator

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE
MATHEWS

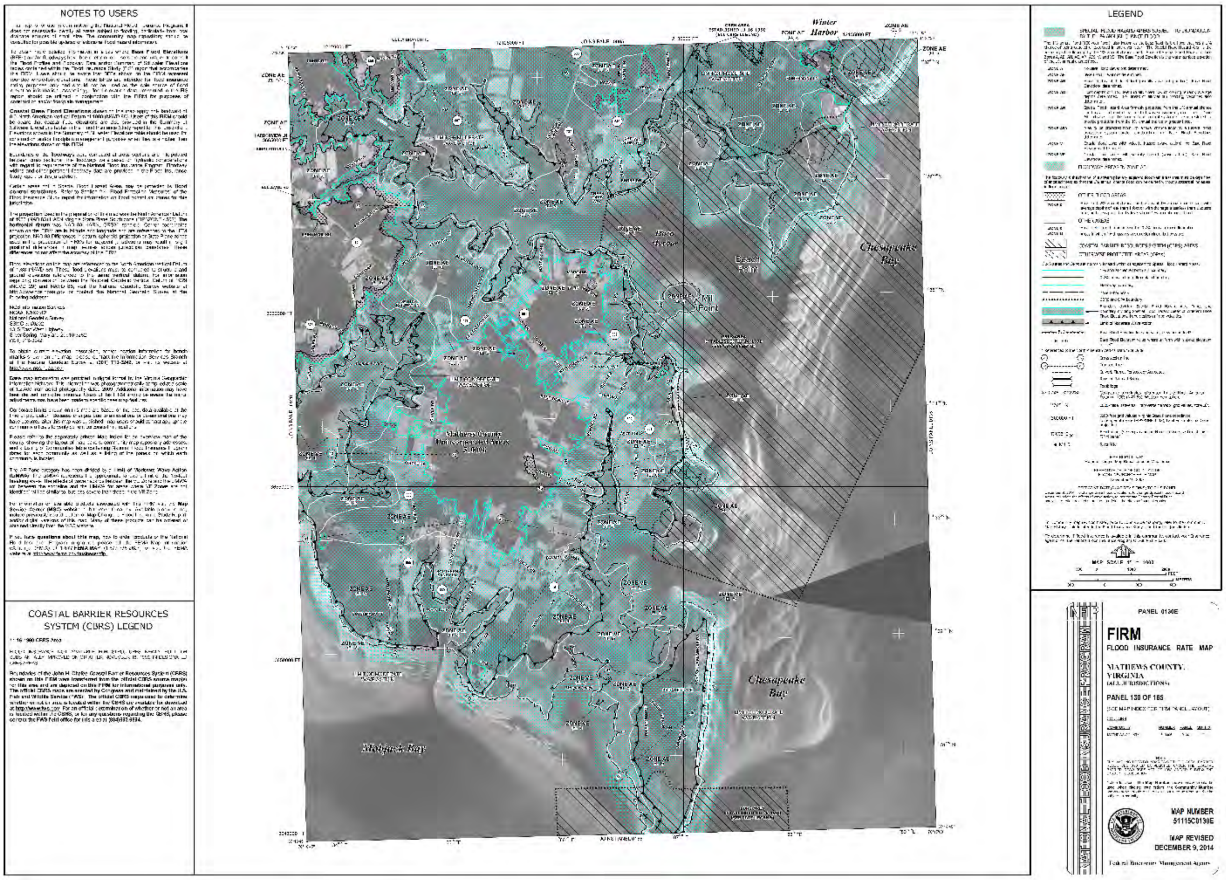
APPENDIX 2

Additional Property Photos

APPENDIX 3

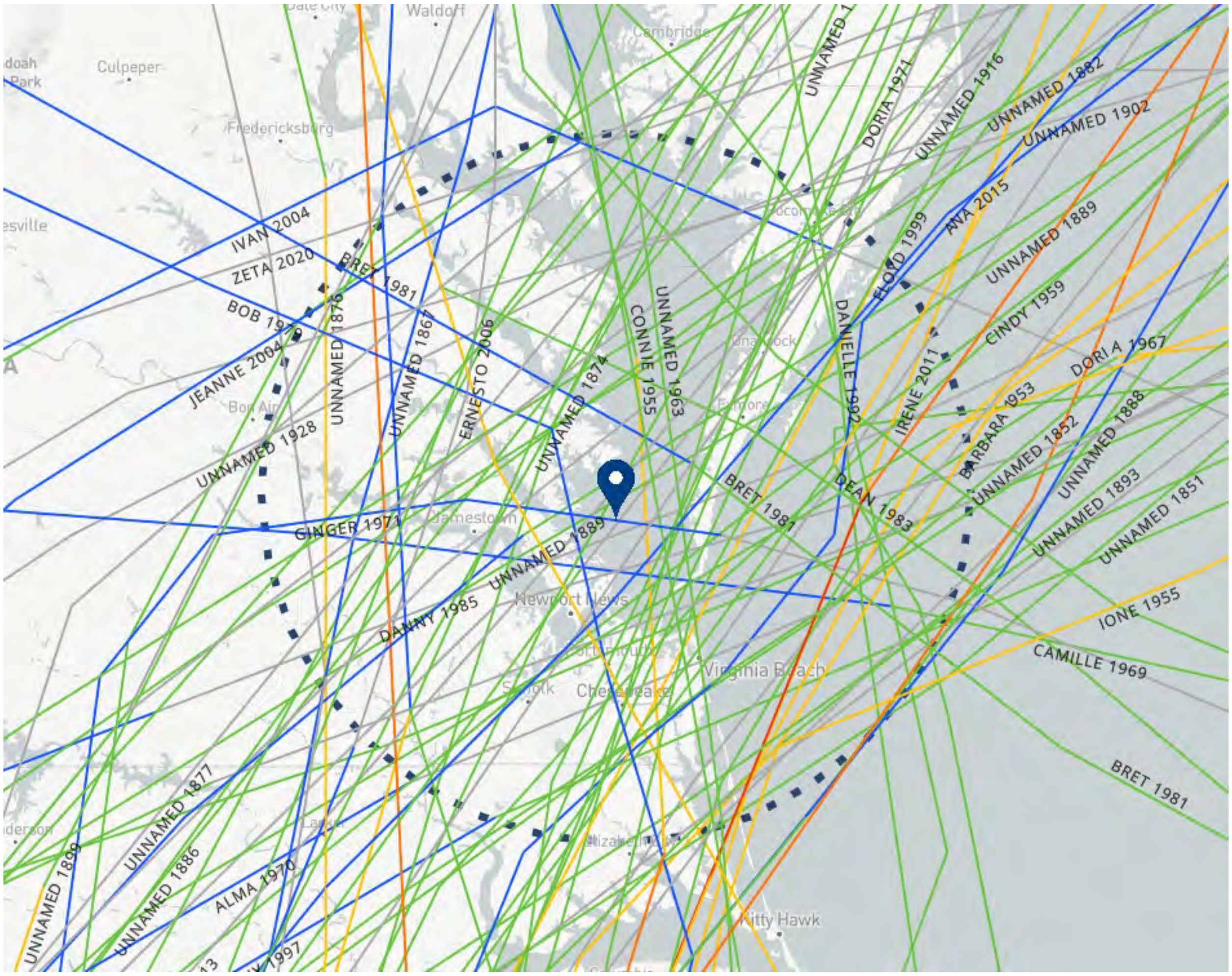
Project Location FIRMette

(FIRMette #: 51115C0130E)



APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.32622 -76.2725

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
BONNIE 2004	Aug 03, 2004 to Aug 14, 2004	55	1001	TS
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
DONNA 1960	Aug 29, 1960 to Sep 14, 1960	125	930	H4
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Oct 08, 1888 to Oct 12, 1888	95	970	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

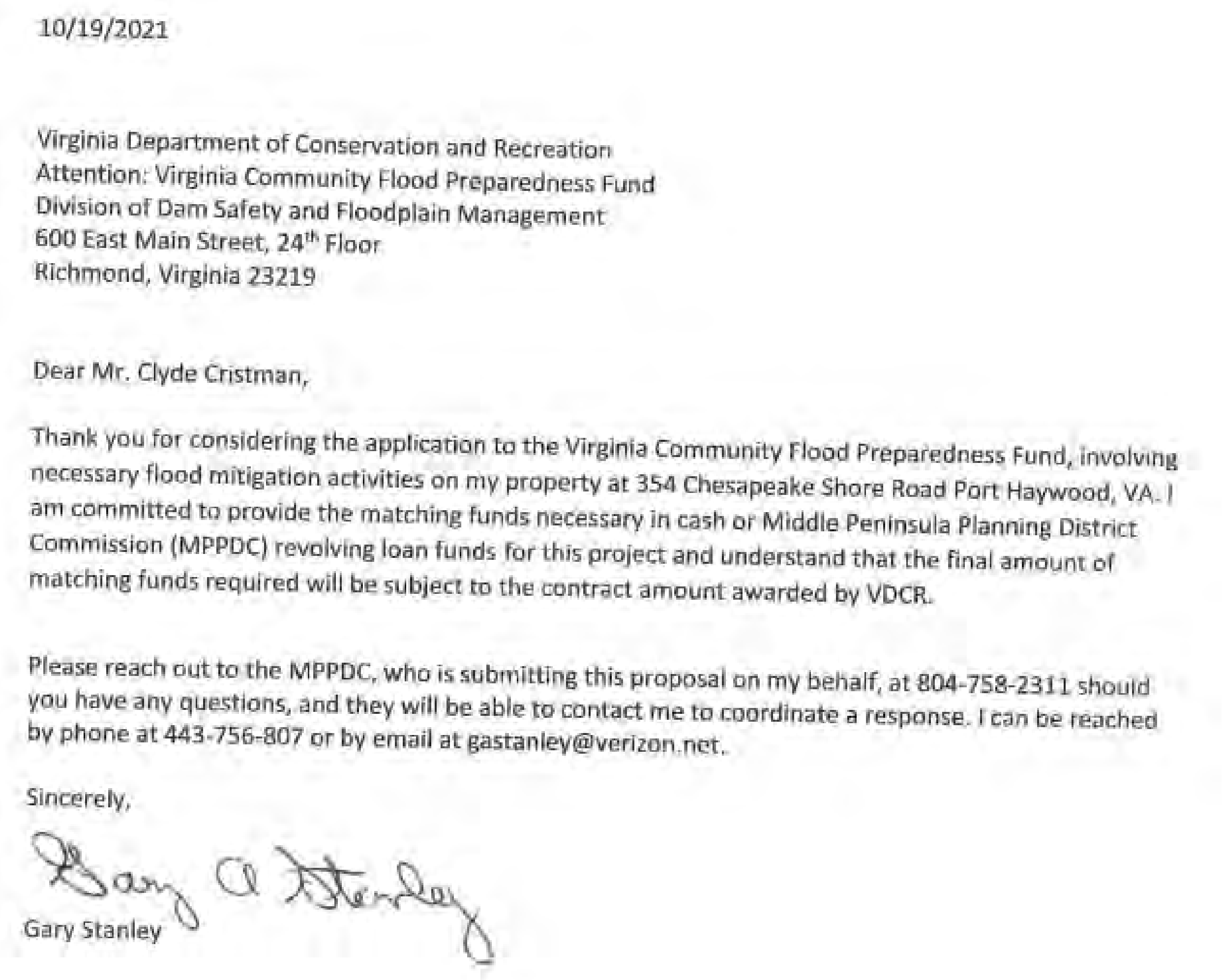
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



10/19/2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 354 Chesapeake Shore Road Port Haywood, VA. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 443-756-807 or by email at gastanley@verizon.net.

Sincerely,

Gary A Stanley

Gary Stanley

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe (Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J. Swartzwelder (Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski (Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Carr** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

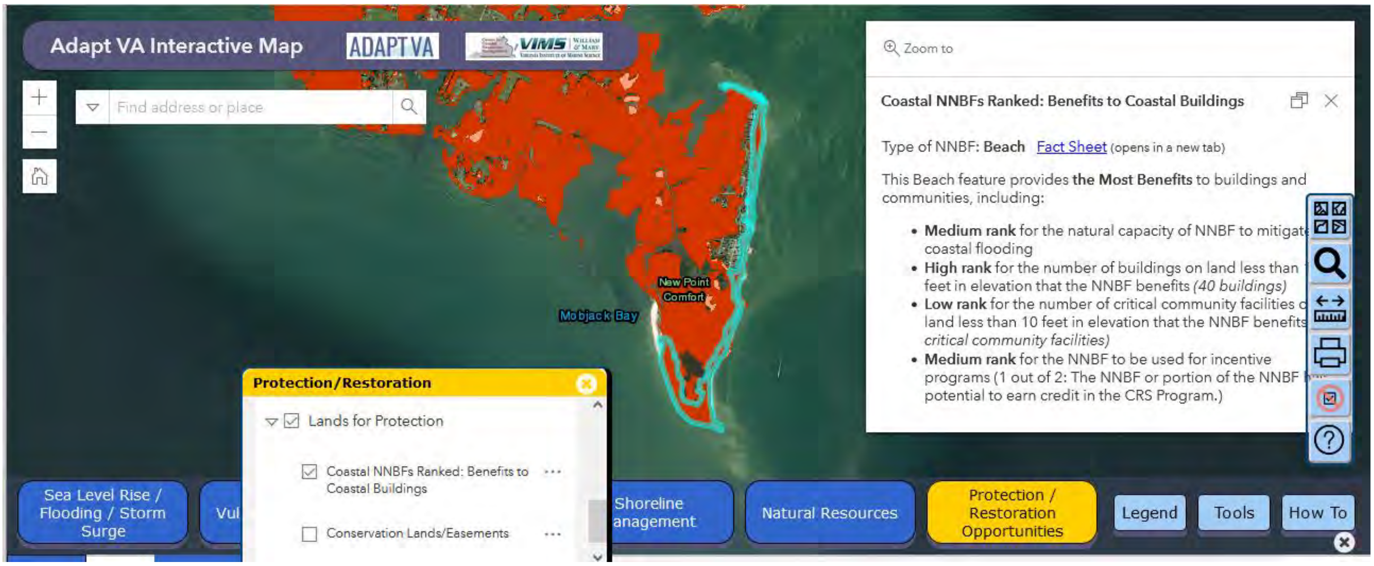
Issue #2
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.



Zoom to

Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Beach** Fact Sheet (opens in a new tab)

This Beach feature provides **the Most Benefits** to buildings and communities, including:

- **Medium rank** for the natural capacity of NNBF to mitigat coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(40 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **Medium rank** for the NNBF to be used for incentive programs (1 out of 2: The NNBF or portion of the NNBF potential to earn credit in the CRS Program.)

Protection/Restoration

▽ ☑ Lands for Protection

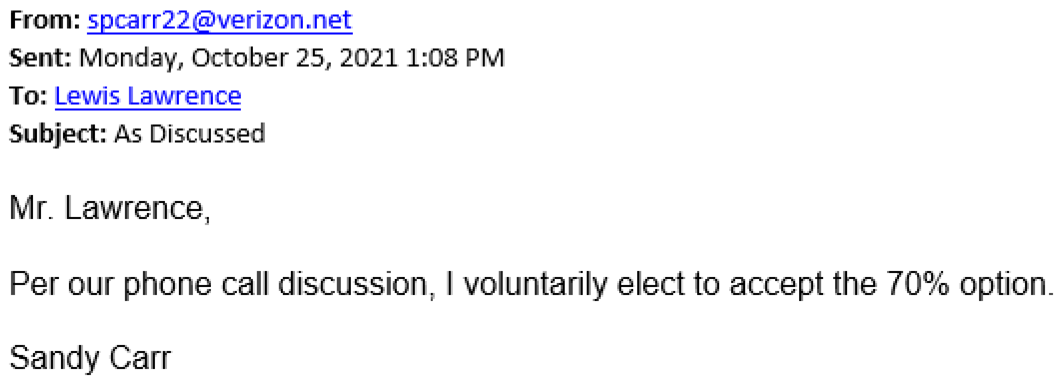
☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings ···

☐ Conservation Lands/Easements ···

Between Round 1 and 2, MPPDC has 6 adjoining/neighborhood homeowners partnering and looking to protect larger "reach based" areas

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



From: spcarr22@verizon.net
Sent: Monday, October 25, 2021 1:08 PM
To: Lewis Lawrence
Subject: As Discussed

Mr. Lawrence,

Per our phone call discussion, I voluntarily elect to accept the 70% option.

Sandy Carr

Amended Budget Request

DCR Funding:	$ 12,180
Owner:	$ 5,219
Total	$ 17,399

						Carr		
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$0		$957	$410	$1,367
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			**$11,500**	8,050.00	3,450.00	$251	$107	$358
		15%	1,725.00	1,207.50	517.50			
Total Personnel			**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$11,500			
SUBTOTAL: Direct Costs						$9,258	$3,967	$13,225
Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$2,922	$1,252	$4,174
Total						**$12,180**	**$5,219**	**$17,399**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$12,180**	**$5,219**	**$17,399**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Chesapeake Bay Road for Carr

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ____________________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) _______________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): County Name **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? þ Yes ¨ No

Is Project Located in a Special Flood Hazard Area? þ Yes ¨ No

Flood Zone(s) (If Applicable): VE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0130E

Total Cost of Project: ________$17,309____

Total Amount Requested: ______$13,846________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding and wetland loss.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal application requests funding address significant shoreline erosion.   Design work is needed using a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Chesapeake Bay Road in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
  - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at:* *https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

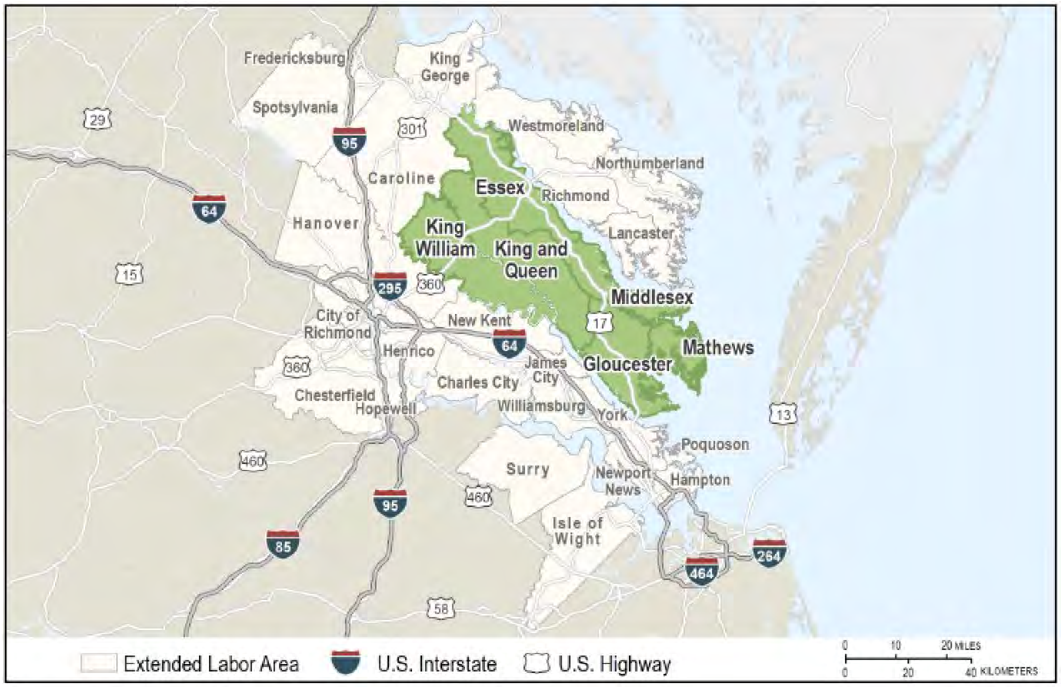
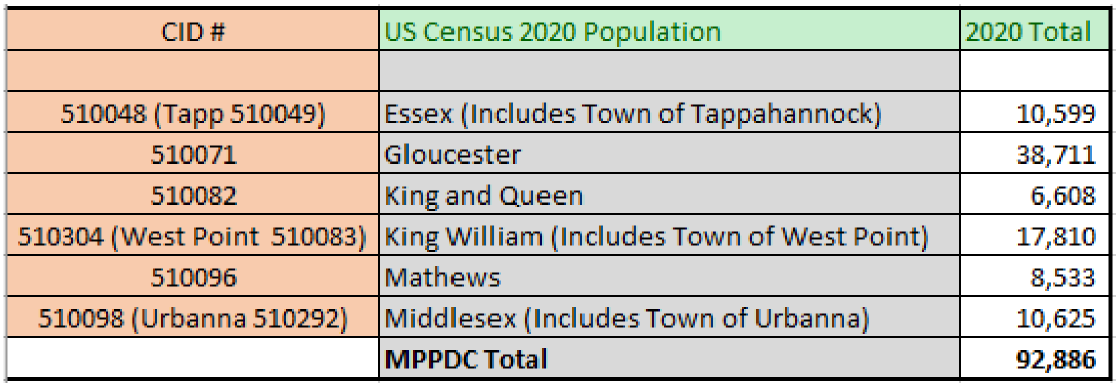


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Chesapeake Bay Road in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

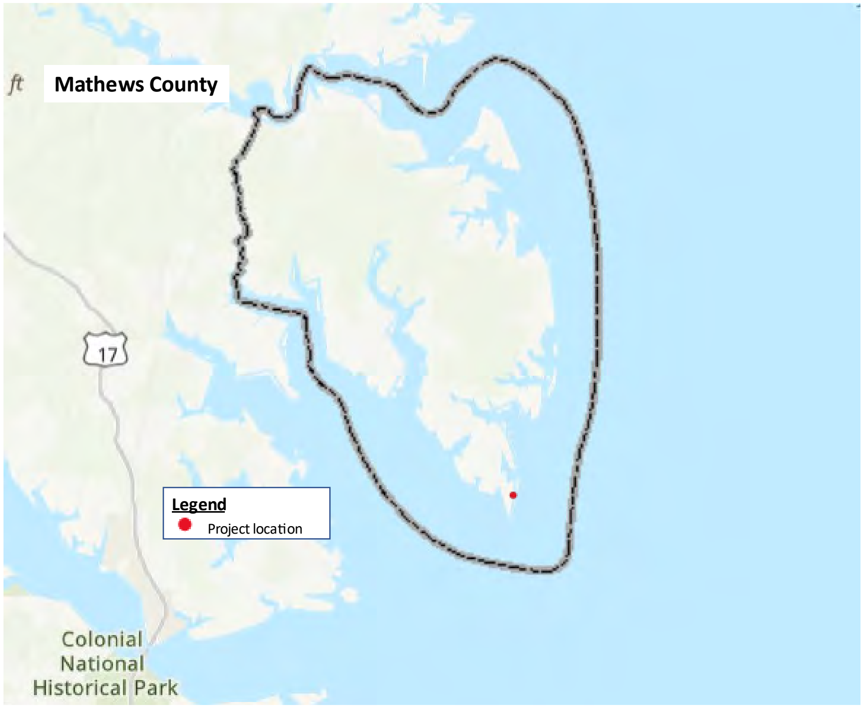
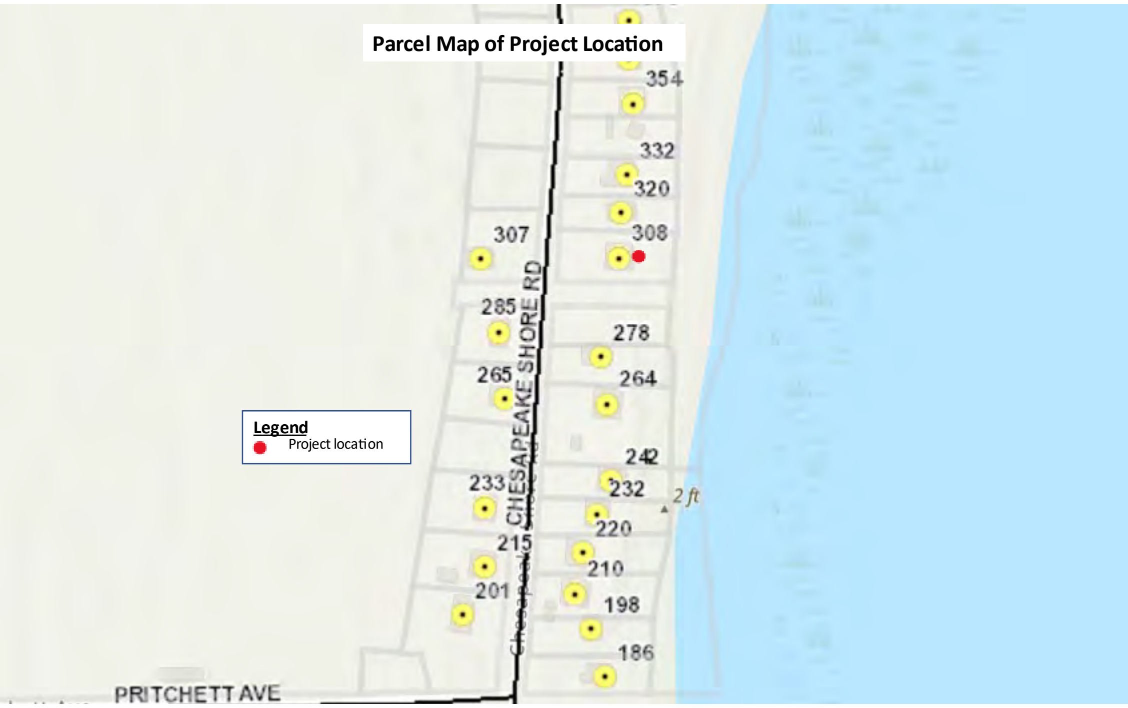


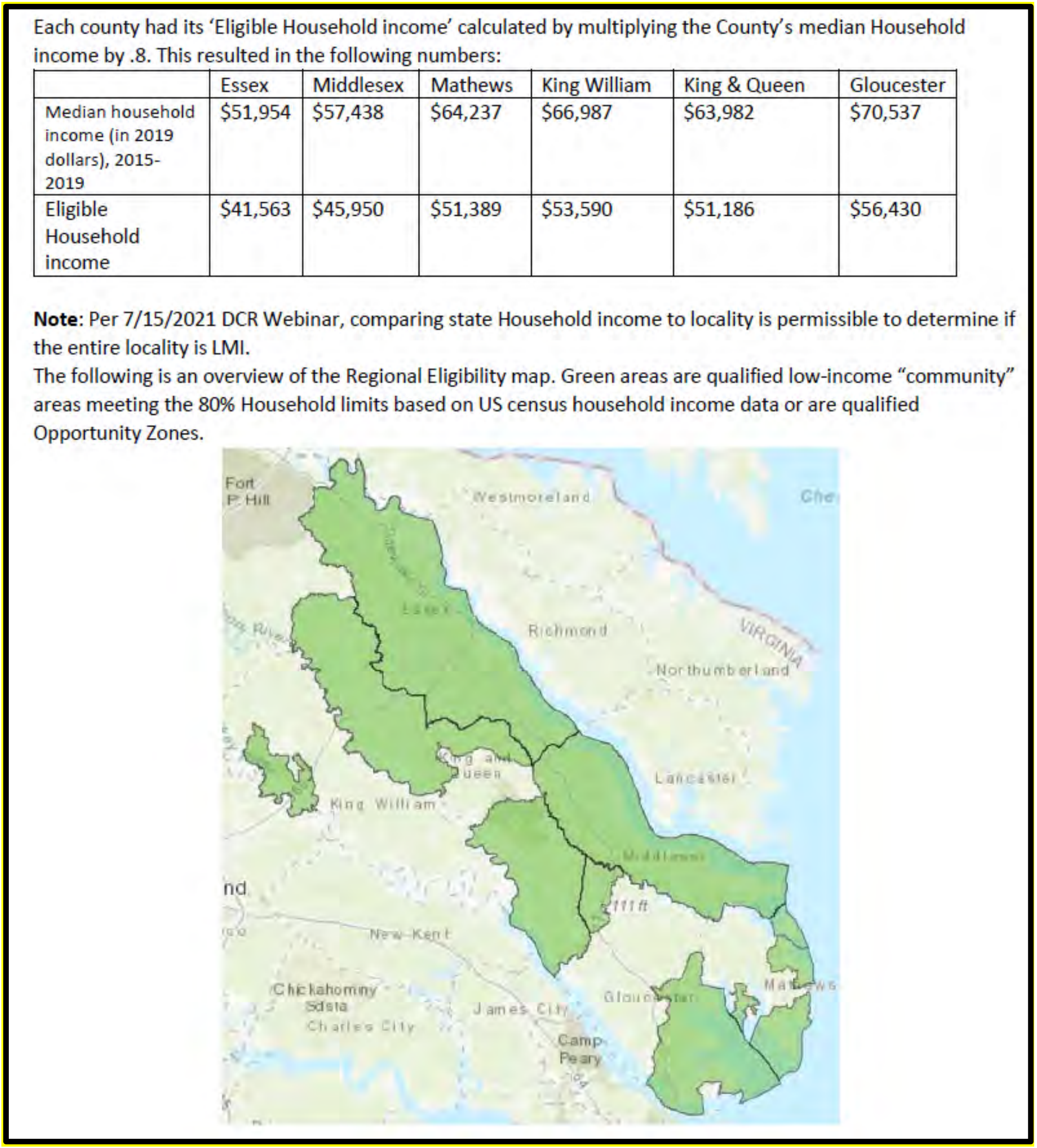
Figure 4. Parcel Map of Project Location



Mathews County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

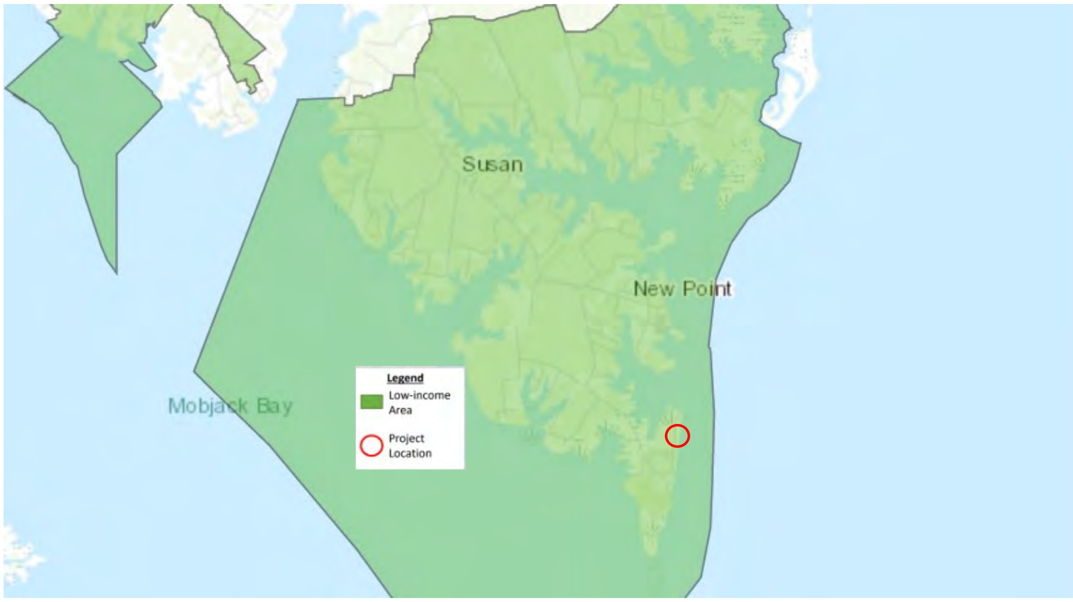
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

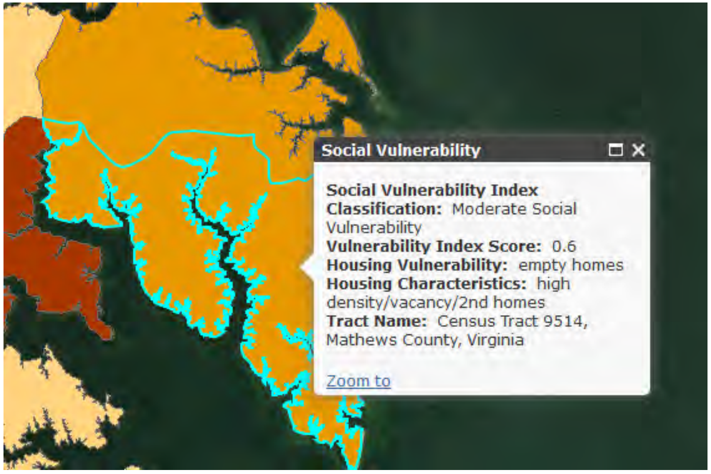
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



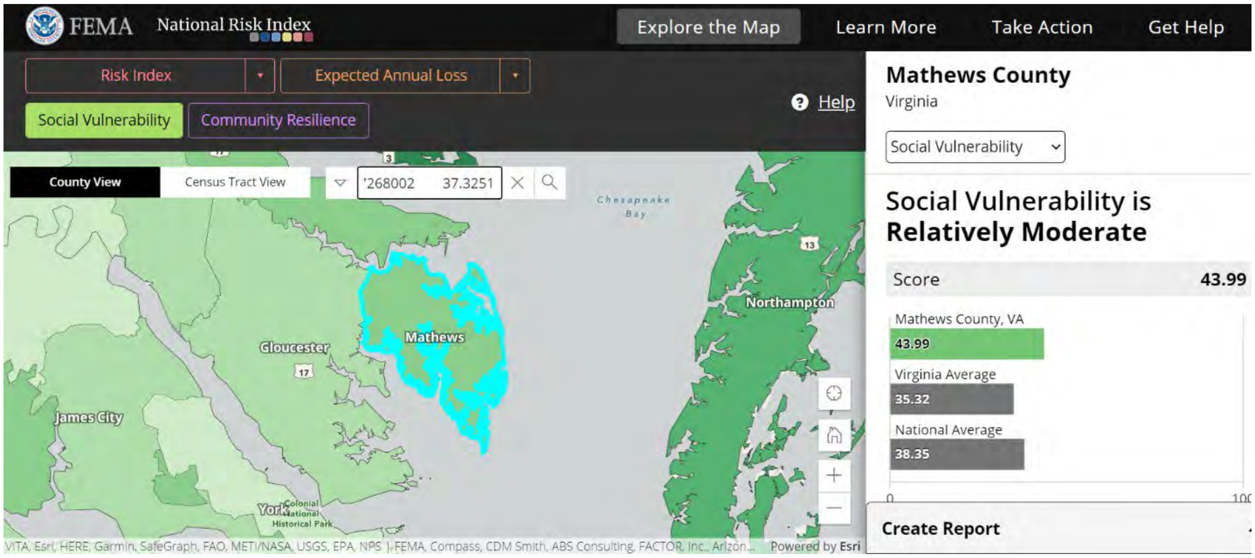
According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability is considered relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Moderate

Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

The project is located at 308 Chesapeake Shore Road, Port Haywood, VA 23138 (-76.26966522, 37.32654784).

This property has two lots on the Bay with a 50-foot beach access right of way in between them. In the last year, the owner's primary dune has disappeared, exposing the previously completely buried metal posts that secured the wood slat sand fence that built the dune. The first, primary lot was purchased in 1983 followed by the additional beach front lot a few years later. The beach in front of the two property parcels and the community access parcel is very flat. During very high tides or storms, the Bay would come up to the steps on their house, a small one-story cottage. The owners immediately started to try and build up the beach with sandbags, hay bales, and hope. They finally realized that a sand fence was the answer, and was successful; still, persistent erosion continues.

The lower wet beach accrues or loses sand based on the action of the Bay water from the south. The upper dry beach accrues or loses sand from wind action from the north. The snow fence collected dry sand effectively and gradually built up the beach. Hurricane Isabel in 2003 flattened the beach, destroyed every blade of beach grass, took down 10 pine trees, flooded their barn building across the street and inundated the lot with water that floated the boardwalks and reached the bottom of their cottage floor. They then immediately installed snow fence and many of their neighbors did also. After Hurricane Isabel, the beach and a large dune grew steadily back and actually blocked their view because the house was lower than the sand. In 2012, they raised the cottage 11 feet and enclosed the "basement" below it which is still much lower than the sand. If the Bay gets close enough, it will flood the basement.

For 30 plus years, the natural movement of sand worked well for the Chesapeake Shores and Bavon Beach communities. Then, in 2016, Bavon Beach was in such bad shape that they constructed break waters to manage recurrent storm energy causing an escalation in erosion. The design was not effective on a large multi parcel reach. Chesapeake Shores homeowners need comprehensive action as the erosion continues to move further and further north. The beach in front of their two lots, and the community access lot between them, have been reduced significantly and their ability to stop it no longer exists. In March 2020, they had sandbags installed to try and stop the dune destruction but that quickly proved to be fruitless.

In the video associated with the following link, it notes the metal sand fence poles that used to be completely covered by the dune that was at least six feet high is now. It also provides a feel for the little peninsula. Very vulnerable from every direction. There is only one road in and out and it is through marsh land which regularly floods the road. See: https://vimeo.com/113180867.

This site is located within the VE flood zone as seen in **Figure 9**. Please see **Appendix 2** for the FIRMettes (last mapped 12/9/2014) and **Appendix 3** for additional property photos.

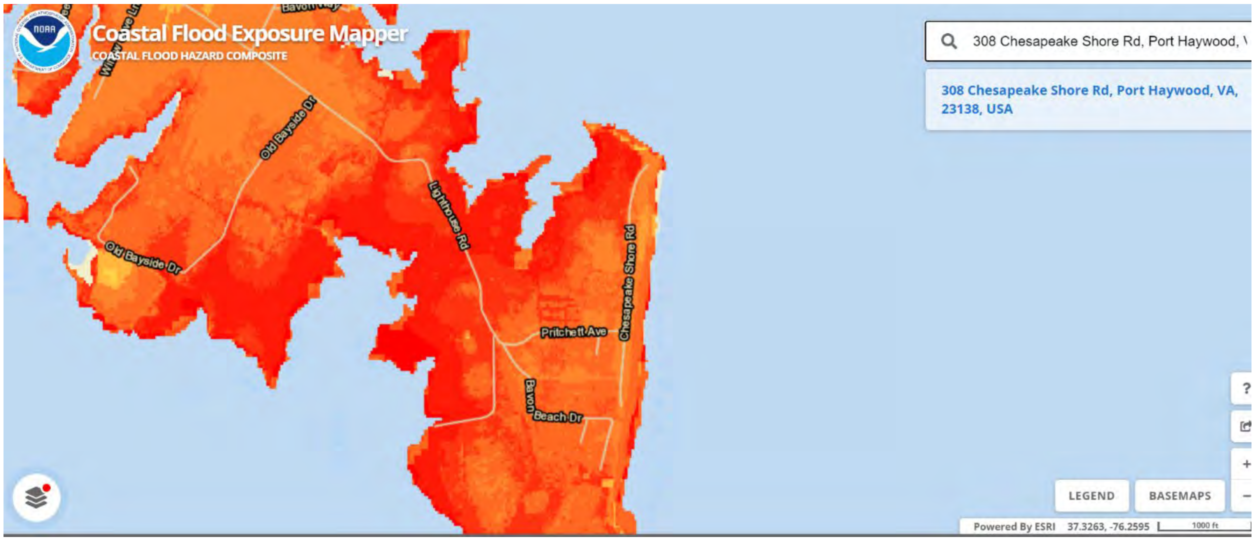
Figure 9: Map of FEMA Flood Zones

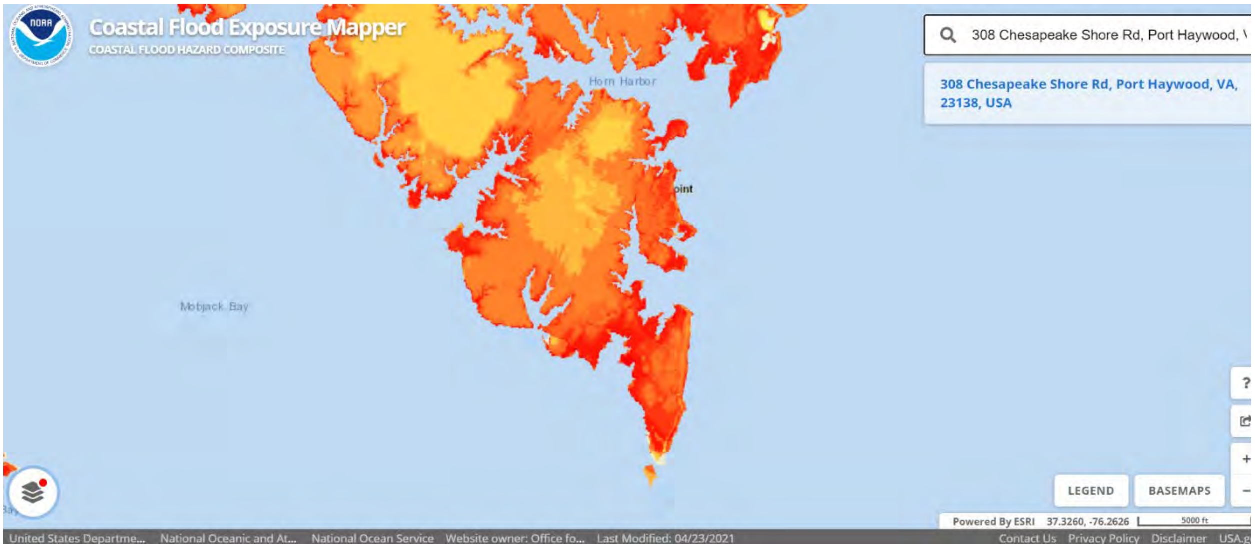
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see significant erosion and change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 84 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 9. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)





For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

***GOALS AND OBJECTIVES*.**

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers. Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fighttheffloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

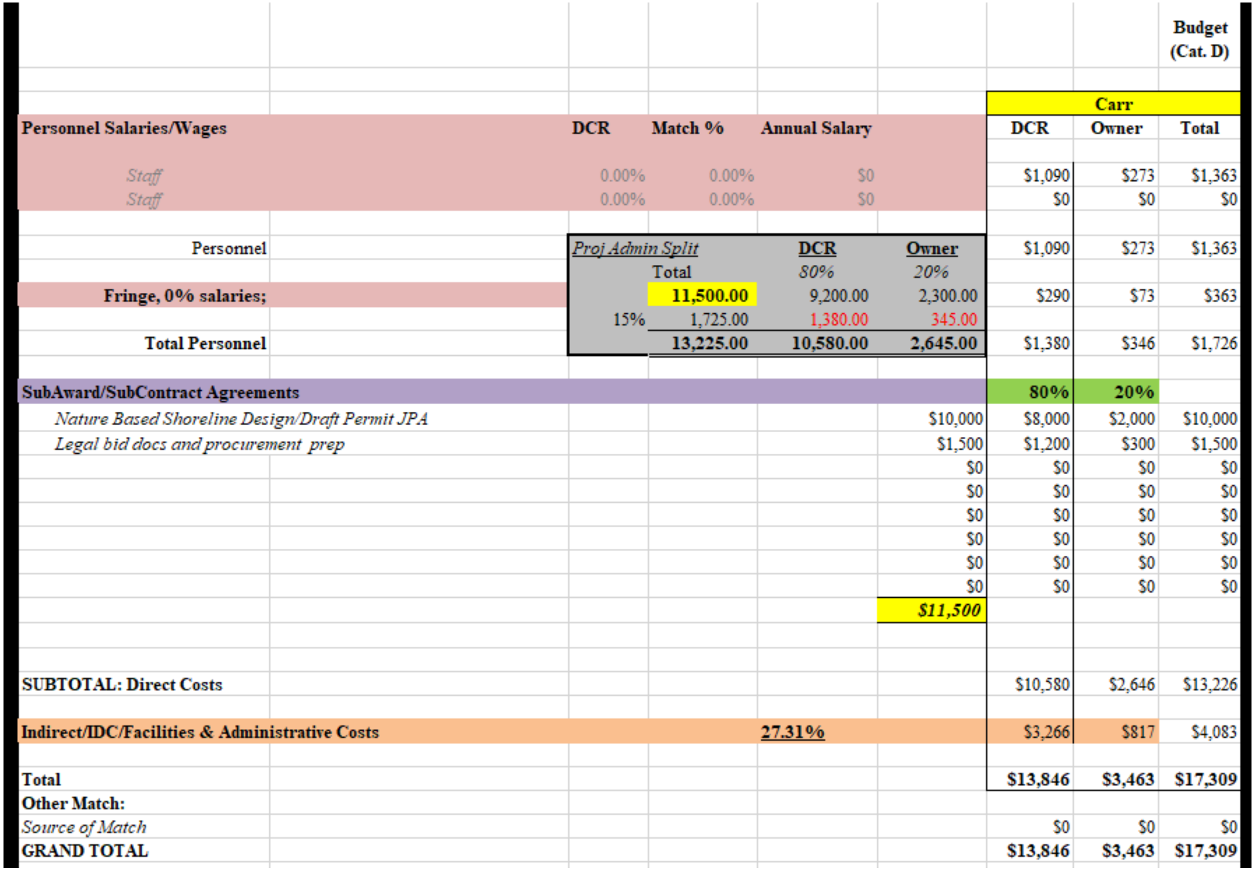
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	þYes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	þYes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	þYes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	þYes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	þYes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	þYes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	þYes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	þYes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	þYes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	þYes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	þYes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	þYes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $17,309

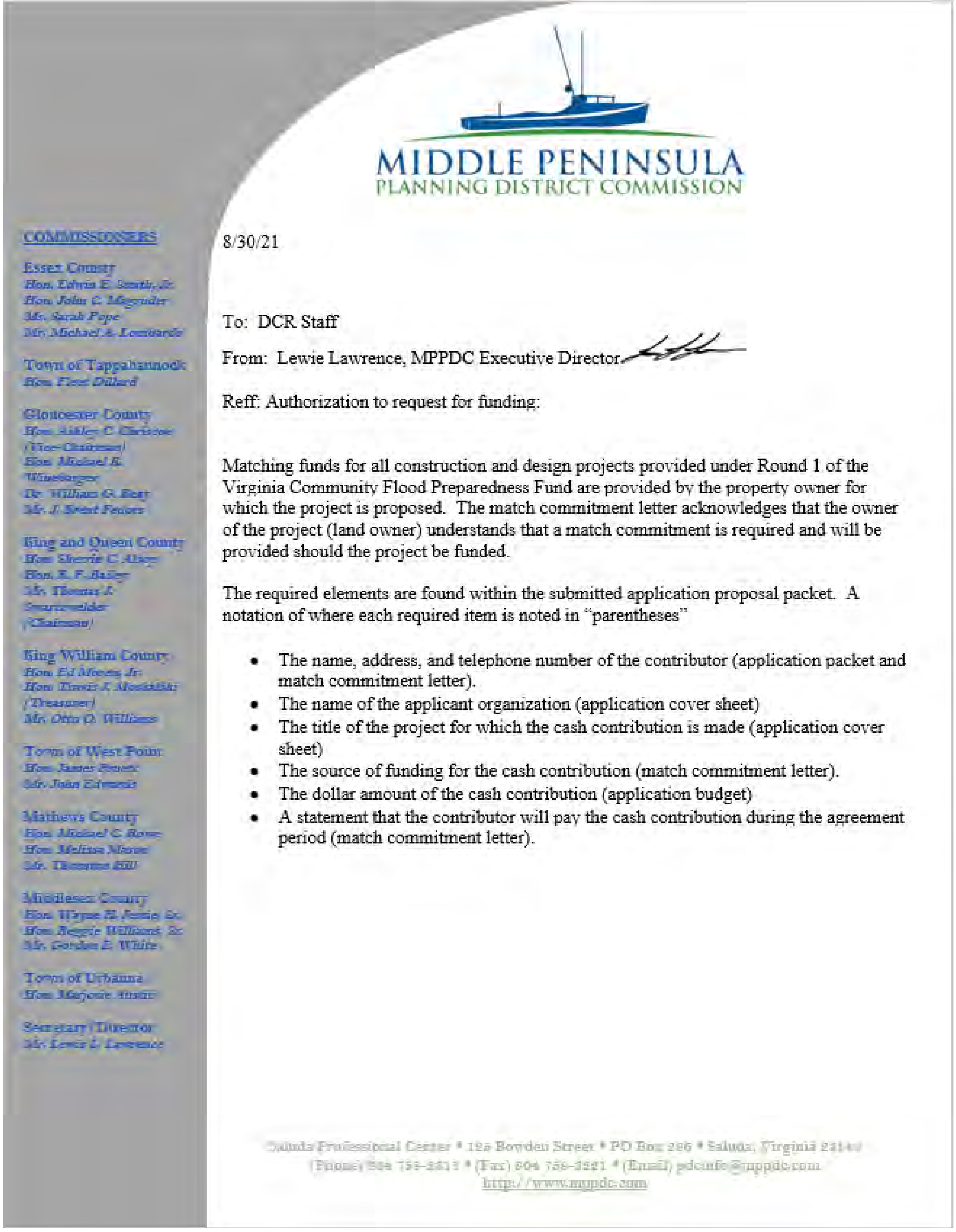


							Budget (Cat. D)
						Carr	
Personnel Salaries/Wages	**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	0.00%	0.00%	$0		$1,090	$273	$1,363
Staff	0.00%	0.00%	$0		$0	$0	$0
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$1,090	$273	$1,363
		Total	*80%*	*20%*			
Fringe, 0% salaries;		**11,500.00**	9,200.00	2,300.00	$290	$73	$363
	15%	1,725.00	1,380.00	345.00			
Total Personnel		**13,225.00**	**10,580.00**	**2,645.00**	$1,380	$346	$1,726
SubAward/SubContract Agreements					**80%**	**20%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$8,000	$2,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,200	$300	$1,500
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$11,500			
SUBTOTAL: Direct Costs					$10,580	$2,646	$13,226
Indirect/IDC/Facilities & Administrative Costs			**27.31%**		$3,266	$817	$4,083
Total					**$13,846**	**$3,463**	**$17,309**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$13,846**	**$3,463**	**$17,309**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

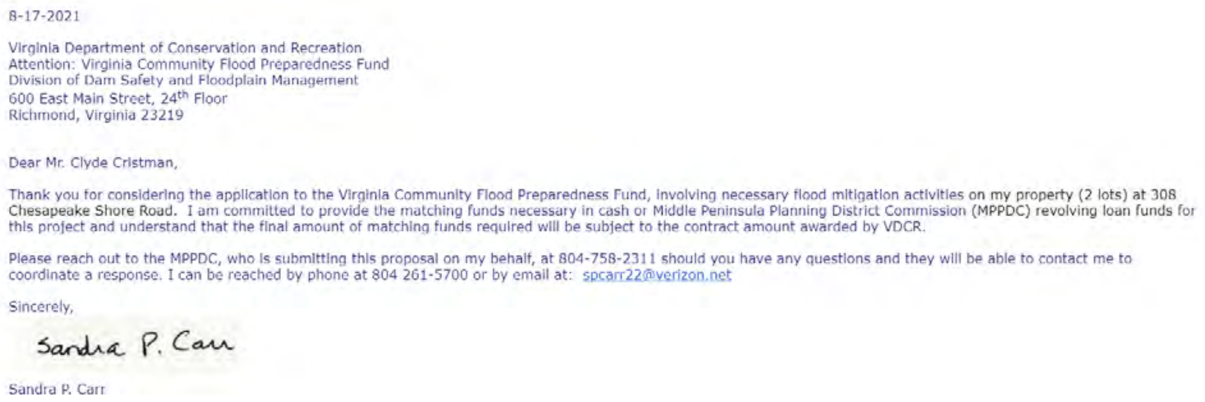
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



8-17-2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property (2 lots) at 308 Chesapeake Shore Road. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804 261-5700 or by email at: spcarr22@verizon.net

Sincerely,

Sandra P. Carr

Sandra P. Carr

I. SUPPORTING DOCUMENTATION

þ Letters of support from all affected local government
þ Detailed map of the project area(s)
þ FIRMette of the project area(s)
þ Historic flood damage data and/or images

Cont next page

APPENDIX 1

Community Support Letter

DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B666C2DAE00C

County Administration

January 27, 2022

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

David Schlosser
Interim County Administrator

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

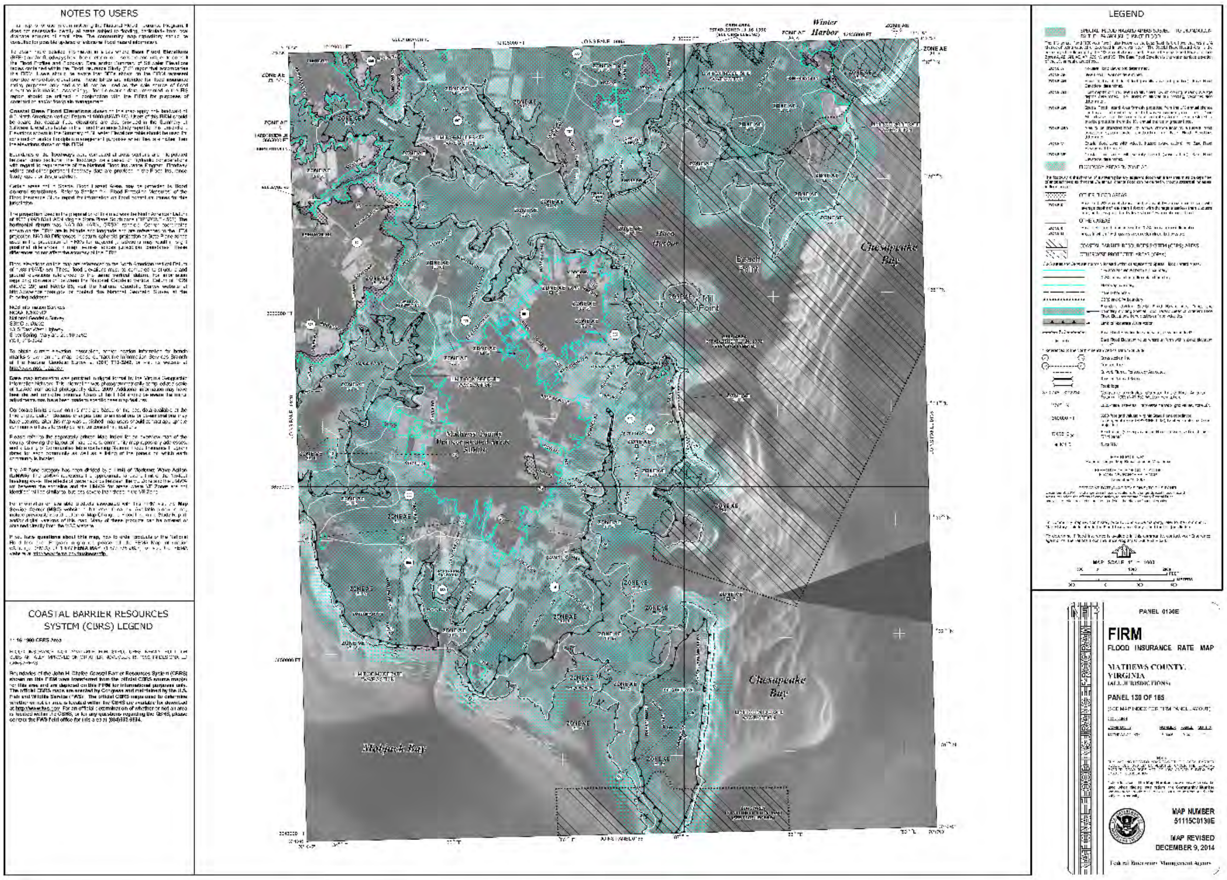
50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE MATHEWS

APPENDIX 2

Project Location FIRMette

Parker Property (FIRMette #: 51115C0130E)

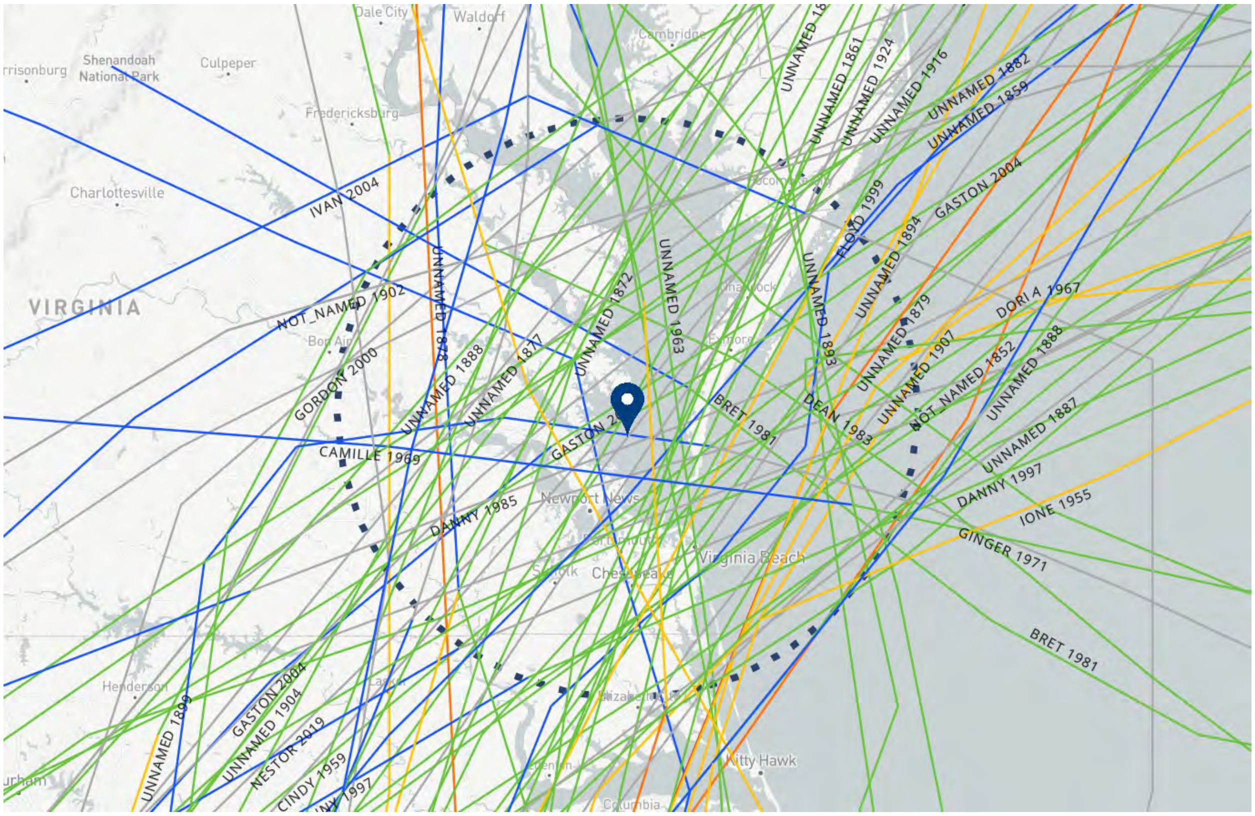


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.32654784, -76.26966522

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1

NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29,	105	950	H3

	2004			
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
BONNIE 2004	Aug 03, 2004 to Aug 14, 2004	55	1001	TS
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep	135	921	H4

	19, 1999			
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16,	65	986	H1

	1979			
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
DONNA 1960	Aug 29, 1960	125	930	H4

	to Sep 14, 1960			
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug	70	985	H1

	04, 1944			
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct	55	999	TS

	01, 1924			
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3

UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Oct 08, 1888 to Oct 12, 1888	95	970	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep	110	949	H3

	13, 1882			
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18,	45	-1	TS

	1867			
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12,	110	938	H3

	1854			
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)
The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)
Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)
In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

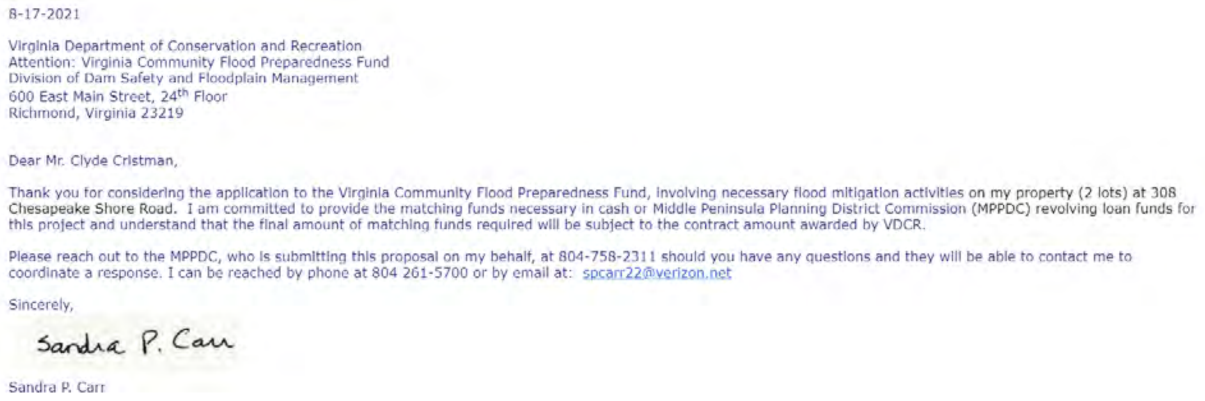
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



8-17-2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property (2 lots) at 308 Chesapeake Shore Road. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804 261-5700 or by email at: spcarr22@verizon.net

Sincerely,

Sandra P. Carr

Sandra P. Carr

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Matthew Gray-Keeling** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

Issue #2

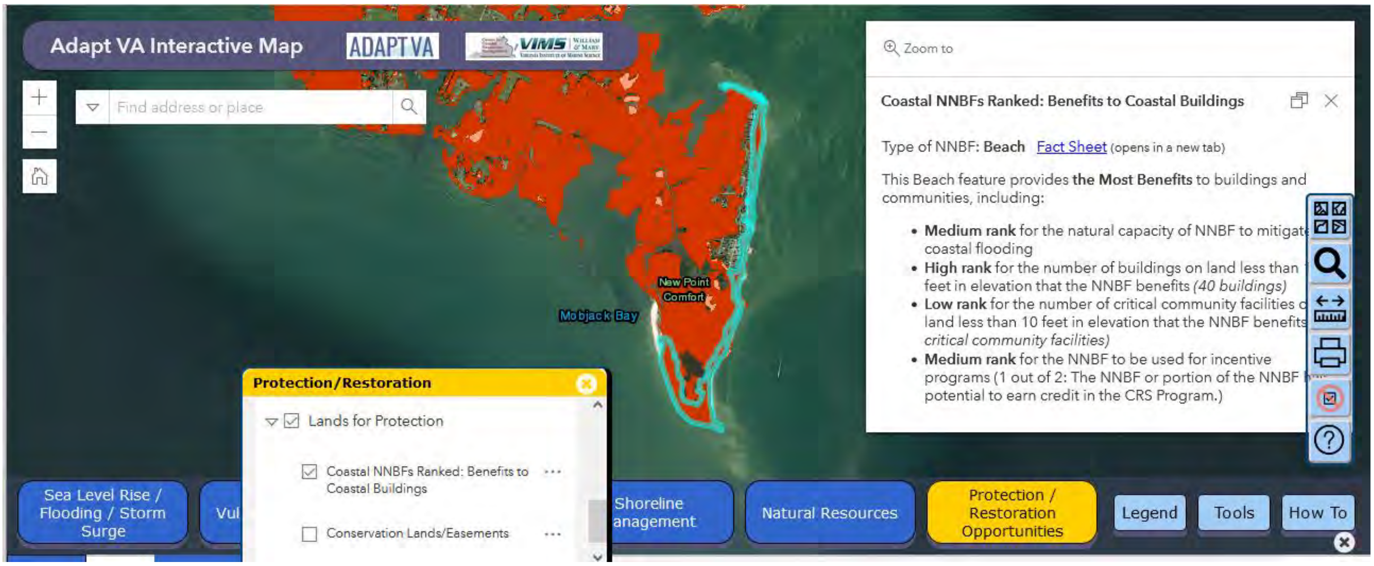
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.



☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

☐ Conservation Lands/Easements

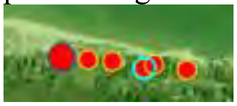
Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Beach** Fact Sheet (opens in a new tab)

This Beach feature provides **the Most Benefits** to buildings and communities, including:

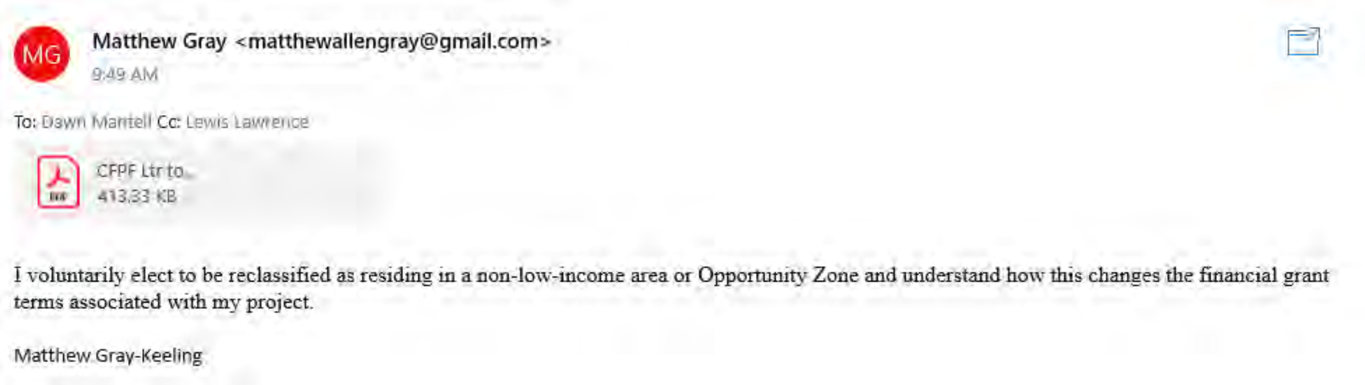
- **Medium rank** for the natural capacity of NNBF to mitigat coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(40 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **Medium rank** for the NNBF to be used for incentive programs (1 out of 2: The NNBF or portion of the NNBF potential to earn credit in the CRS Program.)

Between Round 1 and 2, MPPDC has 6 adjoining/neighborhood homeowners partnering and looking to protect larger “reach based areas



Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



Matthew Gray <matthewallengray@gmail.com>
9:49 AM

To: Dawn Mantell Cc: Lewis Lawrence

CFPF Ltr to...
413.33 KB

I voluntarily elect to be reclassified as residing in a non-low-income area or Opportunity Zone and understand how this changes the financial grant terms associated with my project.

Matthew Gray-Keeling

Amended Budget Request

DCR Funding:	$ 12,180
Owner:	$ 5,219
Total	$ 17,399

						Gray	
Personnel Salaries/Wages	**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	0.00%	0.00%	$70,000		$957	$410	$1,367
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		**$11,500**	8,050.00	3,450.00	$251	$107	$358
	15%	1,725.00	1,207.50	517.50			
Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$11,500			
SUBTOTAL: Direct Costs					$9,258	$3,967	$13,225
Indirect/IDC/Facilities & Administrative Costs			**27.92%**		$2,922	$1,252	$4,174
Total					**$12,180**	**$5,219**	**$17,399**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,180**	**$5,219**	**$17,399**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Chesapeake Bay Road for Gray

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ____
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) _________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): County Name **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0130E

Total Cost of Project:_$17,309____

Total Amount Requested: ___$13,846_________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding and wetland loss.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional

purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal design application seeks a nature-based design solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Chesapeake Bay Road in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC’s All Hazards Mitigation Plan (2016) can be found at:*

https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
  - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

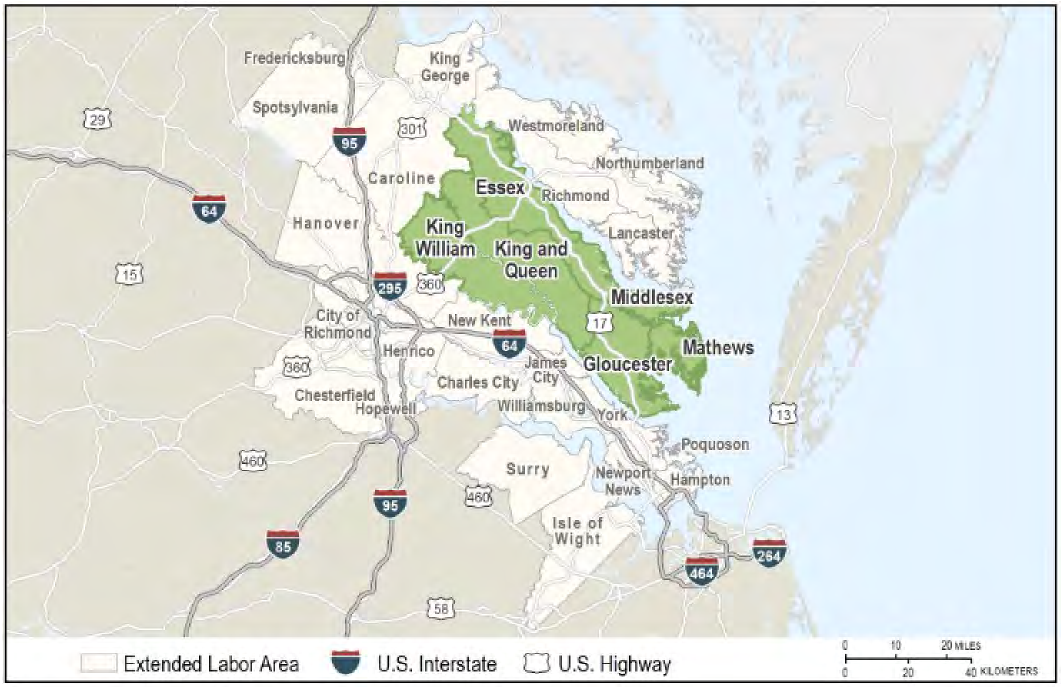
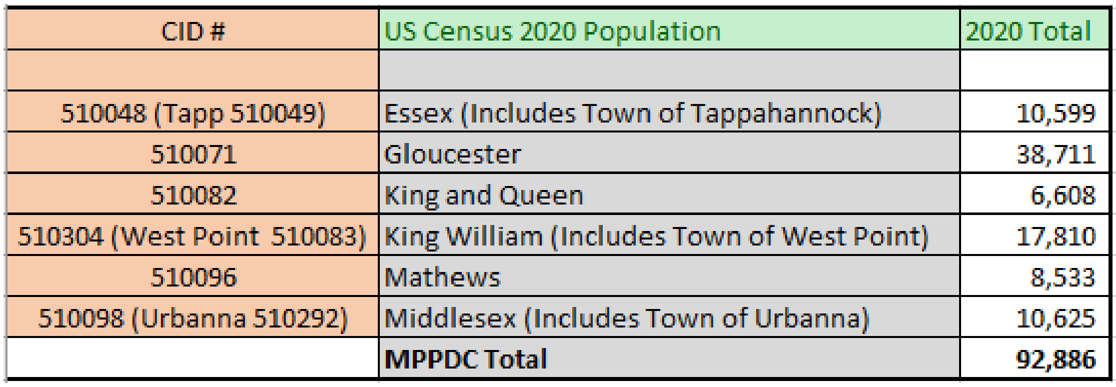


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Chesapeake Bay Road in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

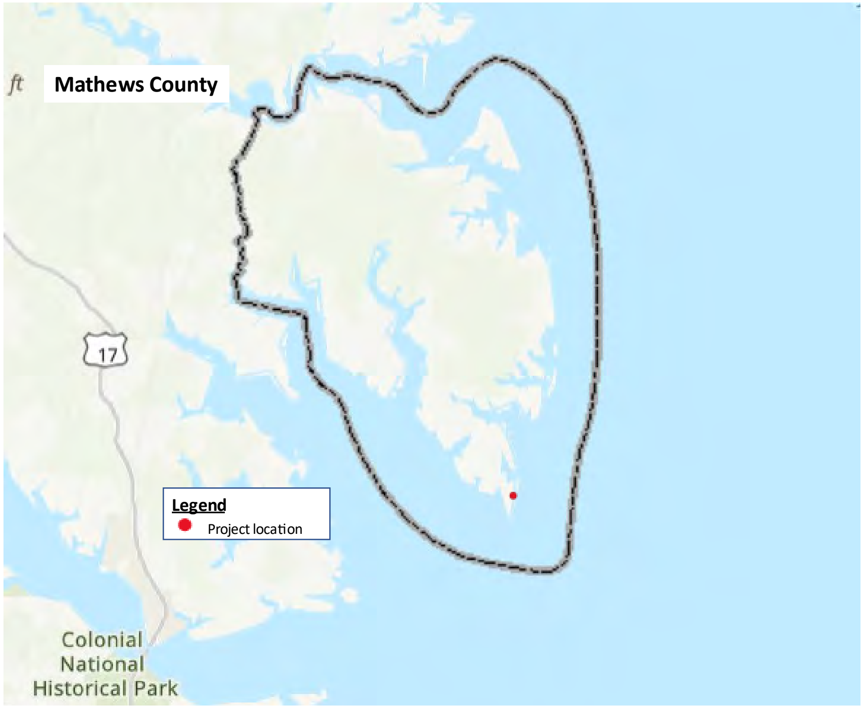
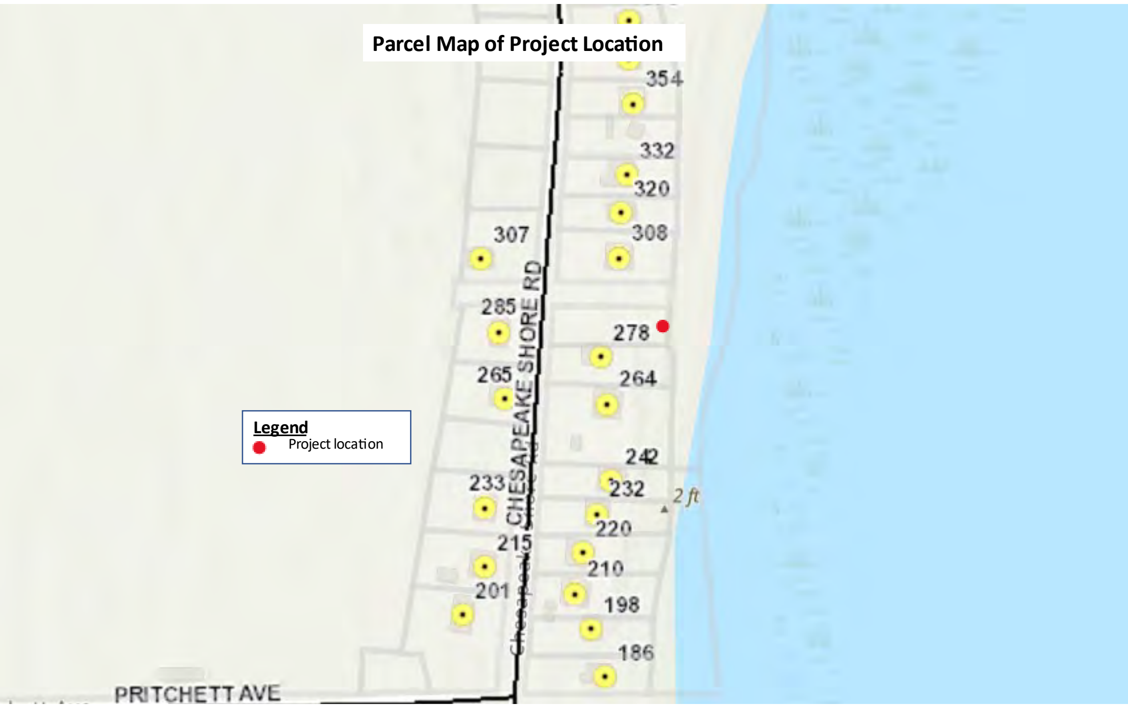


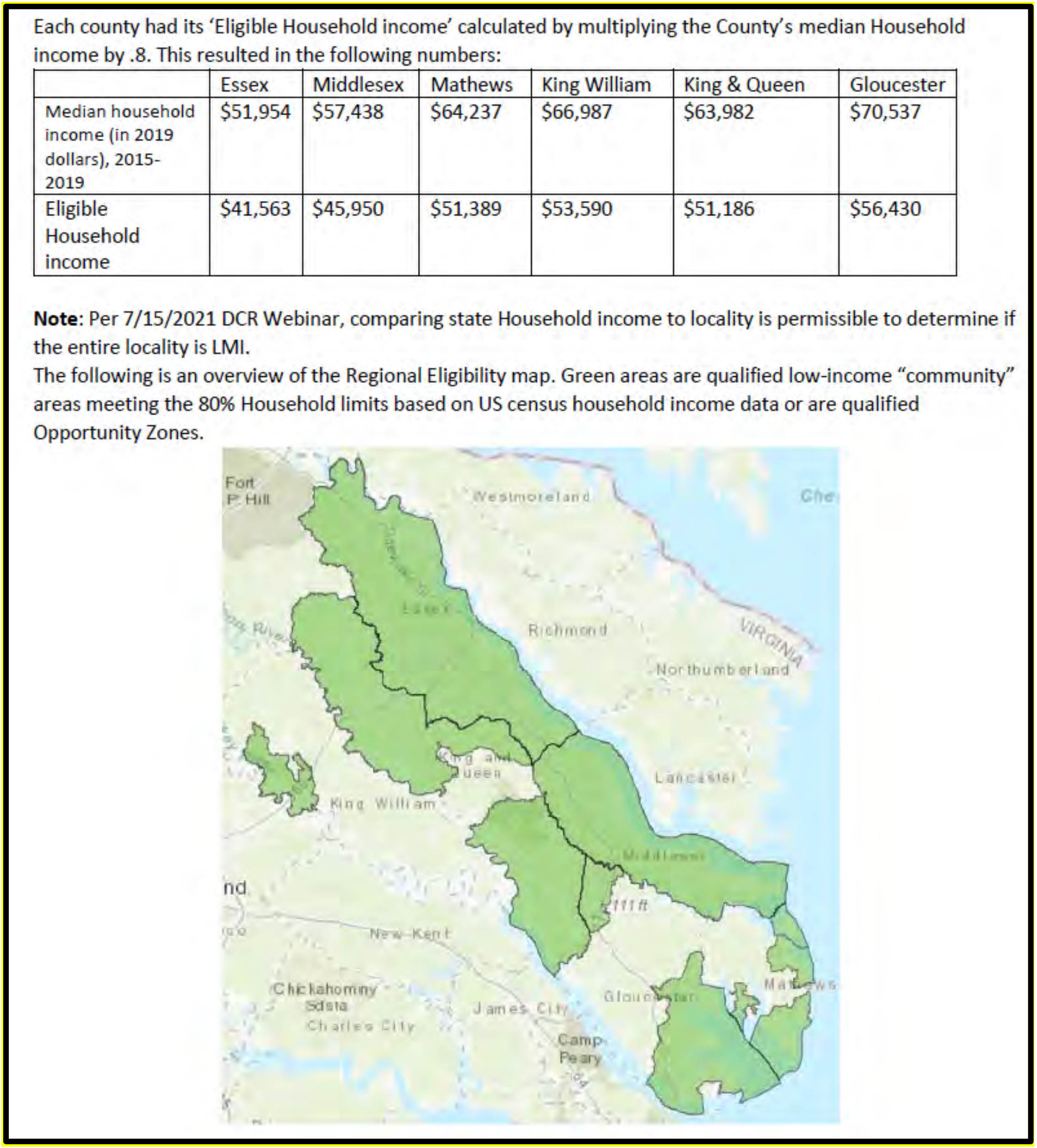
Figure 4. Parcel Map of Project Location



Mathews County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

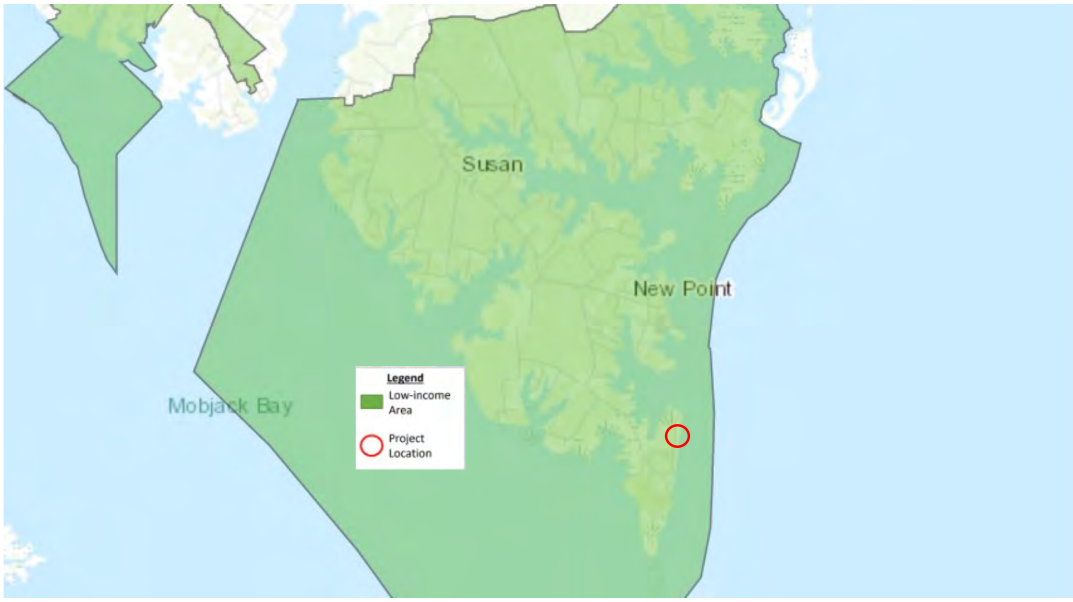
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

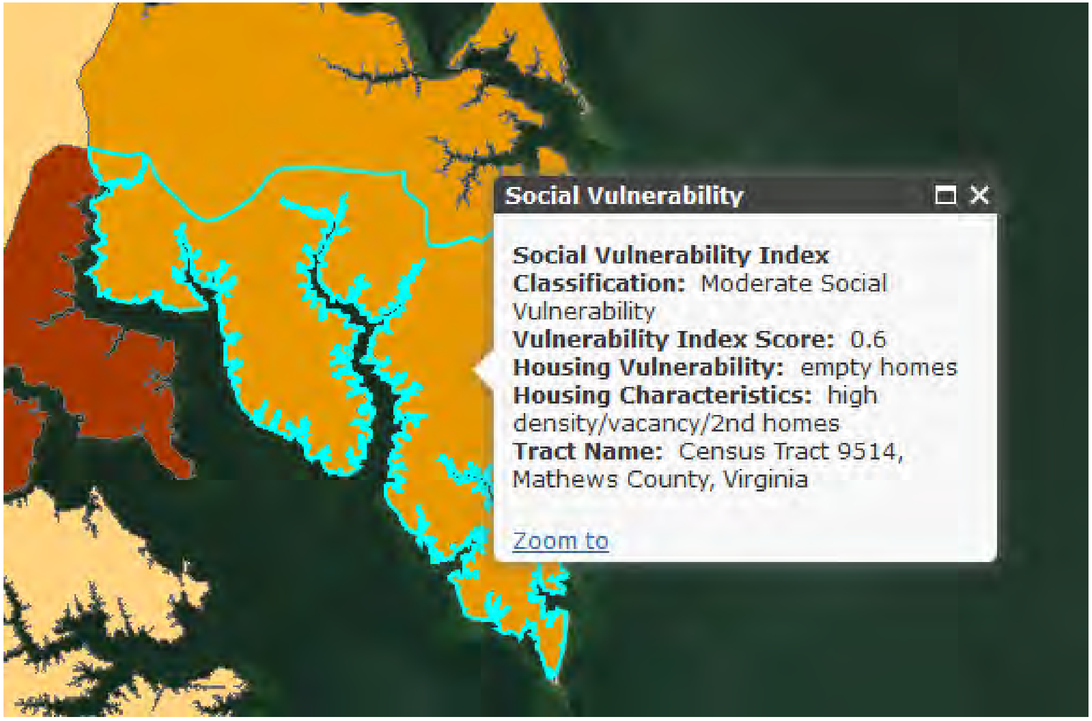
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



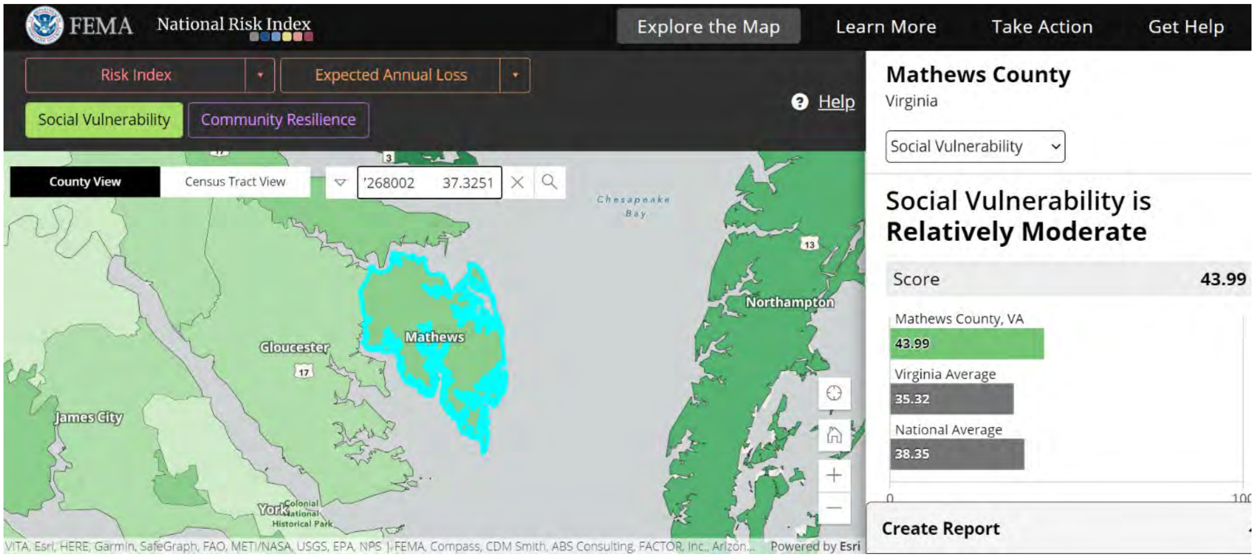
According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability is considered relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

Social Vulnerability

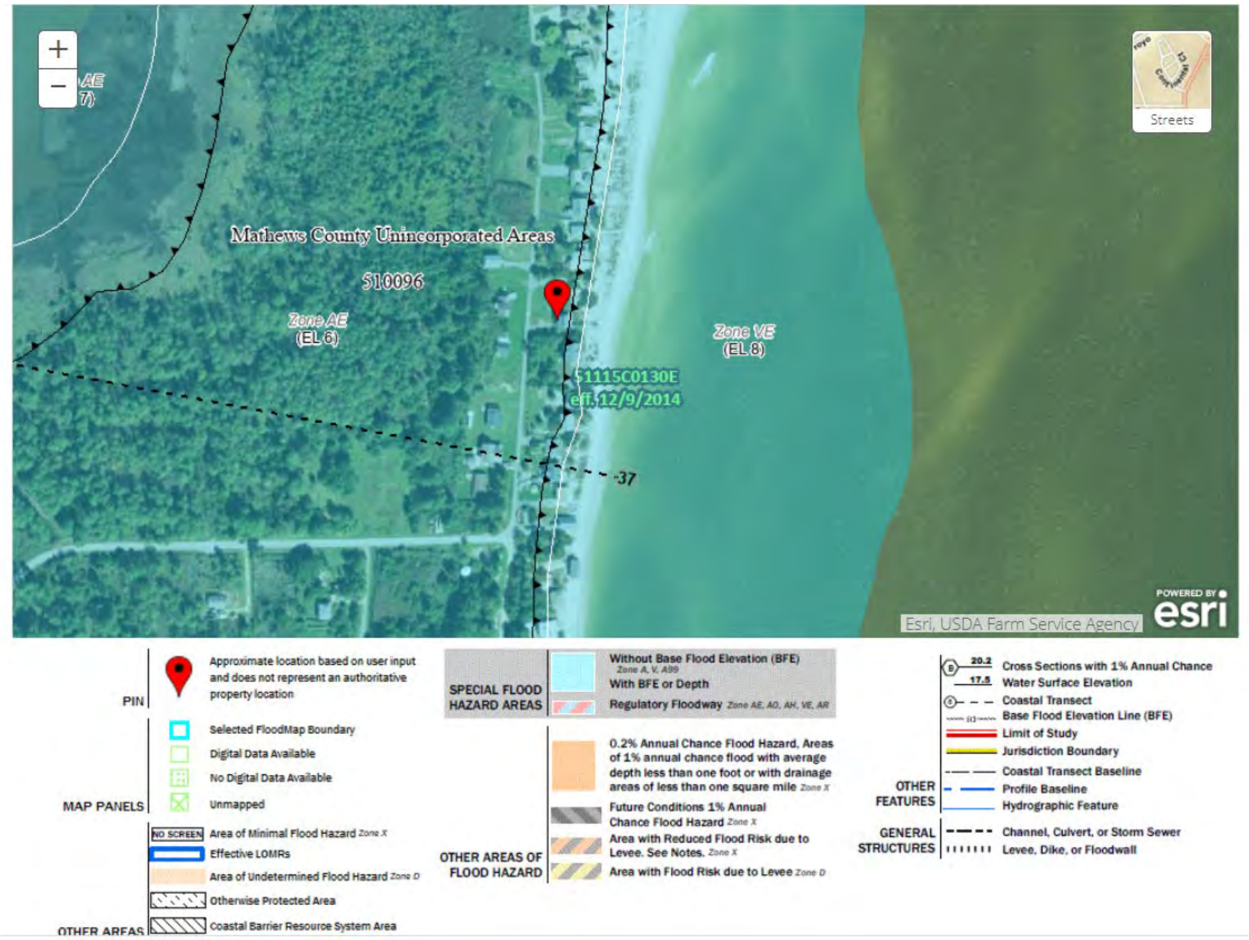
Social Vulnerability is Relatively Moderate

Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

The project is located at 278 Chesapeake Shore Road, Port Haywood, VA 23138 (-76.27268002, 37.32513599). The property was purchased in 2017 and has experienced a number of issues. At the time, the house it had a long sandy beach, but the beach has eroded steadily over the past several years. The beach has lost an entire doom. The walkway out to the beach had a doom to get to the beach and now the beach ends at the walkway; instead, the walkway dangles over the beach. Extreme erosion on the beach is so impactful that the sand is leaving. Additionally, other property owner nearby has implemented hard solutions in a way that it is now negatively impacting their property further to the point that there is no beach with high tide and each week they are losing more of the sand on the doom. The recent few weeks of major storms are causing the continued washing, which is presenting a sense of urgency. This habitat also protects the tiger beetle.

This site is located within the VE flood zone as seen in **Figure 9**. Please see **Appendix 2** for the FIRMettes (last mapped 12/9/2014) and **Appendix 3** for additional property photos.

Figure 9: Map of FEMA Flood Zones

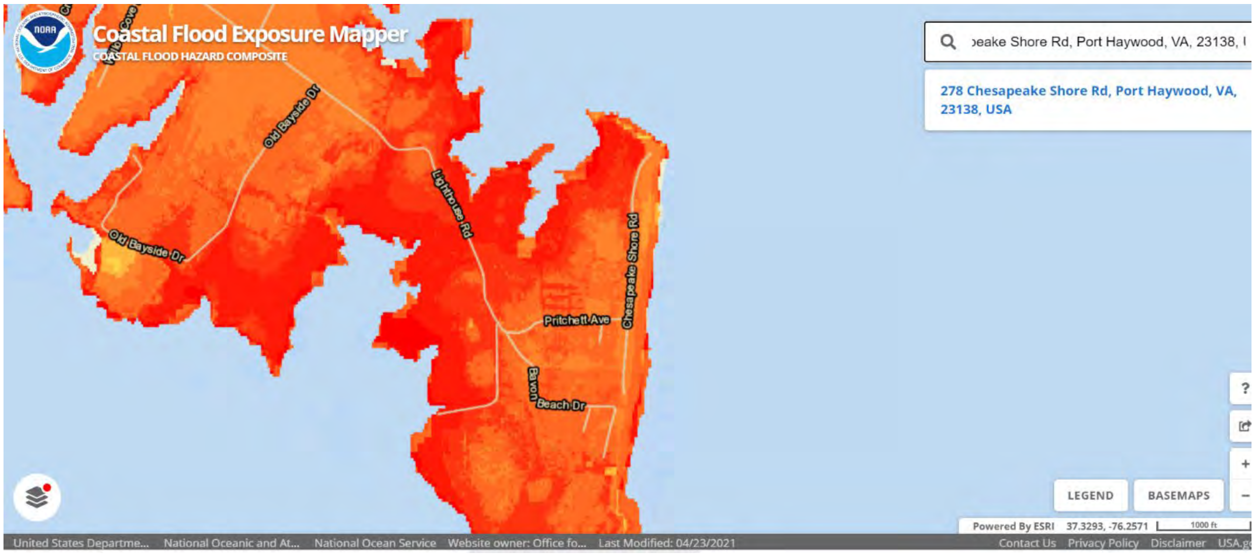


Due to the project site’s proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the active erosion change in the shoreline at the project location and the approximate loss of square feet of shoreline (see site photos). The project location has and continues to be impacted by tropical, sub-tropical, and nor’easter events. **Appendix 4** lists 84 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

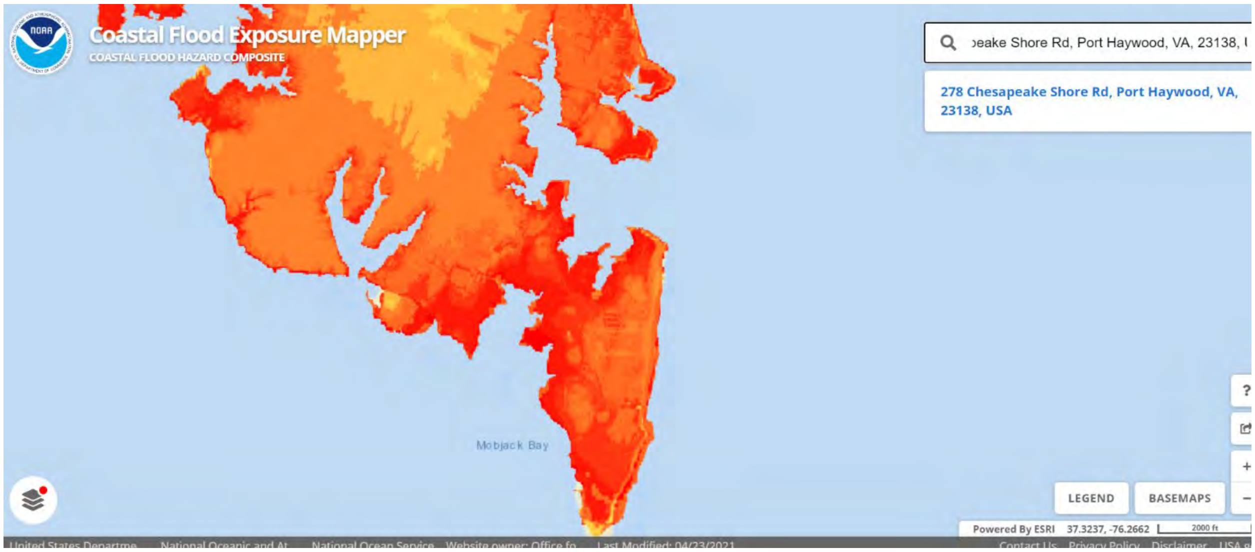
Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)


ɔeake Shore Rd, Port Haywood, VA, 23138, l

278 Chesapeake Shore Rd, Port Haywood, VA, 23138, USA



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at:* [*https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers. Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

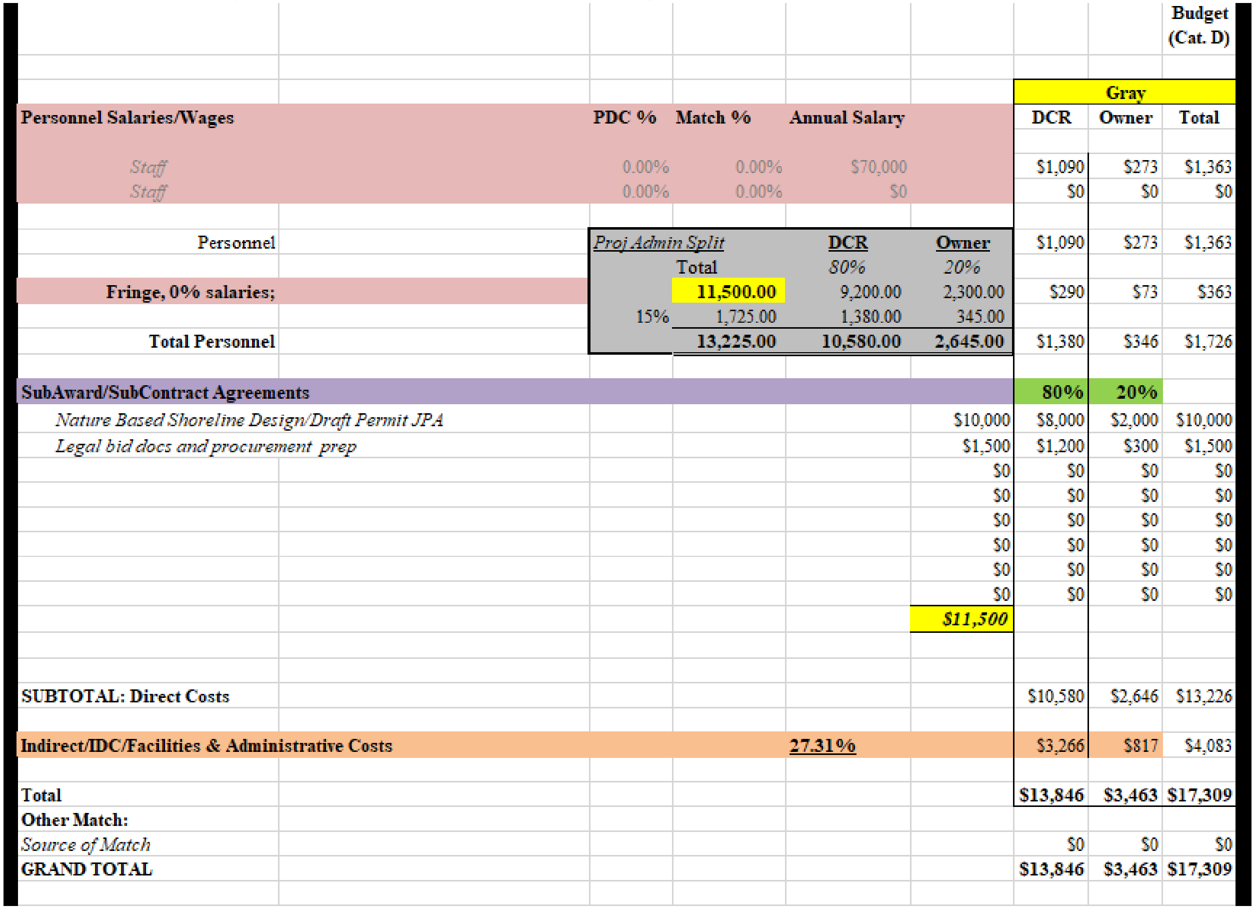
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $17,309

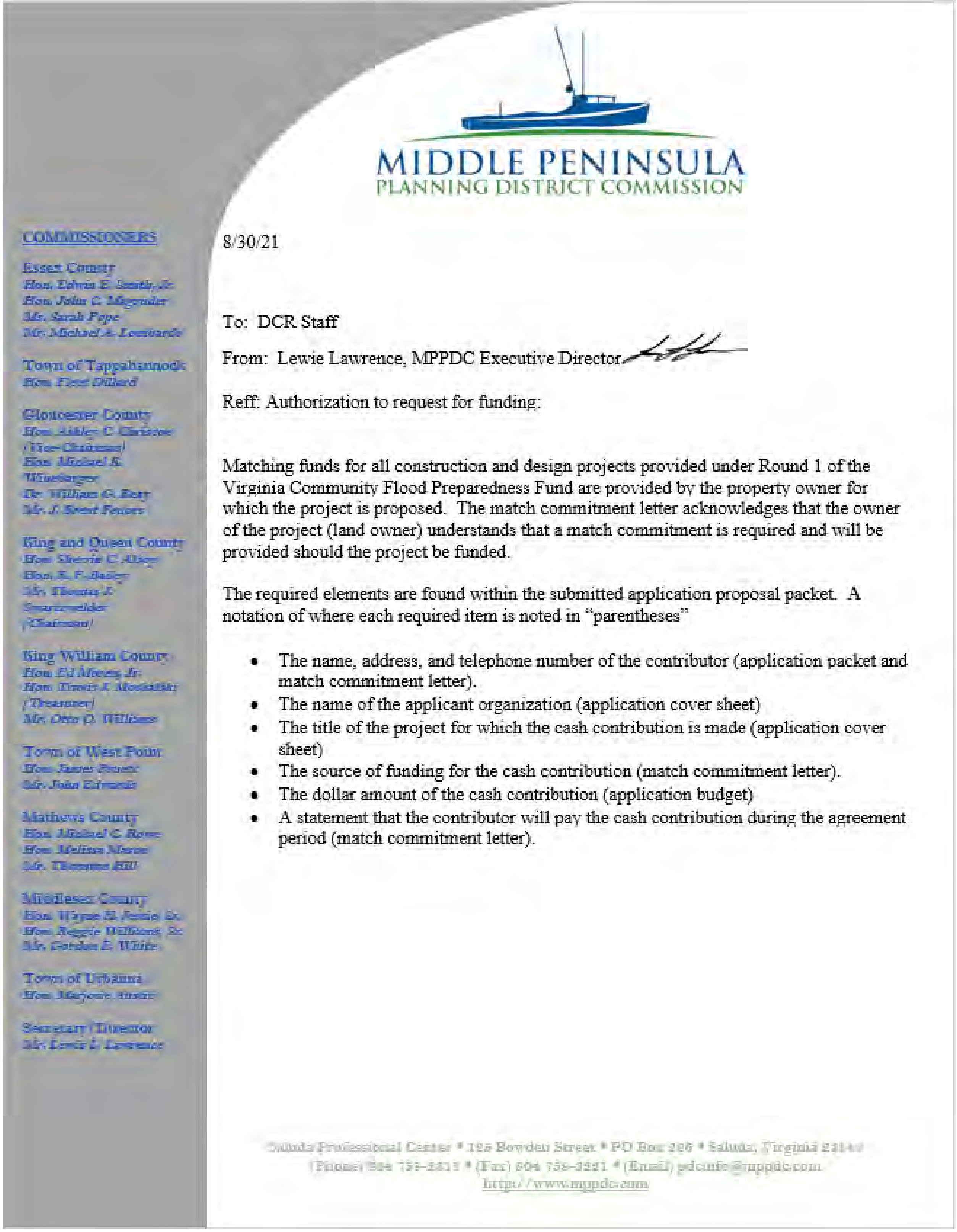


								Budget (Cat. D)
						Gray		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$1,090	$273	$1,363
Staff		0.00%	0.00%	$0		$0	$0	$0
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$1,090	$273	$1,363
			Total	*80%*	*20%*			
Fringe, 0% salaries;			**11,500.00**	9,200.00	2,300.00	$290	$73	$363
		15%	1,725.00	1,380.00	345.00			
Total Personnel			**13,225.00**	**10,580.00**	**2,645.00**	$1,380	$346	$1,726
SubAward/SubContract Agreements						**80%**	**20%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$8,000	$2,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,200	$300	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$11,500			
SUBTOTAL: Direct Costs						$10,580	$2,646	$13,226
Indirect/IDC/Facilities & Administrative Costs				**27.31%**		$3,266	$817	$4,083
Total						**$13,846**	**$3,463**	**$17,309**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$13,846**	**$3,463**	**$17,309**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

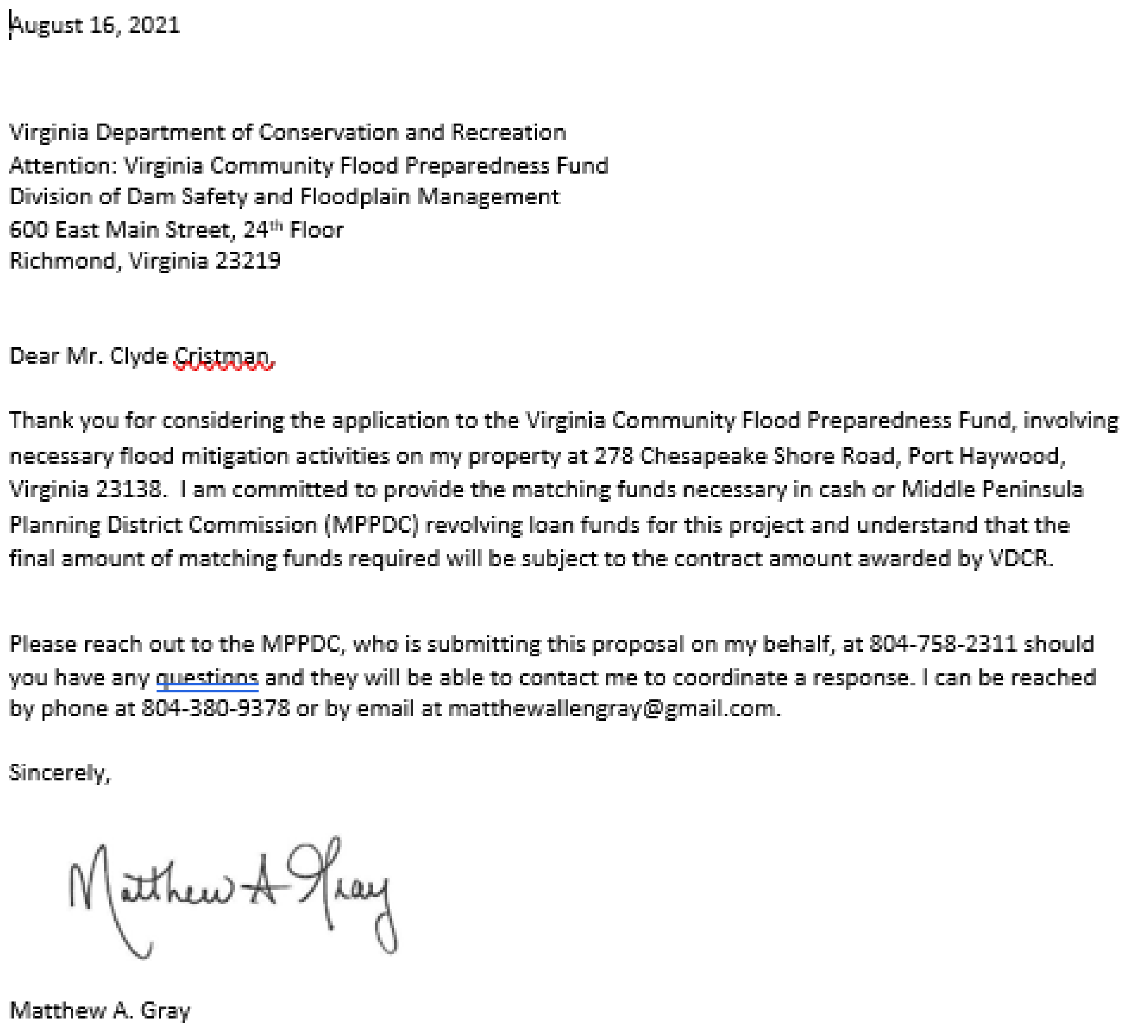
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



August 16, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 278 Chesapeake Shore Road, Port Haywood, Virginia 23138. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-380-9378 or by email at matthewallengray@gmail.com.

Sincerely,

Matthew A Gray

Matthew A. Gray

Also see appendix 6

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

Cont next page

APPENDIX 1

Community Support Letter

DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B668C2DAE00C

County Administration

January 27, 2022

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

David Schlosser
Interim County Administrator

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

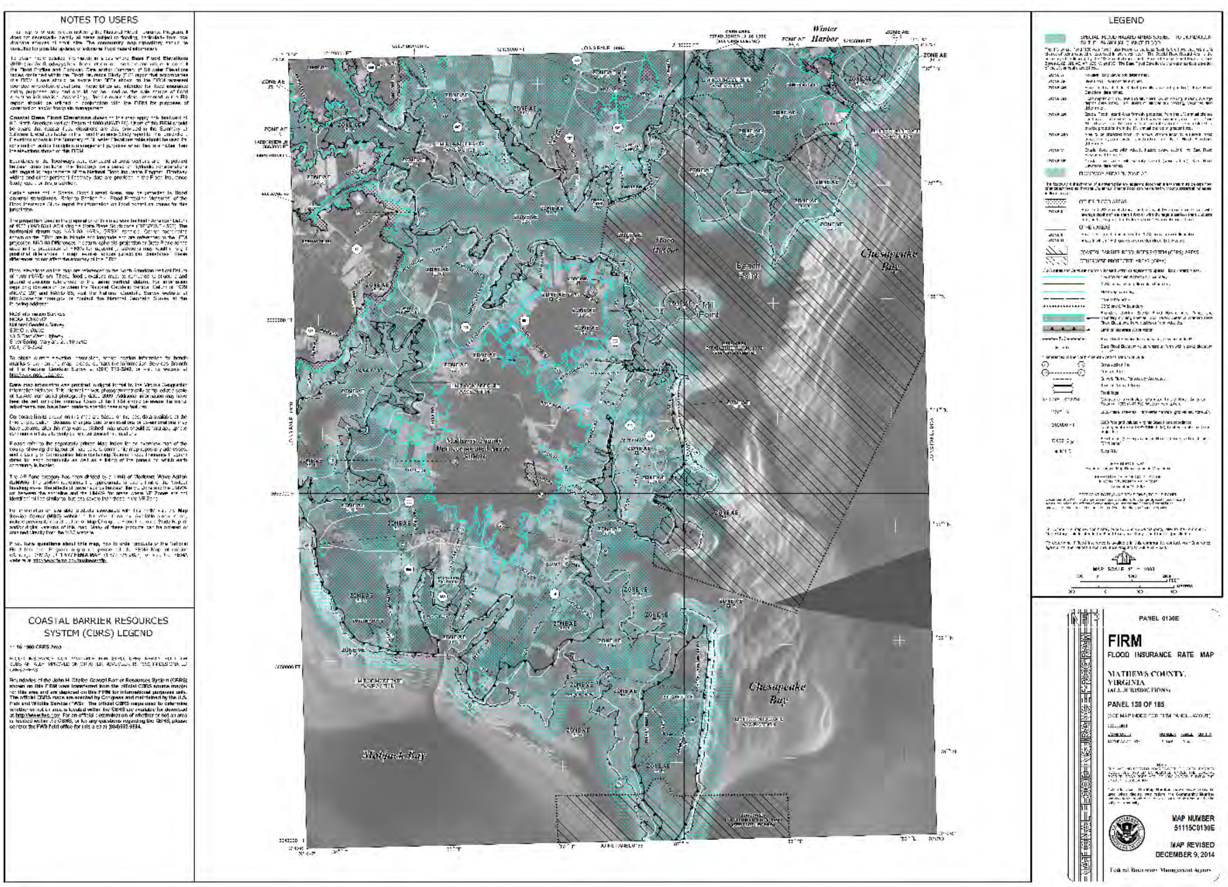
50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE MATHEWS

APPENDIX 2

Project Location FIRMette

Parker Property (FIRMette #: 51115C0130E)



PANEL 0130E

FIRM
FLOOD INSURANCE RATE MAP

MATHEWS COUNTY, VIRGINIA
(ALL JURISDICTIONS)

PANEL 130 OF 165

MAP NUMBER
51115C0130E

MAP REVISED
DECEMBER 9, 2014

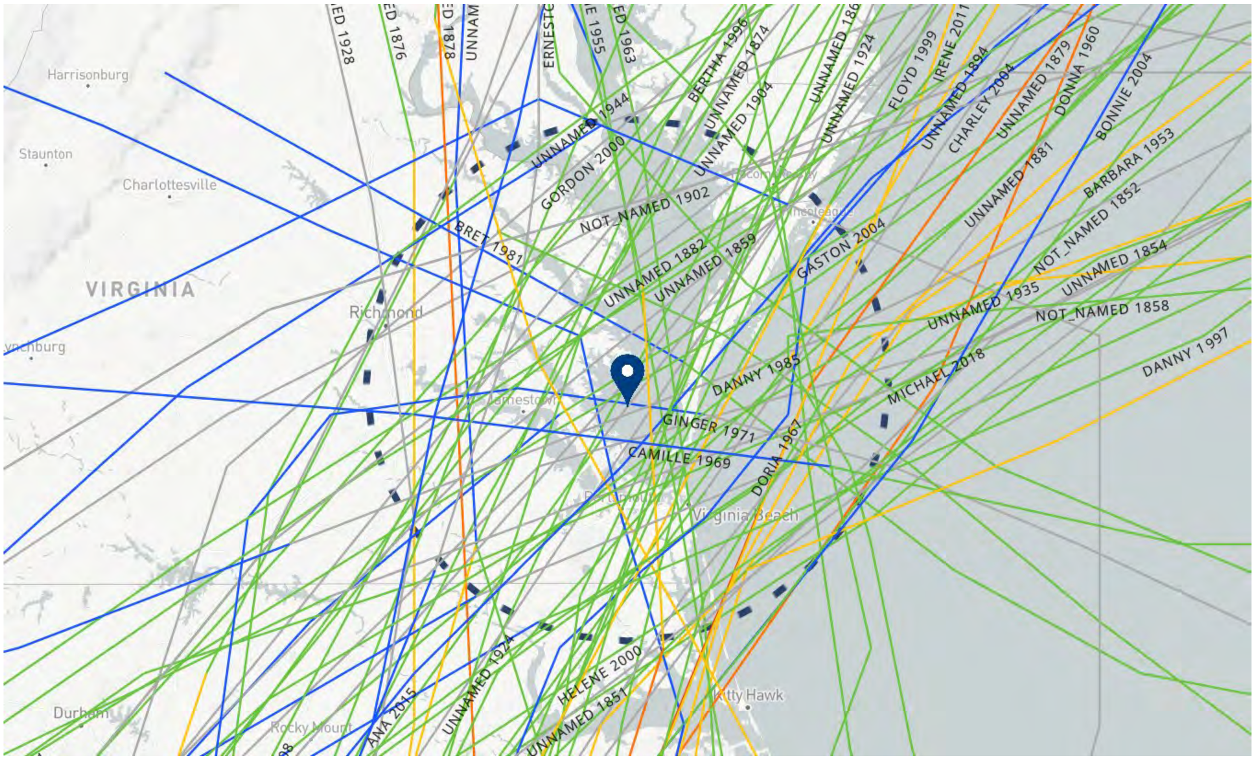
Federal Emergency Management Agency

APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.32513599, -76.27268002

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1

NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29,	105	950	H3

	2004			
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
BONNIE 2004	Aug 03, 2004 to Aug 14, 2004	55	1001	TS
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep	135	921	H4

	19, 1999			
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16,	65	986	H1

	1979			
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
DONNA 1960	Aug 29, 1960	125	930	H4

	to Sep 14, 1960			
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug	70	985	H1

	04, 1944			
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct	55	999	TS

	01, 1924			
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3

UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Oct 08, 1888 to Oct 12, 1888	95	970	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep	110	949	H3

	13, 1882			
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18,	45	-1	TS

	1867			
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12,	110	938	H3

	1854			
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)

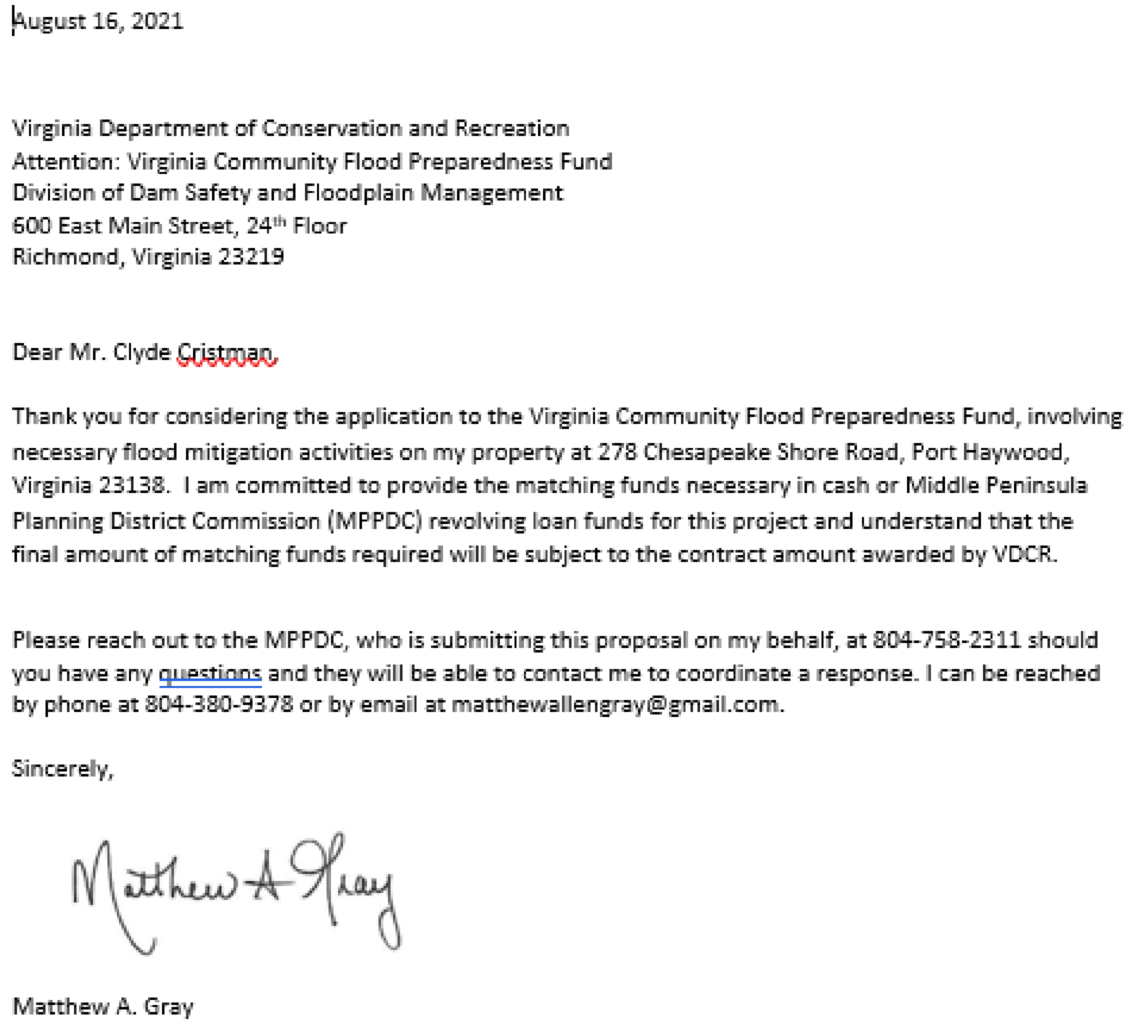
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



August 16, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 278 Chesapeake Shore Road, Port Haywood, Virginia 23138. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-380-9378 or by email at matthewallengray@gmail.com.

Sincerely,

Matthew A Gray

Matthew A. Gray

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Long-Green Plains Shoreline Design** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As reported multiple times to DCR staff, the Long application is not included in a low-income area nor is it in an opportunity zone. MPPDC does not know why this application is being held up and the applicant can't voluntarily elect out of something they are not included in to start with.

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

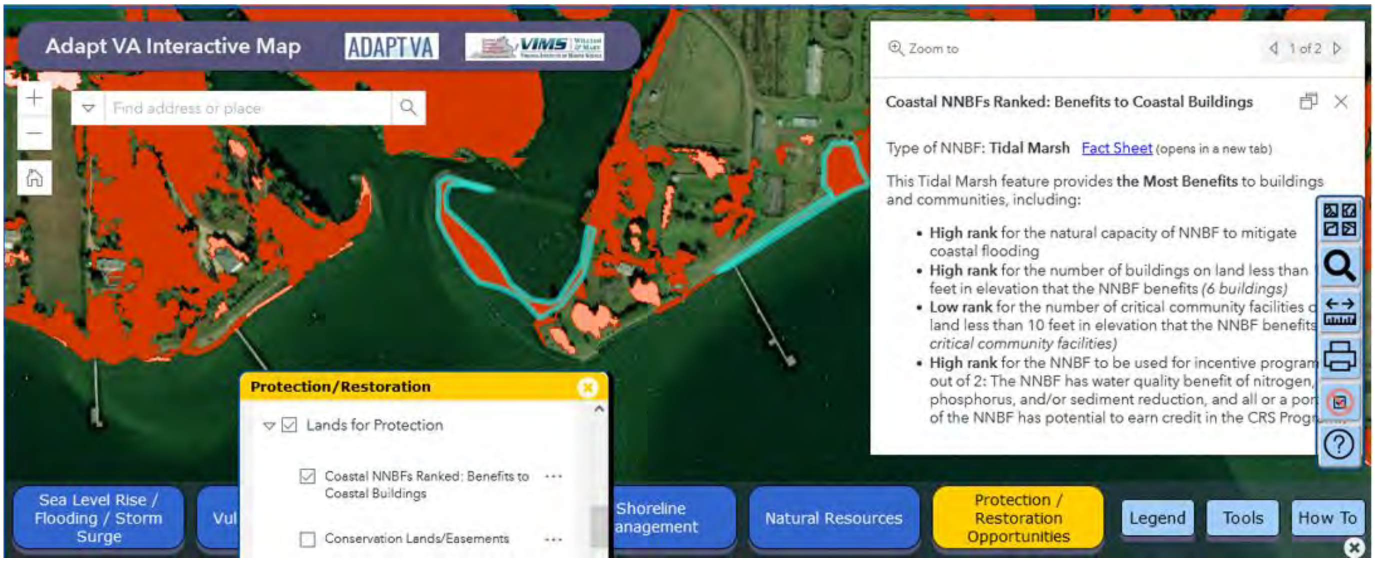
Issue #2

DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(6 buildings)*
- **Low rank** for the number of critical community facilities o land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Prog...

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:

The applicant was never included in a low-income area or an opportunity zone. The applicant cannot voluntarily opt out of something they were never included in. MPPDC staff does not understand why this application has issue with low income or opportunity zones?

Amended Budget Request

DCR Funding:	$ 17,475
Owner:	$ 7,448
Total	$ 24,963

						GREEN PLAIN- LONG- Not LMI		
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$1,373	$588	$1,961
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$1,373	$588	$1,961
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			**$16,500**	11,550.00	4,950.00	$360	$154	$514
		15%	2,475.00	1,732.50	742.50			
Total Personnel			**18,975.00**	**13,282.50**	**5,692.50**	$1,733	$742	$2,475
SubAward/SubContract Agreements						**70%**	**30%**	
Shoreline Assesment for Best Nature Based Shoreline Design/Draft Permit JPA					$15,000	$10,500	$4,500	$15,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$16,500			
SUBTOTAL: Direct Costs						$13,283	$5,692	$18,975
Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$4,192	$1,796	$5,988
Total						**$17,475**	**$7,488**	**$24,963**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$17,475**	**$7,488**	**$24,963**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Green Plains

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): County Name **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0085E

Total Cost of Project: _________$24,835____

Total Amount Requested: ___$17,384__________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for a shoreline site evaluation and recommendation and development of an appropriate nature-based shoreline design or hybrid solution if nature based isn't possible and draft JPA permit application for up to two miles of shoreline. The design is intended to reduce the impacts of storm events, flooding, and wetland loss. The site is a large waterfront estate with several parcels suffering from flooding and storm damage causing failure to the bulkhead which holds the septic drain field and tank in place, hundred year old trees, and loss of tidal wetlands protecting the road.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

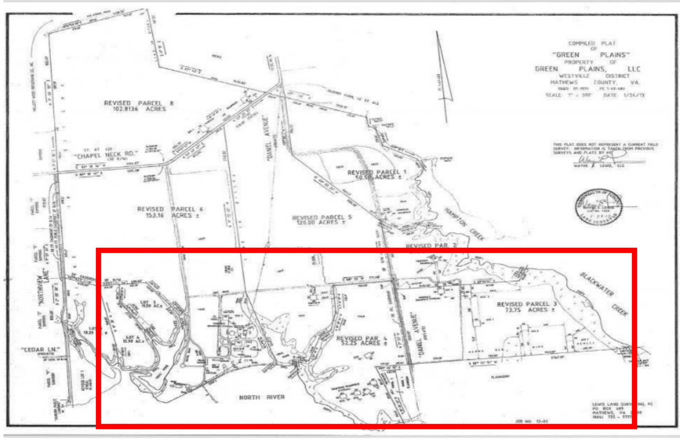
Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely "green" (i.e., consisting of only ecosystem elements) or "hybrid" (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal requests funding for a shoreline site evaluation, recommendation and development of an appropriate nature based shoreline design or hybrid solution if nature based isn't possible and draft JPA permit application. The design is intended to reduce the impacts of storm events, flooding, and wetland loss. The site is a large waterfront estate with several parcels suffering from flooding and storm damage causing failure to the bulkhead which holds the septic drain field and tank in place, hundred year old trees, and loss of tidal wetlands protecting the road (see below red box).

Plat Illustration 1



The applicant request assistance with determining and designing the most appropriate nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal looks to incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life. The owner expressed significant concern about septic failure due to flooding, surge, and erosion on her private property located at Green Plains in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
  - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
  - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

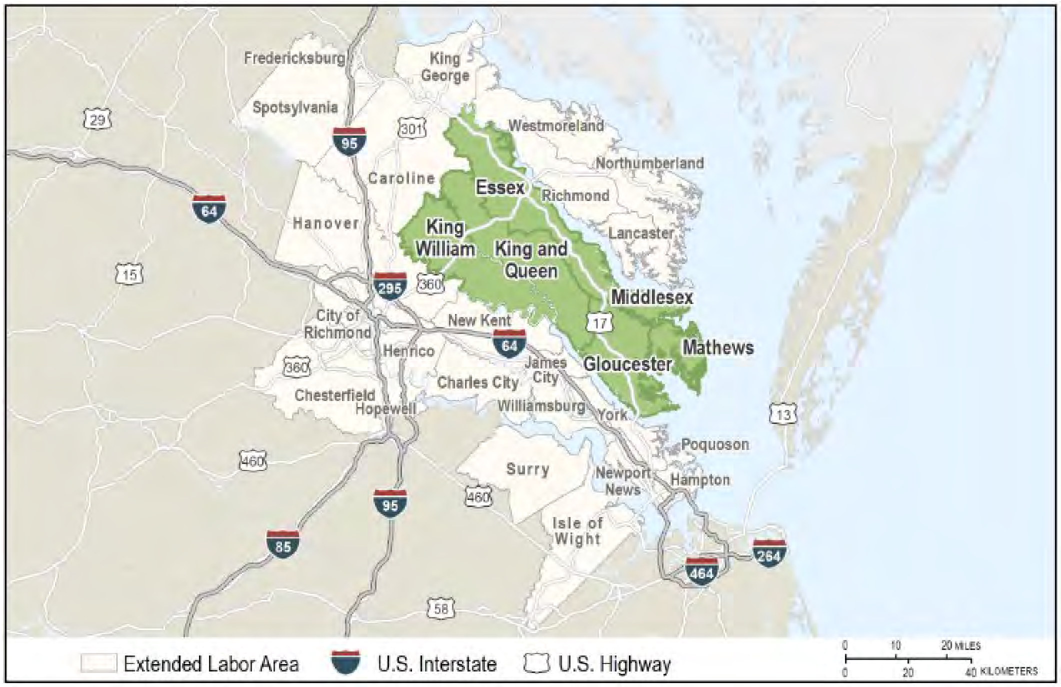
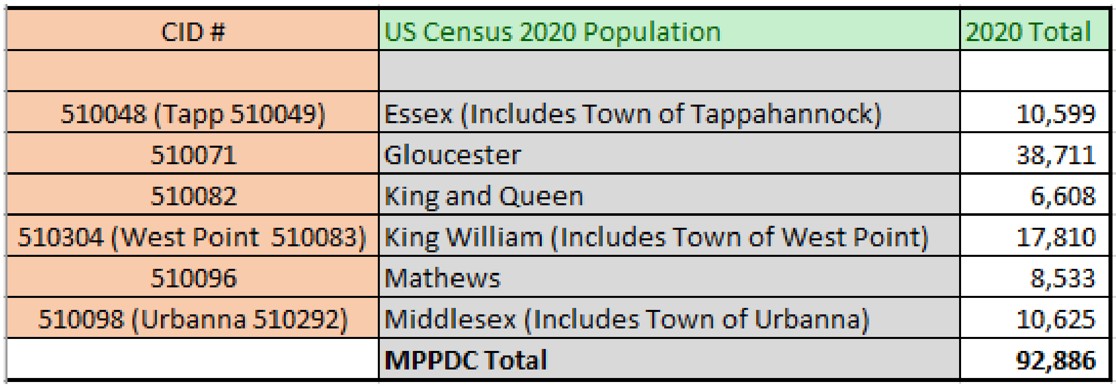


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property at Green Plains in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

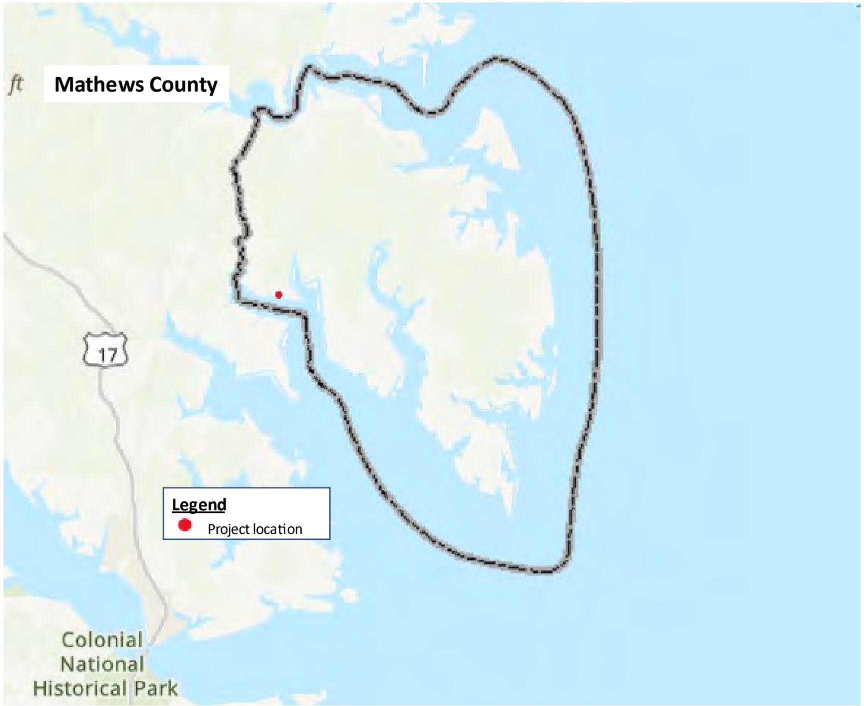
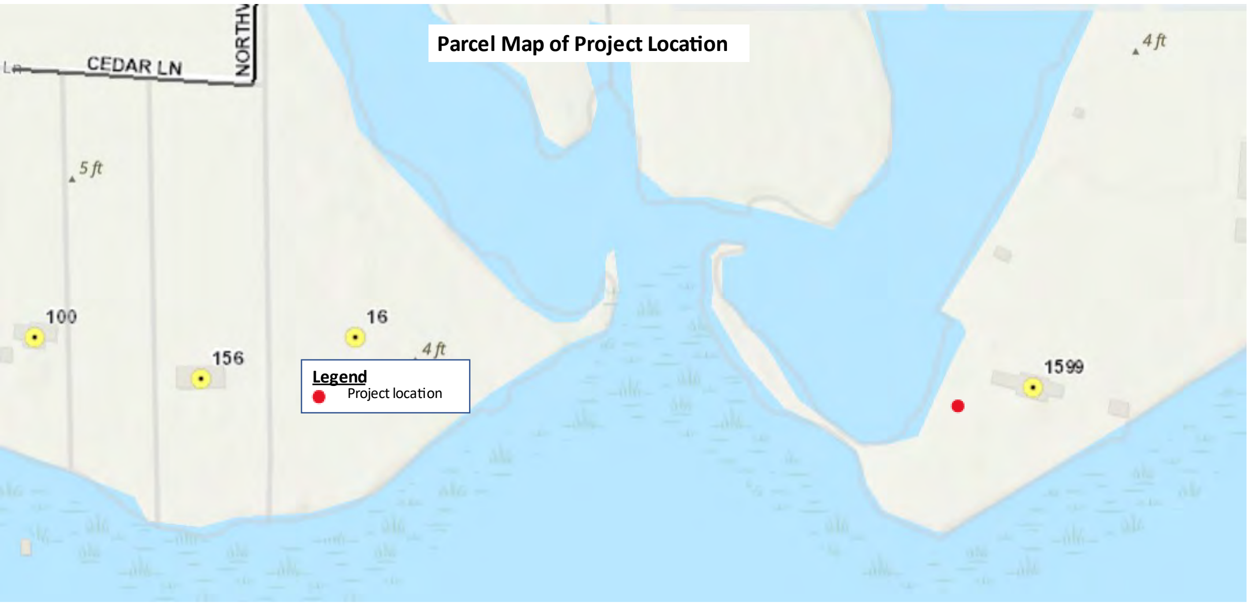


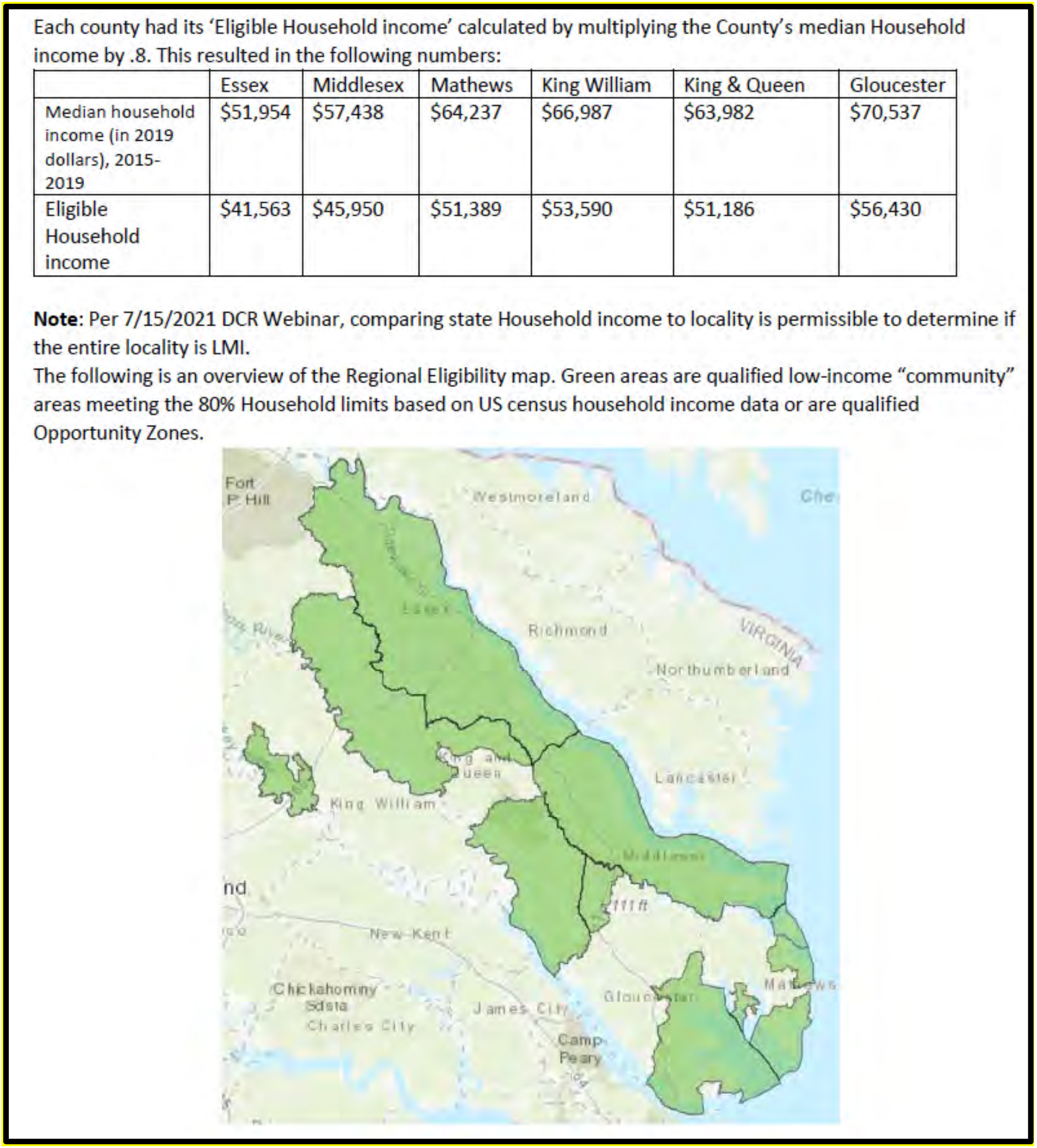
Figure 4. Parcel Map of Project Location



Mathews County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



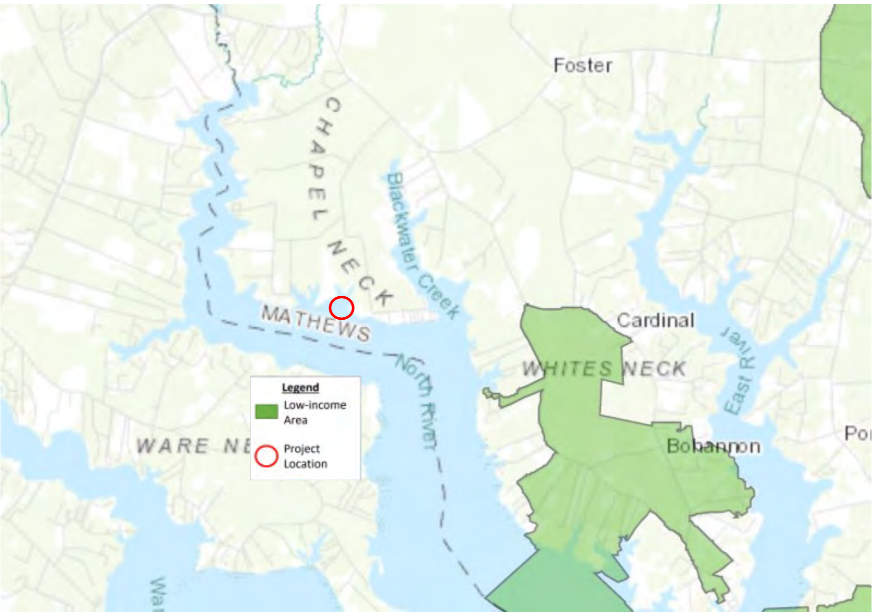
Each county had its ‘Eligible Household income’ calculated by multiplying the County’s median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.
The following is an overview of the Regional Eligibility map. Green areas are qualified low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. **This shows that the project location is not within the low-income area.**

Figure 6. Map of the Project Location within the Green Low-Income Area



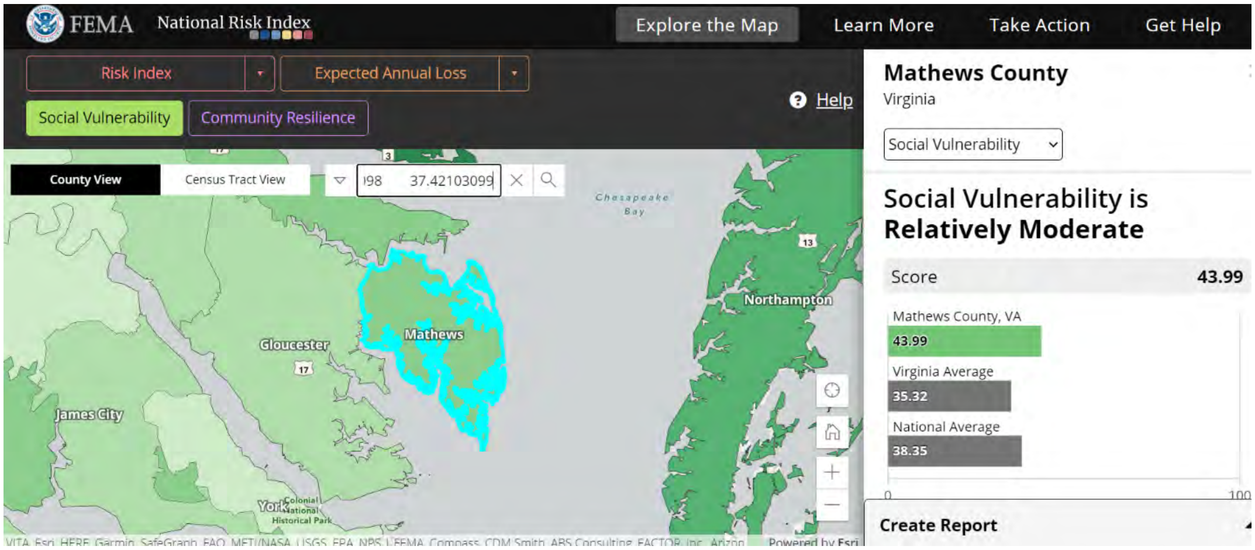
According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability is considered relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

Social Vulnerability

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Figure 8.
FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

Social Vulnerability

Social Vulnerability is
Relatively Moderate

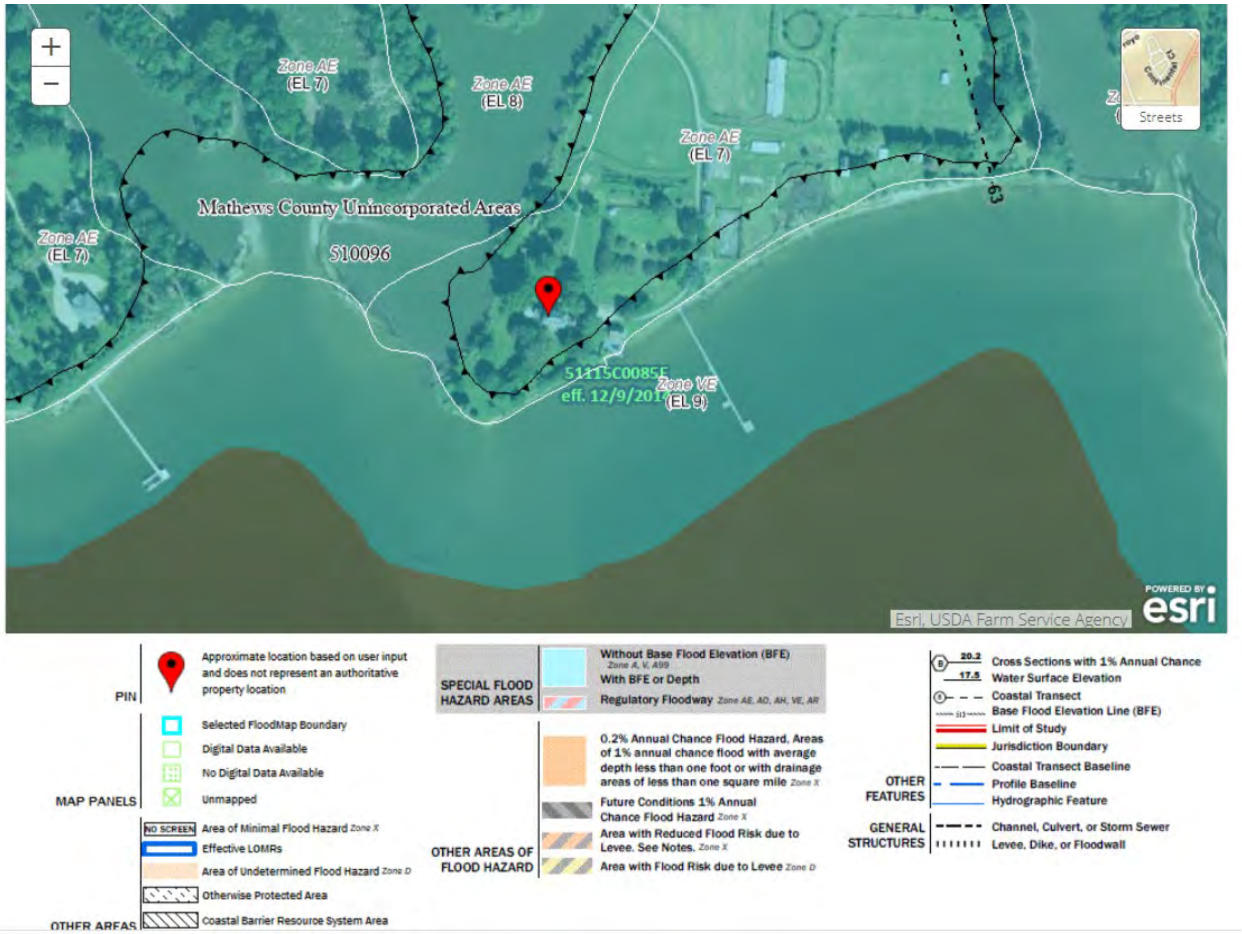
Score	**43.99**
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

The project is located at 1599 Chapel Neck Road North, VA 23128 (-76.42750098,37.42103099). It was purchased by the property owner's father in 1968 and was later inherited. The home was built in 1789 and serves as a historical marker for the region. The current owner has lived there on and off her entire life, as the place has meaning and a legacy. If they had built the home, they would not have located it so close to the water's edge. Now it presents a number of critical infrastructure challenges as the property spans two miles of waterfront. The land once started where the sandbar currently resides. There is a 22 year old sea wall that is failing and is situated on the north river. The septic pump and two drainage fields are between the historic house and the river.

Therefore, if the sea wall fails, the septic lines will drain into the river. People have to drive through the farm in order to get to housing estate development, where FEMA had to rebuild all the houses at one point. The nearby public right of way is adjacent is to the farm and it has already eroded to the point where a mini bridge has been built to service the area. In addition to these issues, many trees are at risk across the 617 acres of coming down, and many are at risk of falling into the water as the soil is completely saturated.

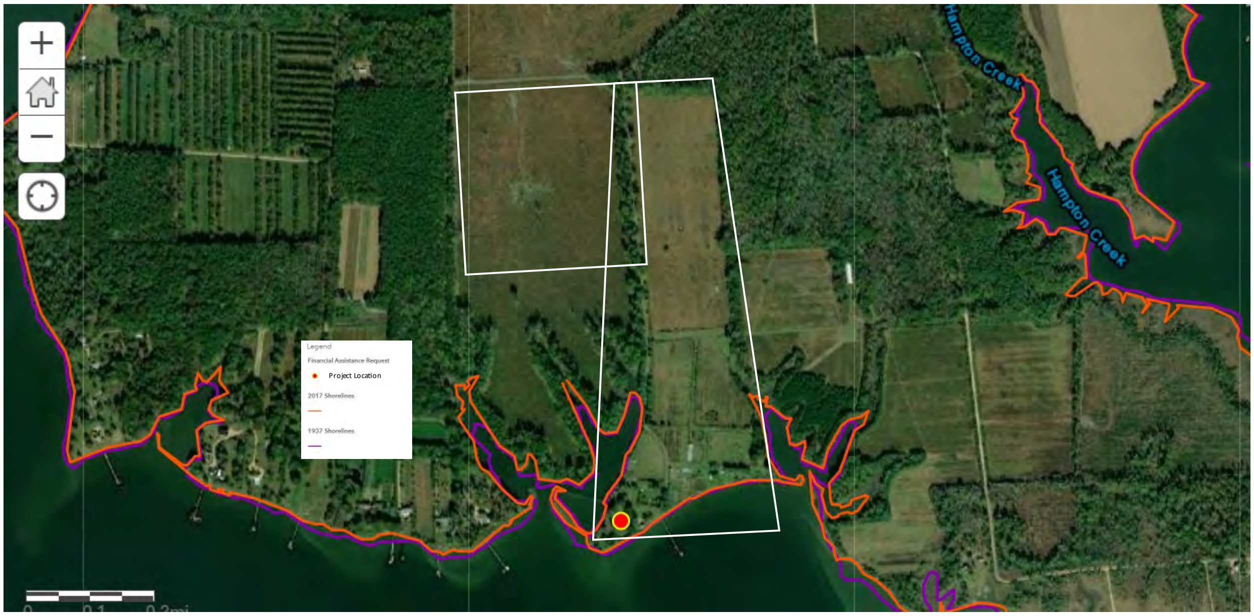
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 2** for the FIRMettes (last mapped 12/9/2014) and **Appendix 3** for additional property photos.

Figure 9: Map of FEMA Flood Zones



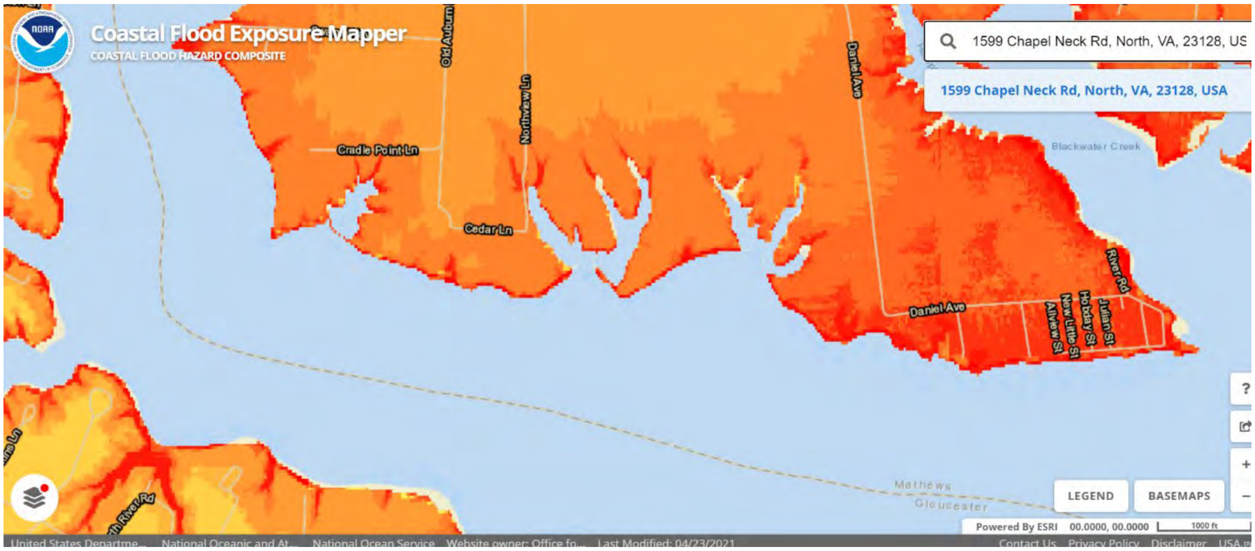
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the site photos and figure one can see the erosion change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 80 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

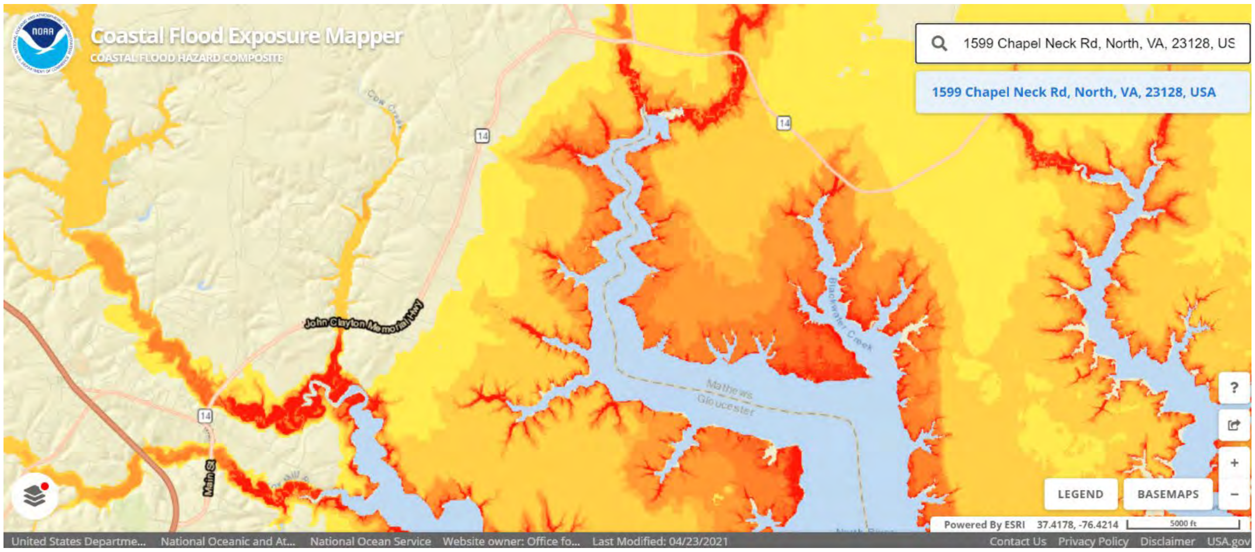
Figure 9. Project Location and Map of the Shoreline Change between 1937 and 2017



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)





For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

***GOALS AND OBJECTIVES*.**

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to asses and develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers. Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design					X	X

solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

<u>Long Term Planning</u>

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

<u>Short Term Implementation</u>

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics.

All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		73

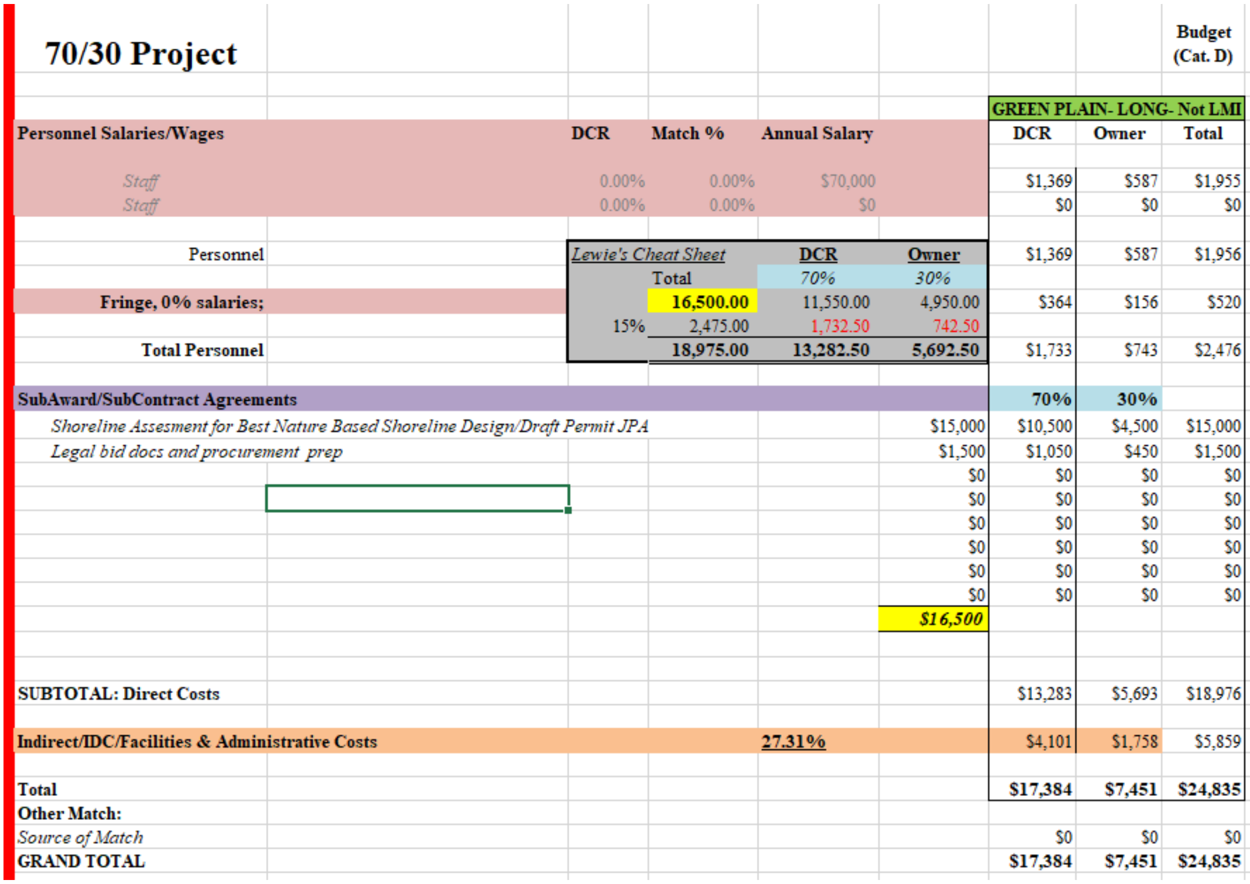
SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $24,835

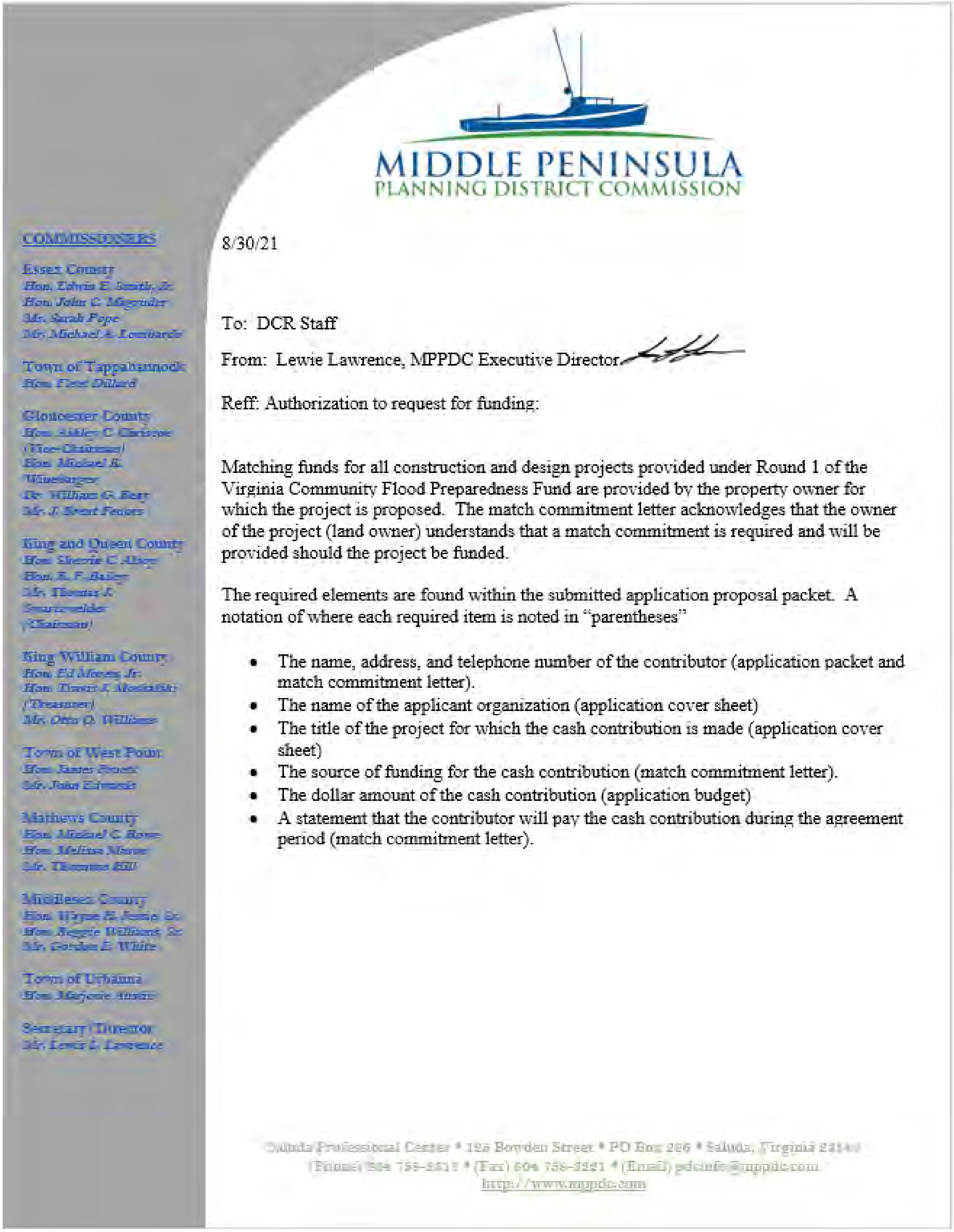


70/30 Project								**Budget (Cat. D)**
						GREEN PLAIN- LONG- Not LMI		
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$1,369	$587	$1,955
Staff		0.00%	0.00%	$0		$0	$0	$0
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$1,369	$587	$1,956
			Total	*70%*	*30%*			
Fringe, 0% salaries;			**16,500.00**	11,550.00	4,950.00	$364	$156	$520
		15%	2,475.00	1,732.50	742.50			
Total Personnel			**18,975.00**	**13,282.50**	**5,692.50**	$1,733	$743	$2,476
SubAward/SubContract Agreements						**70%**	**30%**	
Shoreline Assesment for Best Nature Based Shoreline Design/Draft Permit JPA					$15,000	$10,500	$4,500	$15,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$16,500			
SUBTOTAL: Direct Costs						$13,283	$5,693	$18,976
Indirect/IDC/Facilities & Administrative Costs				**27.31%**		$4,101	$1,758	$5,859
Total						**$17,384**	**$7,451**	**$24,835**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$17,384**	**$7,451**	**$24,835**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

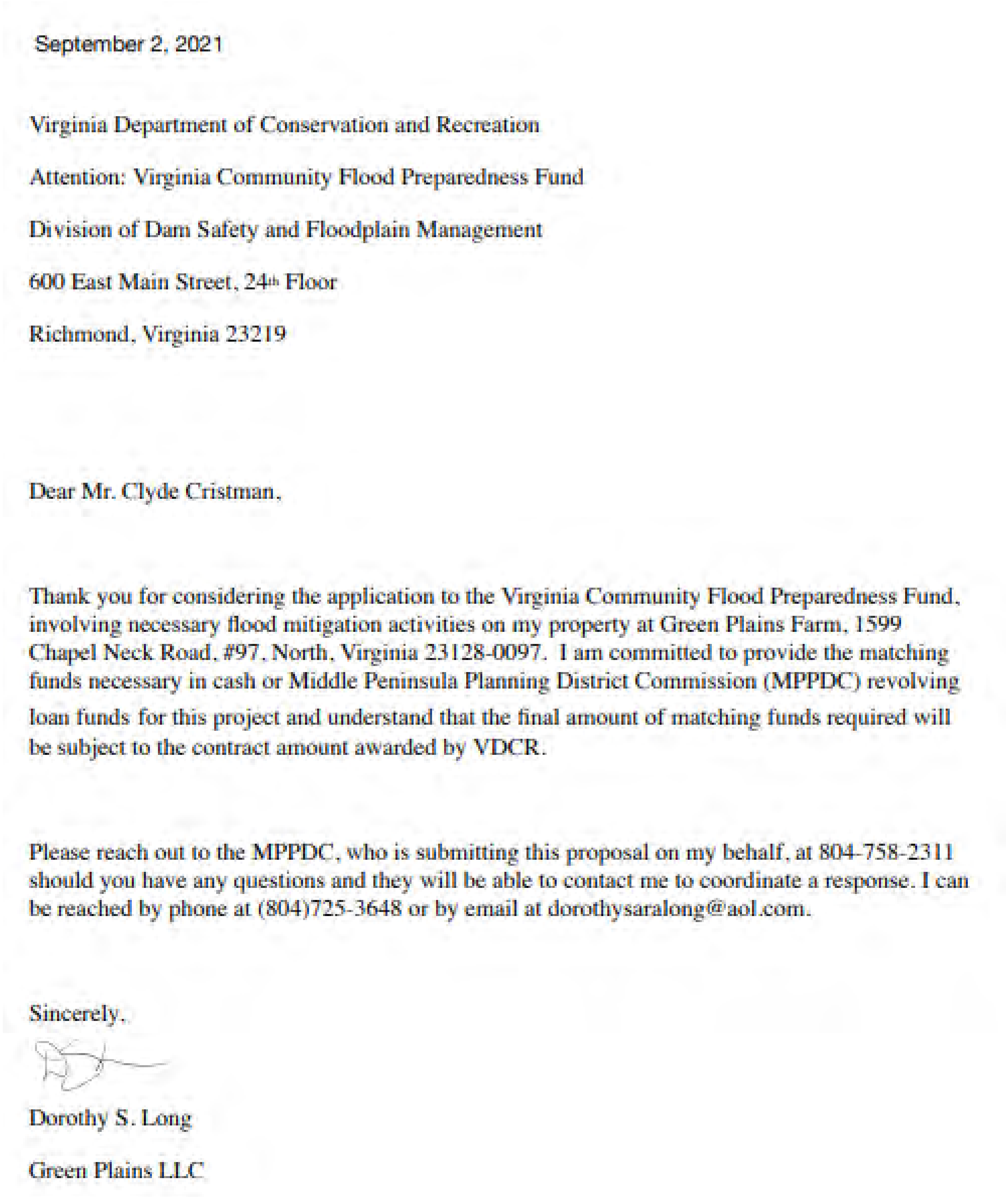
Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

- *Signed pledge agreement from each contributing organization*



September 2, 2021

Virginia Department of Conservation and Recreation

Attention: Virginia Community Flood Preparedness Fund

Division of Dam Safety and Floodplain Management

600 East Main Street, 24th Floor

Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at Green Plains Farm, 1599 Chapel Neck Road, #97, North, Virginia 23128-0097. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at (804)725-3648 or by email at dorothysaralong@aol.com.

Sincerely,

Dorothy S. Long

Green Plains LLC

See also appendix 6

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

Cont next page

APPENDIX 1

Community Support Letter

DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B666C2DAE00C

County Administration

January 27, 2022

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

David Schlosser
Interim County Administrator

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

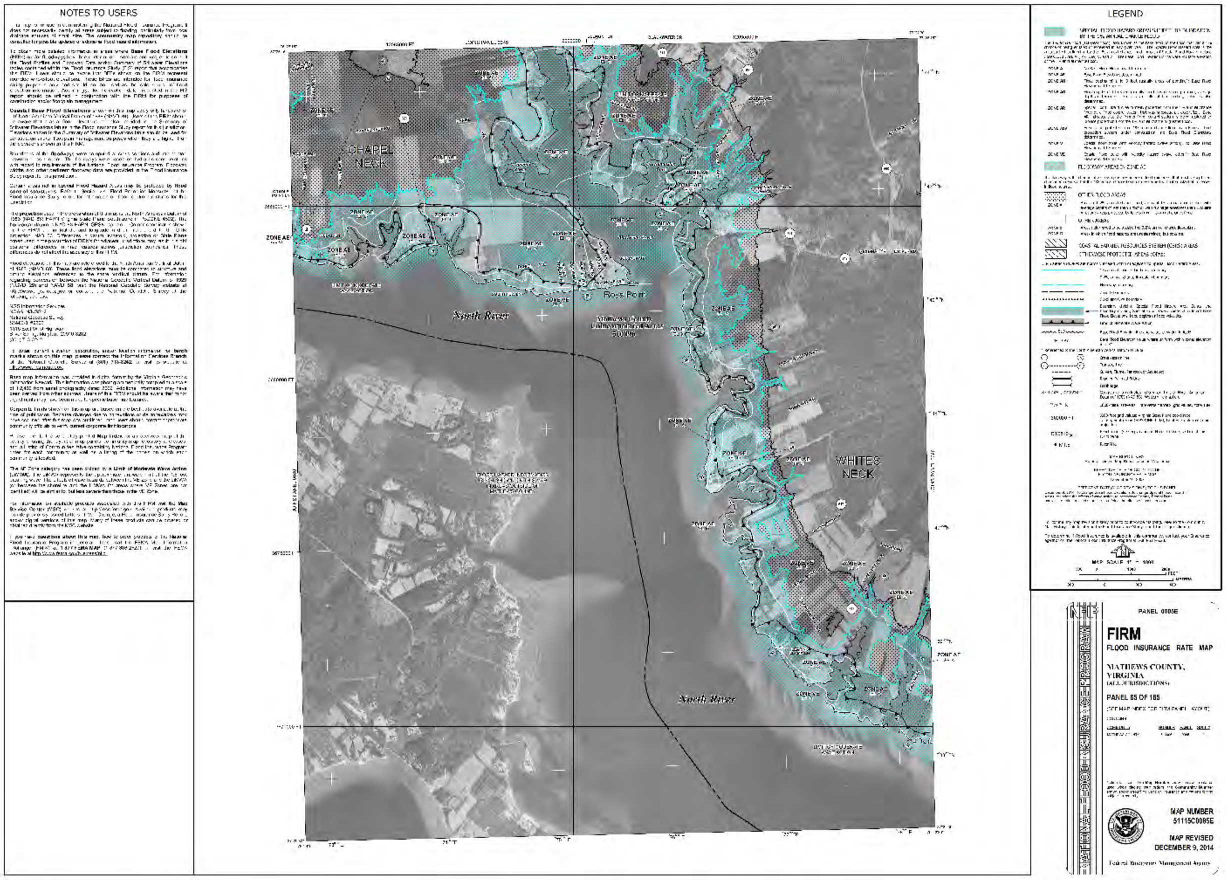
50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE
MATHEWS

APPENDIX 2

Project Location FIRMette

Parker Property (FIRMette #: 51115C0085E)

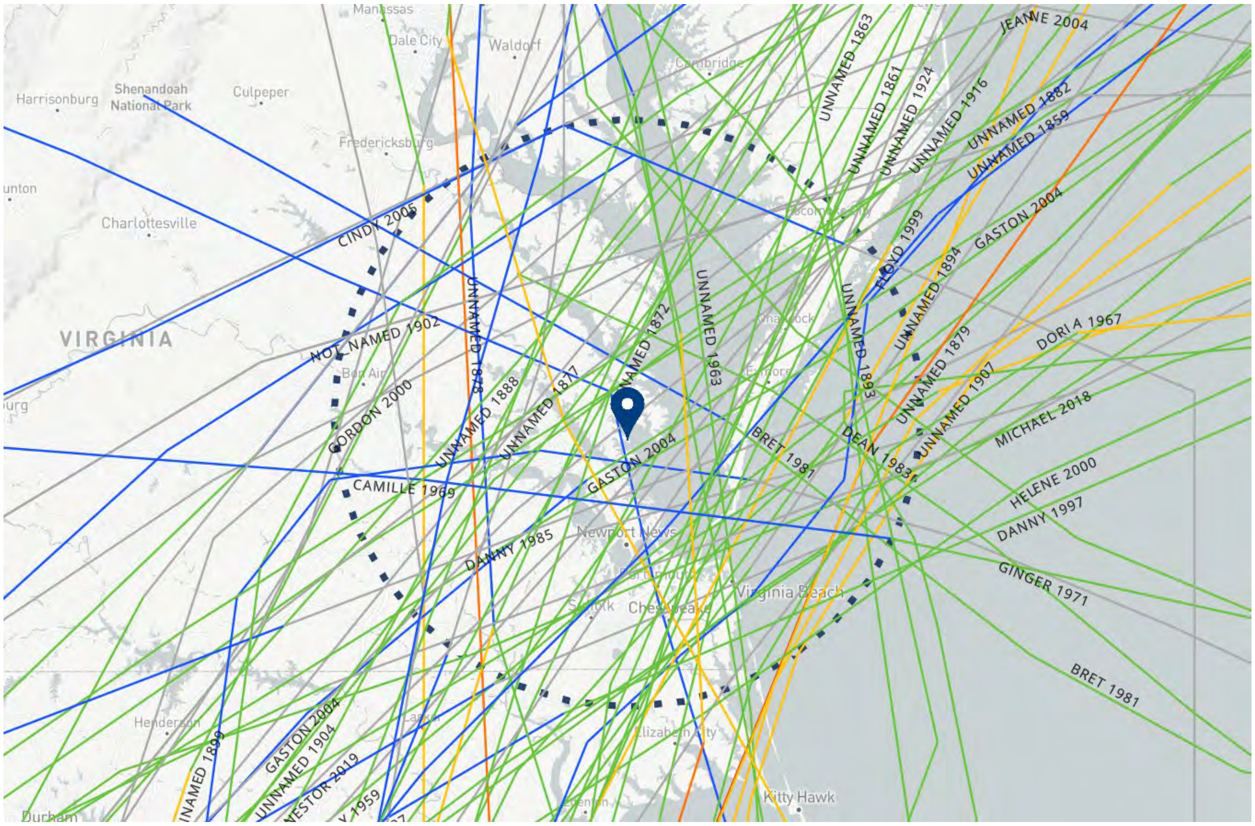


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.42103099, -76.42750098

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	**DATE RANGE**	**MAX WIND SPEED**	**MIN PRESSURE**	**MAX CATEGORY**
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1

NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11,	65	991	H1

	2005			
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19,	135	921	H4

	1999			
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16,	65	986	H1

	1979			
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug	60	976	TS

	07, 1960			
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep	160	892	H5

	10, 1935			
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun	55	-1	TS

	30, 1907			
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2

UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877	100	-1	H3

	to Oct 05, 1877			
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28,	70	-1	H1

	1861			
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

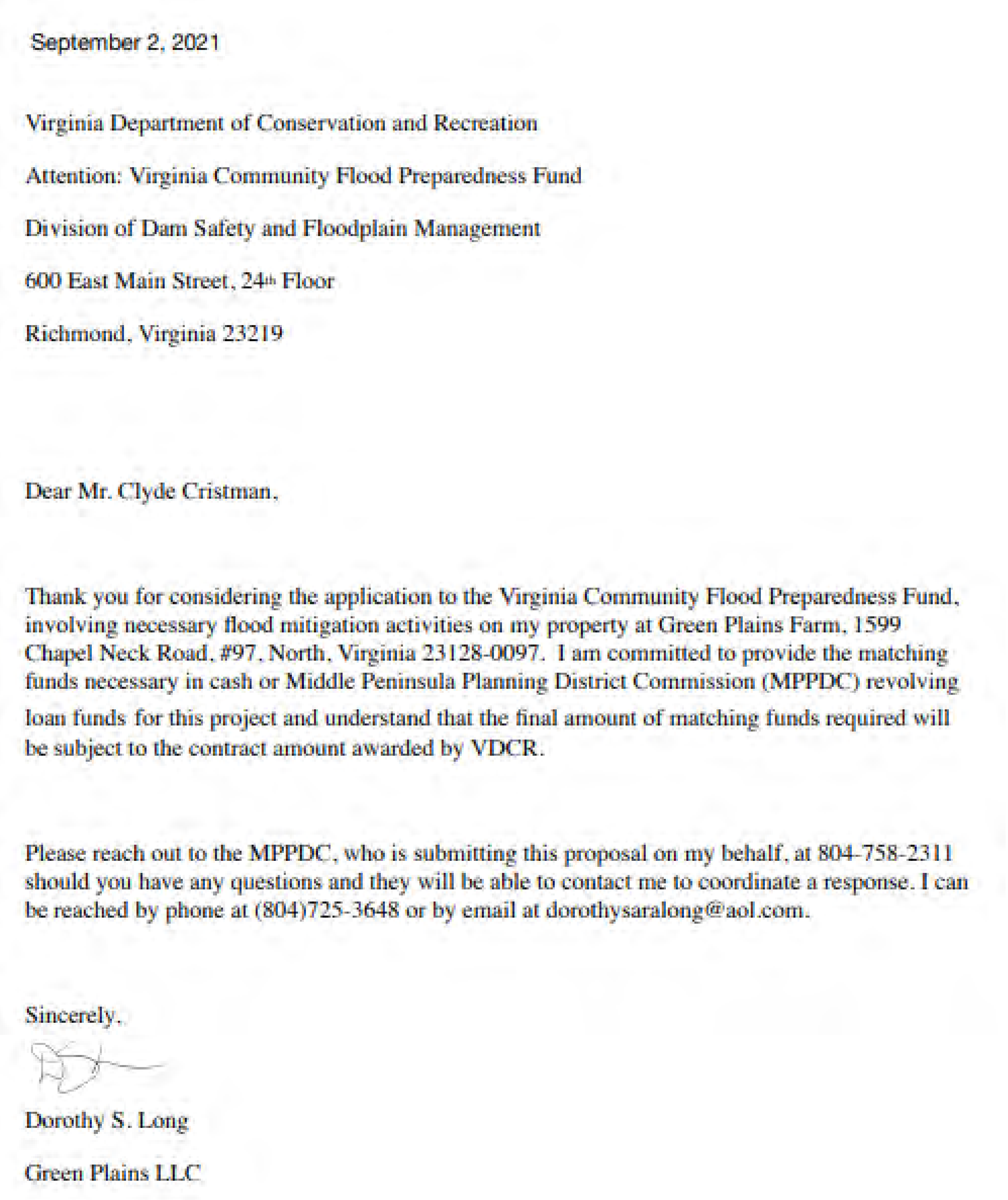
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



September 2, 2021

Virginia Department of Conservation and Recreation

Attention: Virginia Community Flood Preparedness Fund

Division of Dam Safety and Floodplain Management

600 East Main Street, 24th Floor

Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at Green Plains Farm, 1599 Chapel Neck Road, #97, North, Virginia 23128-0097. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at (804)725-3648 or by email at dorothysaralong@aol.com.

Sincerely,

Dorothy S. Long

Green Plains LLC

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe (Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J. Swartzwelder (Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski (Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Wuckovich Shoreline Design** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As reported multiple times to DCR staff, the Wuckovich application is not included in a low-income area nor is it in an opportunity zone. MPPDC does not know why this application is being held up and the applicant can't voluntarily elect out of something they are not included in to start with.

Issue #2

DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

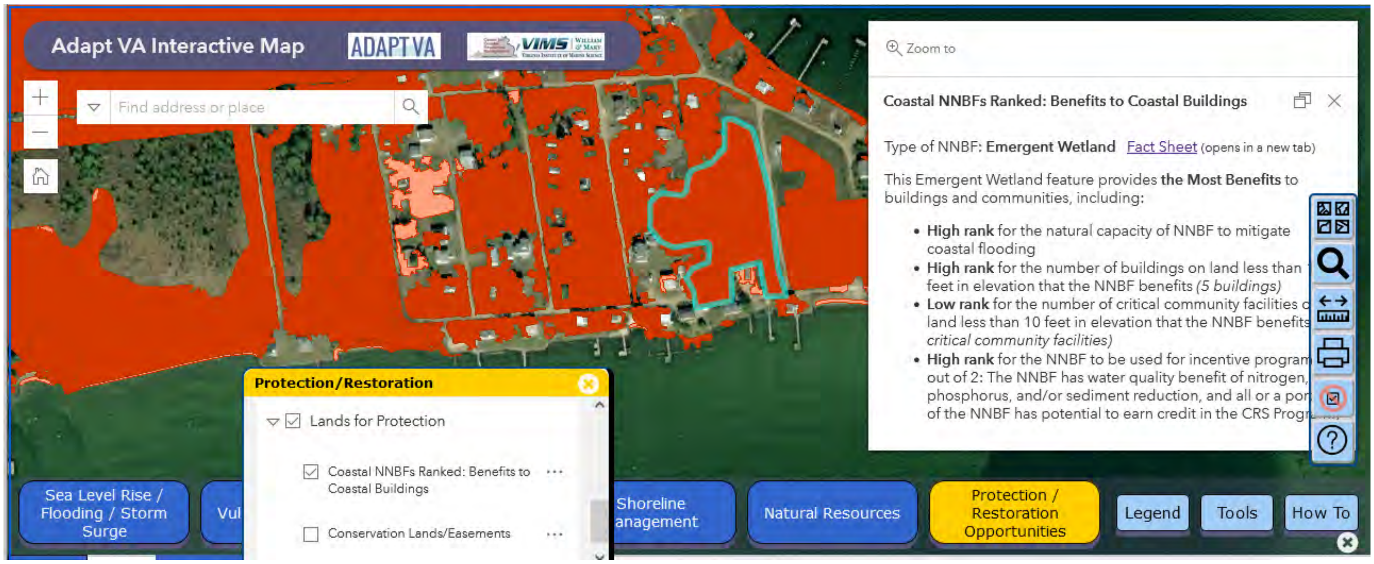
Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Emergent Wetland** Fact Sheet (opens in a new tab)

This Emergent Wetland feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(5 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

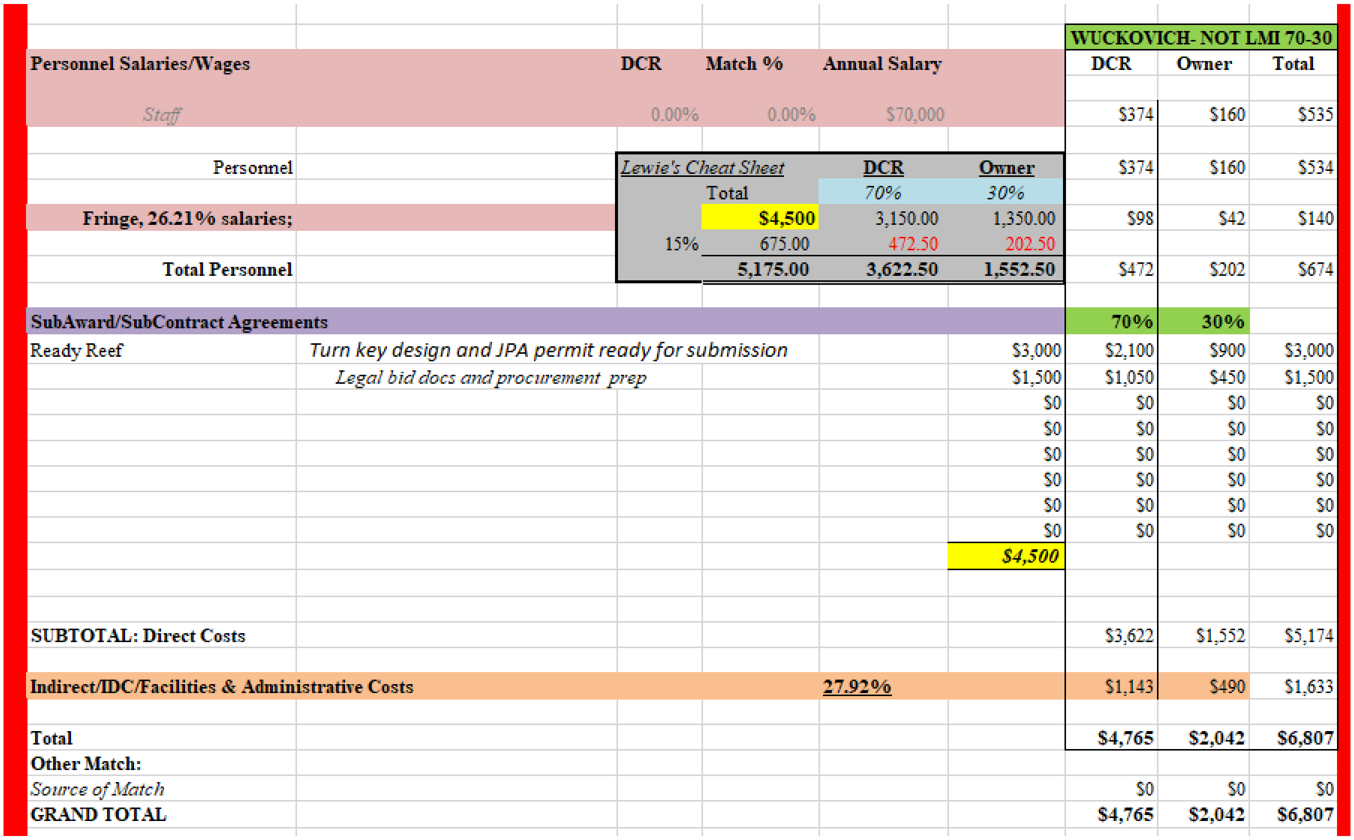
Applicant Voluntarily Selection:

The applicant was never included in a low-income area or an opportunity zone. The applicant cannot voluntarily opt out of something they were never included in. MPPDC staff does not understand why this application has issue with low income or opportunity zones?

Amended Budget Request

DCR Funding:	$ 4,765
Owner:	$ 2,042
Total	$ 6,807

Full updated budget follows



						WUCKOVICH- NOT LMI 70-30		
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$374	$160	$535
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$374	$160	$534
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			**$4,500**	3,150.00	1,350.00	$98	$42	$140
		15%	675.00	472.50	202.50			
Total Personnel			**5,175.00**	**3,622.50**	**1,552.50**	$472	$202	$674
SubAward/SubContract Agreements						**70%**	**30%**	
Ready Reef	*Turn key design and JPA permit ready for submission*				$3,000	$2,100	$900	$3,000
	Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$4,500			
SUBTOTAL: Direct Costs						$3,622	$1,552	$5,174
Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$1,143	$490	$1,633
Total						**$4,765**	**$2,042**	**$6,807**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$4,765**	**$2,042**	**$6,807**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Bayshore Avenue

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ____
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ___ No X__

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): County Name **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0085E

Total Cost of Project: ________$6,773____

Total Amount Requested: ____$4,740_________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional

purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal application requests a design for a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Bayshore Road in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PDC’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC’s All Hazards Mitigation Plan (2016) can be found at:*

  https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

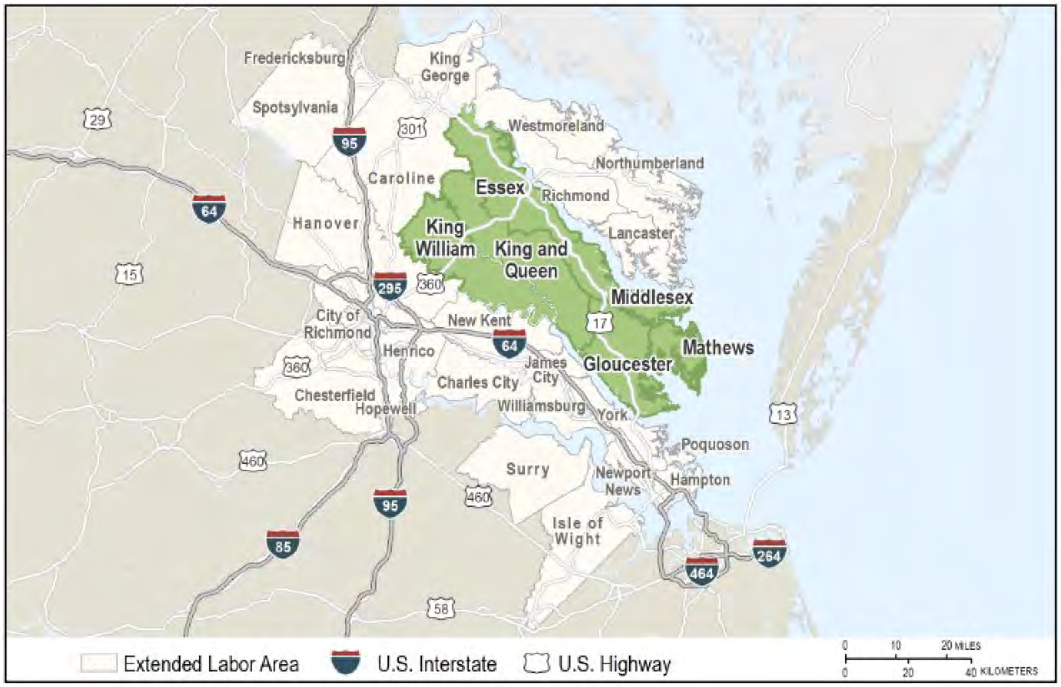
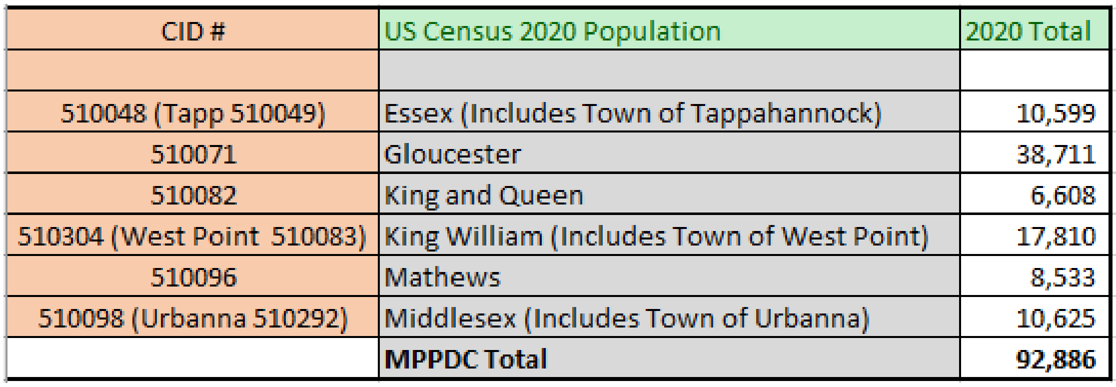


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Chesapeake Bay Road in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

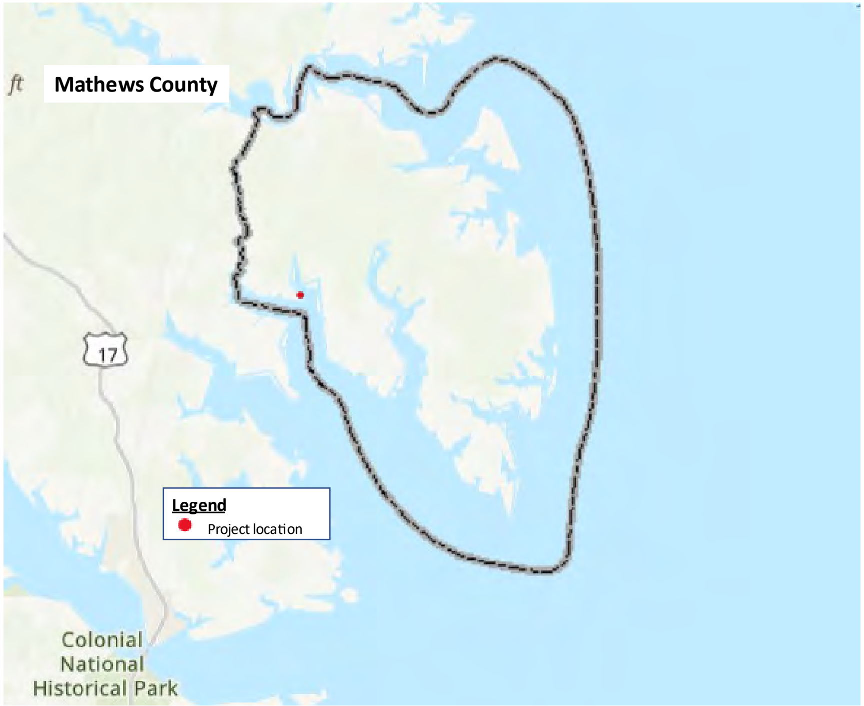
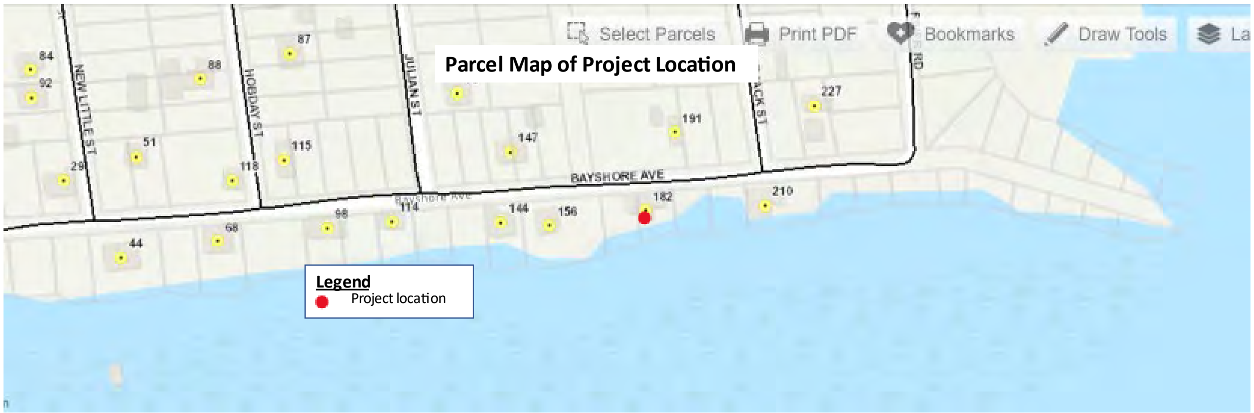


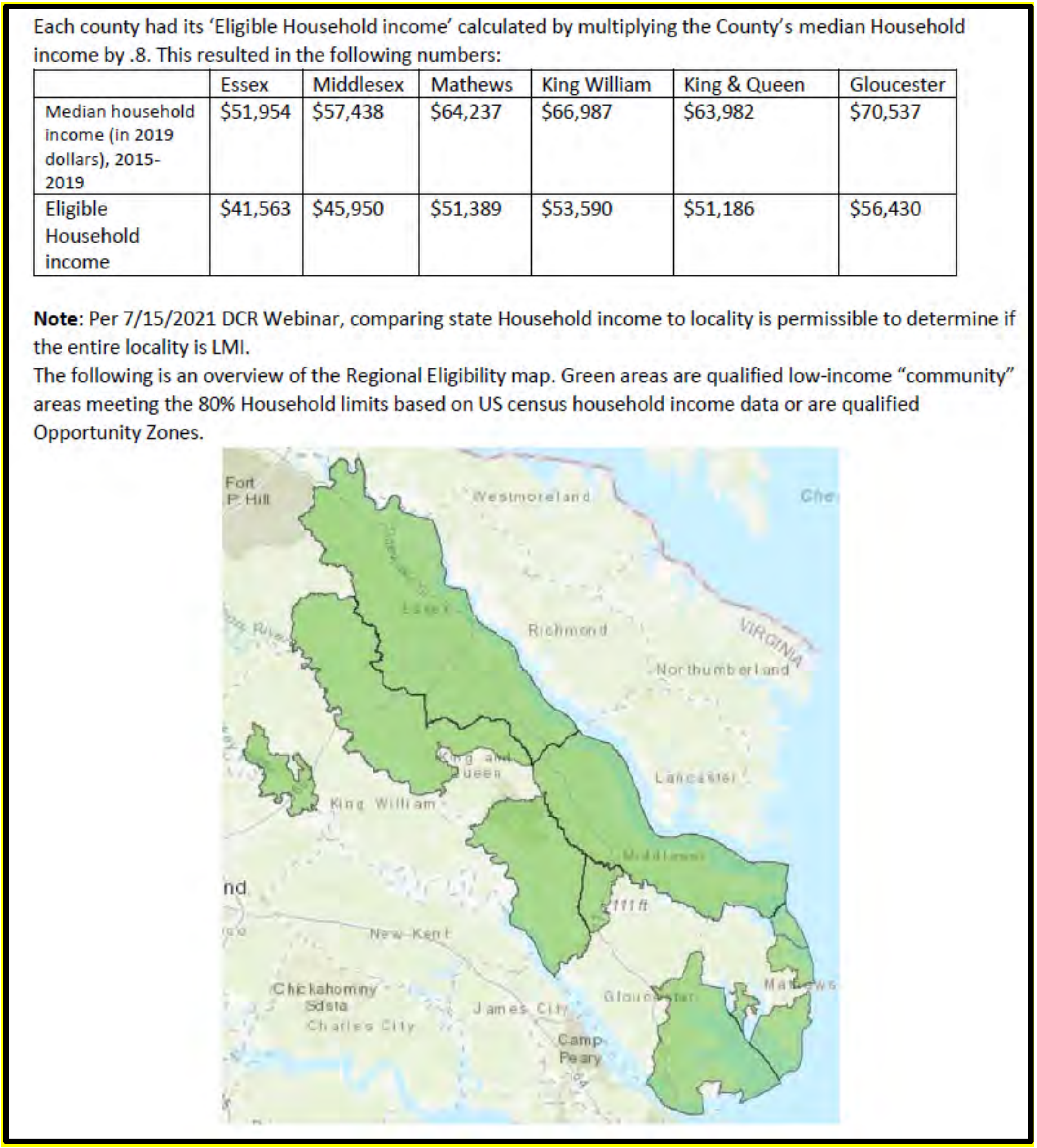
Figure 4. Parcel Map of Project Location



Mathews County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. **This shows that the project location is not within the low-income area**.

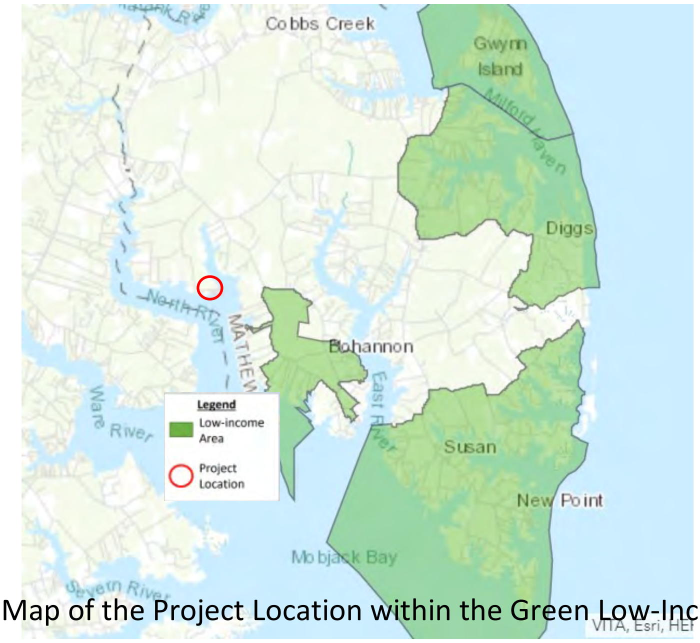
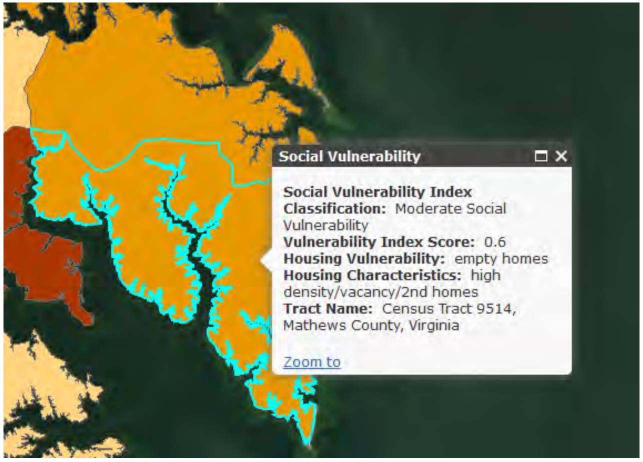


Figure 6. Map of the Project Location within the Green Low-Income Area

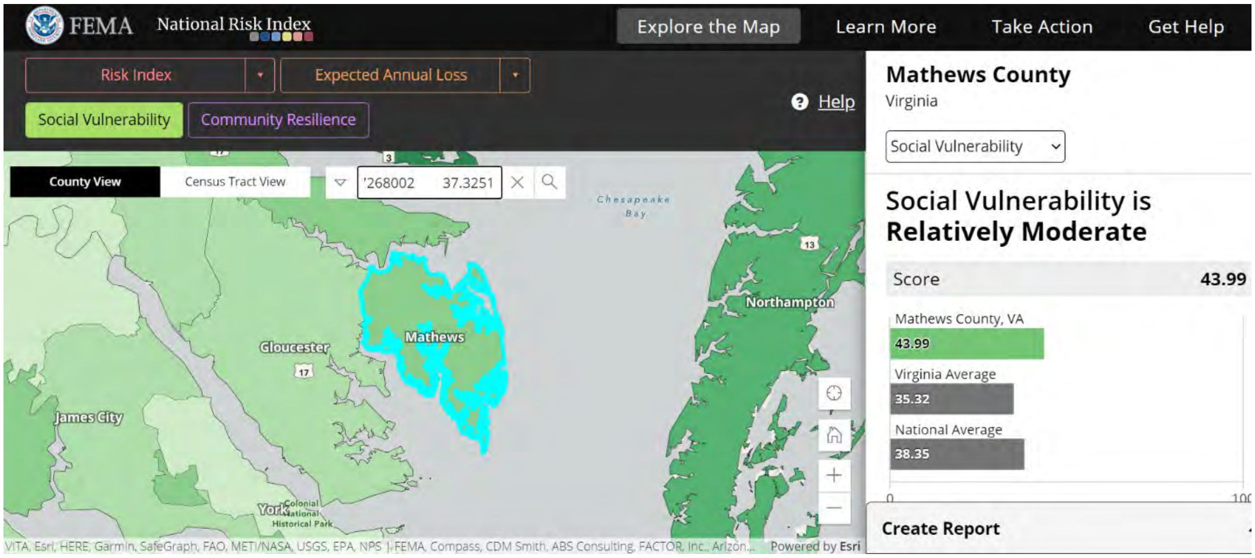
According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability is considered relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Moderate

Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

The project is located at 156 Bayshore Avenue, North, VA 23128 (-76.40596046, 37.41846129).

The property was purchased in 2012. Since then, it has endured countless storm events. The storm in August 2020 pushed the 80 foot wooden bulkhead wall along waterfront back toward property where there is significant erosion behind the bulkhead. The force of the water pushing the bulkhead back snapped the bolts that attached the pilings to the bulkhead. The filter cloth attached to the bulkhead was forced out of place, so the owners have continued erosion of soil through the bulkhead into the bay. Also, the riprap in front on the bulkhead has slumped down. Their house is approximately 10 feet from the bulkhead, so this presents significant ramifications.

This site is located within the VE flood zone as seen in **Figure 9**. Please see **Appendix 2** for the FIRMettes (last mapped 12/9/2014) and **Appendix 3** for additional property photos.

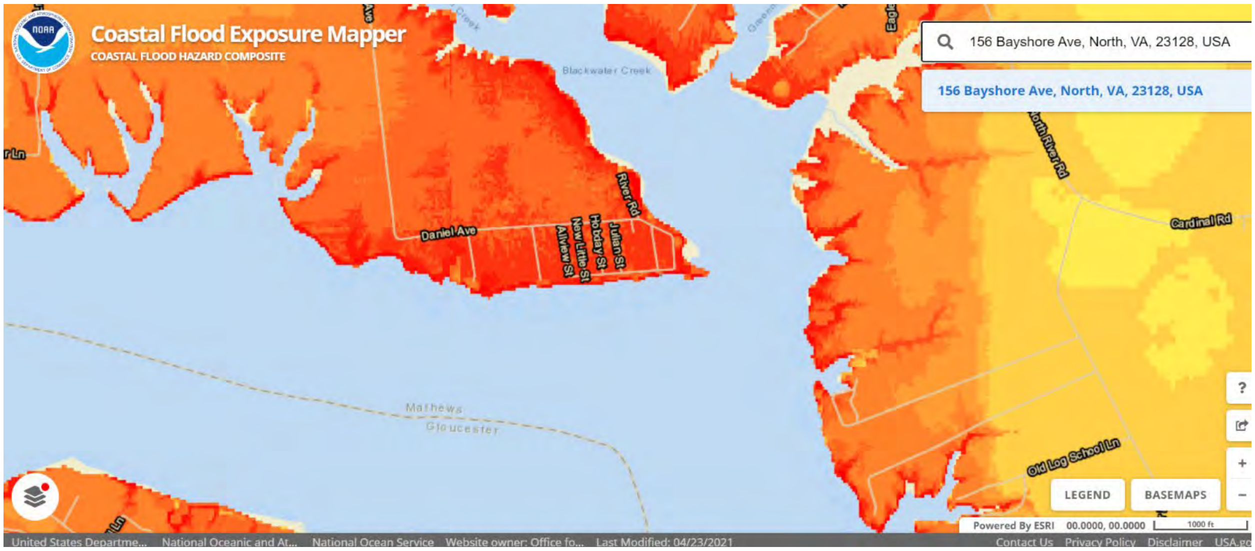
Figure 9: Map of FEMA Flood Zones

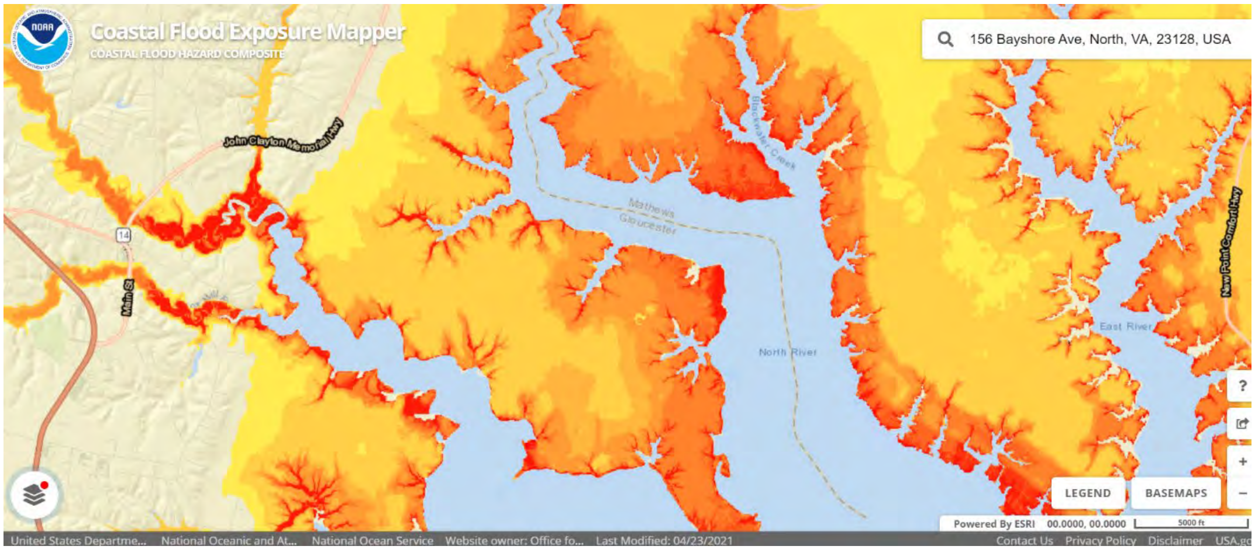
Due to the project site’s proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor’easter events. **Appendix 4** lists 82 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 (purple)and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)





For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers. Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

RELATIONSHIP TO OTHER PROJECTS.

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

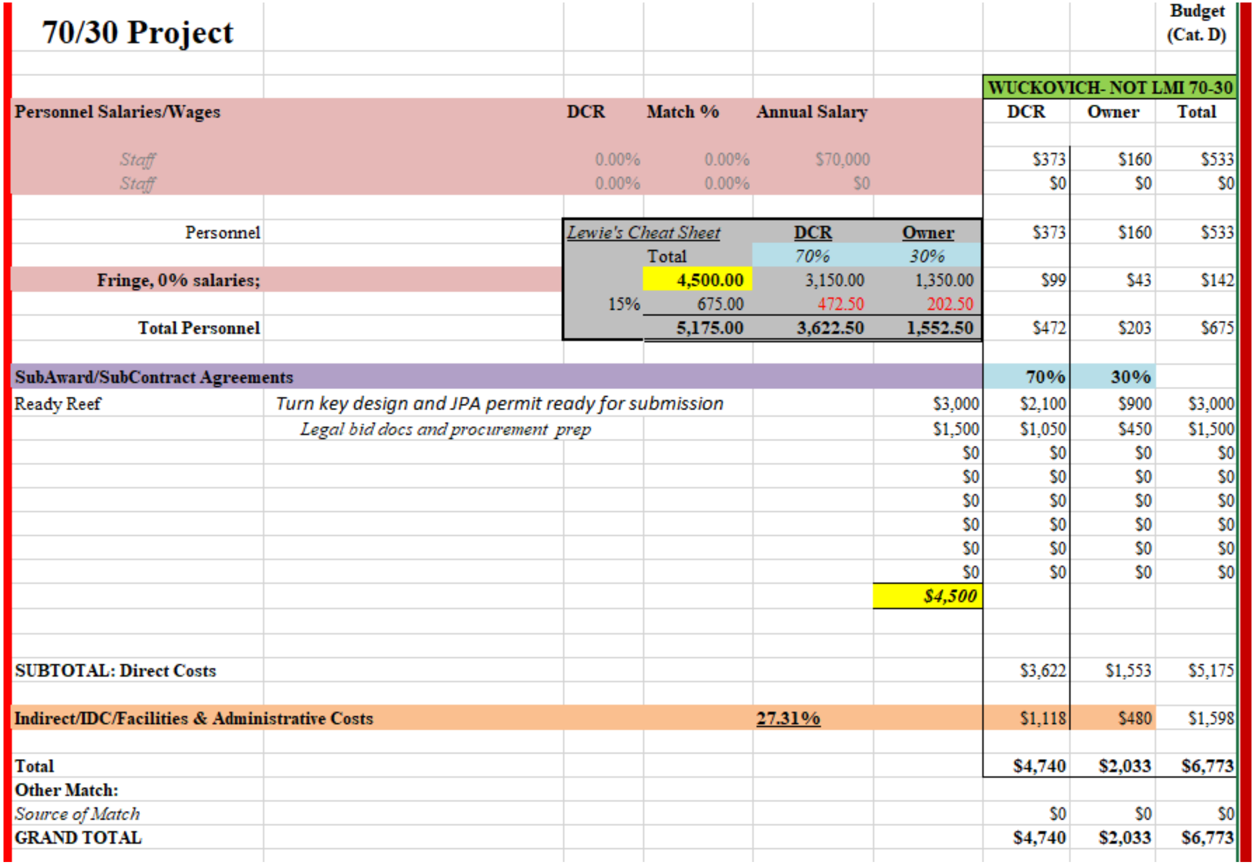
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		73

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $6,773

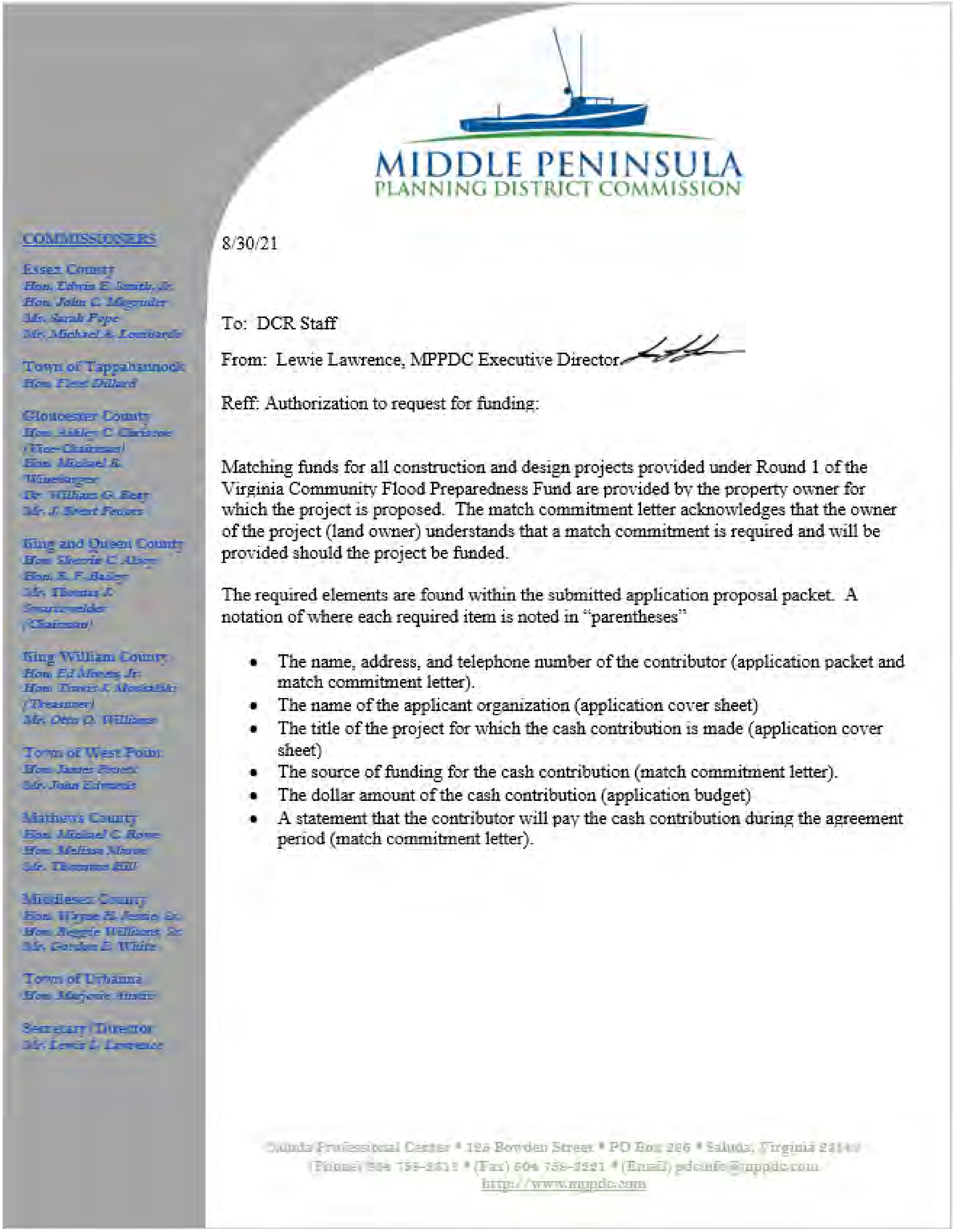


70/30 Project								**Budget (Cat. D)**
						WUCKOVICH- NOT LMI 70-30		
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$373	$160	$533
Staff		0.00%	0.00%	$0		$0	$0	$0
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$373	$160	$533
			Total	*70%*	*30%*			
Fringe, 0% salaries;			**4,500.00**	3,150.00	1,350.00	$99	$43	$142
		15%	675.00	472.50	202.50			
Total Personnel			**5,175.00**	**3,622.50**	**1,552.50**	$472	$203	$675
SubAward/SubContract Agreements						**70%**	**30%**	
Ready Reef	*Turn key design and JPA permit ready for submission*				$3,000	$2,100	$900	$3,000
	Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$4,500			
SUBTOTAL: Direct Costs						$3,622	$1,553	$5,175
Indirect/IDC/Facilities & Administrative Costs				**27.31%**		$1,118	$480	$1,598
Total						**$4,740**	**$2,033**	**$6,773**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$4,740**	**$2,033**	**$6,773**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

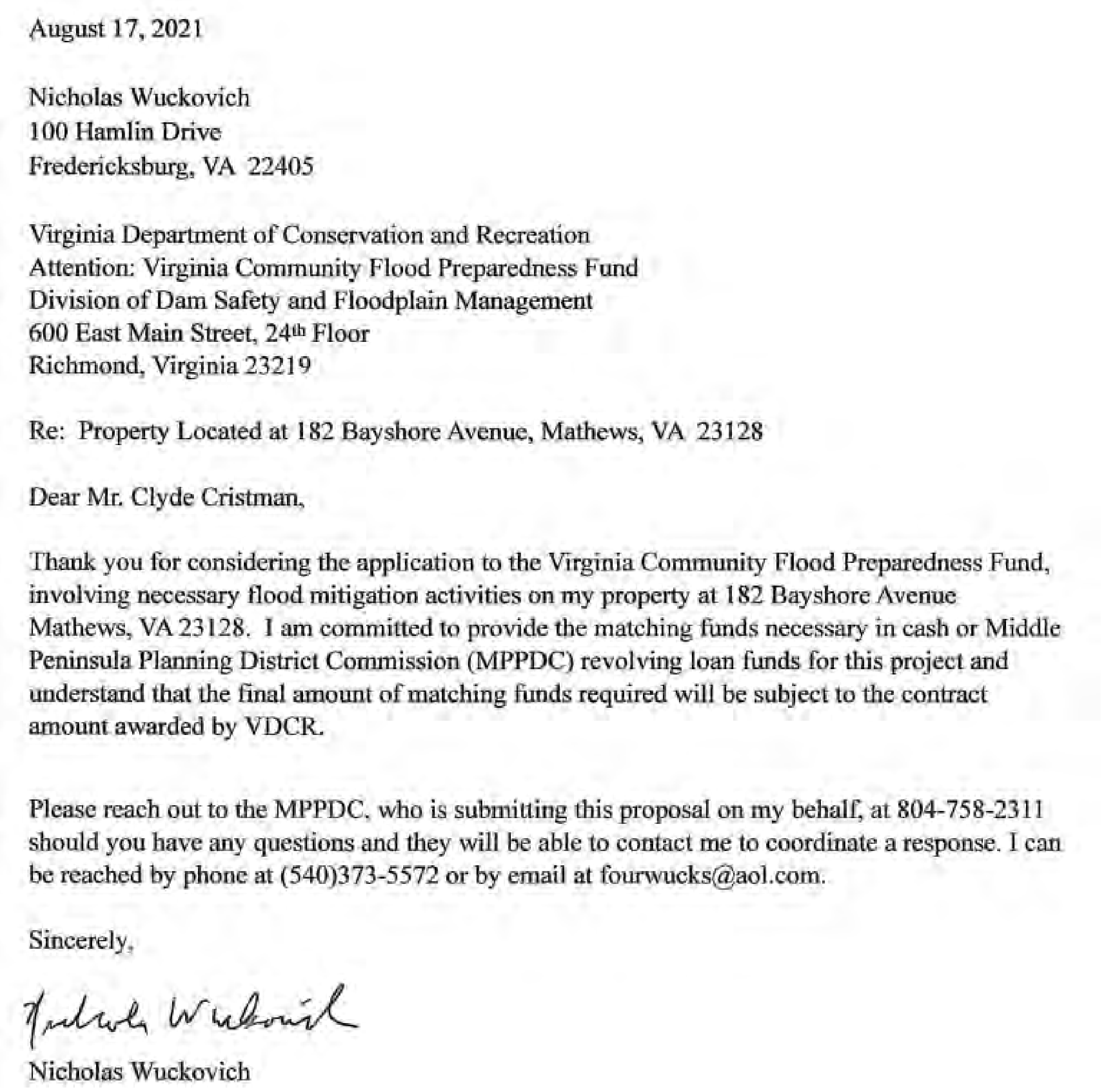
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



August 17, 2021

Nicholas Wuckovich
100 Hamlin Drive
Fredericksburg, VA 22405

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Re: Property Located at 182 Bayshore Avenue, Mathews, VA 23128

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 182 Bayshore Avenue Mathews, VA 23128. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at (540)373-5572 or by email at fourwucks@aol.com.

Sincerely,

Nicholas Wuckovich

see also appendix 6

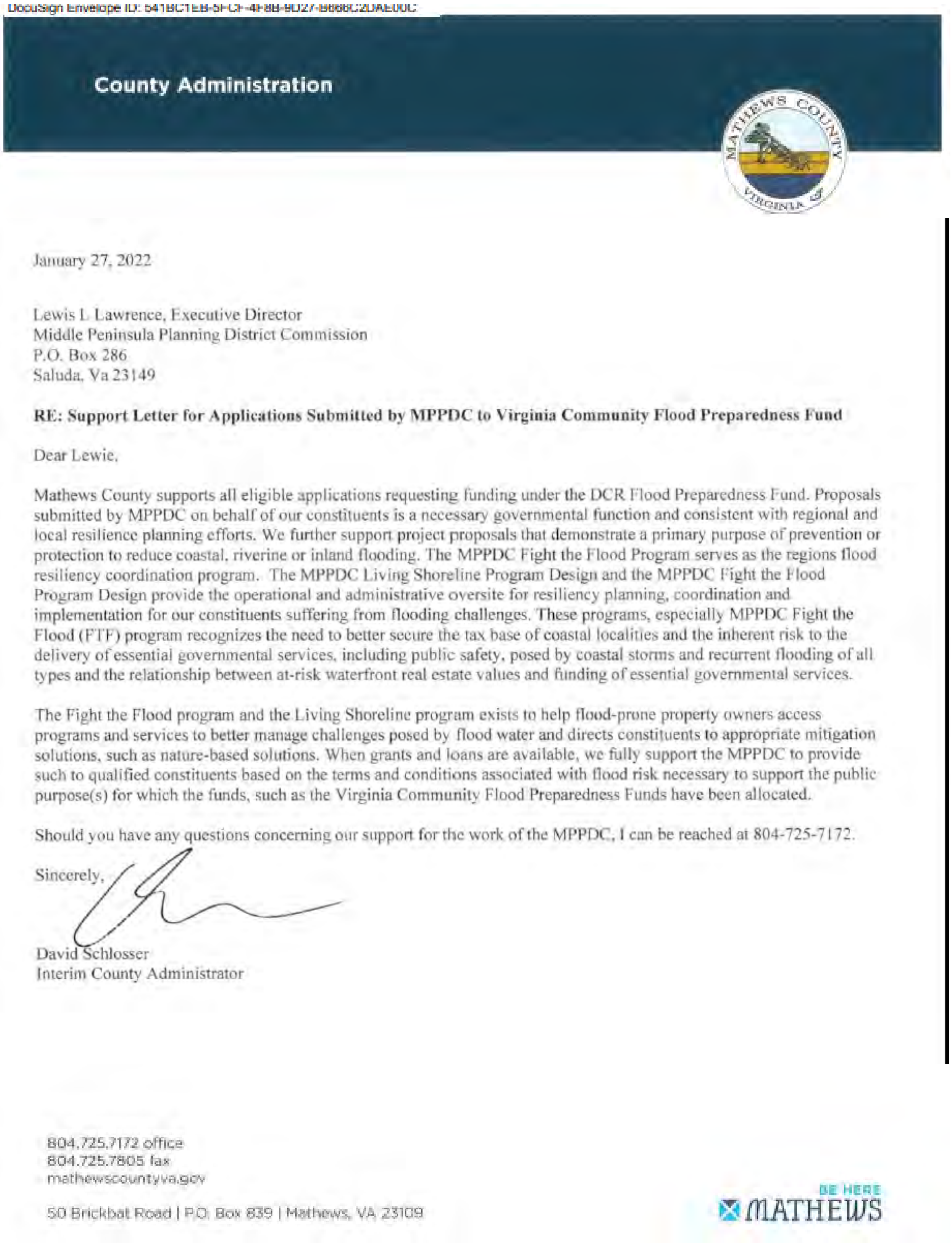
I. SUPPORTING DOCUMENTATION

- ☑ Letters of support from all affected local government
- ☑ Detailed map of the project area(s)
- ☑ FIRMette of the project area(s)
- ☑ Historic flood damage data and/or images

Cont to next page

APPENDIX 1

Community Support Letter



DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B668C2DAE00C

County Administration

January 27, 2022

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

David Schlosser
Interim County Administrator

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

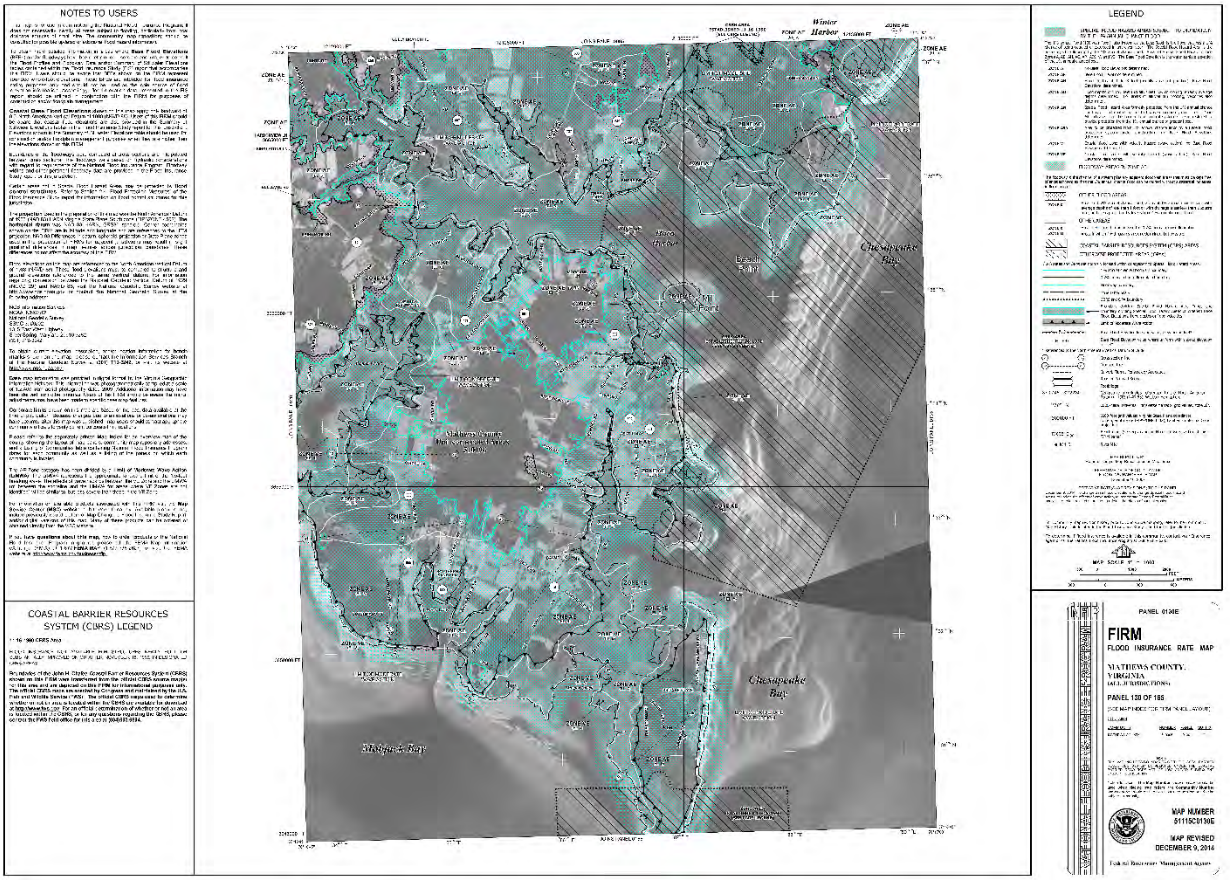
50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE MATHEWS

APPENDIX 2

Project Location FIRMette

Parker Property (FIRMette #: 51115C0130E)

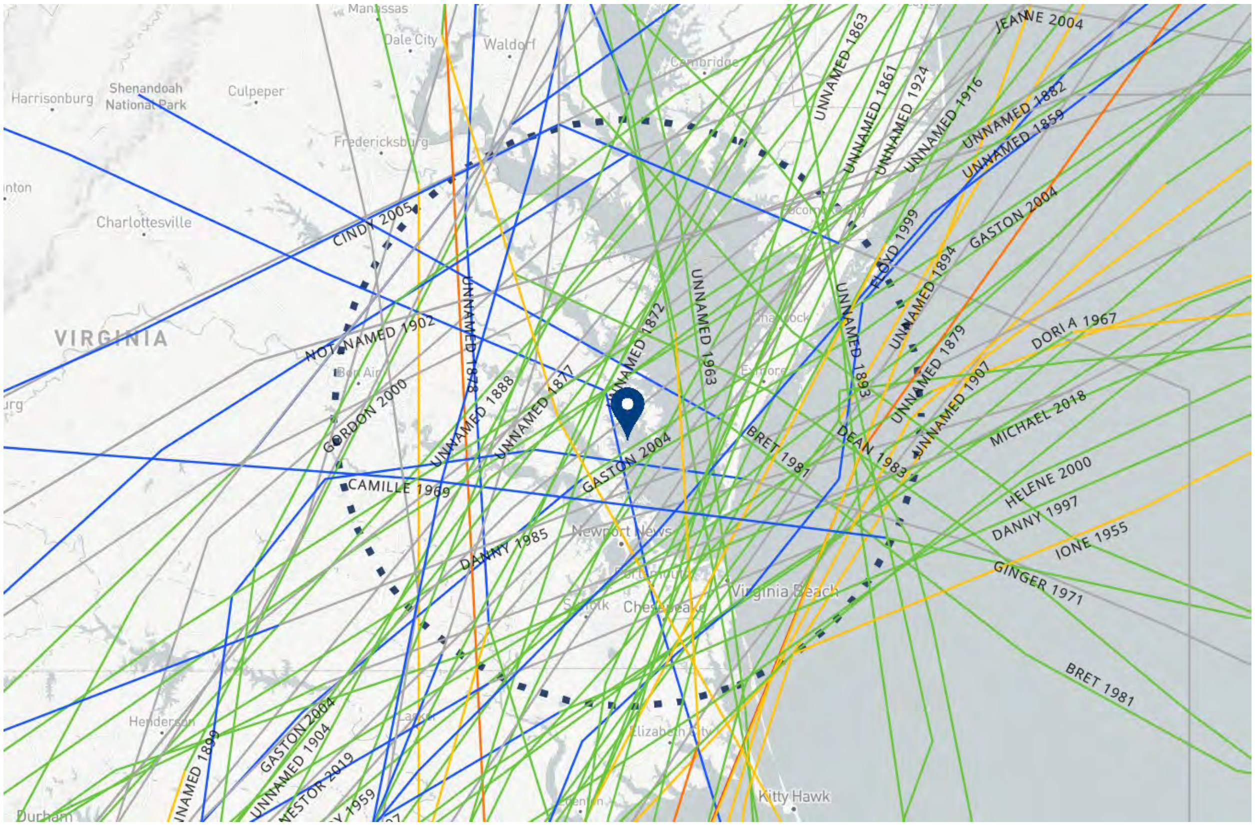


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.41846129, -76.40596046

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05,	75	987	H1

	2020			
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005	65	991	H1

	to Jul 11, 2005			
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep	135	921	H4

	19, 1999			
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16,	65	986	H1

	1979			
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug	60	976	TS

	07, 1960			
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02,	55	997	TS

	1943			
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916	40	990	TS

	to May 18, 1916			
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS

UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879	100	971	H3

	to Aug 20, 1879			
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19,	60	-1	TS

	1863			
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug	50	-1	TS

	31, 1852			

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)

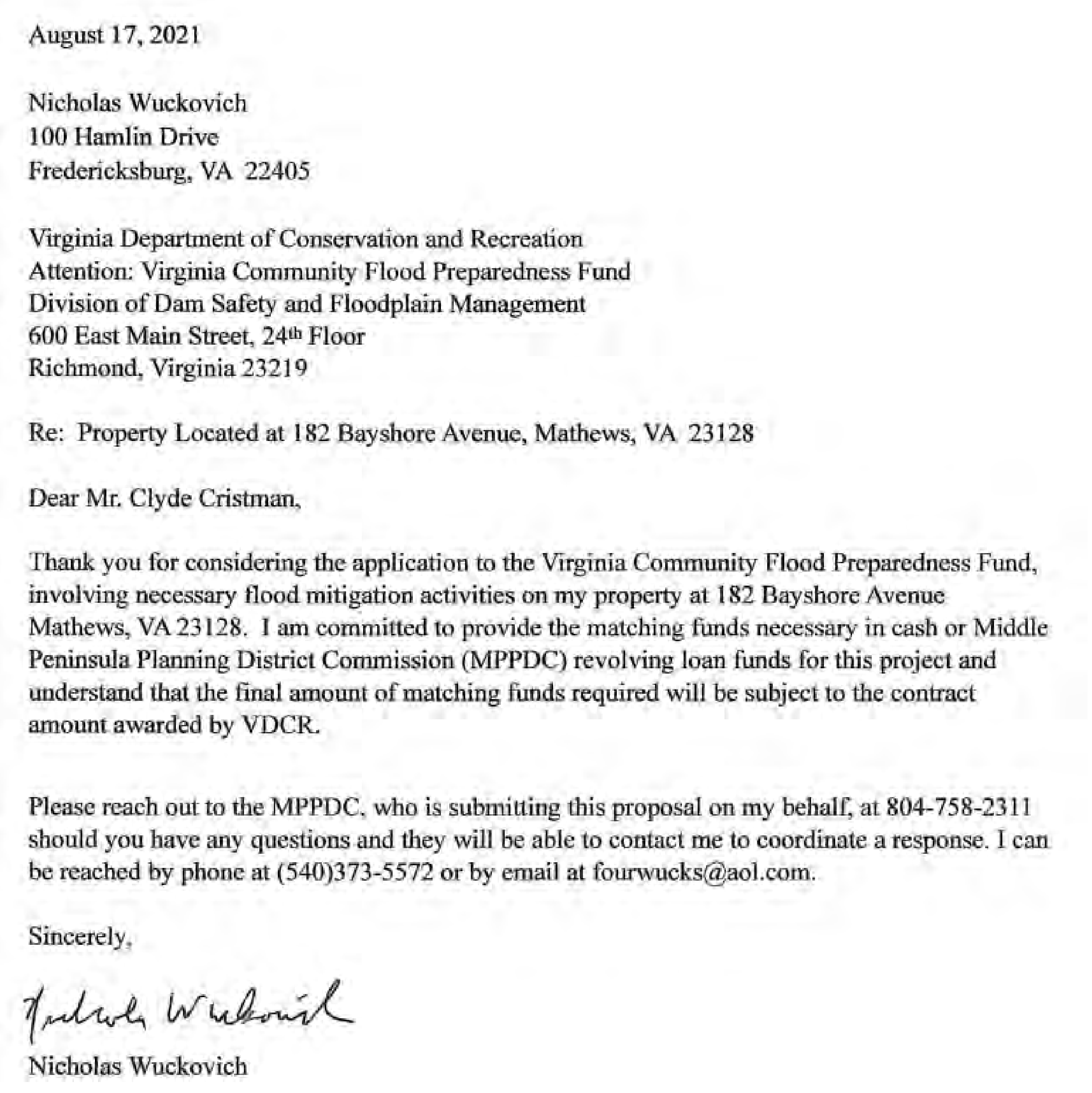
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



August 17, 2021

Nicholas Wuckovich
100 Hamlin Drive
Fredericksburg, VA 22405

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Re: Property Located at 182 Bayshore Avenue, Mathews, VA 23128

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 182 Bayshore Avenue Mathews, VA 23128. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at (540)373-5572 or by email at fourwucks@aol.com.

Sincerely,

Nicholas Wuckovich

Nicholas Wuckovich

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **VIDA** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

Issue #2

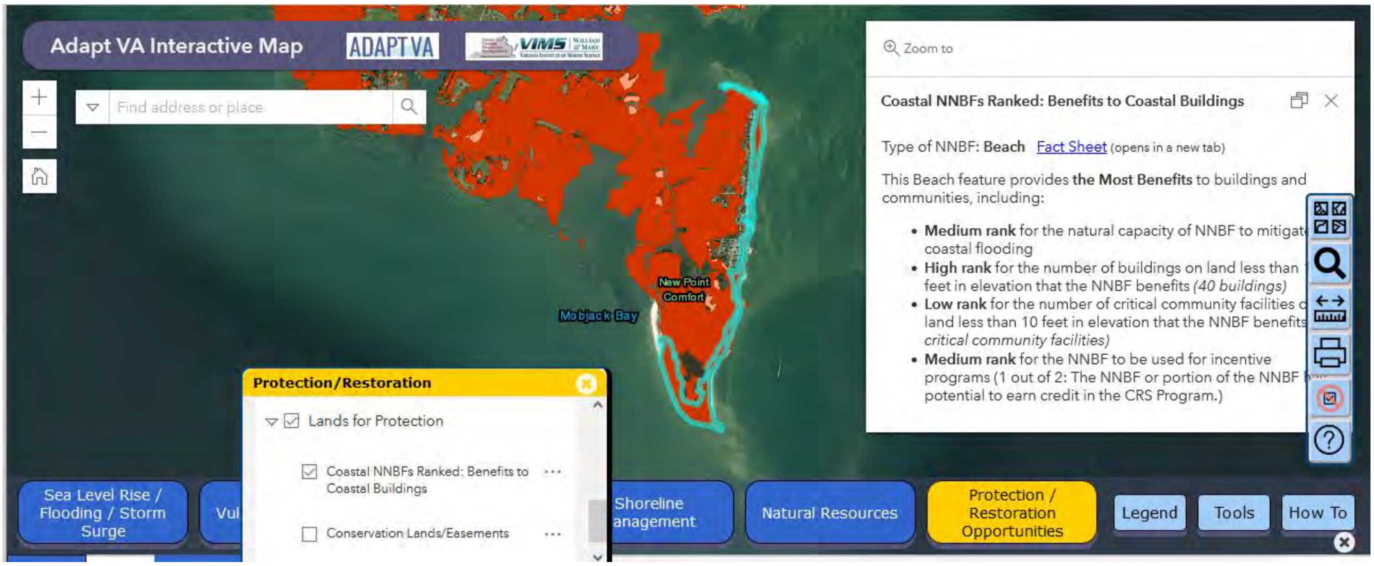
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Beach** Fact Sheet (opens in a new tab)

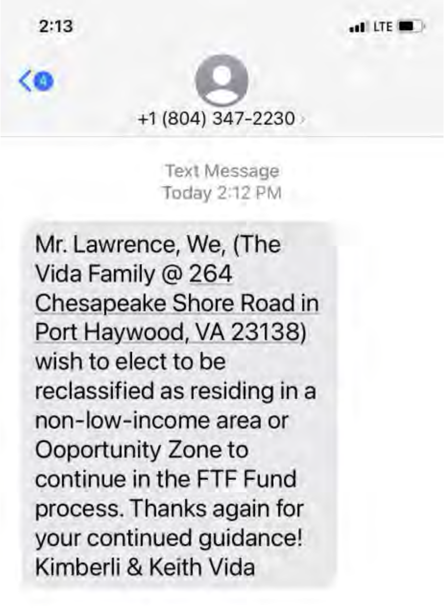
This Beach feature provides **the Most Benefits** to buildings and communities, including:

- **Medium rank** for the natural capacity of NNBF to mitigat coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(40 buildings)*
- **Low rank** for the number of critical community facilities land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **Medium rank** for the NNBF to be used for incentive programs (1 out of 2: The NNBF or portion of the NNBF potential to earn credit in the CRS Program.)

Between Round 1 and 2, MPPDC has 6 adjoining/neighborhood homeowners partnering and looking to protect larger "reach based areas

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



Text Message
Today 2:12 PM

Mr. Lawrence, We, (The Vida Family @ 264 Chesapeake Shore Road in Port Haywood, VA 23138) wish to elect to be reclassified as residing in a non-low-income area or Ooportunity Zone to continue in the FTF Fund process. Thanks again for your continued guidance! Kimberli & Keith Vida

Amended Budget Request

DCR Funding:	$ 12,180
Owner:	$ 5,219
Total	$ 17,399

						Gray	
Personnel Salaries/Wages	**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	0.00%	0.00%	$70,000		$957	$410	$1,367
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		**$11,500**	8,050.00	3,450.00	$251	$107	$358
	15%	1,725.00	1,207.50	517.50			
Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$11,500			
SUBTOTAL: Direct Costs					$9,258	$3,967	$13,225
Indirect/IDC/Facilities & Administrative Costs			**27.92%**		$2,922	$1,252	$4,174
Total					**$12,180**	**$5,219**	**$17,399**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,180**	**$5,219**	**$17,399**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Chesapeake Bay Road for Vida

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ____
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): County Name **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0130E

Total Cost of Project:_____$17,309_______________________________________
Total Amount Requested: ___$13,846__________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional

purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal design application requests a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Chesapeake Bay Road in Mathews County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Mathews County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC’s All Hazards Mitigation Plan (2016) can be found at:*

  https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

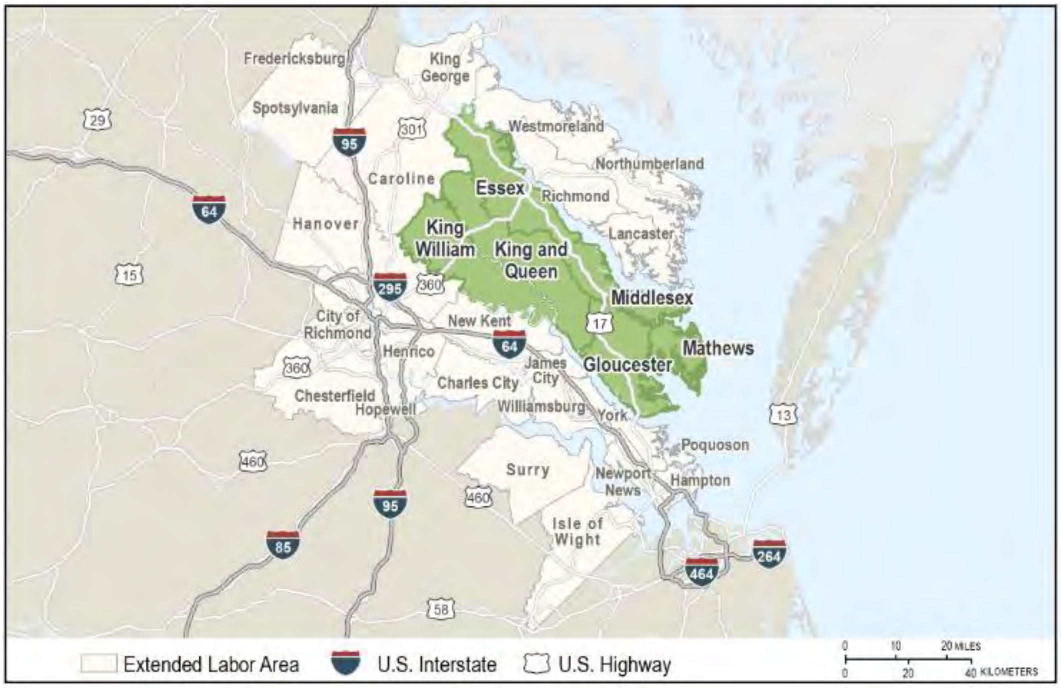
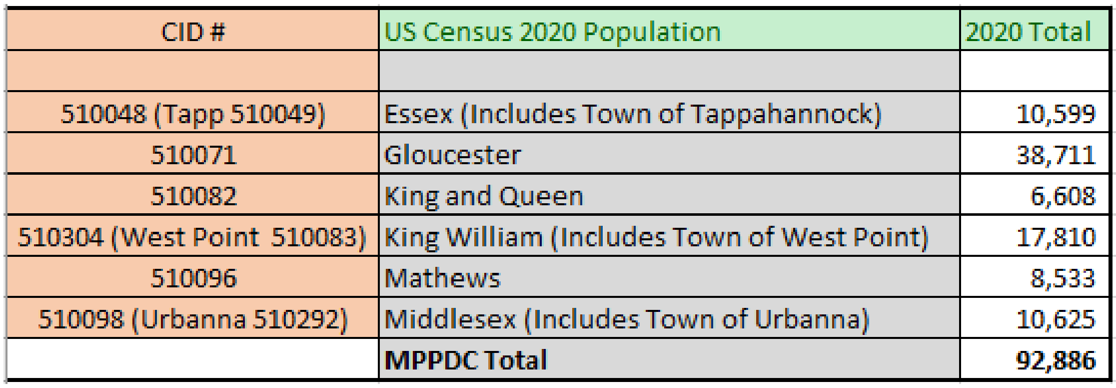


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Chesapeake Bay Road in Mathews County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

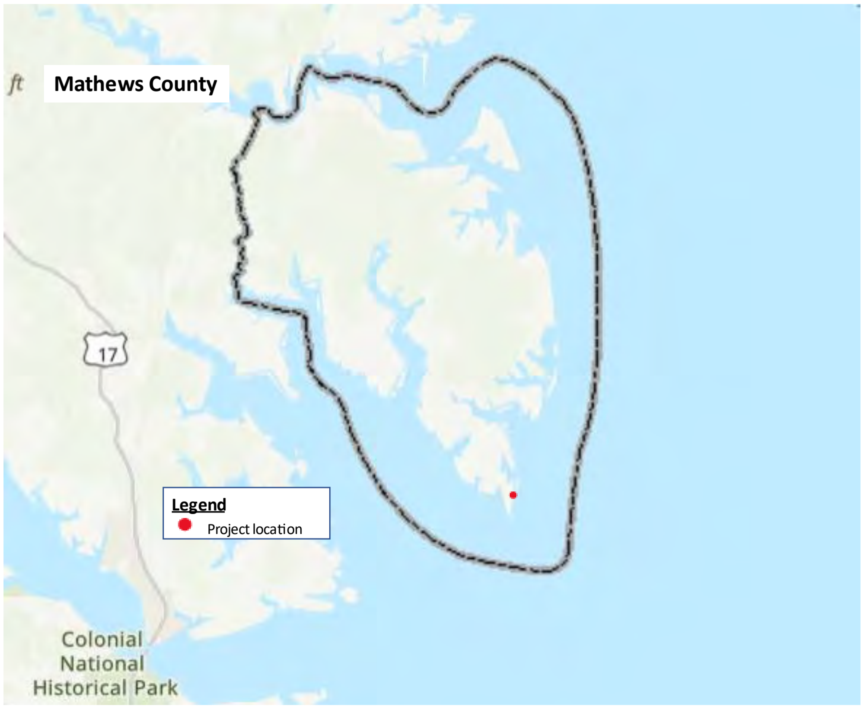
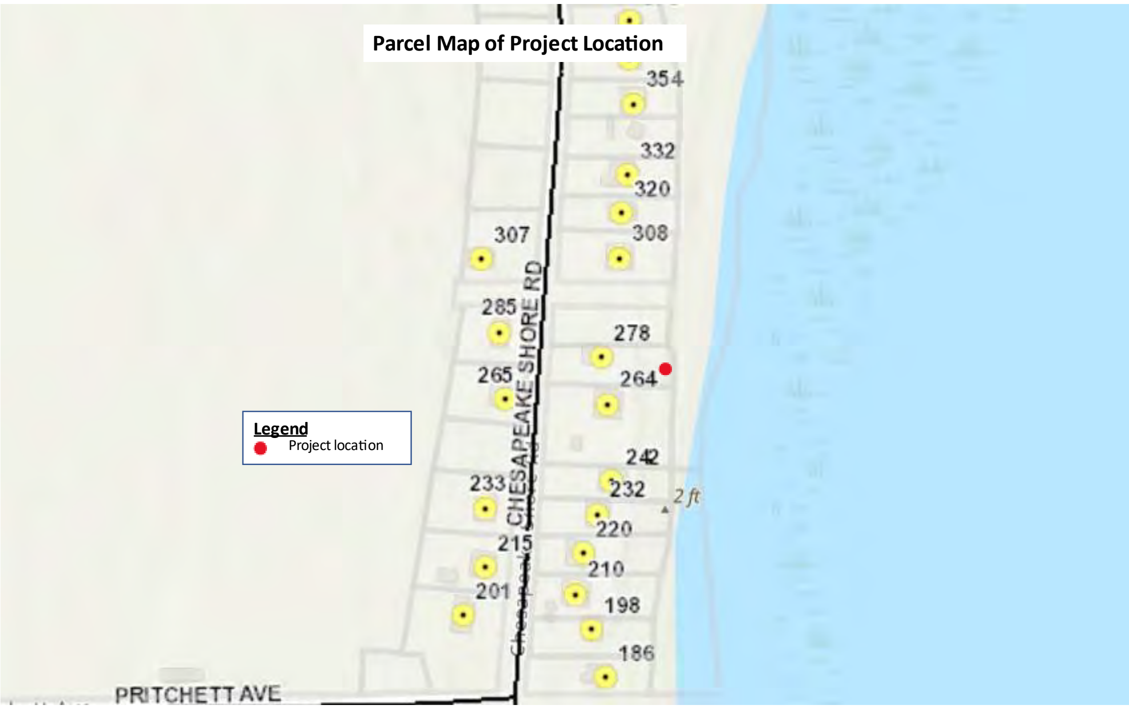


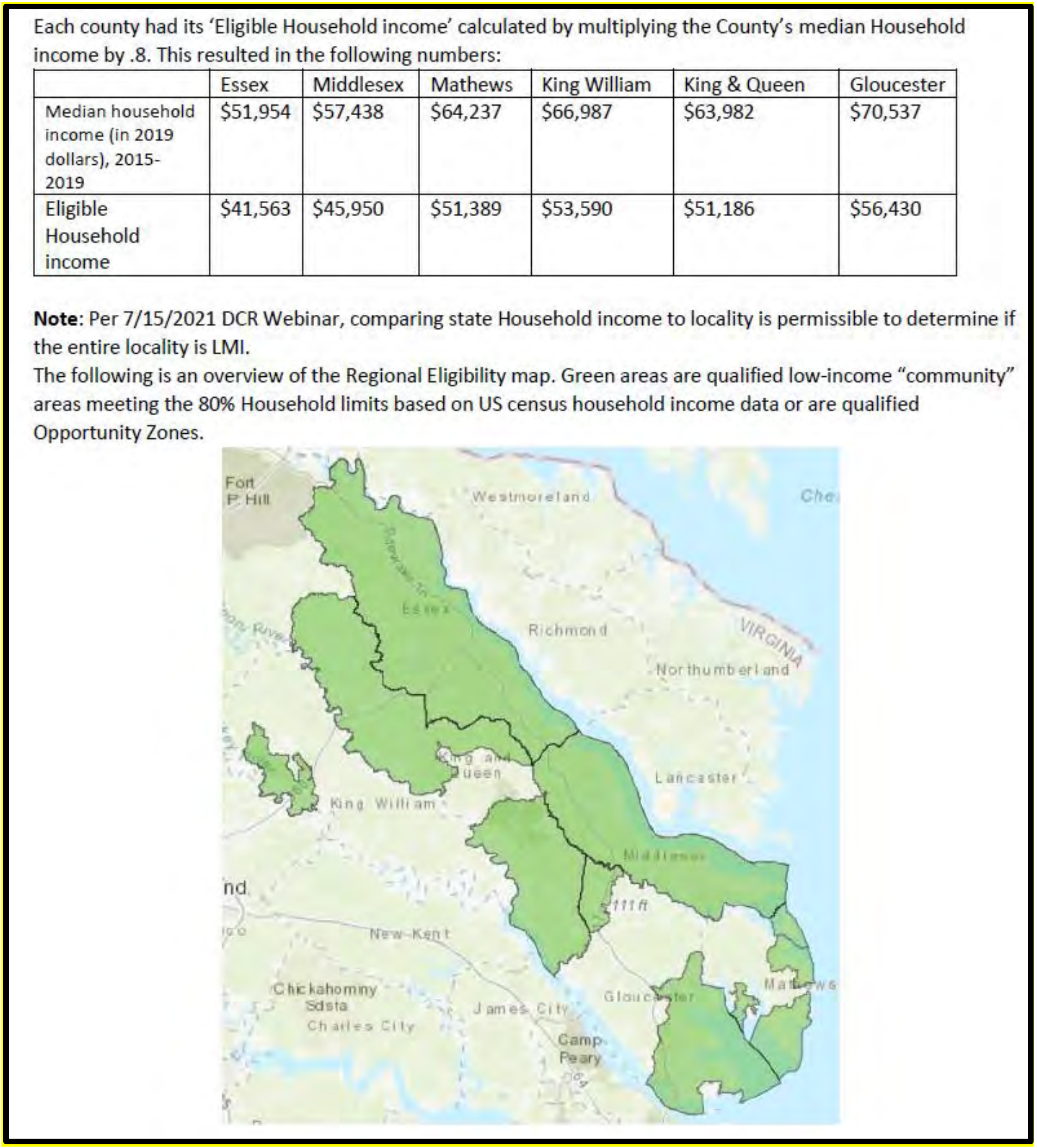
Figure 4. Parcel Map of Project Location



Mathews County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

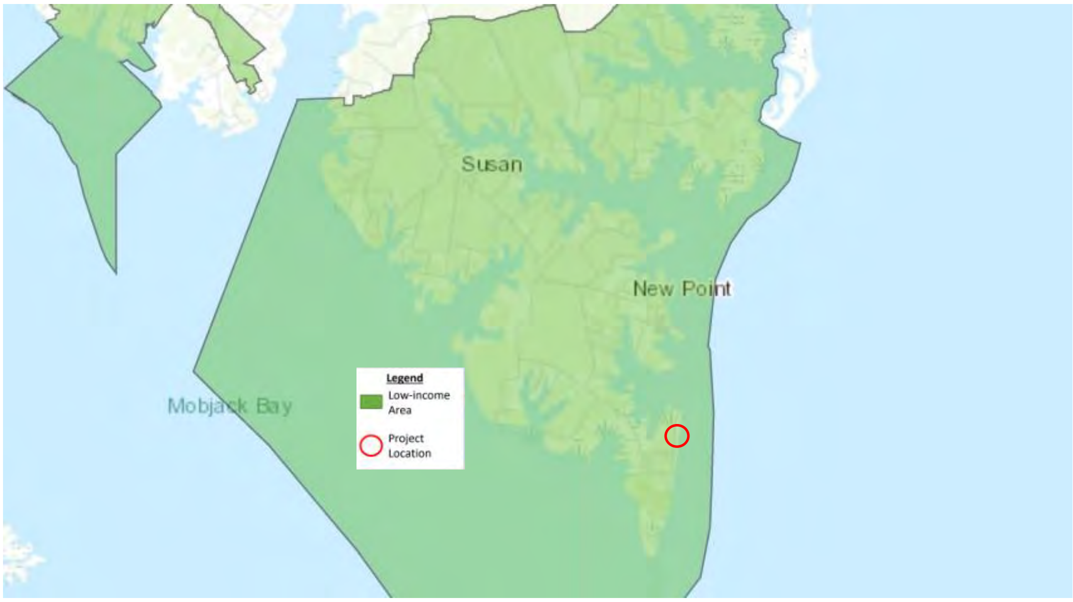
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability is considered relatively moderate level of vulnerability as seen in **Figure 8**.

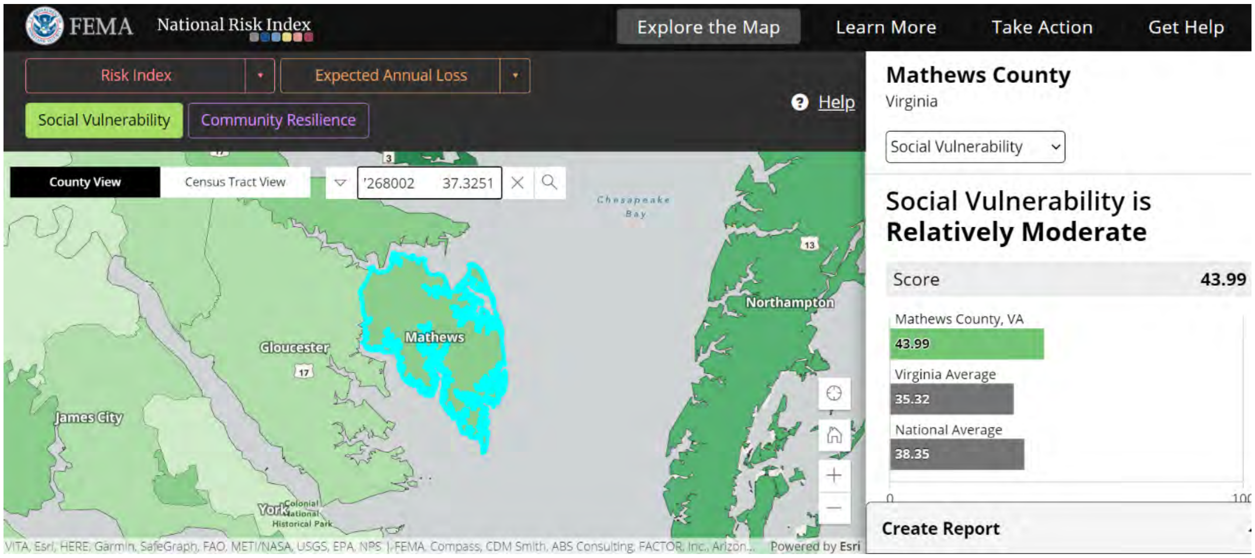
Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location


Social Vulnerability

Social Vulnerability Index
Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Zoom to

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Mathews County
Virginia

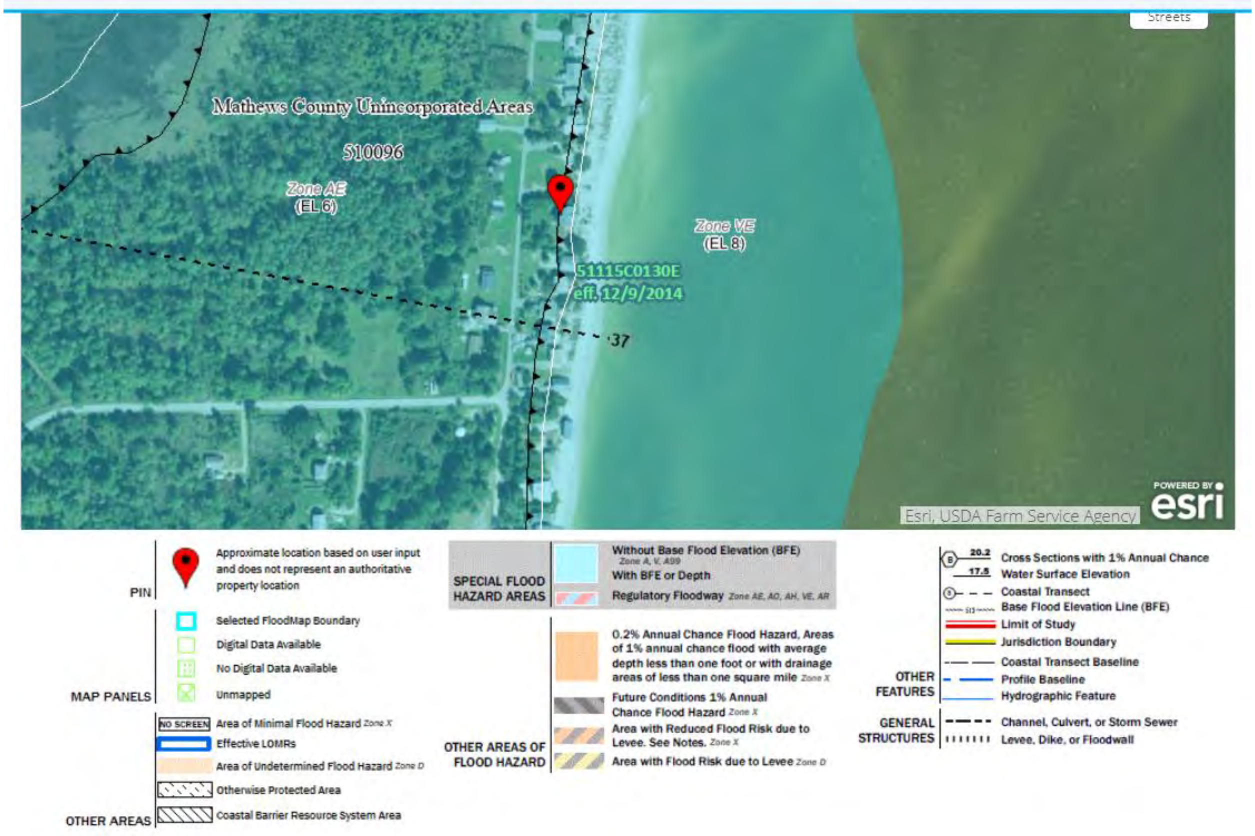
Social Vulnerability is Relatively Moderate

Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

The project is located at 264 Chesapeake Shore Road, Port Haywood, VA 23138 (-76.27260098, 37.324922). Since the recent purchase of the property in November 2020, the owners have witnessed an exponentially-escalating erosion of their dunes. They have lost approximately six to eight feet of their dunes from the land to water erosion, and they have also lost about two and half to five feet in height since over the past year without being hit by any major storms or hurricanes. One significant weather event will cause serious devastation to the community. In regard to the property, they have significant flooding on one side of the property and a bit in the driveway which is increasing the mosquito population. Neighbor next has a breakwater close to their shoreline but even Hurricane Henri caused some water issues. That storm brought in great such waves that were hitting the dune and was spilling over. The rapid progression in erosion issues is also threating several large trees that will likely soon topple over and fall into the encroaching water.

This site is located within the VE flood zone as seen in **Figure 9**. Please see **Appendix 2** for the FIRMettes (last mapped 12/9/2014) and **Appendix 3** for additional property photos.

Figure 9: Map of FEMA Flood Zones



Due to the project site’s proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline, which has accelerated in recent storms (see phots). The project location has and continues to be impacted by tropical, sub-tropical, and nor’easter events. **Appendix 4** lists 84 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

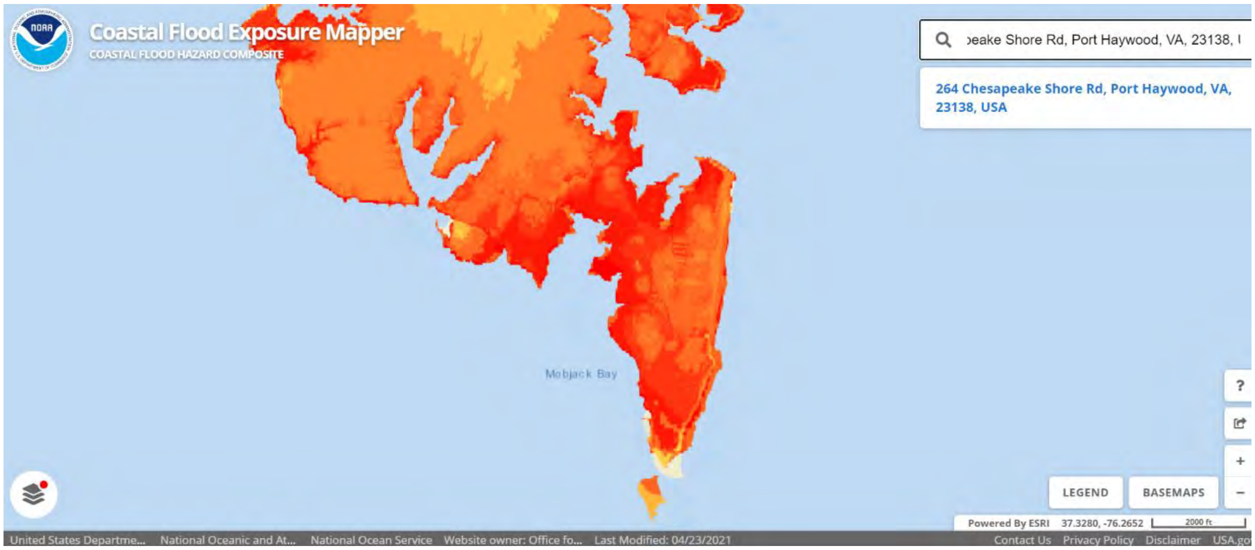
Figure 9. Project Location and Map of the Shoreline Change between 1937 and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)

ɔeake Shore Rd, Port Haywood, VA, 23138,

264 Chesapeake Shore Rd, Port Haywood, VA, 23138, USA



eake Shore Rd, Port Haywood, VA, 23138,

264 Chesapeake Shore Rd, Port Haywood, VA, 23138, USA

For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

***GOALS AND OBJECTIVES*.**

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Mathews County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers. Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

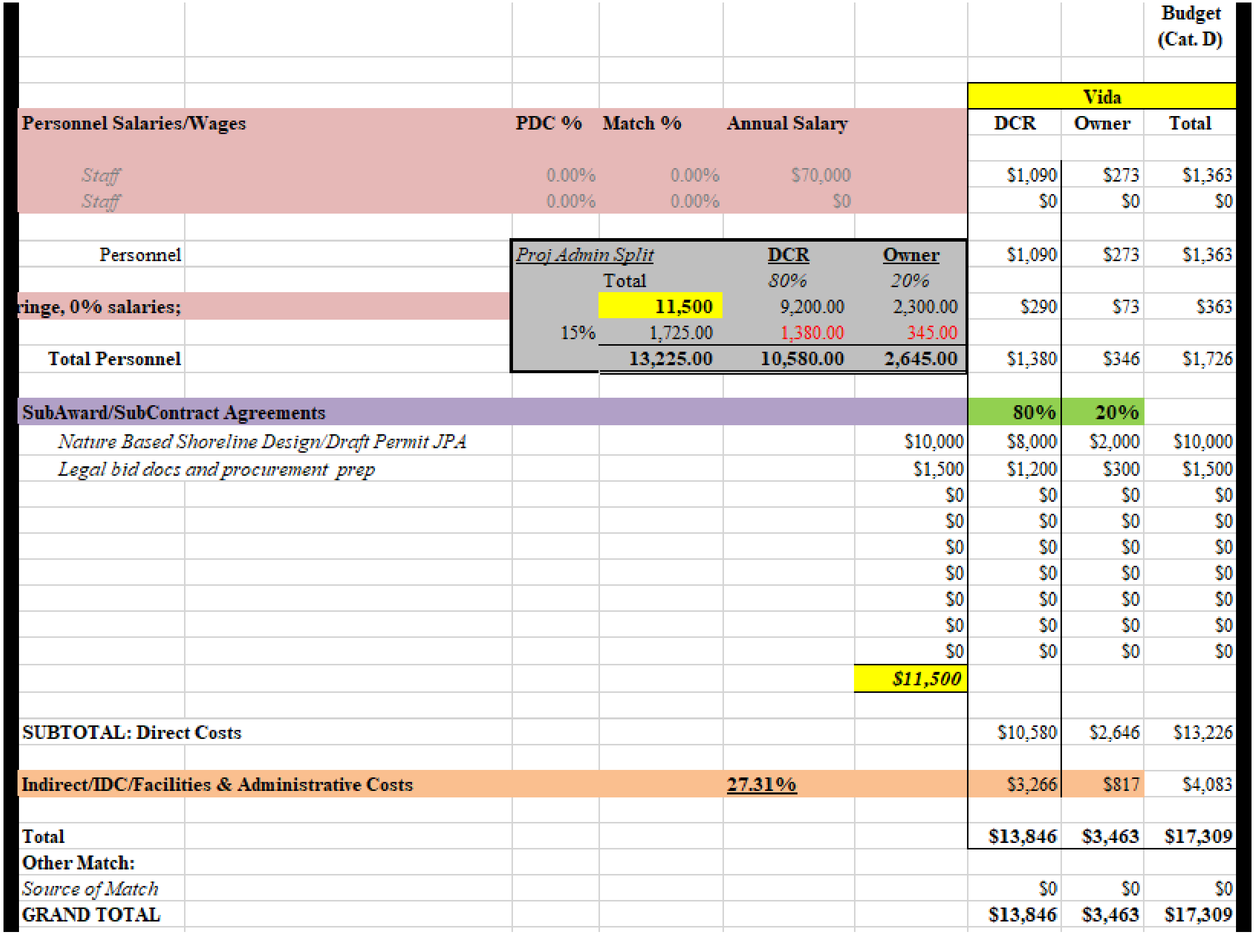
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $17,309

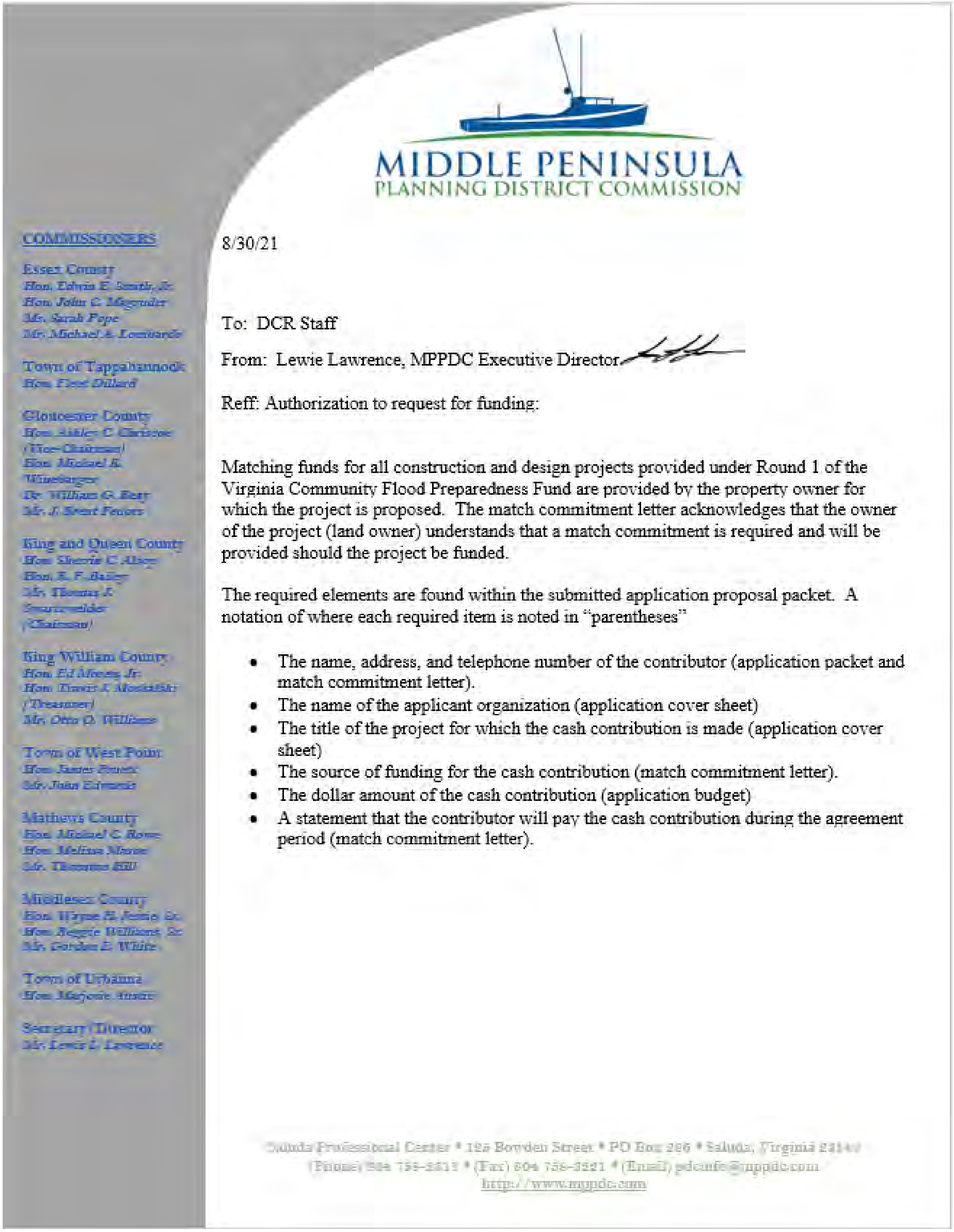


								Budget (Cat. D)
							Vida	
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$70,000		$1,090	$273	$1,363
Staff		0.00%	0.00%	$0		$0	$0	$0
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$1,090	$273	$1,363
			Total	*80%*	*20%*			
ringe, 0% salaries;			**11,500**	9,200.00	2,300.00	$290	$73	$363
		15%	1,725.00	1,380.00	345.00			
Total Personnel			**13,225.00**	**10,580.00**	**2,645.00**	$1,380	$346	$1,726
SubAward/SubContract Agreements						**80%**	**20%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$8,000	$2,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,200	$300	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$11,500			
SUBTOTAL: Direct Costs						$10,580	$2,646	$13,226
Indirect/IDC/Facilities & Administrative Costs				**27.31%**		$3,266	$817	$4,083
Total						**$13,846**	**$3,463**	**$17,309**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$13,846**	**$3,463**	**$17,309**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipmen

- *Authorization to request for funding:*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*

August 14, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 264 Chesapeake Shore Road, Port Haywood, VA 23138. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804.347.2230 or by email at KimberliVida@gmail.com.

Sincerely,

Kimberli Russ Vida

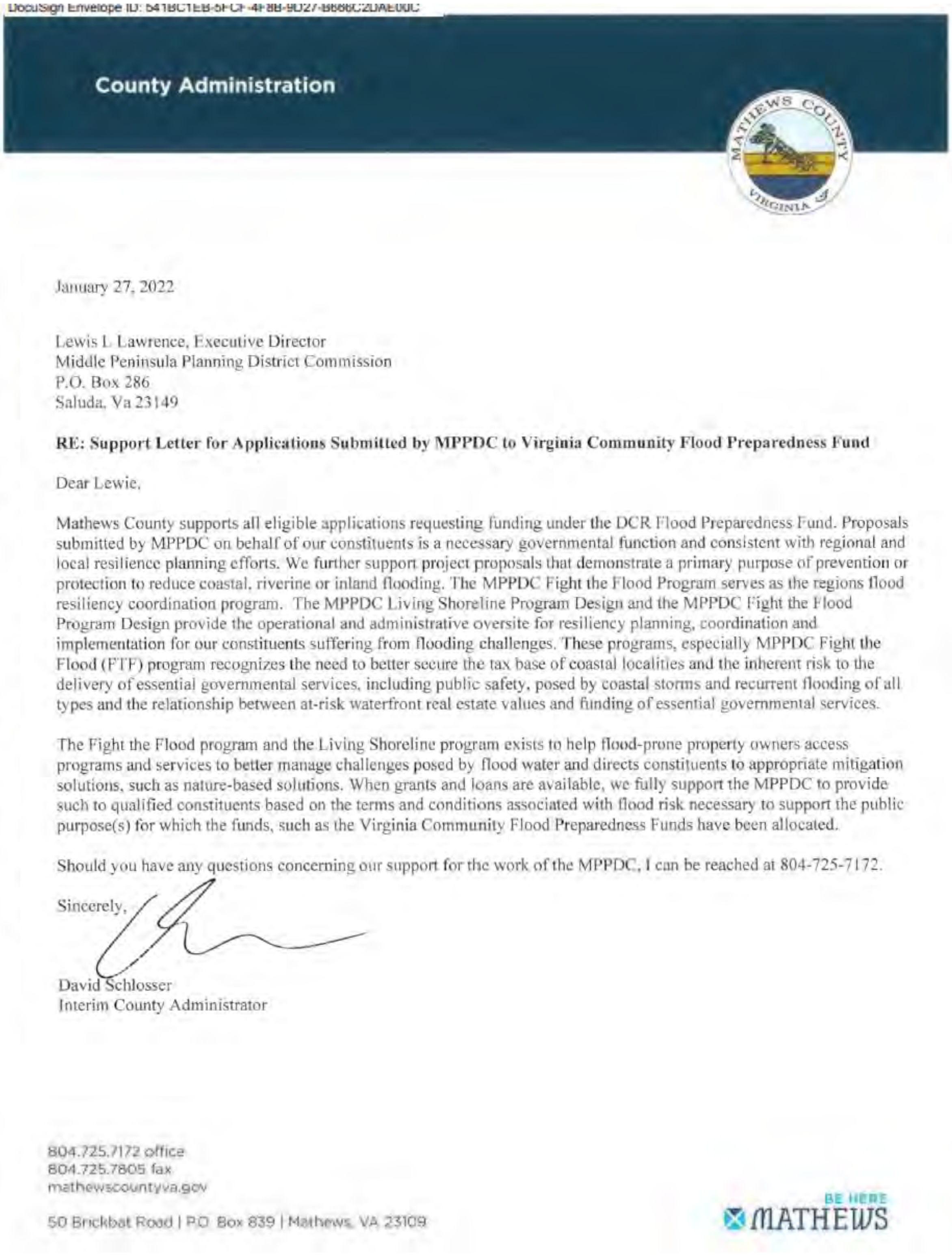
I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

Cont to next page

APPENDIX 1

Community Support Letter



DocuSign Envelope ID: 541BC1EB-5FCF-4F8B-9D27-B686C2DAE00C

County Administration

January 27, 2022

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

David Schlosser
Interim County Administrator

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

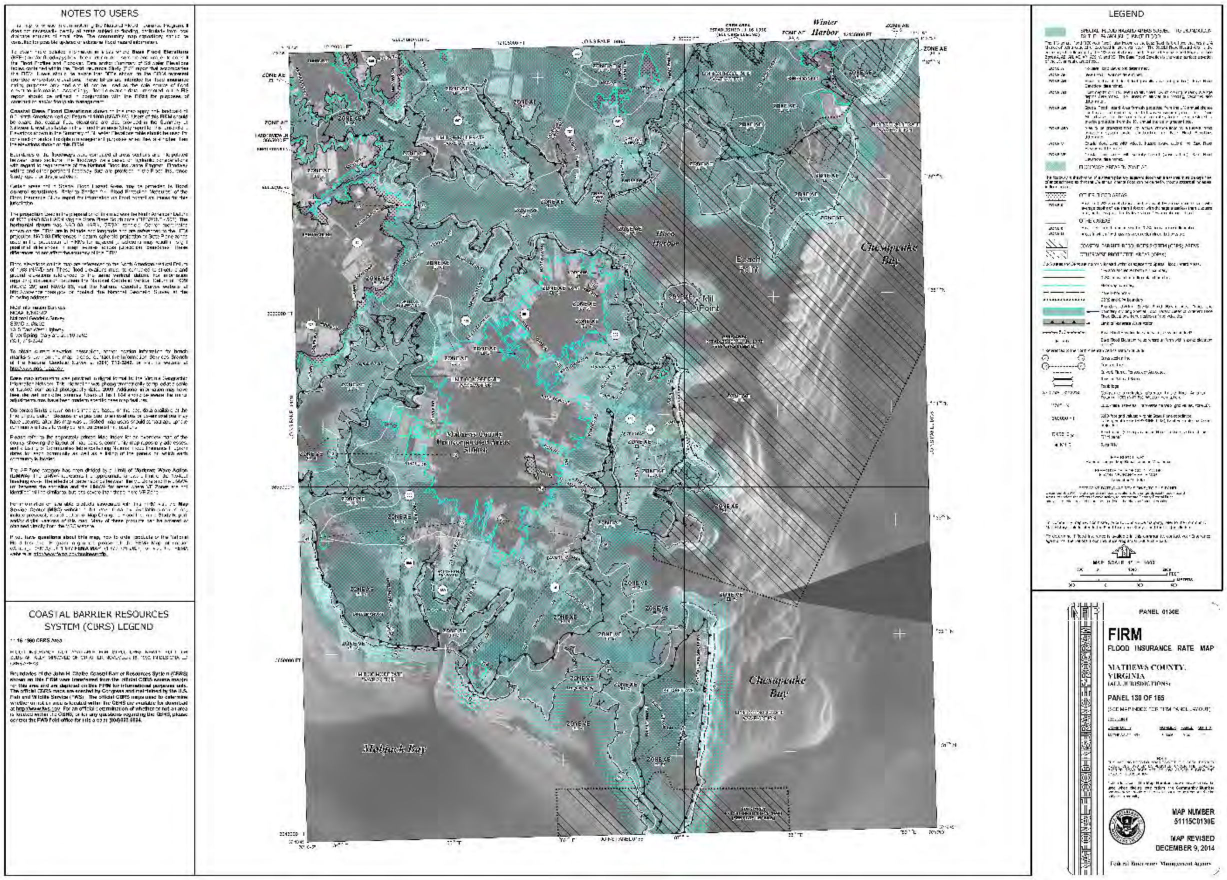
50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE
MATHEWS

APPENDIX 2

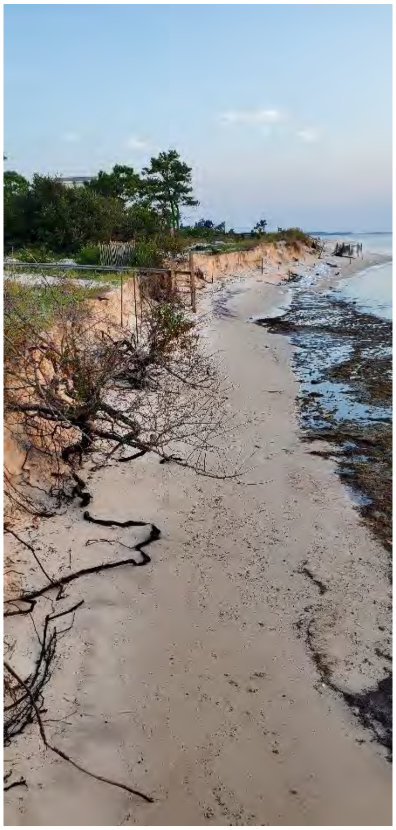
Project Location FIRMette

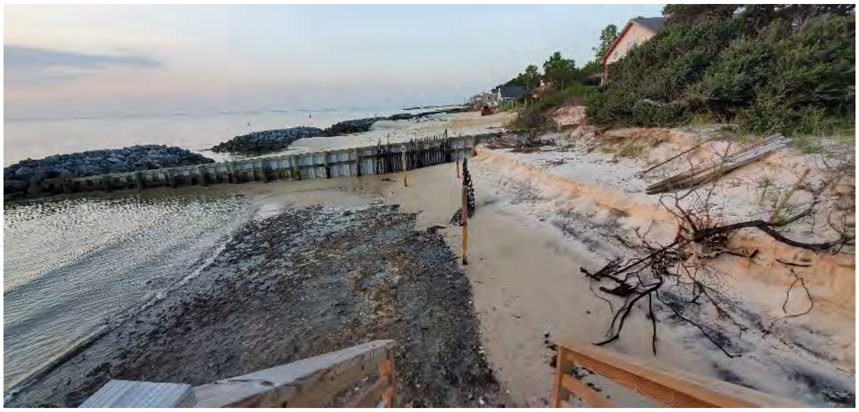
Parker Property (FIRMette #: 51115C0130E)

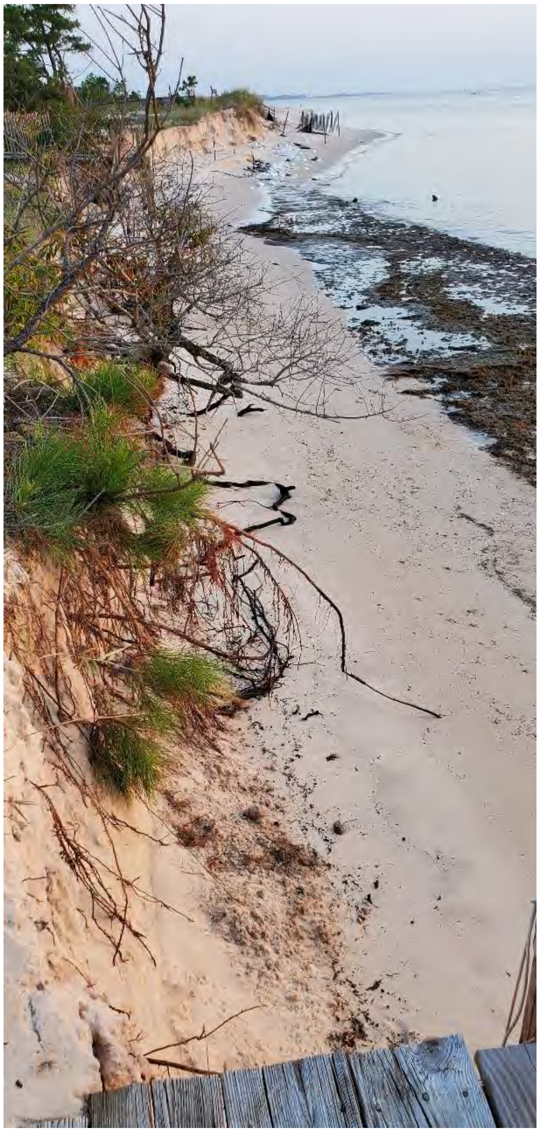


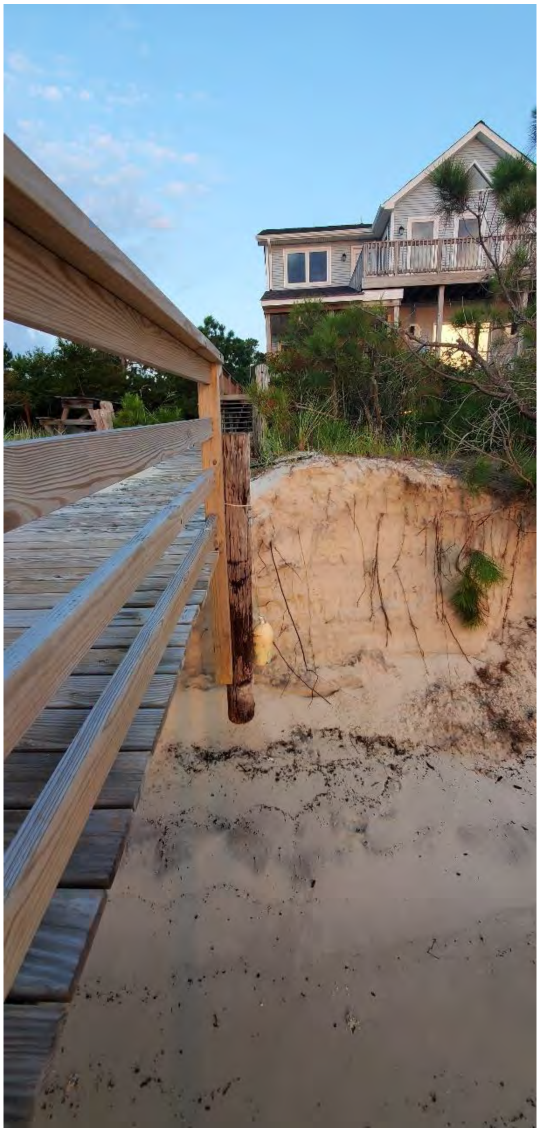
APPENDIX 3

Additional Property Photos



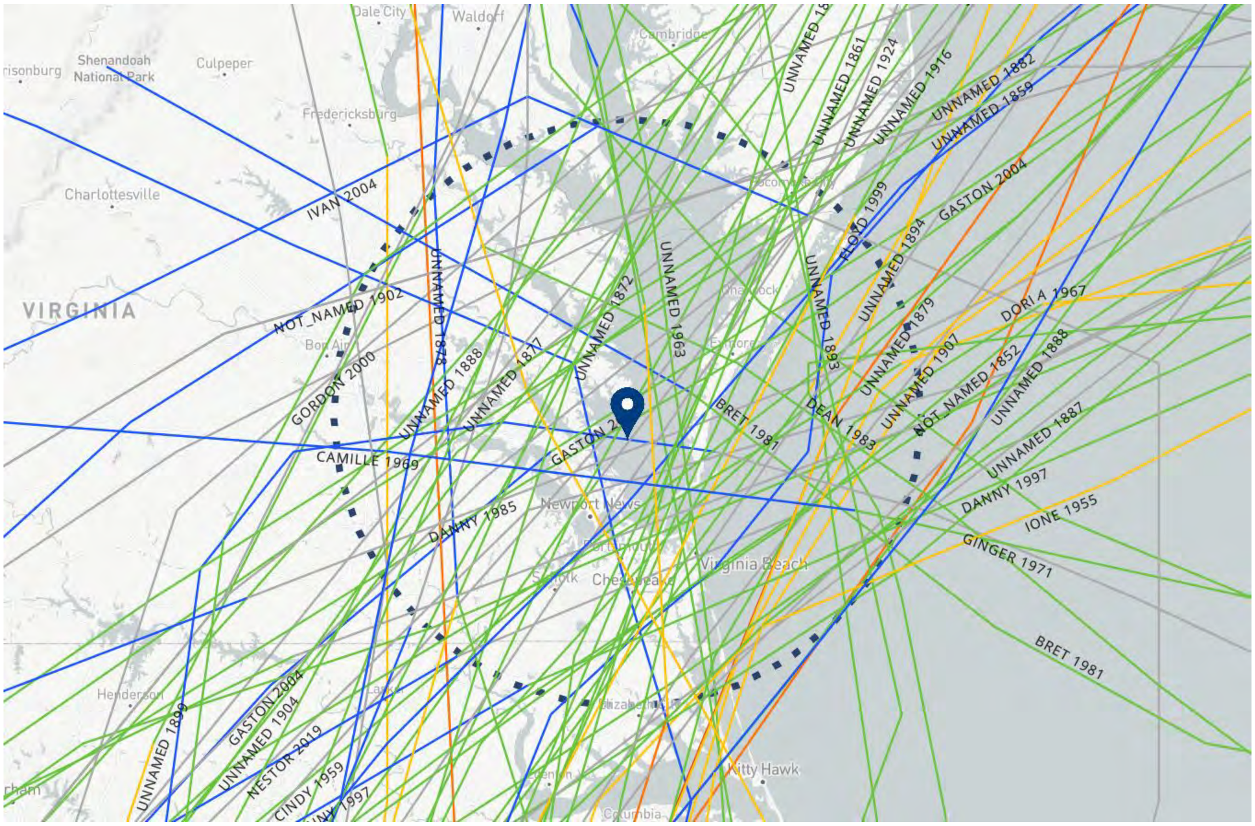






APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.324922, -76.27260098

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1

NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29,	105	950	H3

	2004			
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
BONNIE 2004	Aug 03, 2004 to Aug 14, 2004	55	1001	TS
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep	135	921	H4

	19, 1999			
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16,	65	986	H1

	1979			
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
DONNA 1960	Aug 29, 1960	125	930	H4

	to Sep 14, 1960			
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug	70	985	H1

	04, 1944			
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct	55	999	TS

	01, 1924			
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3

UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Oct 08, 1888 to Oct 12, 1888	95	970	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep	110	949	H3

	13, 1882			
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18,	45	-1	TS

	1867			
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12,	110	938	H3

	1854			
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter

August 14, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 264 Chesapeake Shore Road, Port Haywood, VA 23138. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804.347.2230 or by email at KimberliVida@gmail.com.

Sincerely,

Kimberli Russ Vida

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

March 28, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Matthew Wells,

Enclosed in this packet are three applications for flood protection and prevention projects that involve implementation of nature-based shoreline solutions.

Among the applications are projects which are currently at the construction stage. Construction projects are requesting funds to implement projects which have approved permits or are nearing permit approval prior to construction of a nature-based flood protection solution.

Below is short summary of proposed flood protection and prevention construction projects in Mathews County:

A. **Historic Antioch Rosenwald School Flood Protection**
   (CID): 510096 Total Cost (from individual project application): $141,438
   This proposal requests funding to assist the Antioch Baptist Church with designing and implementing stormwater protection activities to preserve and enhance the historic Antioch Rosenwald School property in Mathews County, which continues to serve a minority community which has historically been underserved regarding flood protection assistance. The efforts to mitigating the stormwater challenges faced at the property are a critical step towards the broader effort to convert the historic property into a community center and museum which can provide much needed assistance and create much needed opportunities for the underserved citizens of this vulnerable community as well as help preserve the rich minority history of the property and the community. The project will construct a stormwater collection system on the Rosenwald School focusing on the roof and managing runoff utilizing approved stormwater BMPs, as well as designing a suite of landscape-focused stormwater BMPs which can be implemented over time to ensure that the property grounds

themselves can once again be restored to a useable and functional condition to meet the needs of the community.

B. **North River Property Resiliency Construction Project**
(CID): 510096 Total Cost (from individual project application): $125,715
This project proposes to construct a nature-based solution on private property located on the North River in Mathews County. The nature-based solution will involve modifying and removing a dilapidated failed wooden bulkhead and the installation of 80 linear feet of living shoreline, 60 linear feet of a bioengineered structure, 900 square feet of fill and plantings and 103 linear feet of rip rap. The applicant also submitted a Round 1 proposal for design needed on a second portion of the project site and therefore this request is not duplicative.

C. **Chesapeake Bay – Robinson's Nature-based Solution Construction Project**
(CID): 510096 Total Cost (from individual project application): $65,263
This project proposes to construct a nature-based solution on a private property located on the Chesapeake Bay in Mathews County. The nature-based solution will entail the installation of a 75 linear feet breakwater, 412 cubic yards of beach nourishment and 100 linear feet of living shoreline. This project will be a partnership between the MPPDC and one private property owner and is supported by Mathews County.

The total project costs for Mathews County Round 3 construction applications is **$332,416** and MPPDC staff are requesting **$232,691** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at llawrence@mppdc.com or by phone at 804-758-2311.

Lewis Lawrence
Executive Director

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

PROJECT TITLE: Historic Antioch Rosenwald School Flood Protection
Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning X Project _____Study

NFIP/DCR Community Identification Number (CID): Mathews County (510096)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (804) 832-6747
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Curtis Smith
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (804) 384-7509
Email Address: csmith@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ **No ____**

Project Grants (Check All that Apply)

☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**

☐ **Wetland restoration.**

☐ Floodplain restoration.

☑ Construction of swales and settling ponds.

☐ Living shorelines and vegetated buffers.

☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.

☑ Storm water system upgrades.

☐ Medium and large-scale Low Impact Development (LID) in urban areas.

☐ Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

☐ Dam restoration or removal.

☐ Stream bank restoration or stabilization.

☑ Restoration of floodplains to natural and beneficial function.

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County – Please see the attached corresponding maps for this application
NFIP Community Identification Number (CID#): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No
Is Project Located in a Special Flood Hazard Area? ☐ Yes ☑ No Flood Zone(s) (If Applicable): N/A
Flood Insurance Rate Map Number(s) (If Applicable): 51115C0130E

Total Cost of Project: **$141,438**

Total Amount Requested: **$99,007**

INTRODUCTION –

This proposal requests funding to assist the Antioch Baptist Church with designing and implementing stormwater protection activities to preserve and enhance the historic Antioch Rosenwald School property in Mathews County, which continues to serve a minority community which has historically been underserved regarding flood protection assistance. The efforts to mitigating the stormwater challenges faced at the property are a critical step towards the broader effort to convert the historic property into a community center and museum which can provide much needed assistance and create much needed opportunities for the underserved citizens of this vulnerable community as well as help preserve the rich minority history of the property and the community. The project will construct a stormwater collection system on the Rosenwald School focusing on the roof and managing runoff utilizing approved stormwater BMPs, as well as designing a suite of landscape-focused stormwater BMPs which can be implemented over time to ensure that the property grounds themselves can once again be restored to a useable and functional condition to meet the needs of the community.

FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). This proposal intends to implement nature-based solutions which utilize and incorporate sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore and protect wetlands, reduce heat, add recreational space, preserve historic structures, provide resilience-related educational opportunities and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions,* June 2021).

- *A link to the Middle Peninsula PDC's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fighttheflooodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
    - Please see Section 4 (page 25), which includes historical hazard data within the region.
- *A link to the County of Mathews' Comprehensive Plan can be found at: https://www.mathewscountyva.gov/196/Comprehensive-Plan*

PROJECT LOCATION INFORMATION –

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

FIGURE 1. MIDDLE PENINSULA REGIONAL MAP SHOWING PROJECT LOCATION

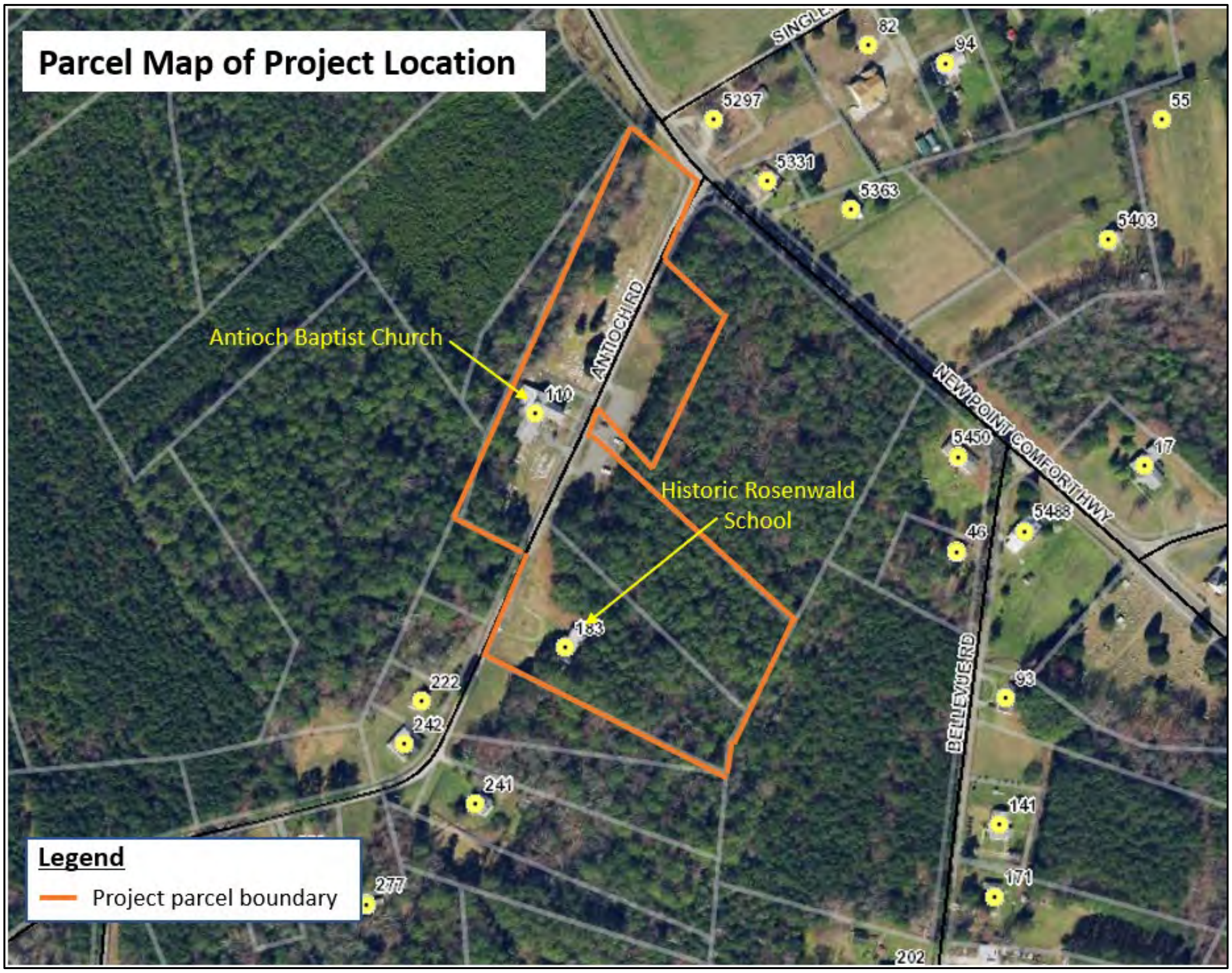
FIGURE 2. MIDDLE PENINSULA POPULATION

CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design and implement stormwater flooding solutions on four private parcels of land constituting approximately 10.5 acres of land located in the historically minority and underserved community of Susan in Mathews County as found in **Figures 3 and 4**. The property is owned by the Antioch Baptist Church, which has served for nearly 100 years as a religious, community, cultural, and educational center for the historically underserved African American citizens of Mathews County. The property consists of the historic Antioch Rosenwald School, the Antioch Baptist Church, the church cemetery, and several wooded, grassy, and parking areas.

FIGURE 3: COUNTY MAP OF PROJECT LOCATION.

FIGURE 4: PARCEL MAP OF PROJECT LOCATION.

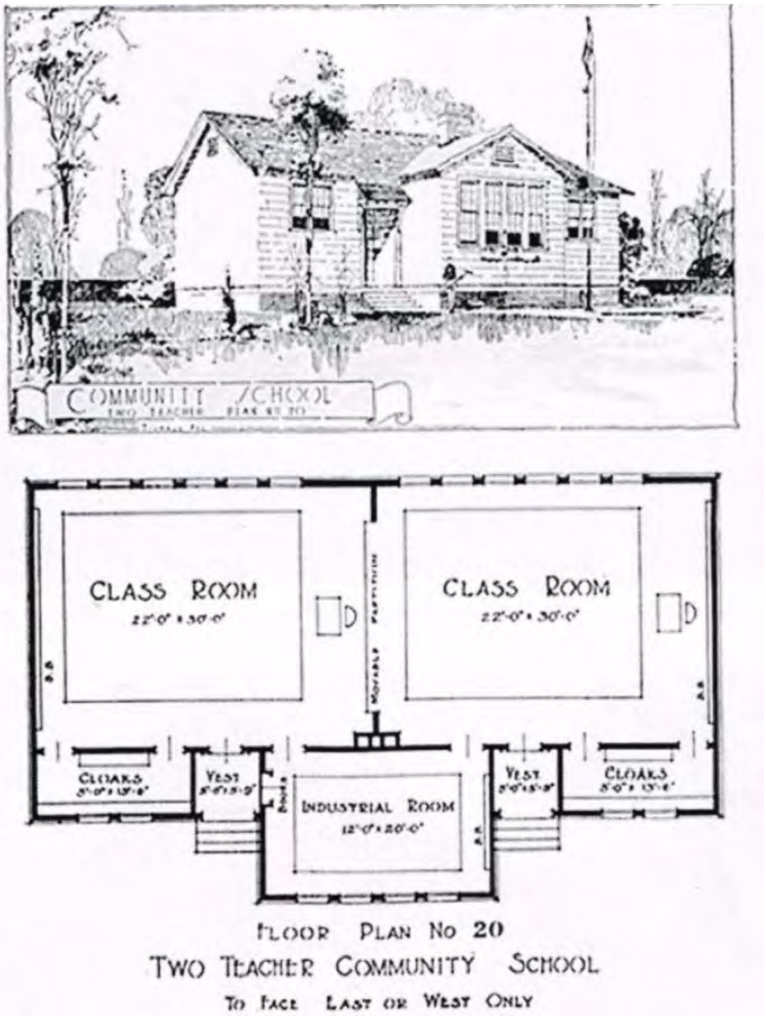


The Antioch Baptist Church congregation and other supporters throughout the community are currently attempting to preserve the historic Rosenwald School for restored use as a museum and cultural and community center. However, the school building and the property grounds experience regular and increasingly problematic amounts of stormwater flooding which has proved to be a great challenge to the preservation and revitalization of the property. Fundraising efforts in recent years have been successful; however, funds that were raised with the intent to revitalize the structure and reignite the functionality of the building as a community center and museum have instead needed to go to efforts to secure the building's foundation, which had degraded due to stormwater-related issues throughout the years. This same scenario is occurring once again as the roof of the building has begun to fail resulting in significant leaks and damages to the building and contents.

Church leadership have reported that stormwater flooding impacts the daily use of the properties including needing to regularly delay funerals for congregation members and alter parking accommodations due to standing water following both extreme and relatively smaller precipitation events. Many of these flooding issues are believed to be as result of the soil type, lack of elevation, local topographic influence, and overall lack of comprehensive stormwater management of impervious surfaces and drainage ditches at the property; however, the problem has not been investigated by an environmental engineer to date.

This proposal intends to design and construct a stormwater collection system and vegetated green roof at the historic Rosenwald School building and design a number of landscaping related BMPs on the Church-owned parcels, which can be implemented over time to ensure that the historic property and community hub remain in operation for generations to come and serve as a model for flooding resiliency for historic structures and similar properties across the Commonwealth.

FIGURE 5: ORIGINAL RENDERING & FLOOR PLAN FOR THE ANTIOCH ROSENWALD SCHOOL.



The Antioch Rosenwald School was constructed in 1927 and is the last remaining Rosenwald School in Mathews County. Between 1912 and 1932, through a unique collaboration between Sears & Roebuck President Julius Rosenwald and Tuskegee Institute's Booker T. Washington, almost 5,000 wood frame school buildings were built throughout the South to provide public education for African Americans. Typically located in proximity to African American Churches, these schools were built incorporating the latest ideas in education and health, including instructional needs, lighting, heating, and sanitation, in an effort to create a positive and healthy environment for learning. The Rosenwald Schools building program created a model for all rural schools in this country. Constructed in 1927 as a two-teacher pattern school (**Figures 5 and 6**) the Antioch School was in service a little over 20 years, until 1948, at which time the County closed the school and relocated the remaining students to the Thomas Hunter School in Mathews. In the years since, Antioch Church has used building for various uses including using the north classroom half of the building as a 3-bedroom dwelling/Parsonage, and the south classroom half as a fellowship hall for parishioners. Around 1970, the building was remodeled into its current appearance. The building which is currently vacant has an original roof that is leaking in several places and is need of replacement to stop further damage

FIGURE 6: FRONT OF THE ANTIOCH ROSENWALD SCHOOL DURING CONSTRUCTION IN 1927.

to the structure. Most of the items and artifacts have been removed and stored to protect them from rain damage. The Church's Board of Trustees has adopted a vision for the school to transform the school building into a community center which can provide educational, entrepreneurship, or workforce training center as well as a museum to preserve the property and community's invaluable history and culture.

Mathews County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 7,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

FIGURE 7: MAP OF MIDDLE PENINSULA LOW INCOME GEOGRAPHIC AREAS QUALIFYING PER DCR GUIDELINES.

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

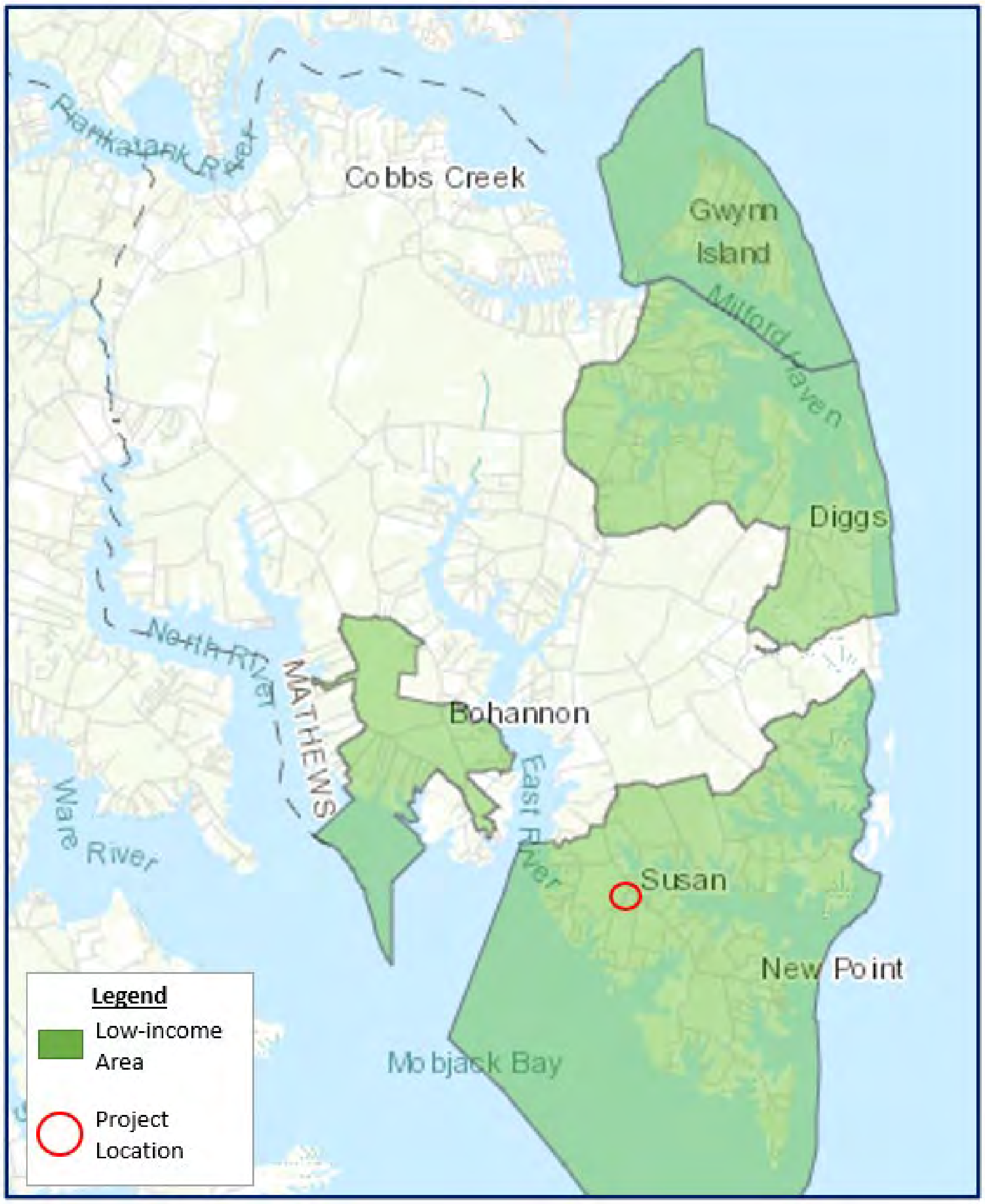
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

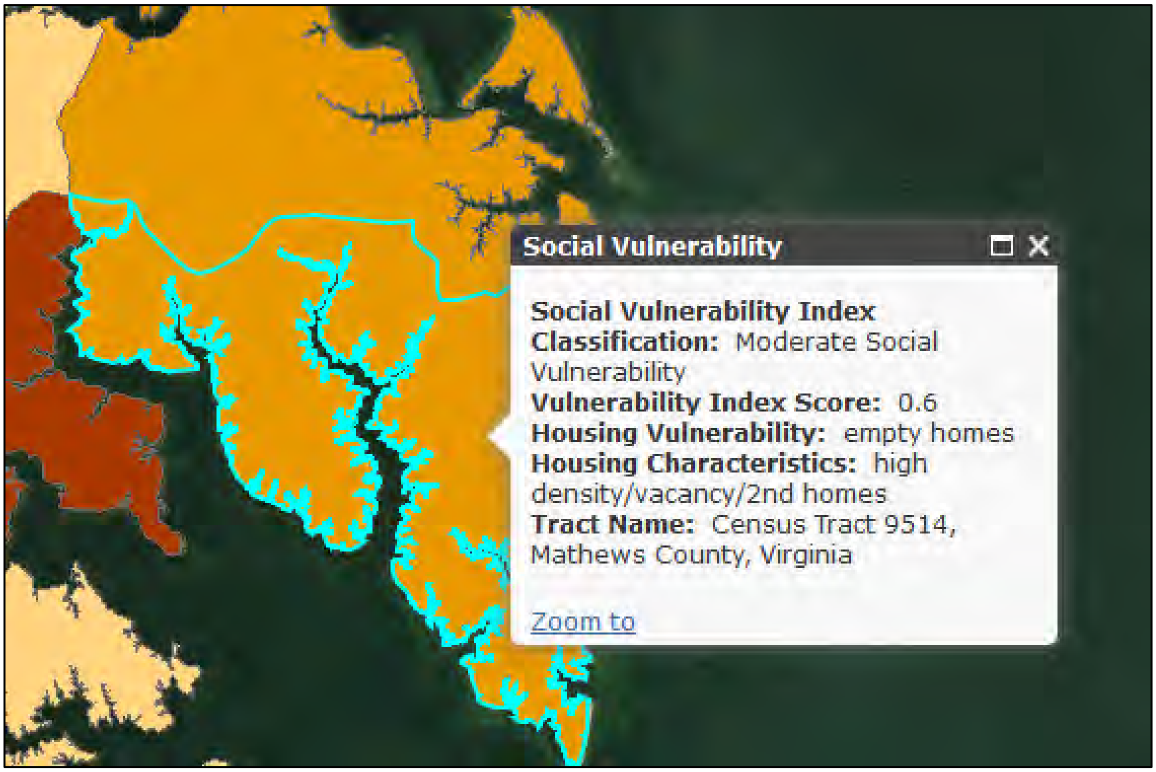
Please see **Figure 8** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

FIGURE 8: MAP OF THE PROJECT LOCATION WITHIN THE GREEN LOW-INCOME AREA.



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 9**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability is considered relatively moderate level of vulnerability as seen in **Figure 10.**

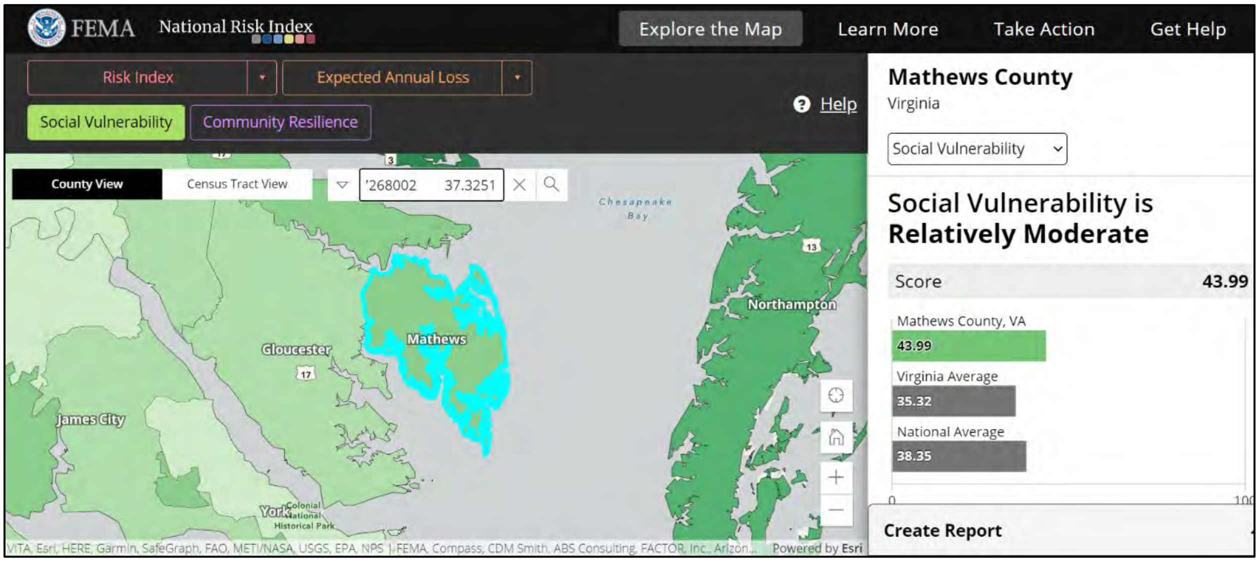
FIGURE 9. VIRGINIA'S SOCIAL VULNERABILITY INDEX SCORE MAP OF THE PROJECT LOCATION


Social Vulnerability

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Zoom to

FIGURE 10. FEMA NATION RISK INDEX OF CENSUS TRACK OF PROJECT LOCATION



Mathews County
Virginia

Social Vulnerability

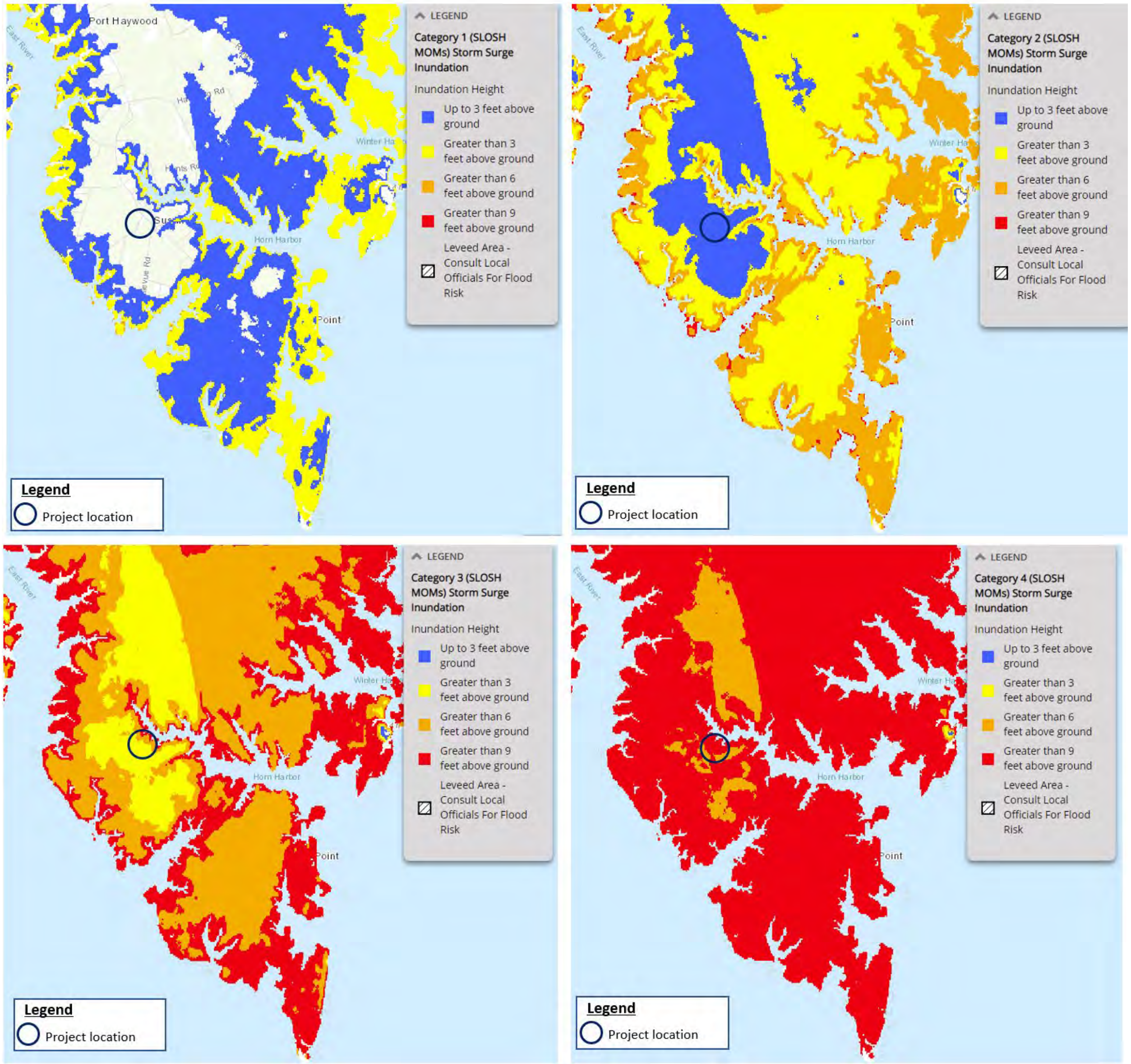
Social Vulnerability is Relatively Moderate

Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

Create Report

The four subject parcels are not located within a designated FEMA Flood Zone but are vulnerable to coastal flooding from tropical and sub-tropical storm surge (**Figure 11** and **Attachment 2** *(FIRMette last mapped 12/19/2014)*) and nor-easters.

Figure 11. NOAA Storm Surge Hazard Maps



Above: Category 1 (top left), Category 2 (top right), Category 3 (bottom left) and Category 4 (bottom right) storm surge levels projected for the Antioch Church properties from the National Storm Surge Hazard Maps produced by NOAA (https://www.nhc.noaa.gov/nationalsurge/).

Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. The proposed stormwater protection solutions will take coastal flooding and long-range sea-level rise into consideration where and as appropriate. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Attachment 3** lists 81 storm events and provides a map with the project location.

For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Mathews County's current floodplain ordinance can be found at: https://www.mathewscountyva.gov/172/National-Flood-Insurance-Program-NFIP*

NEED FOR ASSISTANCE –

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of $1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from $750,000 to over $1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The proposed project will 1) design and construct a stormwater collection system utilizing established stormwater Best Management Practices (BMP) where feasible including new gutters and roof to both preserve and protect the structure from further deterioration and 2) design landscape-related stormwater BMPs to serve as a comprehensive stormwater protection approach for the structures and property.

The need for assistance is two-fold. First and regarding to the Rosenwald School, an unique opportunity has presented itself to preserve and protect one of the most historic properties in Mathews County which has and will continue to serve as a community hub for the historically underserved African American citizens and congregation of the Antioch Baptist Church. The school building's impervious surfaces are a major contributing factor to the stormwater flooding impacts occurring at the property and the same stormwater is beginning to deteriorate the structure itself. The Antioch Church Board of Trustees need immediate financial assistance to implement solutions that will most importantly prevent further deterioration of the building as well as provide broader and longer-range stormwater BMPs which will ensure that the properties are useable for the community in the face of increasing precipitation volumes and frequencies.

Secondly, the need for landscape-related stormwater BMP designs are needed to provide a holistic and comprehensive approach to managing stormwater at the properties. These designs will complement the Rosenwald School impervious surface BMPs by targeting solutions which will make the other areas of the properties which are critical to daily operations at this community hub such as parking areas and the cemetery. If improvements were to be made only to the Rosenwald School building and BMPs focusing on stormwater management issues were neglected, then the current challenges for utilizing the properties would persist.

These designs will also incorporate and build upon previous efforts by the MPPDC to research and advance roadside ditch management solutions for Mathews County (Mathews County Ditch Mapping and Database (mppdc.com). This study was completed in 2017 at the request of Mathews County, which recognized the need of enhanced ditch maintenance as a critical component in the effort to mitigate stormwater flooding across the County. The ditches along Antioch Road and adjacent to the Antioch Baptist Church properties were included in this study. Since the study, Mathews County has cleaned several of the ditches near the Antioch Baptist Church properties where it was determined the County had maintenance responsibilities. The County’s efforts are representative of the magnitude of the stormwater flooding problems and the County’s commitment to preserving and protecting this vulnerable community center; however, they have not provided a long-lasting solution to the overall problem and additional and more holistic solutions are needed.

Figure 12 includes photographs demonstrating the need for assistance to mitigate stormwater flooding issues at the Antioch Baptist Church properties.

FIGURE 12: PHOTOS OF ANTIOCH BAPTIST CHURCH PROPERTIES

Photograph showing the current exterior front of the Historic Antioch Rosenwald School building. The current asphalt shingled roof is failing and is proposed to be replaced with a vegetated green roof or other stormwater collection roofing system.

Photograph showing recent stormwater-related damages to the Antioch Rosenwald School building interior. Immediate assistance is needed to prevent further damages from the failing roof.

Photograph locations depicted in red where stormwater is intruding the roof of historic Antioch Rosenwald School building interior. Immediate assistance is needed to prevent further damages from the failing roof.

A separate location depicted in red where stormwater is intruding the roof of historic Antioch Rosenwald School building interior. Immediate assistance is needed to prevent further damages from the failing roof.

Southward facing view along Antioch Road taken from in front of the Antioch Rosenwald School. The photograph was taken recently following a nominal rain event with less than 0.5" precipitation and is representative of the regular conditions at the site. The level of ponding in the roadside ditches and the yard in front of the school building are a constant challenge for daily operations at the site.

Northward facing view along Antioch Road taken from in front of the Antioch Rosenwald School. The photograph was taken recently following a nominal rain event with less than 0.5" precipitation and is representative of the regular conditions at the site. The level of ponding in the roadside ditches and the yard in front of the school building are a constant challenge for daily operations at the site.

ALTERNATIVES –

Several alternatives have been considered and are proposed regarding this project:

- Do Nothing Scenario – Should DCR not award the proposal. The Antioch Baptist Church Board of Trustees will continue its fundraising efforts to protect and preserve the last remaining Rosenwald School in Mathews County. However, the Church lacks the funds to address the immediate repair needs to the structure and continued stormwater flooding and damages will continue to degrade the historic structure, potentially to a point where the damages are beyond the ability of the Church to repair them. Should the Church be successful in repairing the roof, it is likely that the continued challenges in parking and daily use of the properties will continue to hamper the group's efforts to restore the school and reinvigorate it as a community center and museum.
- Rosenwald School Alternatives – (Note that the desired alternatives are subject to approval by relevant permitting authorities prior to implementation)
  1. Rosenwald School Vegetated/Green Roof (Alternative A) – As the most expensive alternative, the request for funding has been developed to be able to support the construction of a vegetated/green roof at the Rosenwald School as part of a

stormwater collection system to mitigate stormwater flooding at the property and preserve the historic structure. A qualified engineer experienced in these types of roofs will first assess the structure and deem whether a green roof is feasible and appropriate considering the age of the building, pitch of the roof, and potential for mitigating stormwater flooding at the property. Should the engineer deem Alternative A to not be feasible, then the project will shift to accomplishing Alternative B.

  2. Rosenwald School Traditional Roof and Stormwater Collection System (Alternative B) – Should a vegetated roof be deemed not feasible, then the stormwater resulting from the roof at the school will be managed by constructing a traditional non-vegetated roof and incorporating additional stormwater collection BMPs intended to capture or slow the roof runoff. Replacing the failing roof immediately to prevent further damage to the historic structure is of the utmost importance. Utilizing a traditional roof will accomplish this. A qualified stormwater engineer will be utilized to design the stormwater collection system which will be installed at the school. The system will involve components such as but not limited to cisterns and rain gardens.

- Antioch Properties Landscape BMPs – Designs for additional landscape and drainage focused BMPs will consider many alternatives. A qualified stormwater engineer will first assess the drainage conditions at the properties and create a customized stormwater management plan involving BMPs designed to make the property better equipped to handle the increased levels of precipitation forecast in coming years. The MPPDC and Mathews County are prepared to assist the Antioch Baptist Church Board of Trustees with securing future funding to implement the designs completed as part of the proposed project.

GOALS AND OBJECTIVES –

This project will implement nature-based solutions to mitigate stormwater flooding on the historic Antioch Rosenwald School as deemed feasible and appropriate by a qualified engineer and create a stormwater management plan including a suite of nature-based stormwater BMP designs on the nearly 10.5-acre site. The proposed activities will result in the preservation and enhancement of the building and property as the owners strive to reinvigorate the property as a community hub and museum for the historically underserved community.

The goals and objectives of this project are as follows -

Goal 1: Improve flood preparedness and resiliency within a minority and historically disadvantaged and underserved community in Mathews County and the Commonwealth.

Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.

Objective B: Manage stormwater-related flooding to ensure that the historic Antioch Rosenwald School may continue to serve and prosper as a community hub and museum and in turn, so that the County's tax base does not erode.

Goal 2: Improve water quality.

Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.

Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the stormwater BMPs installed at and designed for this project location will:

1. **Prevent continued degradation of the historic Antioch Rosenwald School building through waterproofing the structure**. According to the VA Department of Environmental Quality, vegetated roofs are alternative roof surfaces that typically consist of waterproofing and drainage materials and an engineered growing media that is designed to support plant growth. Vegetated roofs capture and temporarily store stormwater runoff in the growing media before it is conveyed into the storm drain system. A portion of the captured stormwater evaporates or is taken up by the plants, which helps reduce runoff volumes, peak runoff rates, and pollutant loads on development sites. Should a qualified engineer deem a vegetated roof as a feasible and applicable alternative, a vegetated roof will be constructed. Conversely, should a vegetated roof not be feasible, then a traditional metal or asphalt roof connected to a stormwater collection system will be installed.

2. **Provide ecosystem services to the community.** Since this project is proposing the installation of stormwater BMPs, this project will have nutrient and sediment reduction benefits to local waters. According to DEQ stormwater design specifications, the BMPs being considered have significant ability for removing nitrogen, phosphorous and sediment as described in the tables included in **Attachment 4**.

   According to DEQ Stormwater Design Specification #5 for Vegetated Roofs, vegetated roofs are an acceptable runoff reduction practice for the coastal plain, but they have a limited water quality function, since rooftops are not a major loading source for nutrients or bacteria. DEQ recommends that plant materials that can tolerate drought and salt spray be utilized for optimal performance.

   In addition to water quality improvements, stormwater BMPS may offer new or enhanced habitat for wildlife and birds.

APPROACH, MILESTONES, AND DELIVERABLES –
As explained in the previous "Alternative" section, at least one stormwater BMP will be designed and implemented to preserve and protect the historic Antioch Rosenwald School from continued and future degradation resulting from stormwater flooding. This will involve constructing a new roof, vegetated or traditional, on the 2,050 square foot building and associated stormwater collection system components as determined by a qualified engineer.

A separate site-wide Stormwater Management Plan will be developed by a qualified engineer or consultant to identify a suite of additional stormwater BMP solutions which may be implemented over time to ensure comprehensive and holistic stormwater management which can ensure the property is accessible and can support the community's needed daily uses as the property is transformed into a community hub/center and museum.

It is anticipated that the proposed project will commence January 2022 and be completed by June 2022. The anticipated timeline for this project could be as quick as 6 months, but no more than one year. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a one-year timeline will offer potential windows for planting the vegetated roof or other stormwater BMPs involving vegetation. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them develop strong roots and leafy growth.

Below is the project timeline and project milestones for this project.

Action Item	M1	M2	M3	M4	M5	M6
Phase 1 – Environmental Scan and Solution Design						
Hold administrative project kick off meeting	X					
Select engineer(s) and/or contractor(s) to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Discuss nature-based or hybrid design solutions with contractor and property owner (for Rosenwald School Building and properties)		X	X			
Select which nature-based or hybrid design solution is most appropriate (for Rosenwald School construction only)		X	X			
Have contractor develop selected nature-based or hybrid design solution (for Rosenwald School construction only)		X	X			
Apply for any necessary permits (for Rosenwald School construction only)		X	X			
Phase 2 – Strategic Implementation						
Implement the nature-based or hybrid solution upon the Rosenwald School					X	
Complete the Stormwater Management Plan with specific designs for enhancing overall flood protection at the targeted properties.					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the property-wide Stormwater Management Plan						X
Hold administrative project close out meeting						X

The construction and Stormwater Management Plan contractor(s) will be contracted in accordance with the Virginia Public Procurement Act and the MPPDC’s Small Purchase Policy.

RELATIONSHIP TO OTHER PROJECTS –

For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC’s guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 5** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program.** This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their flood protection need.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

Community Scale Benefits -

The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of flood protection protected than urban areas which have smaller sized parcels. Therefore, we believe submissions of each nature-based project are essentially a nature-based "brick in the wall" and over time, the cumulative impact of this approach will be realized. Reducing the amount of impervious surface is critical for stormwater management in rural areas, especially those which are essentially of flat or little topographic relief.

This specific proposal presents a unique proposal for a community-wide stormwater mitigation solution. The stormwater BMPs designed and implemented will occur directly on four different parcels totaling nearly 10.5 acres which are owned by the Antioch Baptist Church. The community-scale benefits; however, will stretch far beyond the boundaries of those parcels. The proposed activities will greatly serve to preserve one of Mathews County and the Middle Peninsula's most unique and sensitive cultural properties, which is the historic Antioch Rosenwald School. While it is imperative that stormwater flooding be managed to ensure that it does not claim the last remaining Rosenwald School in Mathews County, it is equally important that the designs allow for the property and facility to thrive and prosper as the Antioch Baptist Church Board of Trustees works to reinvent the property as a community center and cultural and historical museum that not only celebrates the rich minority history of the community but creates opportunities for minority youth and young adults.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection as seen in **Figure 13**. All Round 1 and 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.

Figure 13: Adapt VA Map of Project Location and Prospects for NNBF Benefits

Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **Many Benefits** to buildings and communities, including:

- **Low rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(11 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **Medium rank** for the NNBF to be used for incentive programs (1 out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction.)

MAINTENANCE PLAN –

The approved permits for construction of the stormwater BMPs are not anticipated to require a maintenance plan; therefore, the maintenance of the construction element of this project will be in accordance with the permit requirements. The Antioch Baptist Church Board of Trustees is committed to not only revitalizing the Rosenwald School as a community center and museum but also ensuring the long-term maintenance of the facility and property.

CRITERIA –

Describe how the project meets each of the applicable scoring criteria containedin Appendix B and provide the required documentation where necessary. Documentationcan be incorporated into the Scope of Work Narrative or included as attachments to the application. Appendix B must be completed and submitted with the application.

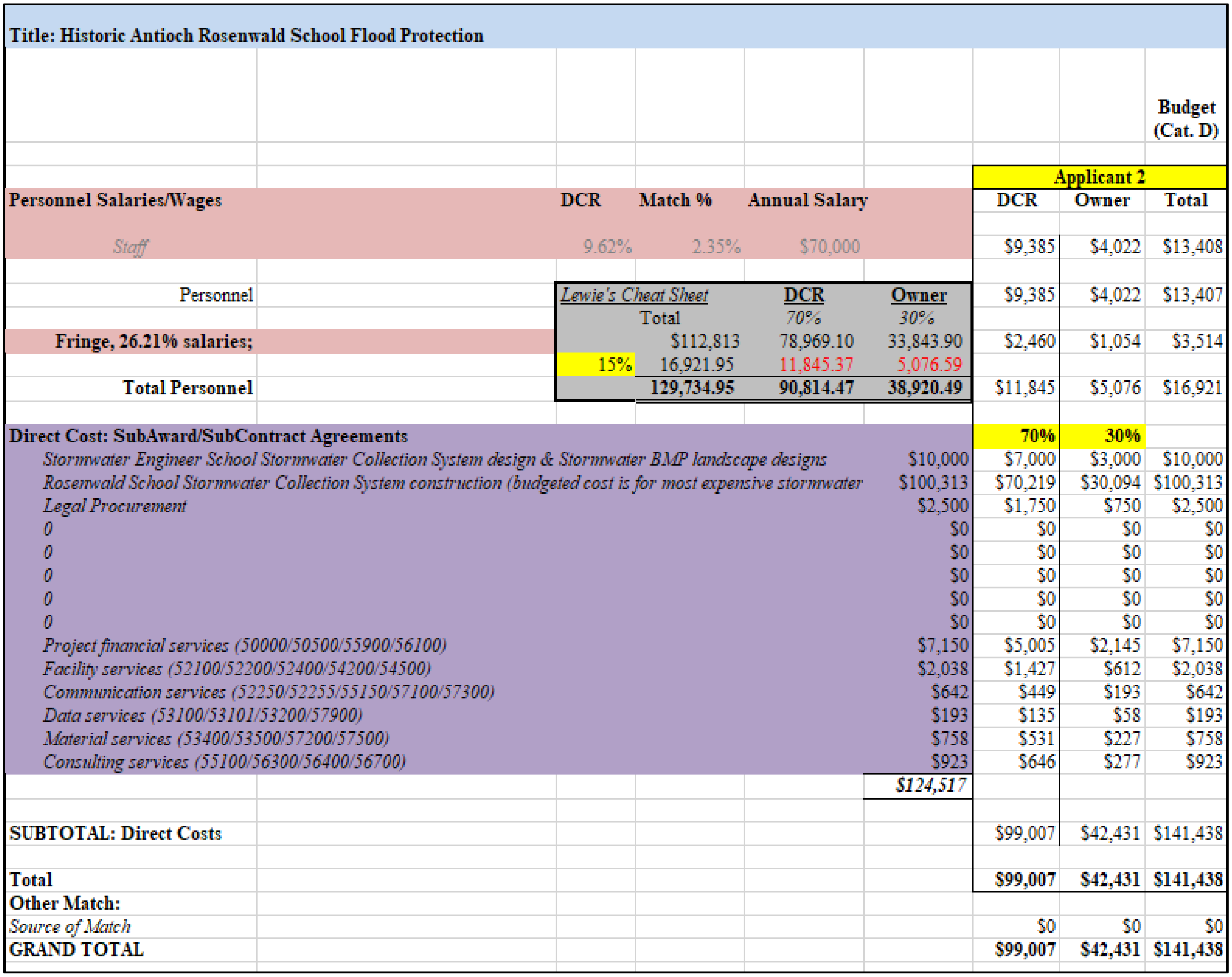
For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
   YES - The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.
2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   YES - Please see **Attachment 1**.
4. **Has the applicant provided evidence of an ability to provide the required match funds?**
   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their project proposal is awarded as seen in **Attachment 7.**
5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?** Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or establishing stormwater BMPs—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.
6. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
   YES.

BUDGET NARRATIVE -

For applications submitted under MPPDC Round 2 proposals that reside in a low-income area or opportunity zone, the following applies to the submitted budget. If the applicant does not reside in a low-income area or opportunity zone, then the following does not apply.

For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being located in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.



Title: Historic Antioch Rosenwald School Flood Protection								
								Budget (Cat. D)
						Applicant 2		
Personnel Salaries/Wages		**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		9.62%	2.35%	$70,000		$9,385	$4,022	$13,408
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$9,385	$4,022	$13,407
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			$112,813	78,969.10	33,843.90	$2,460	$1,054	$3,514
		15%	16,921.95	11,845.37	5,076.59			
Total Personnel			**129,734.95**	**90,814.47**	**38,920.49**	$11,845	$5,076	$16,921
Direct Cost: SubAward/SubContract Agreements						**70%**	**30%**	
Stormwater Engineer School Stormwater Collection System design & Stormwater BMP landscape designs					$10,000	$7,000	$3,000	$10,000
Rosenwald School Stormwater Collection System construction (budgeted cost is for most expensive stormwater					$100,313	$70,219	$30,094	$100,313
Legal Procurement					$2,500	$1,750	$750	$2,500
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)					$7,150	$5,005	$2,145	$7,150
Facility services (52100/52200/52400/54200/54500)					$2,038	$1,427	$612	$2,038
Communication services (52250/52255/55150/57100/57300)					$642	$449	$193	$642
Data services (53100/53101/53200/57900)					$193	$135	$58	$193
Material services (53400/53500/57200/57500)					$758	$531	$227	$758
Consulting services (55100/56300/56400/56700)					$923	$646	$277	$923
					$124,517			
SUBTOTAL: Direct Costs						$99,007	$42,431	$141,438
Total						**$99,007**	**$42,431**	**$141,438**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$99,007**	**$42,431**	**$141,438**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Please note that the cost estimates for the construction element of this project are based upon the most expensive cost estimate for the stormwater collection system, which was supplied by Storybound Construction, LLC. and is included in **Attachment 6**. The most expensive option was a component of the Storybound Construction cost estimate, which was $75,312.60 for a historically accurate Victorian style metal roof. An additional $25,000 was included in the construction element cost to cover additional elements of a stormwater collection system such as a cistern, rain garden, etc. should it be needed. Also, please note that DEQ estimates construction of a vegetated roof to cost between $12 and $25 per square foot. For the 2,050 square foot Rosenwald School, this equates to $51,250. So, the primary alternative, Alternative A, would be easily afforded under the proposed budget amount.

Costs to support legal counsel development of procurement documents to ensure compliance with the Virginia Public Procurement Act are included as well and will be utilized as necessary.

In summary:

***Estimated total project cost*:**	$141,438
***Amount of funds requested from the Fund (70% project total)*:**	$99,007
***Amount of cash funds available (30% project total)*:**	$42,431

Please see the match commitment letter from the property owner in **Attachment 7** and the authorization to request for funding in **Attachment 8.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission

Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	Middle Peninsula Planning District Commission

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (**Based on ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

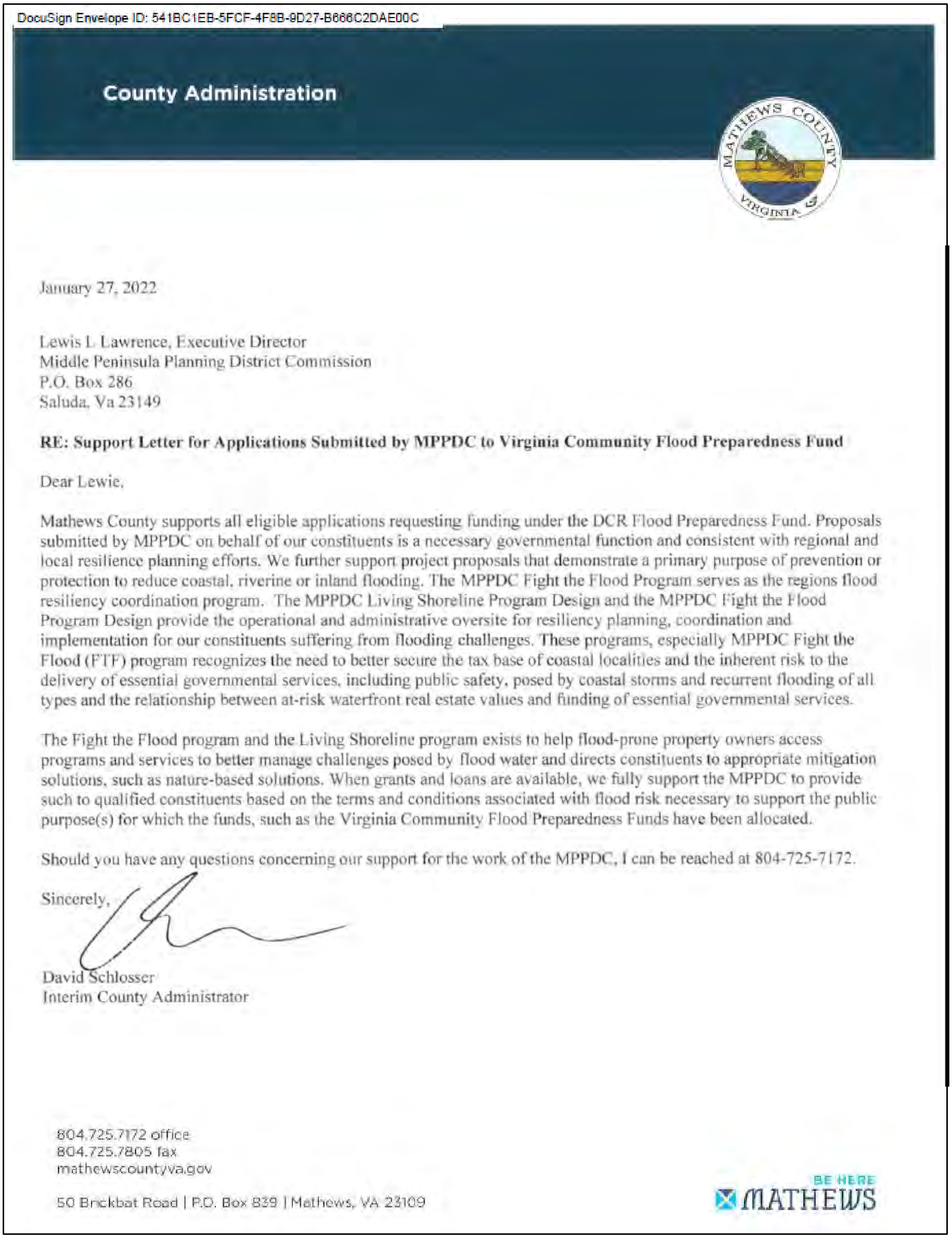
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		123

Appendix D: Checklist All Categories

Virginia Department of Conservation and RecreationCommunity Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from [ADAPT VA's Virginia Vulnerability Viewer]()	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter



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County Administration

January 27, 2022

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

David Schlosser
Interim County Administrator

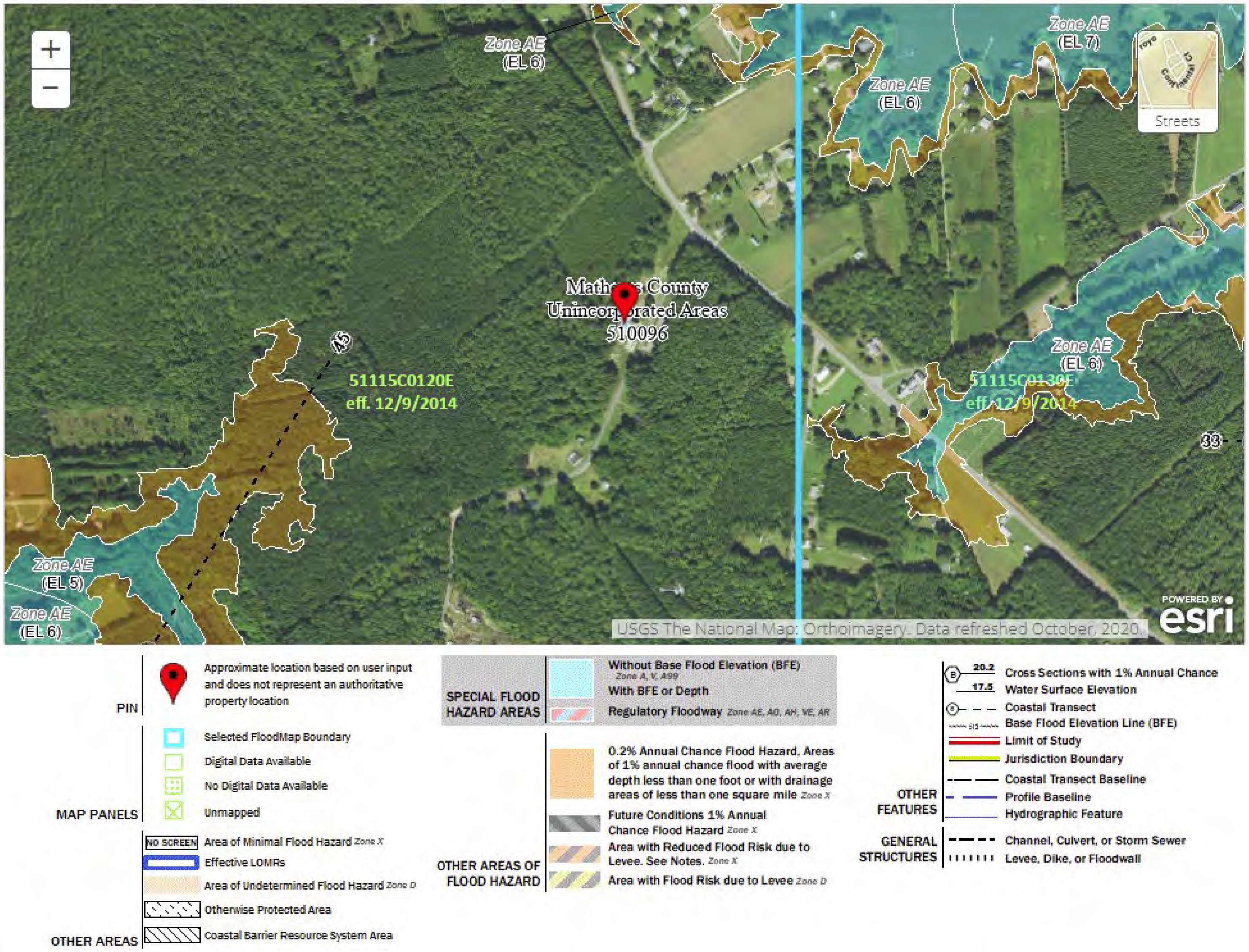
804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE
MATHEWS

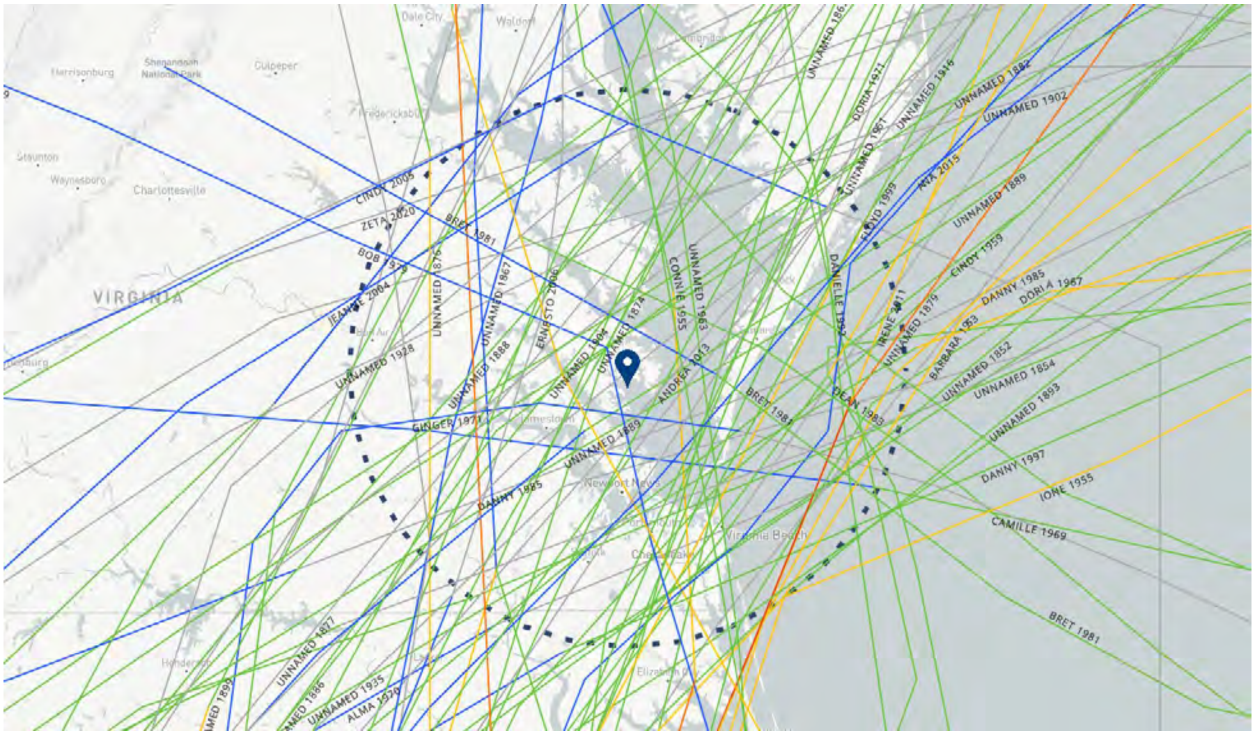
Attachment 2: Project Location FIRMette

Antioch Baptist Church Properties (FIRMette #: 5115C012OE)



Attachment 3: List of historic hurricanes impacting the project area.

Hurricane List



Search Filter Criteria

Location: 37.41985, -76.40677

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: DEQ Stormwater BMP Efficiencies

Best Management Practice	Efficiency		Avg Cost	Unit	BMP Efficiency & Cost References
	TN	TP			
Stormwater BMPs – VA BMP Clearinghouse All efficiencies from: http://www.vwrrc.vt.edu/swc/PostConstructionBMPs.html					
Rooftop Disconnection (HSG Soils Group A&B/C&D)	50% / 25%	50% / 25%			
Sheetflow to Conservation Area (HSG Soils Group A&B/C&D)	75% / 50%	75% / 50%			
Sheetflow to Vegetated Filter (HSG Soils Group A&B/C&D)	50% / 50%	50% / 50%			
Grass Channel without Compost Amendment (HSG Soils Group A&B/C&D)	36% / 28%	32% / 24%	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Grass Channel with Compost Amendment (HSG Soils Group A&B/C&D)	36% / 36%	32% / 32%	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Vegetated Roof (Level 1/Level 2)	45% / 60%	45% / 60%			
Rainwater Harvesting	variable, up to 90%	variable, up to 90%	$100,000		Cost – Spout Run IP (2014)
Permeable Pavement (Level 1/Level 2)	59% / 81%	59% / 81%	$240,000	/treated acre	Cost - Roanoke River IP (2015)
Infiltration (Level 1/Level 2)	57% / 92%	63% / 93%	$60,000	/treated acre	Cost – Maryland Stormwater BMP Cost Worksheet, see http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/PhaseIIBayWIPDev.aspx
Bioretention (Level 1/Level 2)	64% / 90%	55% / 90%	$10,000	/treated acre	Cost - Cooks Creek and Blacks Run IP (2006)
Urban Bioretention (Rain Garden)	40%	55%	$5,000	/treated acre	Cost - Cooks Creek and Blacks Run IP (2006)
Dry Swale (Level 1/Level 2)	55% / 74%	52% / 76%	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Wet Swale (Level 1/Level 2)	25% / 35%	20% / 40%	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)

BEST MANAGEMENT PRACTICE	EFFICIENCY		AVG COST	UNIT	BMP EFFICIENCY & COST REFERENCES
	TN	TP			
Filtering Practice (Level 1/Level 2)	30% / 45%	60% / 65%	$58,100	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Constructed Wetland (Level 1/Level 2)	25% / 55%	50% / 75%	$2,900	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Wet Pond (Level 1/Level 2)	30% (20%)[1] 40% (30%)[2]	50% (45%)[1] 75% (65%)[2]	$8,350	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Extended Detention Pond (Level 1/Level 2)	10% / 24%	15% / 31%	$3,800	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Manufactured BMPs http://www.vwrrc.vt.edu/swc/ProprietaryBMPs.html	varies, see BMP Clearinghouse	varies, see BMP Clearinghouse	$20,000	/treated acre	Cost - Spout Run IP (2014)
Chesapeake Bay Program BMPs All efficiencies from: http://www.chesapeakebay.net/content/publications/cbp_13369.pdf					
Wet Ponds and Wetlands (new)	20%	45%	$24, 115	/treated impervious acre	Cost: Maryland Stormwater BMP Cost Worksheet, see http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/PhaseIIBayWIPDev.aspx
Wet Ponds and Wetlands (retrofit)	20%	45%	$64,000	/treated impervious acre	Cost: Maryland Stormwater BMP Cost Worksheet, see http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/PhaseIIBayWIPDev.aspx

Best Management Practice	Efficiency		Avg Cost	Unit	BMP Efficiency & Cost References
	TN	TP			
Dry Detention Ponds & Hydrodynamic Structures	5%	10%	Dry Detention Pond = $39,000 Hydro-dynamic Structure = $42,000	/treated impervious acre	Cost: Maryland Stormwater BMP Cost Worksheet, see http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/PhaseIIBayWIPDev.aspx
Dry Extended Detention Ponds	20%	20%	$3,800	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Infiltration Practices without Sand, Veg.	80%	85%	$6,000	/treated acre	Cost - James River IP (2014)
Infiltration Practices with Sand, Veg.	85%	85%	$6,000	/treated acre	Cost - James River IP (2014)
Filtering Practices	40%	60%	$58,100	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Bioretention C/D Soils, Underdrain	25%	45%	$10,000	/treated acre	Cost - Cooks Creek and Blacks Run IP (2006)
Bioretention A/B Soils, Underdrain	70%	75%	$10,000	/treated acre	Cost - Cooks Creek and Blacks Run IP (2006)
Bioretention A/B Soils, No Underdrain	80%	85%	$10,000	/treated acre	Cost -Cooks Creek and Blacks Run IP (2006)
Vegetated Open Channels C/D Soils, No Underdrain	10%	10%	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)
Vegetated Open Channels A/B Soils, No Underdrain	45%	45%	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices cited in Roanoke River IP (2015)

BEST MANAGEMENT PRACTICE	EFFICIENCY		AVG COST	UNIT	BMP EFFICIENCY & COST REFERENCES
	TN	TP			
Bioswale Vegetated Open Channels A/B Soils, No Underdrain	70%	75%	$42,000	/treated impervious acre	Cost: Maryland Stormwater BMP Cost Worksheet, see http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/PhaseIIBayWIPDev.aspx
Permeable Pavement without Sand, Veg. C/D soils, Underdrain	10%	20%	$240,000	/treated acre	Cost - Roanoke River IP (2015)
Permeable Pavement without Sand, Veg. A/B Soils, Underdrain	45%	50%	$240,000	/treated acre	Cost - Roanoke River IP (2015)
Permeable Pavement without Sand, Veg. A/B soils, No Underdrain	75%	80%	$240,000	/treated acre	Cost - Roanoke River IP (2015)
Permeable Pavement with Sand, Veg. C/D Soils, Underdrain	20%	20%	$240,000	/treated acre	Cost - Roanoke River IP (2015)
Permeable Pavement with Sand, Veg. A/B Soils, Underdrain	50%	50%	$240,000	/treated acre	Cost - Roanoke River IP (2015)
Permeable Pavement with Sand, Veg. A/B soils, No Underdrain	80%	80%	$240,000	/treated acre	Cost - Roanoke River IP (2015)
Wetland Restoration (Appalachian Plateau Siliciclastic Non-Tidal)	7%	12%	$15,000	/acre	Cost - Spout Run IP (2014)
Wetland Restoration (Coastal Plain Dissected Uplands Non-Tidal; Coastal Plain Dissected Uplands Tidal; Coastal Plain Lowlands Tidal; Coastal Plain Uplands Tidal; Coastal Plain Lowlands Non-Tidal; Coastal Plain Uplands Non-Tidal)	25%	50%	$15,000	/acre	Cost - Spout Run IP (2014)
Wetland Restoration (Blue Ridge Non-Tidal; Mesozoic Lowlands Non-Tidal; Valley and Ridge Carbonate Non-Tidal; Piedmont Crystalline Non-Tidal; Piedmont Carbonate Non-Tidal; Valley and Ridge Siliciclastic Non-Tidal)	14%	26%	$15,000	/acre	Cost - Spout Run IP (2014)

Best Management Practice	Efficiency		Avg Cost	Unit	BMP Efficiency & Cost References
	TN	TP			
Other Stormwater BMPs					
Urban Riparian Forest Buffer - 435 Bare Root Seedlings/Acre - 300 Potted Trees/Acre	25%	50%	$1529 $2060	/treated acre	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost – www.chesapeakebay.net/content/publications/cbp_13369.pdf
Street Sweeping	0.025 lbs/yr of dry weight collected	0.01 lbs/yr of dry weight collected	$520	/curb mile	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost – Roanoke River IP (2015)
Land Use Change Pervious Non-Tree Vegetation or Impervious Area without Buildings and Roads to Trees	varies based on basin and LU changes	varies based on basin and LU changes	$3,500	/acre	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost – Roanoke River IP (2015)
Urban Stream Restoration	0.075/lin. ft stream restored	0.068/ lin. ft stream restored	$300	/lin. ft	Interim approved removal rates as indicated in the Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost – Roanoke River IP (2015)
Urban Nutrient Management on Unregulated Land (by Site Risk) - High - Low - Unknown (Blended)	20% 6% 9%	10% 3% 4.5%	$5,500	/turf acre treated	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost - Maryland Stormwater BMP Cost Worksheet, see http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/PhaseIIBayWIPDev.aspx

*Nutrients - No state water quality standards, potential stressors for benthic impairments.

[1] Number in parentheses is slightly lower EMC removal rate in the coastal plain (or any location) if the wet pond is influenced by groundwater, see design specification and CSN Technical Bulletin No. 2 (2009).

[2] Credit is variable and determined using the Cistern Design Spreadsheet. Credit up to 90% is possible if all water from storms with rainfall of one-inch or less is used through demand, and the tank is sized such that no overflow from this size event occurs. The total credit may not exceed 90%.

BEST MANAGEMENT PRACTICE	EFFICIENCY	AVG COST	UNIT	BMP EFFICIENCY & COST REFERENCES
Stormwater BMPs – VA BMP Clearinghouse (Actual efficiencies would be based on site-specific calculations.) http://www.vwrrc.vt.edu/swc/PostConstructionBMPs.html				
Rooftop Disconnection (HSG Soils Group A&B/C&D)	See Chesapeake Bay Retrofit Equation for TSS	$100 per down-spout		Cost - Roanoke River IP (2015)
Sheetflow to Conservation Area (HSG Soils Group A&B/C&D)	See Chesapeake Bay Retrofit Equation for TSS			
Sheetflow to Vegetated Filter (HSG Soils Group A&B/C&D)	See Chesapeake Bay Retrofit Equation for TSS			
Grass Channel without Compost Amendment (HSG Soils Group A&B/C&D)	See Chesapeake Bay Retrofit Equation for TSS	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Grass Channel with Compost Amendment (HSG Soils Group A&B/C&D)	See Chesapeake Bay Retrofit Equation for TSS	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Vegetated Roof (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$10 - $20	square foot	Cost - EPA cited in Roanoke River IP (2015)
Rainwater Harvesting	See Chesapeake Bay Retrofit Equation for TSS	$100,000	/treated acre	Cost - Spout Run TMDL (2014)
Permeable Pavement (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$240,000	/treated acre	Cost - Roanoke River IP (2015)
Infiltration (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$6,000	/treated acre	Cost - James River IP (2014)
Bioretention (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$10,000	/treated acre	Cost -Cooks Creek and Blacks Run IP (2006)

Best Management Practice	Efficiency	Avg Cost	Unit	BMP EFFICIENCY & COST REFERENCES
Urban Bioretention	See Chesapeake Bay Retrofit Equation for TSS	$5,000	/treated acre	Cost - Cooks Creek and Blacks Run IP (2006)
Dry Swale (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Wet Swale (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Filtering Practice (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$58,100	/treated acre	Cost -Center for Watershed Protection Urban Stormwater Retrofit Practices
Constructed Wetland (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$2,900	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Wet Pond (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$8,350	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Extended Detention Pond (Level 1/Level 2)	See Chesapeake Bay Retrofit Equation for TSS	$3,800	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Manufactured BMPs http://www.vwrrc.vt.edu/swc/ProprietaryBMPs.html	See Chesapeake Bay Retrofit Equation for TSS	$20,000	/treated acre	Cost - Spout Run IP (2014)
Chesapeake Bay Program BMPs All efficiencies from: www.chesapeakebay.net/content/publications/cbp_13369.pdf				
Wet Ponds	60%	$8,350	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Dry Detention Ponds & Hydrodynamic Structures	10%		/treated acre	www.chesapeakebay.net/content/publications/cbp_13369.pdf
Dry Extended Detention Ponds	60%	$3,800	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices

BEST MANAGEMENT PRACTICE	EFFICIENCY	AVG COST	UNIT	BMP EFFICIENCY & COST REFERENCES
Infiltration Practices without Sand, Veg.	95%	$6,000	/treated acre	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost – James River IP (2014)
Infiltration Practices with Sand, Veg.	95%	$6,000	/treated acre	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost – James River IP (2014)
Filtering Practices	80%	$58,100	/treated acre	Interim Approved Removal Rates as indicated in the Chesapeake Bay TMDL Special Condition guidance (5/18/2015) Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices, from Roanoke River TMDL I P (2015)
Bioretention C/D Soils, Underdrain	55%	$10,000	/treated acre	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost - Cooks Creek and Blacks Run IP (2006)
Bioretention A/B Soils, Underdrain	80%	$10,000	/treated acre	Cost - Cooks Creek and Blacks Run IP (2006)
Bioretention A/B Soils, No Underdrain	90%	$10,000	/treated acre	Cost - Cooks Creek and Blacks Run IP (2006)
Vegetated Open Channels C/D Soils, No Underdrain	50%	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Vegetated Open Channels A/B Soils, No Underdrain	70%	$18,150	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Bioswale	80%	$24,000	/treated acre	Cost - Maryland Stormwater BMP Cost Worksheet, see http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/PhaseIIBayWIPDev.aspx
Permeable Pavement without Sand, Veg. C/D Soils, Underdrain	55%	$240,000	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Permeable Pavement without Sand, Veg. A/B Soils, Underdrain	70%	$240,000	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Permeable Pavement without Sand, Veg. A/B Soils, No Underdrain	85%	$240,000	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices

Best Management Practice	Efficiency	Avg Cost	Unit	BMP EFFICIENCY & COST REFERENCES
Permeable Pavement with Sand, Veg. C/D Soils, Underdrain	55%	$240,000	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Permeable Pavement with Sand, Veg. A/B Soils, Underdrain	70%	$240,000	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Permeable Pavement with Sand, Veg. A/B soils, No Underdrain	85%	$240,000	/treated acre	Cost - Center for Watershed Protection Urban Stormwater Retrofit Practices
Wetland Restoration (Appalachian Plateau Siliciclastic Non-Tidal)	4%	$15,000	acre	Cost - Spout Run IP (2014)
Wetland Restoration (Coastal Plain Dissected uplands Non-Tidal; Coastal Plain Dissected Uplands Tidal; Coastal Plain Lowlands Tidal; Coastal Plain Uplands Tidal; Coastal Plain Lowlands Non-Tidal; Coastal Plain Uplands Non-Tidal)	15%	$15,000	acre	Cost - Spout Run IP (2014)
Wetland Restoration (Blue Ridge Non-Tidal; Mesozoic Lowlands Non-Tidal; Valley and Ridge Carbonate Non-Tidal; Piedmont Crystalline Non-Tidal; Piedmont Carbonate Non-Tidal; Valley and Ridge Siliciclastic Non-Tidal)	8%	$15,000	acre	Cost - Spout Run IP (2014)
Other Stormwater BMPs				
Urban Riparian Forest Buffer	50%	$1529 - $2060	/treated acre	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost – Chesapeake Bay Program – Best Management Practices for Sediment Control and Water Clarity Enhancement www.chesapeakebay.net/content/publications/cbp_13369.pdf
Street Sweeping	0.3 lbs/yr of dry weight collected	$40	/curb mile	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost - Schilling, J.G. 2005. Street Sweeping – Report No. 1, State of the Practice. Prepared for Ramsey-Washington Metro Watershed District (http://www.rwmwd.org). North St. Paul, Minnesota. June 2005

BEST MANAGEMENT PRACTICE	EFFICIENCY	AVG COST	UNIT	BMP EFFICIENCY & COST REFERENCES
Land Use Change	varies		$3,500	Chesapeake Bay TMDL Special Condition guidance (5/18/2015) Cost – Roanoke River IP (2015)
Urban Stream Restoration - Outside Coastal Plain - Coastal Plain	44.88 lbs /lin. ft 15.13lbs /lin. ft	$300	/treated acre	Chesapeake Bay TMDL Special Condition Guidance (5/18/2015) Cost – Roanoke River IP (2015)

*Sediment - No state water quality standard, potential stressor for benthic impairment.

Attachment 5: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)

The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and

community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

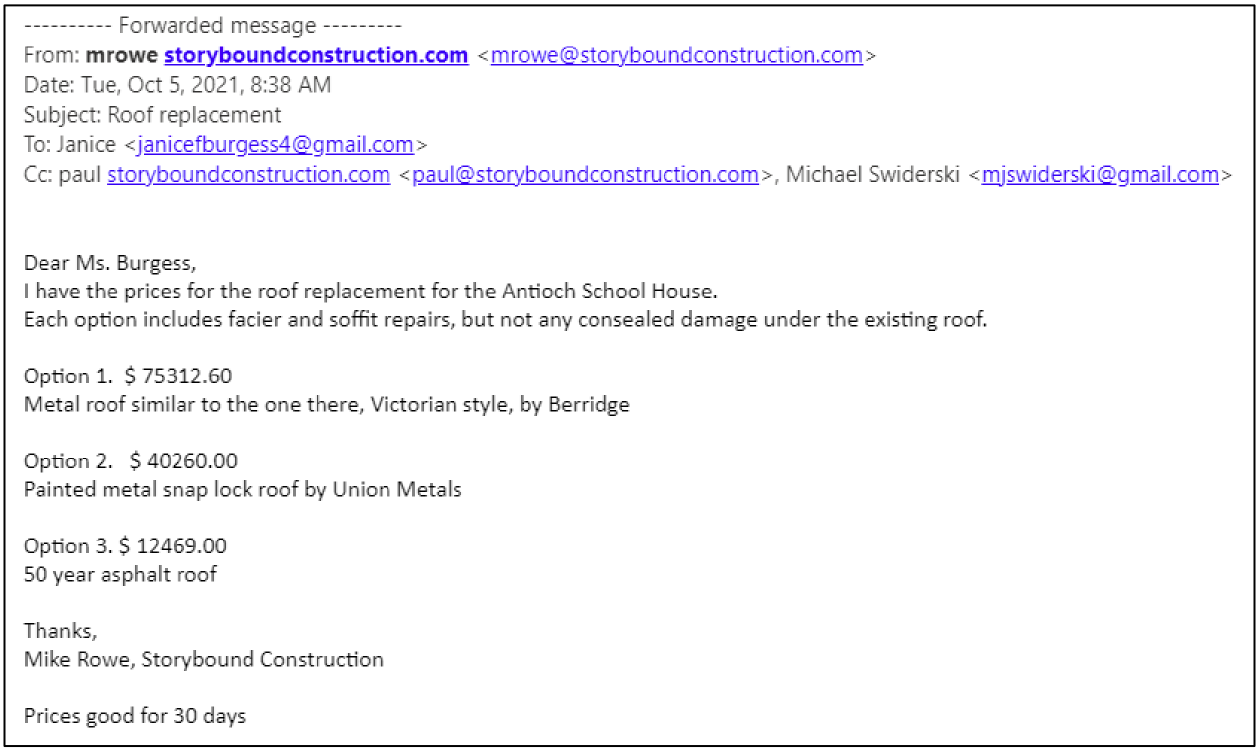
Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

Attachment 6: Project cost estimates



---------- Forwarded message ---------

From: **mrowe storyboundconstruction.com** <mrowe@storyboundconstruction.com>

Date: Tue, Oct 5, 2021, 8:38 AM

Subject: Roof replacement

To: Janice <janicefburgess4@gmail.com>

Cc: paul storyboundconstruction.com <paul@storyboundconstruction.com>, Michael Swiderski <mjswiderski@gmail.com>

Dear Ms. Burgess,
I have the prices for the roof replacement for the Antioch School House.
Each option includes facier and soffit repairs, but not any consealed damage under the existing roof.

Option 1. $ 75312.60
Metal roof similar to the one there, Victorian style, by Berridge

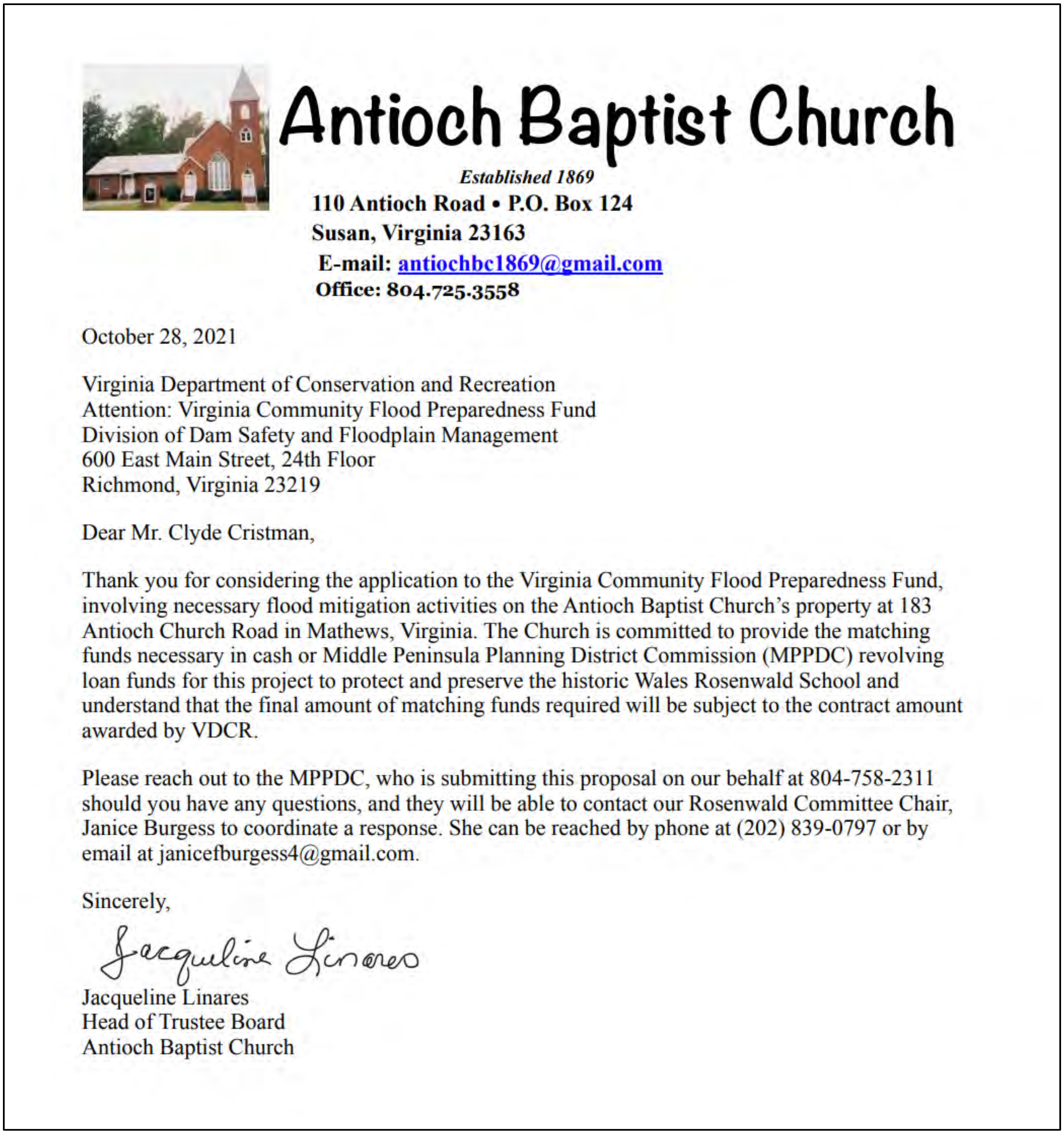
Option 2. $ 40260.00
Painted metal snap lock roof by Union Metals

Option 3. $ 12469.00
50 year asphalt roof

Thanks,
Mike Rowe, Storybound Construction

Prices good for 30 days

Attachment 7: Match Commitment Letter



Antioch Baptist Church

Established 1869

110 Antioch Road • P.O. Box 124
Susan, Virginia 23163
E-mail: antiochbc1869@gmail.com
Office: 804.725.3558

October 28, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on the Antioch Baptist Church's property at 183 Antioch Church Road in Mathews, Virginia. The Church is committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project to protect and preserve the historic Wales Rosenwald School and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

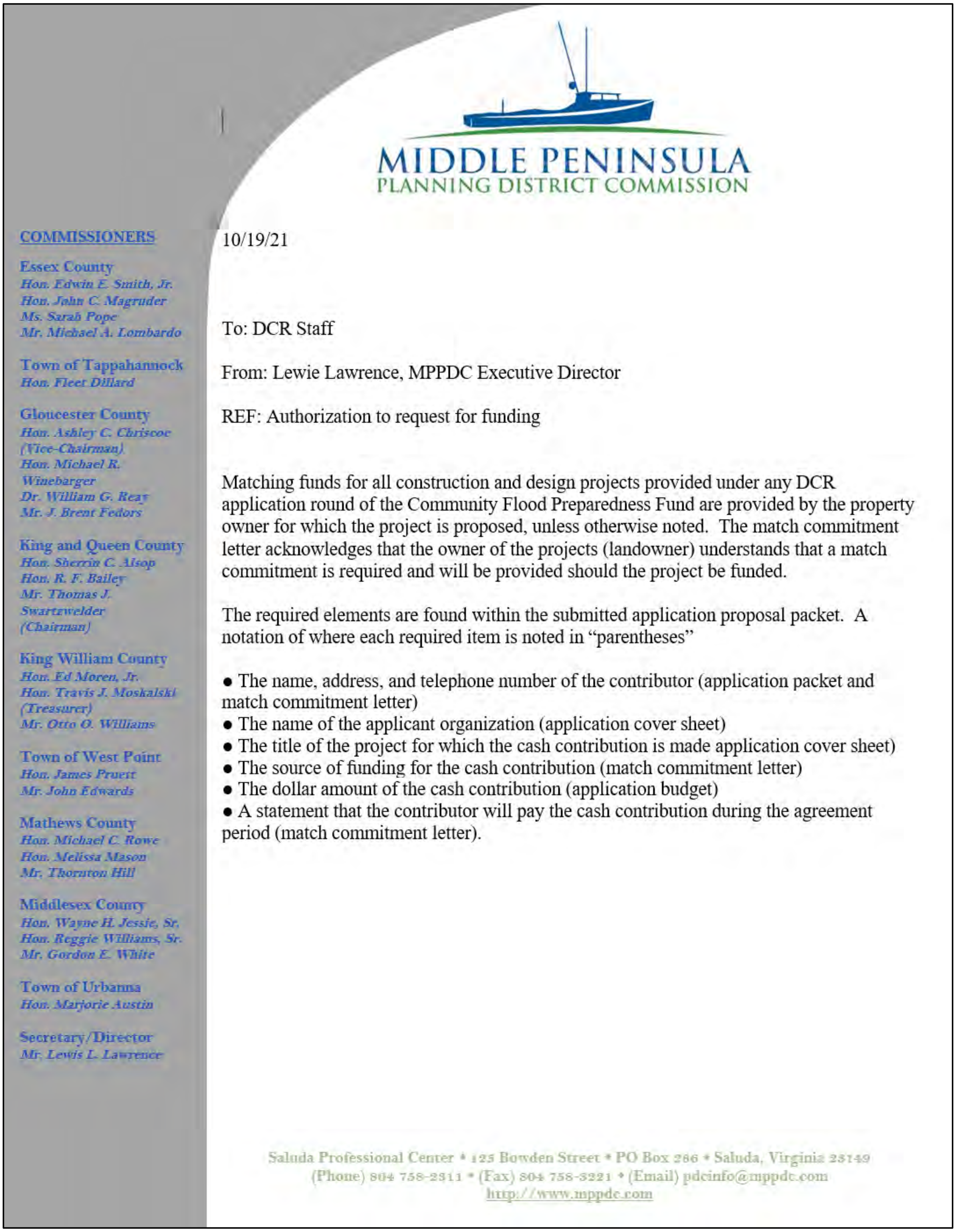
Please reach out to the MPPDC, who is submitting this proposal on our behalf at 804-758-2311 should you have any questions, and they will be able to contact our Rosenwald Committee Chair, Janice Burgess to coordinate a response. She can be reached by phone at (202) 839-0797 or by email at janicefburgess4@gmail.com.

Sincerely,

Jacqueline Linares

Jacqueline Linares
Head of Trustee Board
Antioch Baptist Church

Attachment 8: Authorization to request for funding



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center • 125 Bowden Street • PO Box 286 • Saluda, Virginia 23149
(Phone) 804 758-2311 • (Fax) 804 758-3221 • (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

PROJECT TITLE: North River Property Resiliency Construction Project
Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning   X Project   _____Study

NFIP/DCR Community Identification Number (CID): Mathews County (510096)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ________________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311   Cell Phone Number: (____) _________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311   **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ____

Project Grants (Check All that Apply)

☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**

☑ **Wetland restoration.**

☑ **Floodplain restoration.**

☐ **Construction of swales and settling ponds.**

☑ **Living shorelines and vegetated buffers.**

☐ **Structural floodwalls, levees, berms, flood gates, structural conveyances.**

☐ **Storm water system upgrades.**

☐ **Medium and large-scale Low Impact Development (LID) in urban areas.**

☐ **Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.**

☐ **Dam restoration or removal.**

☑ **Stream bank restoration or stabilization.**

☐ **Restoration of floodplains to natural and beneficial function.**

☐ **Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.**

Location of Project (Include Maps): Mathews County
NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? þ Yes □ No
Is Project Located in a Special Flood Hazard Area? þ Yes □ No Flood Zone(s) (If Applicable): VE Zone
Flood Insurance Rate Map Number(s) (If Applicable): 51115C0085E

Total Cost of Project: **$125,715**

Total Amount Requested: **$88,000**

INTRODUCTION –

This project proposes to construct a nature-based solution on private property located on the North River in Mathews County. The nature-based solution will involve modifying and removing a dilapidated failed wooden bulkhead and the installation of 80 linear feet of living shoreline, 60 linear feet of a bioengineered structure, 900 square feet of fill and plantings and 103 linear feet of rip rap. The applicant also submitted a Round 1 proposal for design needed on a second portion of the project site and therefore this request is not duplicative.

FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). This proposal is a Nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions,* June 2021).

This project will be a partnership between the MPPDC and one private property owner and is supported by Mathews County (See the community support letter in Attachment 1).

- A link or copy to the approved resilience plan: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf within the plan please see Section 4 (page 25). This Section includes historical hazard data within the region.
- Here's a link to the Mathews County Comprehensive Plan: https://www.mathewscountyva.gov/DocumentCenter/View/621/2030-Comprehensive-Plan-Updated-2018?bidId=

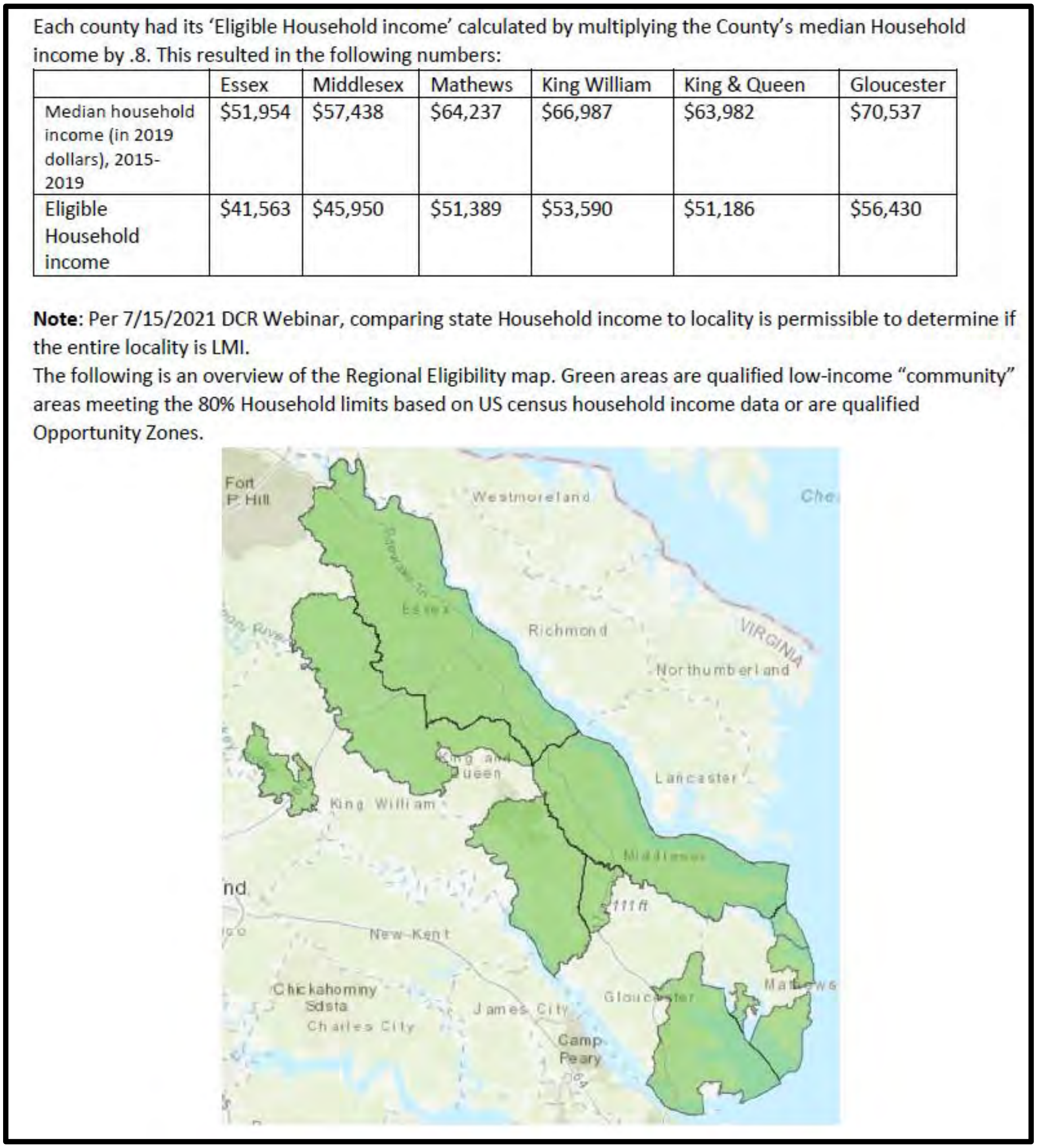
PROJECT LOCATION INFORMATION – This project proposes to install living shorelines on one private property on the North River in Mathews County (**Figure 1 and 2**). The property was purchased in 2012. Since then, it has endured countless storm events. The storm in August 2020 pushed the 80-foot wooden bulkhead wall along waterfront back toward property where there is significant erosion behind the bulkhead. The force of the water pushing the bulkhead back snapped the bolts that attached the pilings to the bulkhead. The filter cloth attached to the bulkhead was forced out of place, so the owners have continued erosion of soil through the bulkhead into the bay. Also, the riprap in front on the bulkhead has slumped down. Their house is approximately 10 feet from the bulkhead, so this presents significant ramifications.

FIGURE 1: COUNTY MAP OF PROJECT LOCATION.

FIGURE 2: PARCEL MAP OF PROJECT LOCATION.

Mathews County is located at Virginia’s Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County’s population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 3** the green areas qualified as low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

FIGURE 3: MAP OF MIDDLE PENINSULAS LOW INCOME GEOGRAPHIC AREAS QUALIFYING UNDER DCR GUIDELINES.



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

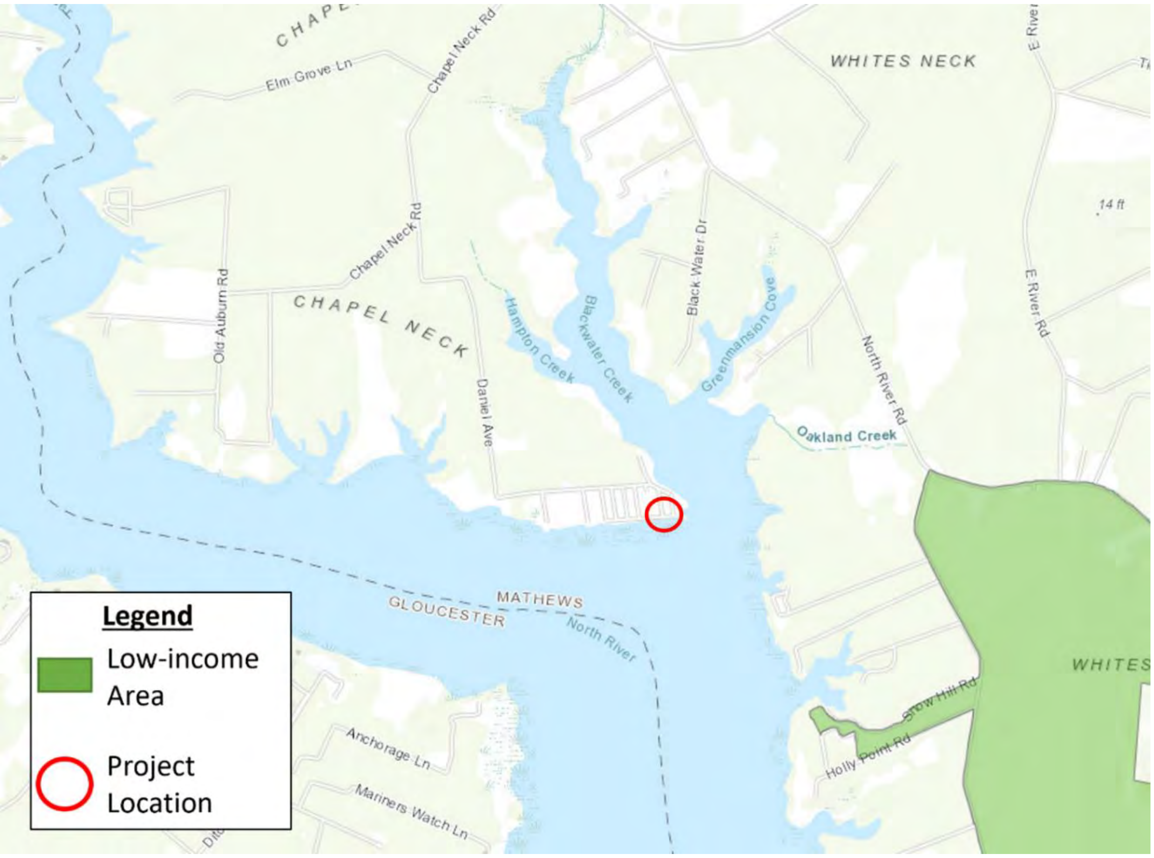
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

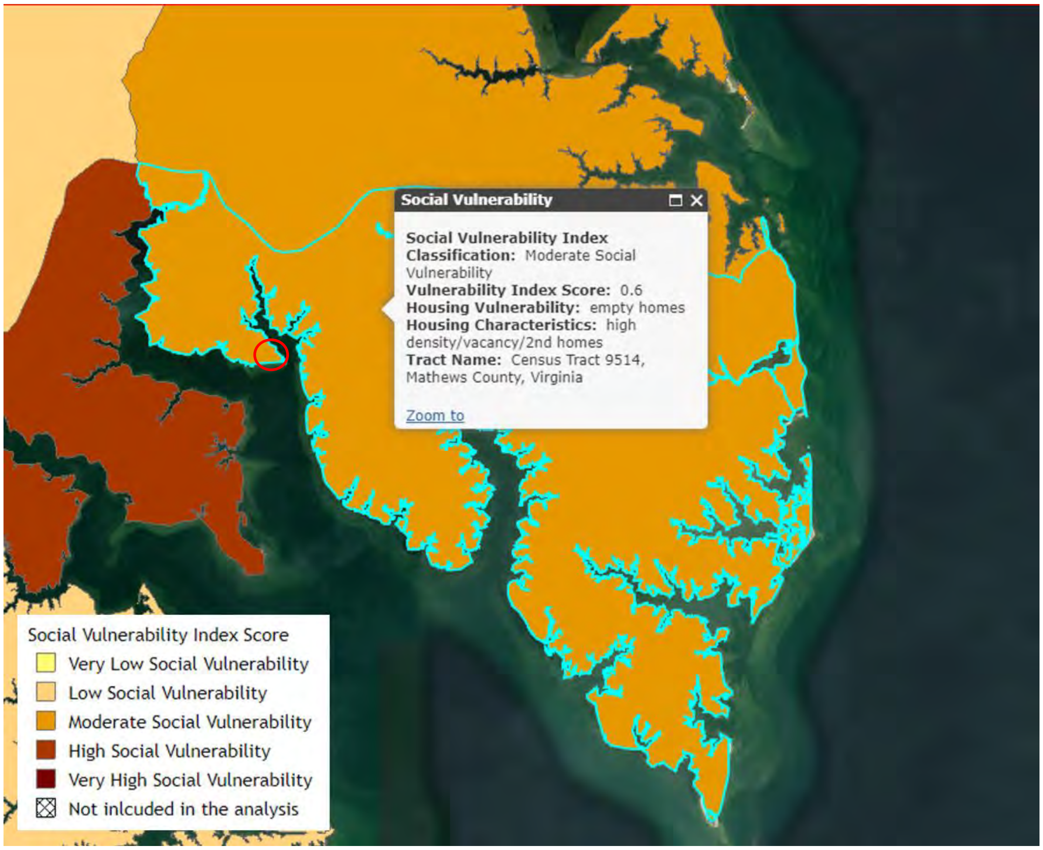
Please see **Figure 4** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is not within the low-income area.

FIGURE 4: MAP OF THE PROJECT LOCATION AND THE GREEN LOW-INCOME AREA.



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score (**Figure 5**). MPPDC is perplexed by the designation of the project area being automatically recognized as low income under the Community Flood Preparedness Fund Guidelines as an Opportunity Zone (**Figure 6**), identifying census tracts in the most in need, economically distressed and low-income communities while simultaneously the VA Social Vulnerability score of the exact same area reports a low social vulnerability score of -.03. MPPDC assumes the Opportunity Zone designation trumps the VA Social Vulnerability score in this case.

FIGURE 5: VIRGINIA'S SOCIAL VULNERABILITY INDEX SCORE MAP FOR THE PROJECT LOCATION.

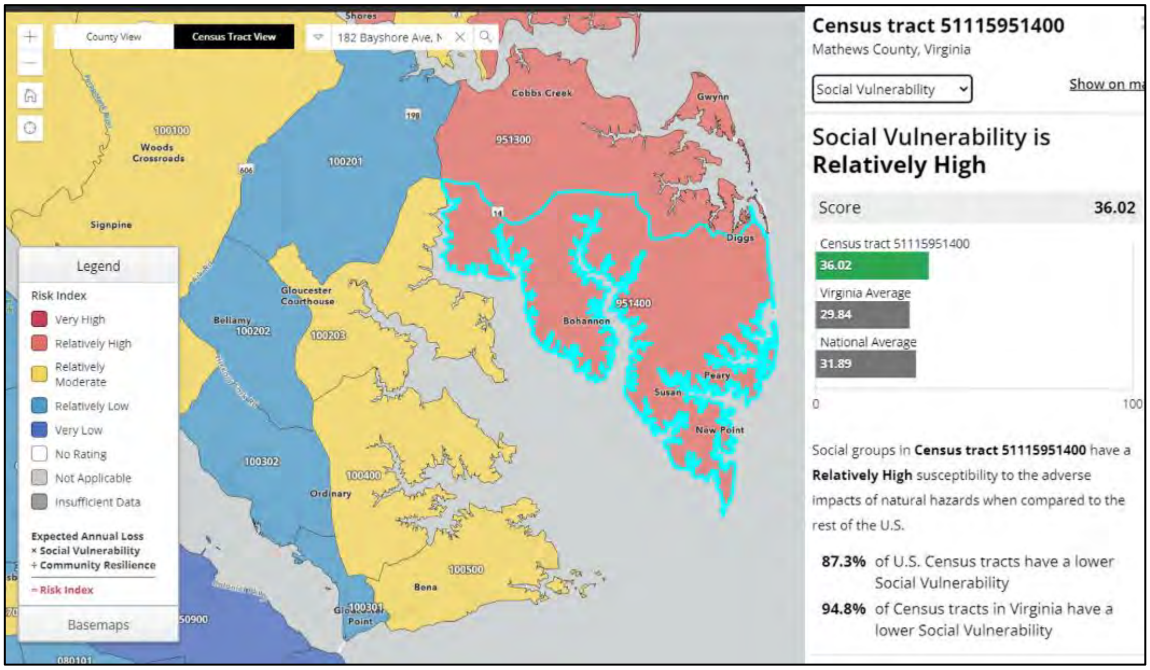


Social Vulnerability

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Zoom to

FIGURE 6: FEMA NATION RISK INDEX OF CENSUS TRACK WHERE THE PROJECT LOCATION.



Census tract 51115951400
Mathews County, Virginia

Social Vulnerability is Relatively High

Score **36.02**

Social groups in **Census tract 51115951400** have a **Relatively High** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

87.3% of U.S. Census tracts have a lower Social Vulnerability
94.8% of Census tracts in Virginia have a lower Social Vulnerability

The project is located at 182 Bayshore Ave. North, VA 23128 (37.41985, -76.40677). A total of 60 linear feet of Flexamat with plantings, 103 linear feet of Class II stone, and 80 linear feet of living shoreline will be constructed on this property. Additionally, the bulkhead on this property is failing and will be addressed in tandem with the nature-based solution design. This nature-based solution, **which is approximately 8 feet from the residential structure on the property**, will help to stabilize the shoreline. The structures on this property are not identified as severe repetitive loss structure or repetitive loss structures. This site is located within the VE flood zone (**Figure 7**). Please see **Attachment 2** for the FIRMettes (last mapped 12/9/2014).

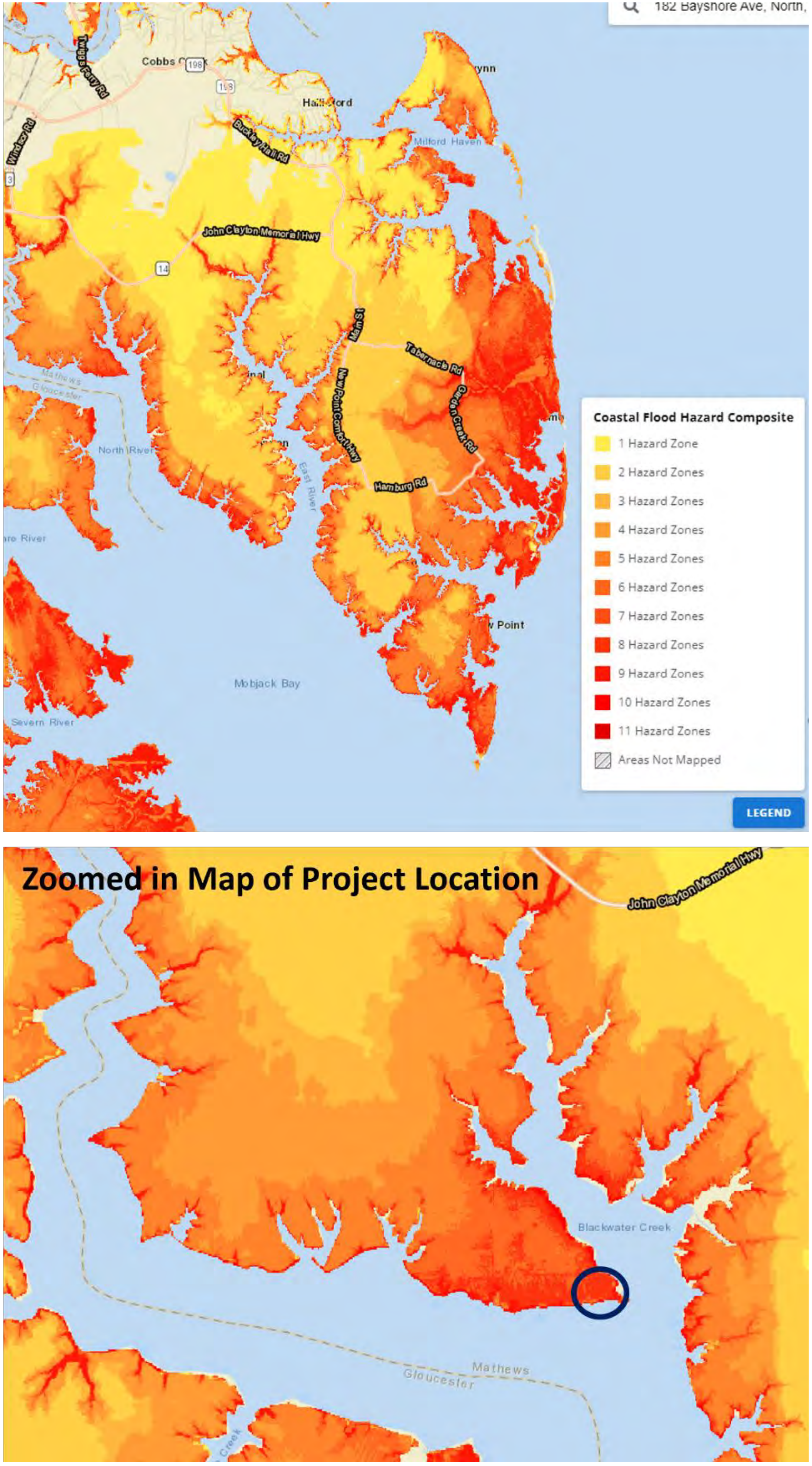
FIGURE 7: MAP OF FEMA FLOOD ZONES.

Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 8** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 8,032.2 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Attachment 3** lists 82 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

FIGURE 8: PROJECT LOCATION AND MAP OF THE SHORELINE CHANGE BETWEEN 1937 AND 2017. PLEASE NOTE THAT THE PROJECT AREA PARCEL IS OUTLINED IN WHITE.

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding (**Figure 9**).

FIGURE 9: MAP OF PROJECT LOCATION AND RISK OF COASTAL FLOODING (NOAA, 2021).



For more information about this project area please see:

- The Middle Peninsula All Hazards Mitigation Plan identifies all hazards that impact the

region - https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf .
- Mathews County Planning Department administers the NFIP. Here is the link to the current floodplain ordinance: http://mathewsco-va.elaws.us/code/coor_ch63

NEED FOR ASSISTANCE –

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of $1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from $750,000 to over $1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The need for assistance is two-fold.

First, Mathews County’s proximity to the Chesapeake Bay and numerous tidal rivers, coupled with the County’s low elevation, creates an area at high risk of coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from the Virginia Institute of Marine Science (VIMS), relative sea level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et al. 2010). In addition to sea level rise, Mathews County has a history of being impacted by hurricanes, tropical storms, and recurrent flooding. As storms pass over or near the coast the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm’s winds causing a storm surge. Additionally, when a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a “storm tide”. In Mathews County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below mean sea level (FEMA 1987, 6). Thus, if a severe hurricane were to make landfall during high tide, an additional 1.2 feet of water would be added to the highest storm surge possible, which could create a storm tide of 16.2 feet (Rygel, 2005). Nor’easters, like hurricanes and tropical storms, can dump heavy amounts of rain and produce hurricane-force winds that push large amounts of sea water inland.

According to a study conducted by the Center for Coastal Resources Management (CCRM), a one-and-a-half-foot rise in sea level coupled with a three-foot storm surge, like what would be experienced in a strong tropical storm, could lead to 29% of Mathews County land mass being flooded. Also, this could potentially flood 139 miles of roads within the county. As a result, the County implements several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on the community. Getting projects such as the proposed constructed creates a more resilient community as flooding impacts persist and increase in intensity and frequency.

Second, at this project location, the shoreline is experiencing erosion and undercutting of the bulkhead. The waterfront of the property was severely damaged during the Isaias storm in August 2020. The wooden bulkhead wall was pushed back toward the house with significant soil erosion behind it on the house side. The property owners have tried to quell the erosion behind the bulkhead until a suitable repair can be implemented. However, the erosion is still occurring behind the bulkhead. Additionally, the erosion on either side of the bulkhead has been addressed with a living shoreline application completed under APA #20-1593. This phase called for installation of Flexamat on the left and right sides of our property. The central portion of the property was permitted to have riprap overlain over the existing inadequate riprap to protect a deteriorating bulkhead, which is allowing erosion of yard soil into the North River and Mobjack Bay. There would have to be excavation behind the failing bulkhead to install new filter cloth. The loss of soil is so close to the house behind the bulkhead, approximately 8 feet, which represents a severe threat to the property. The homeowners’ efforts to pack sand into voids have fallen short and fail to protect from soil erosion with each passing high tide and storm. Please see **Figure 10** for project location photos and **Attachment 4** for more photos.

FIGURE 10: PHOTOS OF THE WUCKOVICH PROPERTY.

ALTERNATIVES –

Alternatives are not applicable to this project. A living shoreline is feasible at this location and therefore required per VMRC regulations. This project employs a nature-based solution, and this project cost is not greater than $3 Million.

GOALS AND OBJECTIVES –

This project will install a nature-based solution consisting of 60 linear feet of Flexamat with plantings, 103 linear feet of Class II stone, and 80 linear feet of living shoreline (i.e., clean sand nourishment and spartina plantings). Additionally, the bulkhead on this property will be repaired. This project will reduce erosion and stabilize the shoreline. The installation of a nature-based solution will also help to protect the residential home from falling into the North River. The nature-based solution will be installed as designed and permitted through the JPA process. Please note that the design work for 80 linear feet of living shorelines was submitted through Round 1 of the DCR Community Flood Preparedness Fund. Please see the permit package for the remaining elements of this project in **Attachment 5**.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.

Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode.

Goal 2: Improve water quality

Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.

Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the living shoreline installed at this project location will:

1. **Stabilize the shoreline and reduce the overall erosion rate at the project location**. According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region’s commercial and recreational maritime economies.

2. **Provide ecosystem services to the community.** Since this project is proposing the installation of living shorelines, this project will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb./lf./yr.) and a phosphorus removal rate of 0.00861 lbs./lf./yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb./lf./yr. Therefore, with a proposed project of 243 linear feet of living shoreline this has the ability of removing 2.95974 pounds of nitrogen per year, 2.09223 pounds of phosphorus per year and 508.41189 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

   In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

3. **Prevent loss of property and life.** As the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Gloucester County, which is local government.

APPROACH, MILESTONES, AND DELIVERABLES –

This project will follow the designs outlined and approved in the Joint Permit Application. Upon issuance of the permits for this project, VMRC has analyzed the upstream and downstream impacts of this project using the best available science, as per state law. Please see **Attachment 5** for the JPA application, Design, and Permit Package. The below table outlines the components of the nature-based solution and what will be installed at the project location, as permitted by Virginia Marine Resource Commission (VMRC). Please note the living shoreline design was proposed in Round 1 of DCR Community Flood Preparedness funding and will not be included in the attached JPA.

	Total Project Location Specifications
Bioengineered Structure	60 Linear Feet
Rip Rap	103 Linear Feet
Fill/Plantings	900 Square Feet
Living Shorelines	80 linear Feet

The anticipated timeline for this project could be as quick as 1 year, but no more than two years. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a two-year timeline will offer potential windows for planting the living shoreline - one in 2022 and one in 2023. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses for living shorelines should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them develop strong roots and leafy growth.

Below is the project timeline and project milestones for this project.

Receive funding notice - December 2021
Coordinate with property owners and the project contractor R & W Marine Construction, Inc to review project timeline and project expectations – December 2021
Initiate site preparation at the project location - January 2022 to June 2022
Construction of the living shoreline – July 2022 to October 2022
Project Close out – December 2022

RELATIONSHIP TO OTHER PROJECTS –

For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 6** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program.** This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN –

The approved VMRC permits does not require a maintenance plan; therefore, the maintenance of this construction project will be in accordance with the permit requirements.

CRITERIA –

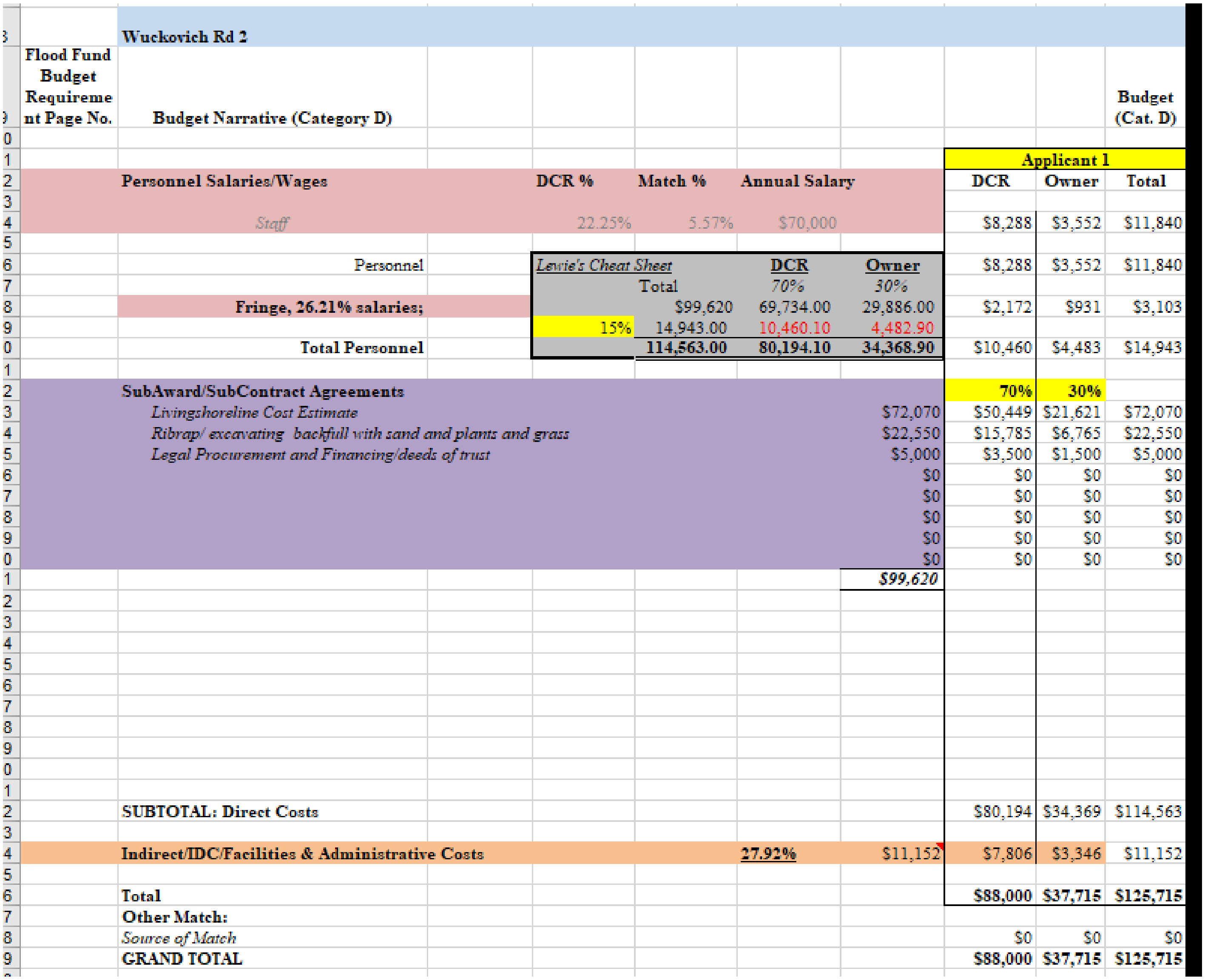
Describe how the project meets each of the applicable scoring criteria containedin Appendix B and provide the required documentation where necessary. Documentationcan be incorporated into the Scope of Work Narrative or included as attachments to the application. <u>Appendix B must be completed and submitted with the application.</u>

For local governments that are not towns, cities, or counties, the documentation providedfor the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
   YES.
2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   YES. Here's the link: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   YES. Please see **Attachment 1**
4. **Has the applicant provided evidence of an ability to provide the required match funds?**
   YES. Please see the match commitment letter in **Attachment 8**
5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
   YES.

BUDGET NARRATIVE -

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being located in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding, we respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.



	Wuckovich Rd 2							
Flood Fund Budget Requirement Page No.	**Budget Narrative (Category D)**							**Budget (Cat. D)**
						Applicant 1		
	Personnel Salaries/Wages	**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
	Staff	22.25%	5.57%	$70,000		$8,288	$3,552	$11,840
	Personnel	*Lewie's Cheat Sheet*		**DCR**	**Owner**	$8,288	$3,552	$11,840
			Total	*70%*	*30%*			
	Fringe, 26.21% salaries;		$99,620	69,734.00	29,886.00	$2,172	$931	$3,103
		15%	14,943.00	10,460.10	4,482.90			
	Total Personnel		**114,563.00**	**80,194.10**	**34,368.90**	$10,460	$4,483	$14,943
	SubAward/SubContract Agreements					**70%**	**30%**	
	Livingshoreline Cost Estimate				$72,070	$50,449	$21,621	$72,070
	Ribrap/ excavating backfull with sand and plants and grass				$22,550	$15,785	$6,765	$22,550
	Legal Procurement and Financing/deeds of trust				$5,000	$3,500	$1,500	$5,000
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$99,620			
	SUBTOTAL: Direct Costs					$80,194	$34,369	$114,563
	Indirect/IDC/Facilities & Administrative Costs			**27.92%**	$11,152	$7,806	$3,346	$11,152
	Total					**$88,000**	**$37,715**	**$125,715**
	Other Match:							
	Source of Match					$0	$0	$0
	GRAND TOTAL					**$88,000**	**$37,715**	**$125,715**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Also please note that the cost estimates for the construction of this project were supplied by the contractor, R & W Marine Construction, Inc. Please see **Attachment 7**.

In summary:
***Estimated total project cost*:** $ 125,715
***Amount of funds requested*:** $ 88,000

Finally, please see the authorization to request for funding in **Attachment 9.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission

Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☐ Yes ☐ No
Applicant Name:	Middle Peninsula Planning District Commission

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

Appendix D: Checklist All Categories

Virginia Department of Conservation and RecreationCommunity Flood Preparedness Fund Grant

Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter

County Administration

January 27, 2022

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

David Schlosser
Interim County Administrator

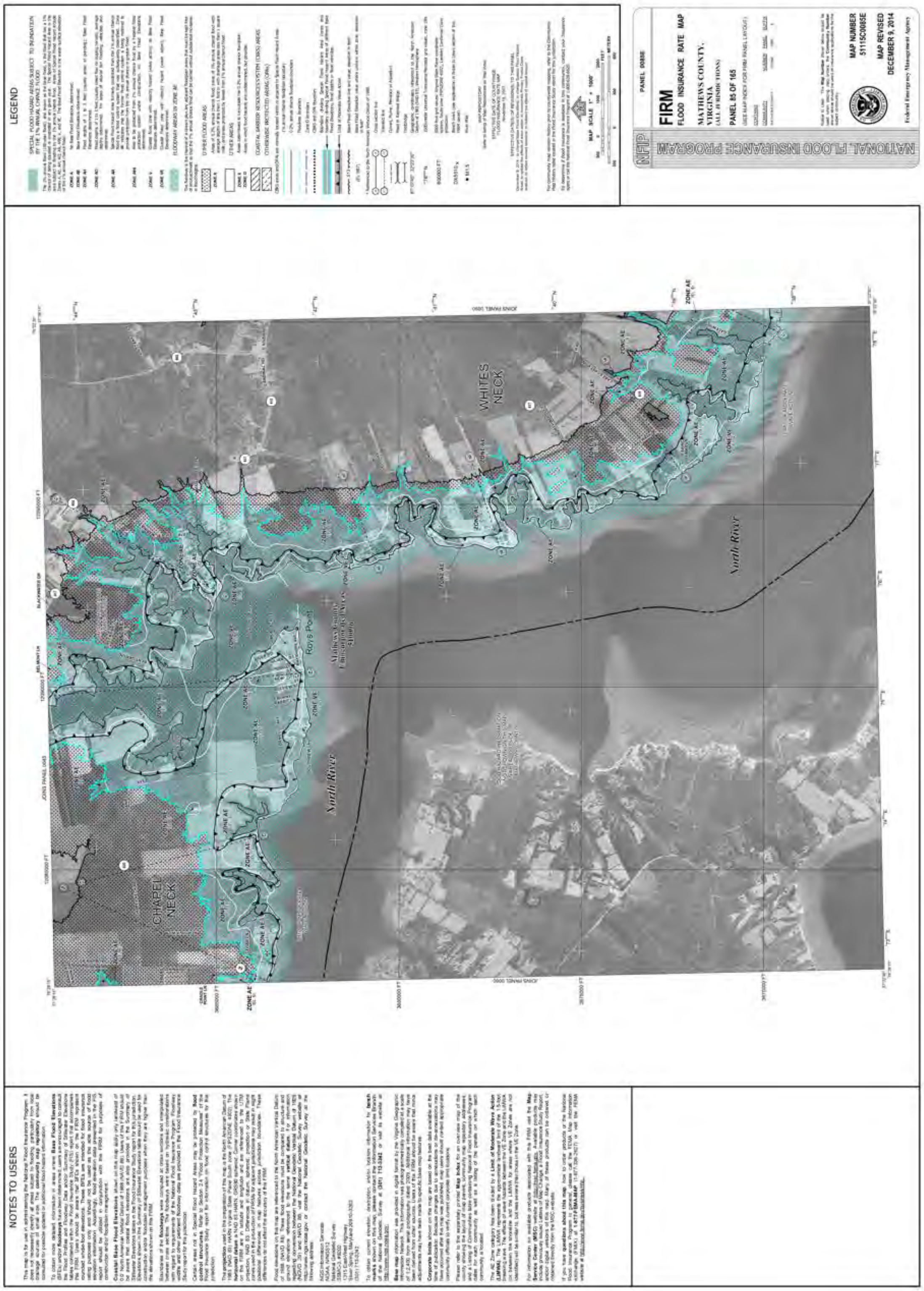
804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE MATHEWS

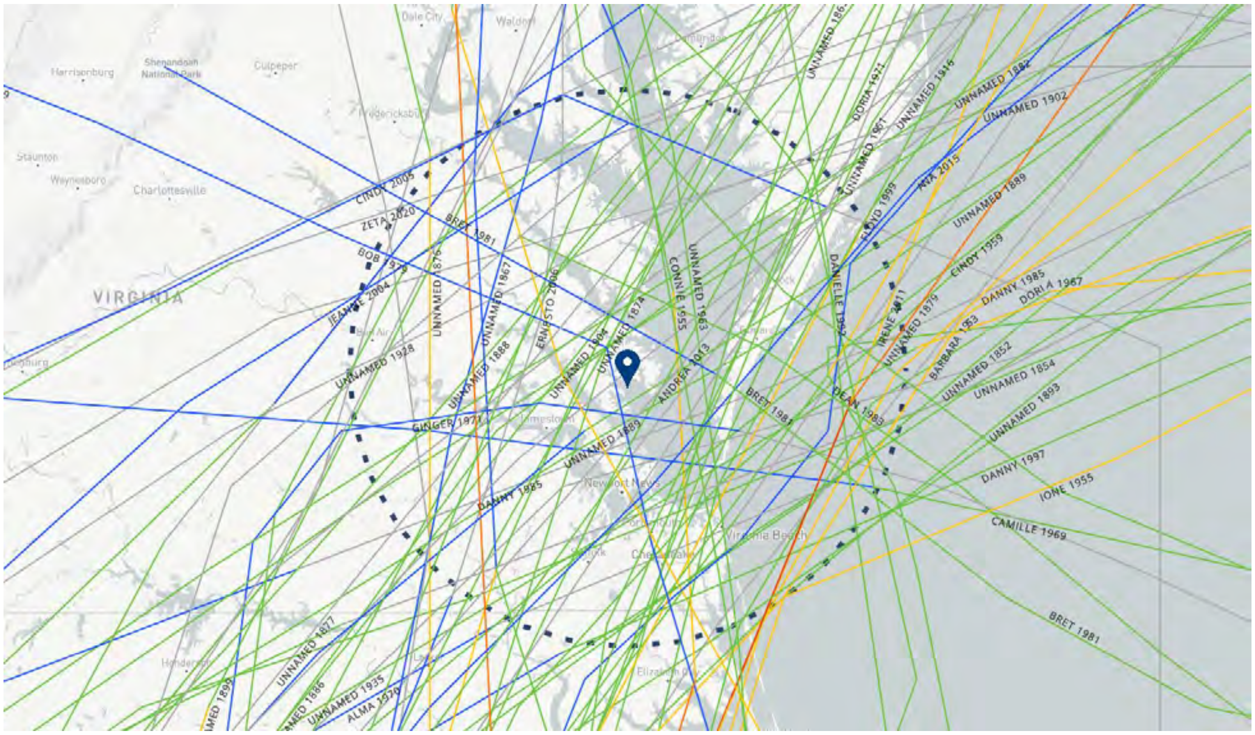
Attachment 2: Project Location FIRMette

Wuckovich Property (FIRMette #: **51115C0085E**)



Attachment 3: List of historic hurricanes impacting the project area.

Hurricane List



Search Filter Criteria

Location: 37.41985, -76.40677

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: Photos of the Wuckovich property shoreline.

Severe shoreline erosion and damaged stone sill on property.

Date Photo Taken: 2020:09:30 15:59:36

Date Photo Taken: 2020:09:30 15:59:37

Photo eroding shoreline within close proximity to the house (approximately 8 ft) and remanence of bulkhead.

Date Photo Taken: 2020:09:30 16:00:03

Date Photo Taken: 2020:09:30 16:01:16

Attachment 5: Wuckovich JPA, Design, and Permit Package

From: Chris Davis
To: jpa.permits@mrc.virginia.gov
Subject: Wuckovick JPA attached
Date: Monday, August 31, 2020 7:08:50 AM
Attachments: Wuckovick JPA 8-30-20.pdf

Signature pages to follow later this morning.

Received by VMRC August 31, 2020 /blh

- ❖ DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- ❖ VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- ❖ LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA # **20-1593**

APPLICANTS
Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply		
Pre-Construction Notification (PCN) ☒ NWP # 19 (*For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned*)	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: Mathews

Waterway at project site: North River

PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)

Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html

Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial
	NA			

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address:

Kim and Nick Wuckovick
100 Hamlin Drive
Fredericksburg, VA
22405

Contact Information:
Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (540) 373 5572
e-mail fourwucks@aol.com

State Corporation Commission Name and ID Number (if applicable) _____________

2. Property owner(s) legal name* and complete address, if different from applicant: Contact Information:
Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (____)_____________
e-mail _________________

State Corporation Commission Name and ID Number (if applicable) _____________

3. Authorized agent name* and complete mailing address (if applicable):

Chris Davis (ReadyReef Inc)
504 Smoketree Ct
North Chesterfield, VA 23236

Contact Information:
Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (804) 338-3103
e-mail chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) _____________

<u>* If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.</u>

4. Provide a <u>detailed</u> description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

The project consists of installing a total of 60LF of Flexamat on the eroding bank of the Applicant's two lots. The mat will be planted with new marsh grass sprigs. All work is above MLW. A small living shoreline of clean sand and plants will be installed in place of invasive phragmities in the east basin. There will be a net gain in marsh grass.
A second phase consists of installing 103LF of Class 2 stone up and over existing, decaying bulkhead as a splashblock. Access will be through the yard.

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? x Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

ReadyReef Inc
504 Smoketree Ct
North Chesterfield, VA
23236

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (804) 338-3103
email chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) ____________________

<u>* If multiple contractors, each must be listed and each must sign the applicant signature page.</u>

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:

Gazette-Journal
PO Box 2060
Gloucester, VA 23061

legals@gazettejournal.net

Telephone number
(804) 693-3101

7. Give the following project location information:

Street Address (911 address if available) 182 Bayshore Avenue North
Lot/Block/Parcel# 24A-1-2-10 and 24A-1-2-11
Subdivision____________________
City / County North, VA ZIP Code 23128
Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
37.418415 / - -76.405924 (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

From Gloucester Court House, take Rt. 14 East towards Mathews. After crossing the North River Bridge, turn right onto Rt. 620 (Chapel Neck Rd).
At fork in the road where the hard surface road takes a sharp right, go straight on the dirt road (Daniel Ave). Go to the end at Bayshore Community. Turn right onto Allview Street, then left onto Bayshore Ave. House #182 is on the right.

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose <u>may</u> be "to protect property from erosion due to boat wakes" and the secondary purpose <u>may</u> be "to provide safer access to a pier."

The primary purpose of the project is to prevent erosion of the property's bank and to repair the protection system at the decaying bulkhead. The bulkhead has been compromised and is leaking sediment from behind it.
The secondary purpose is to install living plants in such a way that they can migrate upslope if forced by Relative Sea Level Rise, thus preventing the existing Living shoreline from being "squeezed out" at the backslope area.

Part 1 - General Information (continued)

9. Proposed use (check one):
   _X_ Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

    All work will be done from upland lawn areas and above MHW. There will be no impact on sensitive areas. At the bottom edge of the west Flexamat installation, existing marsh grass will be flipped up seaward while the mat gets tucked in behind and below it. The grass will then be laid back down in place. There will be a net gain in grass.

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes _X_No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $___________________________
    Approximate cost of that portion of the project that is channelward of mean low water:
    $0___________

13. Completion date of the proposed work: July 30 - 2021

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

    Daniel and Susan Warren
    PO Box 35796
    Richmond, VA
    23235-0796

    James Brockenbrough
    7262 Spring Hill Farm Rd
    Hanover, VA
    23069

Part 2 - Signatures

1. Applicants and property owners (if different from applicant). NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

______________________________ Applicant's Legal Name (printed/typed)	______________________________ (Use if more than one applicant)
______________________________ Applicant's Signature	______________________________ (Use if more than one applicant)
______________________________ Date	
______________________________ Property Owner's Legal Name (printed/typed) (If different from Applicant)	______________________________ (Use if more than one owner)
______________________________ Property Owner's Signature	______________________________ (Use if more than one owner)
______________________________ Date	

Received by VMRC August 31, 2020 /blh

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we),____________________, hereby certify that I (we) have authorized ___________________________
(Applicant's legal name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

____________________________________ ________________________________
(Agent's Signature) (Use if more than one agent)

____
(Date)

____________________________________ ________________________________
(Applicant's Signature) (Use if more than one applicant)

____
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), ______________________, have contracted____
(Applicant's legal name(s)) (Contractor's name(s))
to perform the work described in this Joint Permit Application, signed and dated_________________________.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

____
Contractor's name or name of firm

____
Contractor's or firms address

________________________________ ____________________________________
Contractor's signature and title Contractor's License Number

________________________________ ____________________________________
Applicant's signature (use if more than one applicant)

____
Date

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we), ____________________________________, own land next to (across the water
(Print adjacent/nearby property owner's name)

from/on the same cove as) the land of______________________________________.
(Print applicant's name(s))

I have reviewed the applicant's project drawings dated ________________________
(Date)

to be submitted for all necessary federal, state and local permits.

I HAVE NO COMMENT_______ ABOUT THE PROJECT.

I DO NOT OBJECT ______ TO THE PROJECT.

I OBJECT ______ TO THE PROJECT.

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form be sure you have checked the appropriate option above).

____
Adjacent/nearby property owner's signature(s)

____
Date

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Received by VMRC August 31, 2020 /blh

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we), ____________________________________, own land next to (across the water
(Print adjacent/nearby property owner's name)

from/on the same cove as) the land of_______________________________________.
(Print applicant's name(s))

I have reviewed the applicant's project drawings dated _________________________
(Date)

to be submitted for all necessary federal, state and local permits.

I HAVE NO COMMENT_______ ABOUT THE PROJECT.

I DO NOT OBJECT ______ TO THE PROJECT.

I OBJECT ______ TO THE PROJECT.

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form, be sure you have checked the appropriate option above).

____
Adjacent/nearby property owner's signature(s)

____
Date

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

APPENDIX B

U.S. Army Corps
Of Engineers
Norfolk District

REGIONAL PERMIT 17 CHECKLIST

Expires: September 5, 2023

Please review the 18-RP-17 enclosure before completing this form and note 18-RP-17 can only be used for proposed <u>PRIVATE USE</u> structure(s) that comply with the terms and conditions of 18-RP-17. Copies can be obtained online at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/.

YES☐ NO☐ **(1)** Has the permittee reviewed the 18-RP-17 enclosure and verified that the proposed structure(s) is in compliance with all the terms, conditions, and limitations of 18-RP-17?

YES☐ NO☐ **(2)** Does the proposed structure(s) extend no more than one-fourth of the distance across the waterway measured from either mean high water (MHW) to MHW (including all channelward wetlands) or ordinary high water (OHW) to OHW (including all channelward wetlands)?

YES☐ NO☐ **(3)** Does the proposed structure(s) extend no more than 300 feet from MHW or OHW (including all channelward wetlands)?

YES☐ NO☐ N/A☐ **(4)** Does the proposed structure(s) attach to the upland at a point landward of MHW or OHW (including all channelward wetlands)?

YES☐ NO☐ N/A☐ **(5)** If the proposed structure(s) crosses wetland vegetation, is it an open-pile design that has a <u>maximum</u> width of five (5) feet and a <u>minimum</u> height of four (4) feet between the decking and the wetland substrate?

YES☐ NO☐ N/A☐ **(6)** Does the proposed structure(s) include no more than two (2) boatlifts and no more than two (2) boat slips?

YES☐ NO☐ N/A☐ **(7)** Is the open-sided roof structure designed to shelter a boat ≤ 700 square feet and/or is the open sided roof structure or gazebo structure designed to shelter a pier ≤ 400 square feet?

YES☐ NO☐ N/A☐ **(8)** Are all piles associated with the proposed structure(s) non-steel, less than or equal to 12” in diameter, and will less than or equal to 25 piles be installed channelward of MHW?

YES☐ NO☐ N/A☐ **(9)** Is all work occurring behind cofferdams, turbidity curtains, or other methods to control turbidity being utilized when operationally feasible and federally listed threatened or endangered species may be present?

YES☐ NO☐ N/A☐ **(10)** If the proposed structure(s) is to be located within an anadromous fish use area, the prospective permittee will adhere to the anadromous fish use area time of year restriction (TOYR) prohibiting in-water work from occurring between February 15 through June 30 of any given year if (1) piles are to be installed with a cushioned impact hammer and there is less than 492 feet between the most channelward pile and mean low water (MLW) on the opposite shoreline or (2) piles are to be installed with a vibratory hammer and there is less than 384 feet between the most channelward pile and MLW on the opposite shoreline.

YES☐ NO☐ **(11)** Is all work occurring outside of submerged aquatic vegetation (SAV) mapped by the Virginia Institute of Marine Sciences’ (VIMS) most recent survey year and 5 year composite?

YES☐ NO☐ **(12)** Has the permittee ensured the construction and/or installation of the proposed structure(s) will not affect federally listed threatened or endangered species or designated critical habitat?

YES☐ NO☐ **(13)** Will the proposed structure be located outside of Broad Creek in Middlesex County, Fisherman’s Cove in Norfolk, or the Salt Ponds in Hampton?

YES☐ NO☐ **(14)** Will the proposed structure(s) be located outside of the waterways containing a Federal Navigation Project listed in Permit Specific Condition 12 of 18-RP-17 and/or will all portions of the proposed structure(s) be located more than 85 feet from the Federal Navigation Project?

YES☐ NO☐ **(15)** Will the proposed structure(s) be located outside a USACE Navigation and Flood Risk Management project area?

YES☐ NO☐ **(16)** Will the proposed structure(s) be located outside of any Designated Trout Waters?

YES☐ NO☐ N/A☐ **(17)** If the proposed structure(s) includes flotation units, will the units be made of materials that will not become waterlogged or sink if punctured?

YES☐ NO☐ N/A☐ **(18)** If the proposed structure(s) includes flotation units, will the floating sections be braced so they will not rest on the bottom during periods of low water?

YES☐ NO☐ **(19)** Is the proposed structure(s) made of suitable materials and practical design so as to reasonably ensure a safe and sound structure?

YES☐ NO☐ **(20)** Will the proposed structure(s) be located on the property in accordance with the local zoning requirements?

YES☐ NO☐ N/A☐ **(21)** If the proposed structure(s) includes a device used for shellfish gardening, will the device be attached directly to a pier and limited to a total of 160 square feet?

YES☐ NO☐ N/A☐ **(22)** If the proposed structure(s) includes a device used for shellfish gardening, does the permittee recognize this RP does not negate their responsibility to obtain an oyster gardening permit (General Permit #3) from Virginia Marina Resources Commission's Habitat Management Division?

YES ☐NO ☐ **(23)** Does the permittee recognize this RP does not authorize any dredging or filling of waters of the United States (including wetlands) and does not imply that future dredging proposals will be approved by the Corps?

YES☐ NO☐ **(24)** Does the permittee understand that by accepting 18-RP-17, the permittee accepts all of the terms and conditions of the permit, including the limits of Federal liability contained in the 18-RP-17 enclosure? Does the permittee acknowledge that the structures permitted under 18-RP-17 may be exposed to waves caused by passing vessels and that the permittee is solely responsible for the integrity of the structures permitted under 18-RP-17 and the exposure of such structures and vessels moored to such structures to damage from waves? Does the permittee accept that the United States is not liable in any way for such damage and that it shall not seek to involve the United States in any actions or claims regarding such damage?

IF YOU HAVE ANSWERED "NO" TO ANY OF THE QUESTIONS ABOVE, REGIONAL PERMIT 17 (18-RP-17) DOES NOT APPLY AND YOU ARE REQUIRED TO OBTAIN WRITTEN AUTHORIZATION FROM THE CORPS PRIOR TO PERFORMING THE WORK.

IF YOU HAVE ANSWERED "YES" (OR "N/A", WHERE APPLICABLE) TO ALL OF THE QUESTIONS ABOVE, YOU ARE IN COMPLIANCE WITH REGIONAL PERMIT 17 (18-RP-17). PLEASE SIGN BELOW, ATTACH, AND SUBMIT THIS CHECKLIST WITH YOUR COMPLETED JOINT PERMIT APPLICATION (JPA). THIS SIGNED CERTIFICATE SERVES AS YOUR LETTER OF AUTHORIZATION FROM THE CORPS. YOU WILL NOT RECEIVE ANY OTHER WRITTEN AUTHORIZATION FROM THE CORPS; HOWEVER, YOU MAY NOT PROCEED WITH CONSTRUCTION UNTIL YOU HAVE OBTAINED ALL OTHER NECESSARY STATE AND LOCAL PERMITS.

I CERTIFY THAT I HAVE READ AND UNDERSTAND ALL CONDITIONS OF THE REGIONAL PERMIT 17 (18-RP-17), DATED SEPTEMBER 2018, ISSUED BY THE US ARMY CORPS OF ENGINEERS, NORFOLK DISTRICT REGULATORY BRANCH (CENAO-WRR), NORFOLK, VIRGINIA.

Proposed work to be located at:

______________________________ ______________________________

Signature of Property Owner(s) or Agent

____

Date______________________ **VMRC Number:** ______________________

Part 3 – Appendices

Please complete and submit the appendix questions applicable to your project, and attach the required vicinity map(s) and drawings to your application. If an item does not apply to your project, please write "N/A" in the space provided.

Appendix A: (TWO PAGES) Projects for Access to the water such as private and community piers, boathouses, marinas, moorings, and boat ramps. Answer all questions that apply.

1. **Briefly describe your proposed project**.

2. **For private, noncommercial piers:**
   Do you have an existing pier on your property? ____Yes____ No
   If yes, will it be removed? ____Yes ____No
   Is your lot platted to the mean low water shoreline? ____Yes ____No
   What is the overall length of the proposed structure? ________feet.
   Channelward of Mean High Water? ________feet.
   Channelward of Mean Low Water? ________feet.
   What is the area of the piers and platforms that will be constructed over
   Tidal non-vegetated wetlands __________ square feet.
   Tidal vegetated wetlands _________ square feet.
   Submerged lands __________square feet.
   What is the total size of any and all L- or T-head platforms?_______sq. ft.
   For boathouses, what is the overall size of the roof structure? ________sq. ft.
   Will your boathouse have sides?_____Yes____ No.

   NOTE: All proposals for piers, boathouses and shelter roofs must be reviewed by the Virginia Marine Resources Commission (Commission or VMRC), however, pursuant to § 28.2-1203 A 5 of the Code of Virginia a VMRC permit may not be required for such structures (except as required by subsection D of § 28.2-1205 for piers greater than 100 feet in length involving commercially productive leased oyster or clam grounds), provided that (i) the piers do not extend beyond the navigation line or private pier lines established by the Commission or the United States Army Corps of Engineers (USACE), (ii) the piers do not exceed six feet in width and finger piers do not exceed five feet in width, (iii) any L or T head platforms and appurtenant floating docking platforms do not exceed, in the aggregate, 400 square feet, (iv) if prohibited by local ordinance open-sided shelter roofs or gazebo-type structures shall not be placed on platforms as described in clause (iii), but may be placed on such platforms if not prohibited by local ordinance, and (v) the piers are determined not to be a navigational hazard by the Commission. Subject to any applicable local ordinances, such piers may include an attached boat lift and an open-sided roof designed to shelter a single boat slip or boat lift. In cases in which open-sided roofs designed to shelter a single boat, boat slip or boat lift will exceed 700 square feet in coverage or the open-sided shelter roofs or gazebo structures exceed 400 square feet, and in cases in which an adjoining property owner objects to a proposed roof structure, permits shall be required as provided in § 28.2-1204.

Part 3 – Appendices (continued)

3. **For USACE permits**, in cases where the proposed pier will encroach beyond one fourth the waterway width (as determined by measuring mean high water to mean high water or ordinary high water mark to ordinary high water mark), the following information must be included before the application will be considered complete. For an application to be considered complete:

   a. The USACE MAY require depth soundings across the waterway at increments designated by the USACE project manager. Typically 10-foot increments for waterways less than 200 feet wide and 20-foot increments for waterways greater than 200 feet wide with the date and time the measurements were taken and how they were taken (e.g., tape, range finder, etc.).
   b. The applicant MUST provide a justification as to purpose if the proposed work would extend a pier greater than one-fourth of the distance across the open water measured from mean high water or the channelward edge of the wetlands.
   c. The applicant MUST provide justification if the proposed work would involve the construction of a pier greater than five feet wide or less than four feet above any wetland substrate.

4. Provide the type, size, and registration number of the vessel(s) to be moored at the pier or mooring buoy.

   Type Length Width Draft Registration #

   ____
   ____
   ____

5. For **Marinas, Commercial Piers, Governmental Piers, Community Piers and other non-private piers**, provide the following information:
   A) Have you obtained approval for sanitary facilities from the Virginia Department of Health?___________ (required pursuant to Section 28.2-1205 C of the Code of Virginia).
   B) Will petroleum products or other hazardous materials be stored or handled at your facility?_______________.
   C) Will the facility be equipped to off-load sewage from boats?__________.
   D) How many wet slips are proposed?_______. How many are existing?______.
   E) What is the area of the piers and platforms that will be constructed over
      Tidal non-vegetated wetlands __________ square feet
      Tidal vegetated wetlands _________ square feet
      Submerged lands __________square feet

6. For **boat ramps**, what is the overall length of the structure?________feet.
   From Mean High Water?________feet.
   From Mean Low Water?________feet.

   Note: drawings must include the construction materials, method of installation, and all dimensions. If tending piers are proposed, complete the pier portion.

   Note: If dredging or excavation is required, you must complete the Standard Joint Point Permit application.

Part 3 – Appendices (continued)

Appendix B: Projects for Shoreline Stabilization in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS**.**

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

   Two 8' x 30' rolls of Flexamat will be used, with about half in the RPA zone and half in the upper part of the 1.5x Tide Range zone.

   3 cuyds of clean sand will be used to grade a 3:1 slope under the Flexamat.
   The balance of 1 truckload of sand will be put into the eastern basin to achieve a 10:1 slope overtop of where phragmities will be treated. Then this area will be planted with new marsh grass sprigs.

2. What is the maximum encroachment channelward of mean high water? 0 feet.
   Channelward of mean low water? 0 feet.
   Channelward of the back edge of the dune or beach? 3 feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 0 square feet
   - Non-vegetated wetlands 280 square feet
   - Subaqueous bottom 0 square feet
   - Dune and/or beach 0 square feet

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes____ No.

   If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____Yes ____No.

   If no, please provide an explanation for the purpose and need for the additional encroachment.

Part 3 – Appendices (continued)

5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
NOTE: **Drawings must include construction details, including dimensions, design and all materials, including fittings if used**.

Clean sand from upland pit meeting USACE sand specifications.
Nursery grown marsh grass plants.
Flexamat specifications provided as an attachment.

Steel Rebar anchors for the Flexamat.

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
Core (inner layer) material__________ pounds per stone Class size ________
Armor (outer layer) material __________ pounds per stone Class size ________

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

• Volume of material	0	cubic yards channelward of mean low water
	7	cubic yards landward of mean low water
	7	cubic yards channelward of mean high water
	3	cubic yards landward of mean high water
• Area to be covered	0	square feet channelward of mean low water
	600	square feet landward of mean low water
	300	cubic yards channelward of mean high water
	300	cubic yards landward of mean high water

- Source of material, composition (e.g. 90% sand, 10% clay): 93% sand, 7% clay
- Method of transportation and placement:
  Truck transport from Middlesex pit, dump on client lot, skid steer transport over yard to deposition site for grading and packing.
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:

  Flexamat will be planted one foot on center with the elevation appropriate Spartina Grass.

  Grasses will be monitored three times in the first year and twice in the second year. They are covered under contractor warranty for two years.

Virginia Marine Resources Commission

Permit Application 20201593

Printed: Friday October 22, 2021 1:41 PM

Applicant: Nick Wuckovich
100 Hamlin Drive
Fredericksburg, VA 22405

Application Number:	20201593	**Engineer:**	Mike Johnson
Application Date:	August 31, 2020	**Locality:**	Mathews
Permit Type:	No VMRC Permit Nec.	**Waterway:**	North River
Permit Status:	No Permit Nec	**Expiration Date:**	
Wetlands Board Action:	Approved as Proposed	**Public Hearing Date:**	October 7, 2020

Project Description: Living Shoreline

Project Dimensions:

Bioengineered Structure: 60 Linear Feet

Fill/Plantings: 900 Square Feet

Virginia Marine Resources Commission
Photos for Permit Application 20201593
Printed: Friday October 22, 2021 1:41 PM

Date Photo Taken: 2020:09:30 15:59:36

Date Photo Taken: 2020:09:30 15:59:37

Virginia Marine Resources Commission
Photos for Permit Application 20201593
Printed: Friday October 22, 2021 1:41 PM

Date Photo Taken: 2020:09:30 16:00:03

Date Photo Taken: 2020:09:30 16:01:16

Attachment 6: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)
The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and

community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in
which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

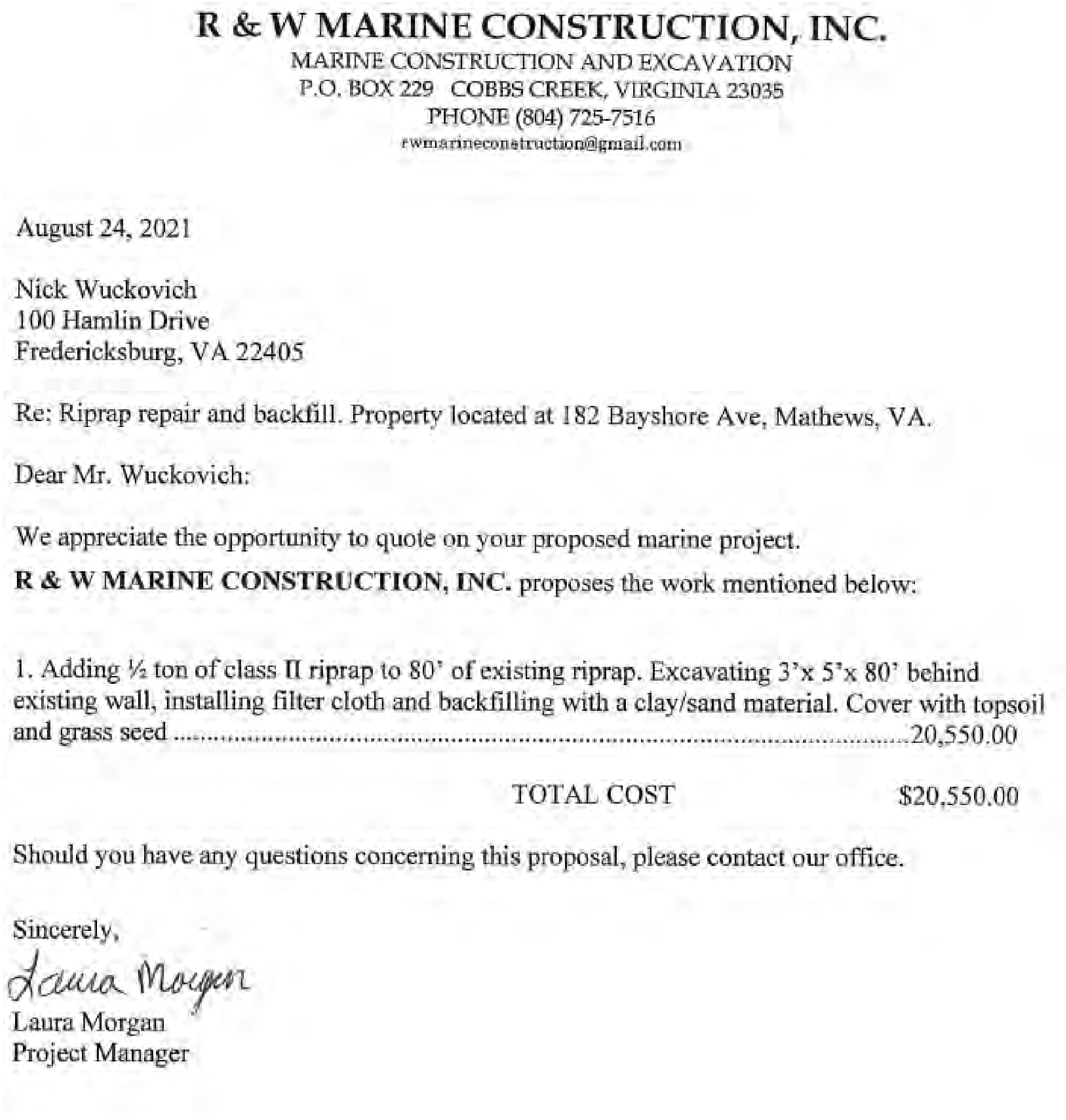
Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

Attachment 7: Project cost estimates



R & W MARINE CONSTRUCTION, INC.
MARINE CONSTRUCTION AND EXCAVATION
P.O. BOX 229 COBBS CREEK, VIRGINIA 23035
PHONE (804) 725-7516
rwmarineconstruction@gmail.com

August 24, 2021

Nick Wuckovich
100 Hamlin Drive
Fredericksburg, VA 22405

Re: Riprap repair and backfill. Property located at 182 Bayshore Ave, Mathews, VA.

Dear Mr. Wuckovich:

We appreciate the opportunity to quote on your proposed marine project.

R & W MARINE CONSTRUCTION, INC. proposes the work mentioned below:

1. Adding ½ ton of class II riprap to 80' of existing riprap. Excavating 3'x 5'x 80' behind existing wall, installing filter cloth and backfilling with a clay/sand material. Cover with topsoil and grass seed	20,550.00
TOTAL COST	$20,550.00

Should you have any questions concerning this proposal, please contact our office.

Sincerely,

Laura Morgan

Laura Morgan
Project Manager

From: Kim & Nick Wuckovich <fourwucks@aol.com>
Date: Friday, October 29, 2021 at 3:36 PM
To: Jackie Rickards <jrickards@mppdc.com>
Subject: Re: FTF Grant Application Development - Introduction and Invoice_Round 2

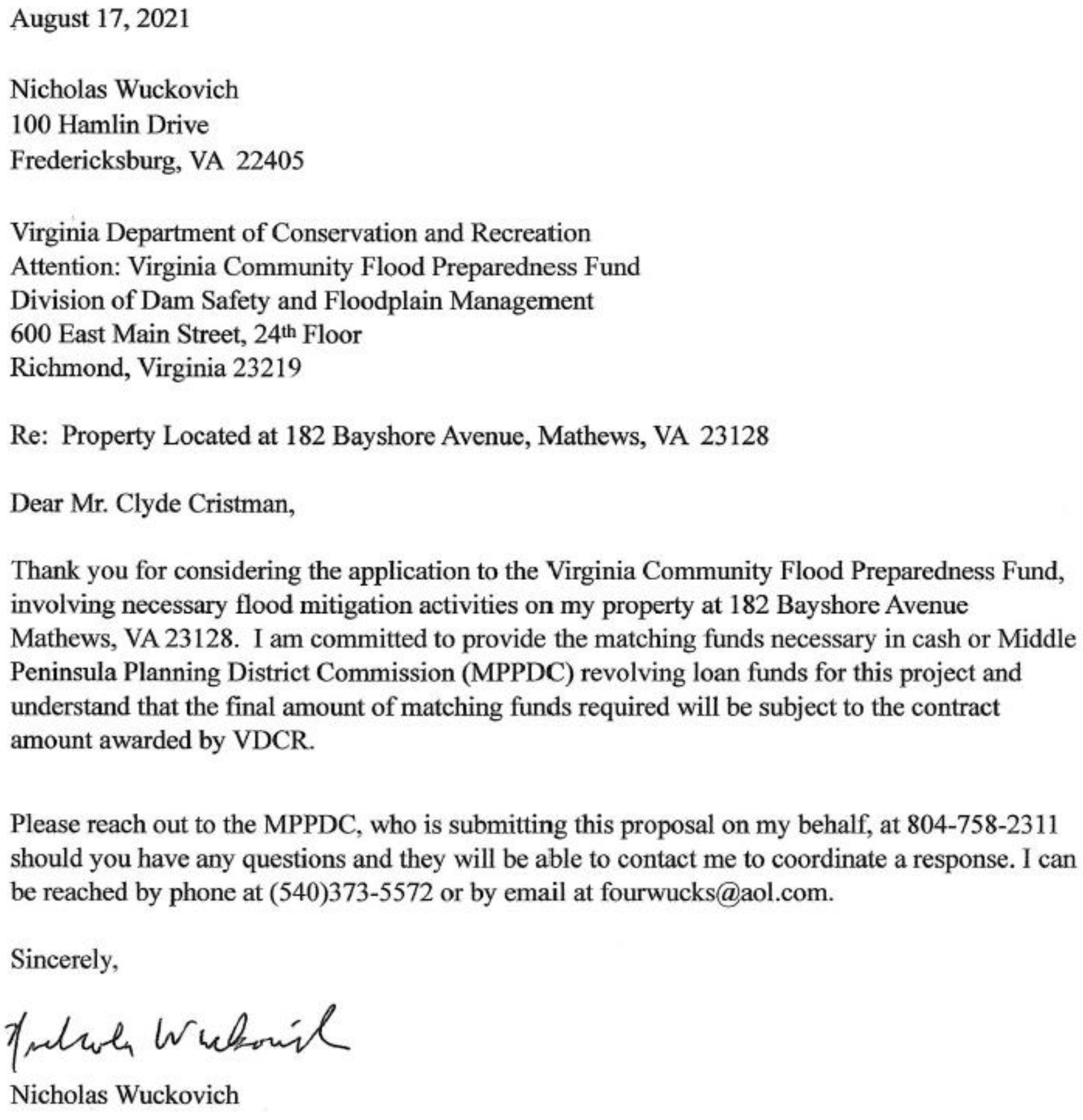
Received the detailed estimate from our living shoreline contractor. He has adjusted his quote. See new number and details below:

Reefs: $13,500
Barge fee: $1000
Crane Truck: $3000
Dock Work: $1500
Extra Anchors for Flexamat: $600
Flexamat: $33,120
Sand (15 truckloads): $5850
Sand Distribution: $3500
Sand Packing: $600
Sub- Total: $62,670
Total with General Contractor Margin added: $72,070

Let us know if you need additional information.

Kim and Nick Wuckovich

Attachment 8: Match Commitment Letters



August 17, 2021

Nicholas Wuckovich
100 Hamlin Drive
Fredericksburg, VA 22405

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Re: Property Located at 182 Bayshore Avenue, Mathews, VA 23128

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 182 Bayshore Avenue Mathews, VA 23128. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

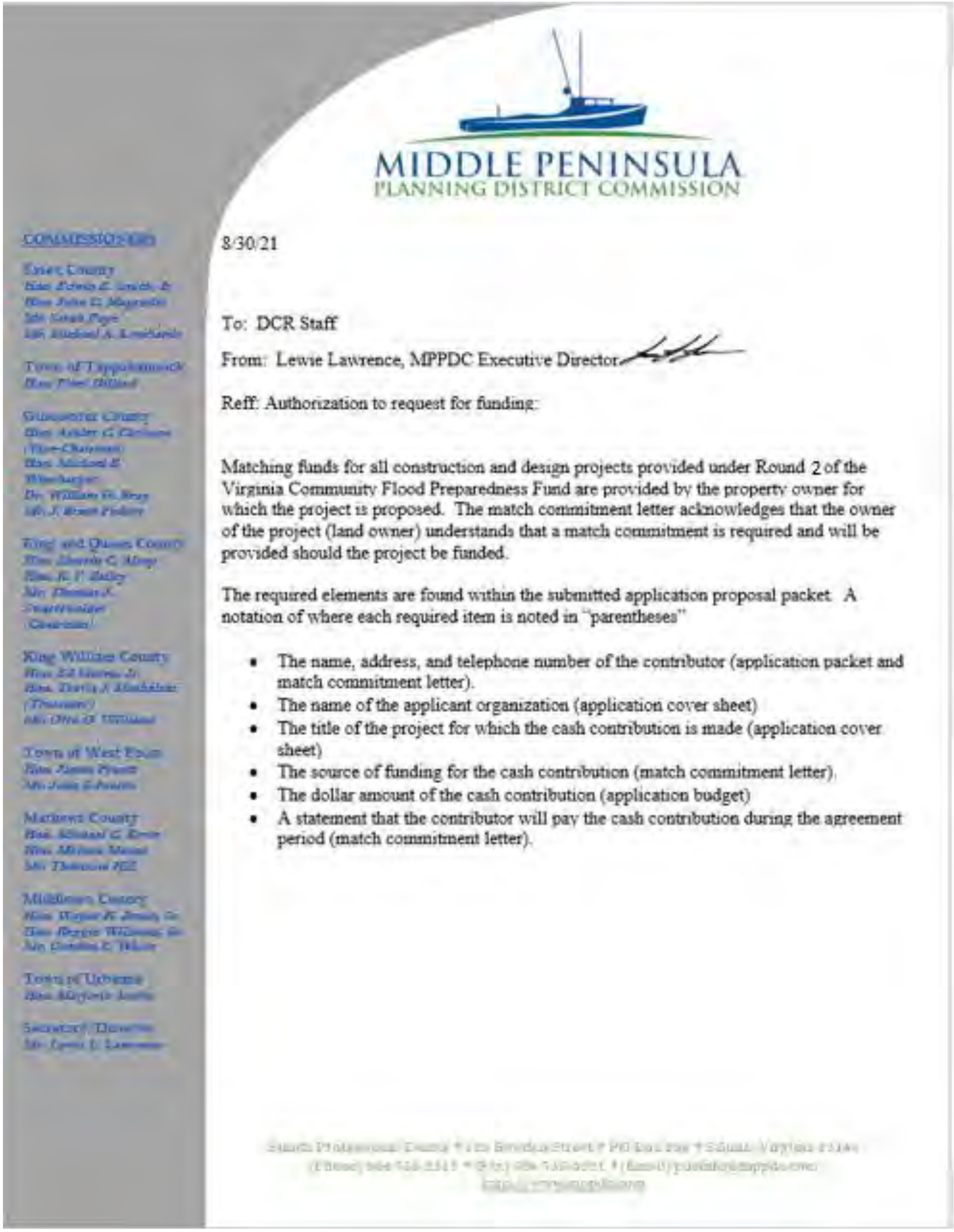
Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at (540)373-5572 or by email at fourwucks@aol.com.

Sincerely,

Nicholas Wuckovich

Nicholas Wuckovich

Attachment 9: Authorization to request for funding



8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 2 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe (Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J. Swartzwelder (Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski (Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
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Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

October 25, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Robinson Shoreline Construction** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

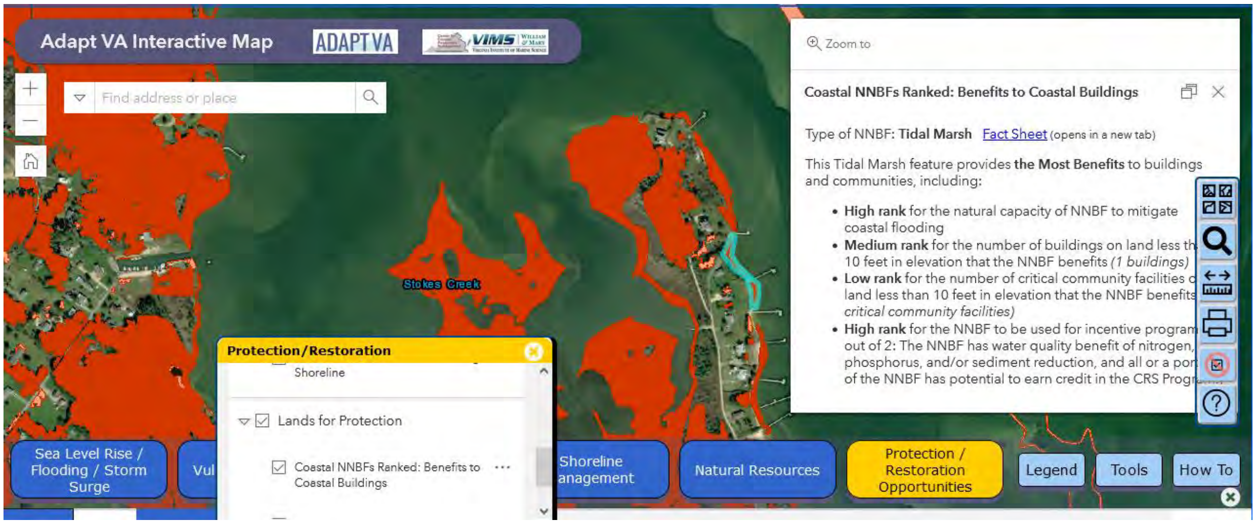
Issue #2

DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.



Coastal NNBFs Ranked: Benefits to Coastal Buildings

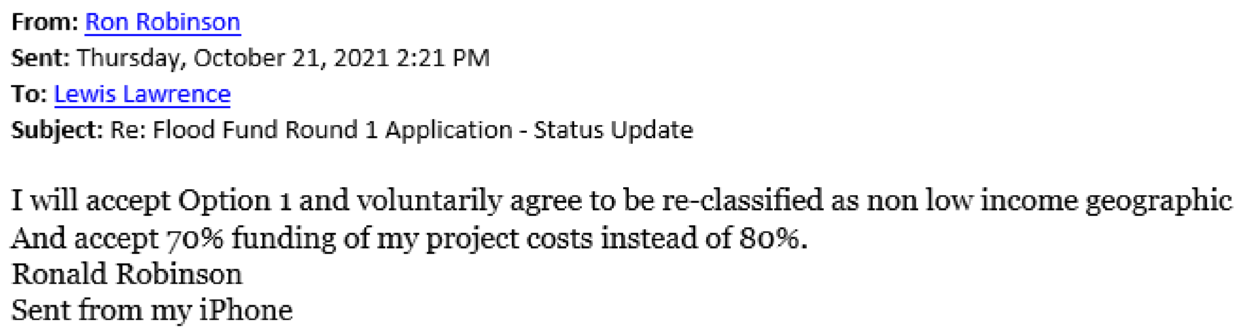
Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Medium rank** for the number of buildings on land less th 10 feet in elevation that the NNBF benefits *(1 buildings)*
- **Low rank** for the number of critical community facilities o land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:

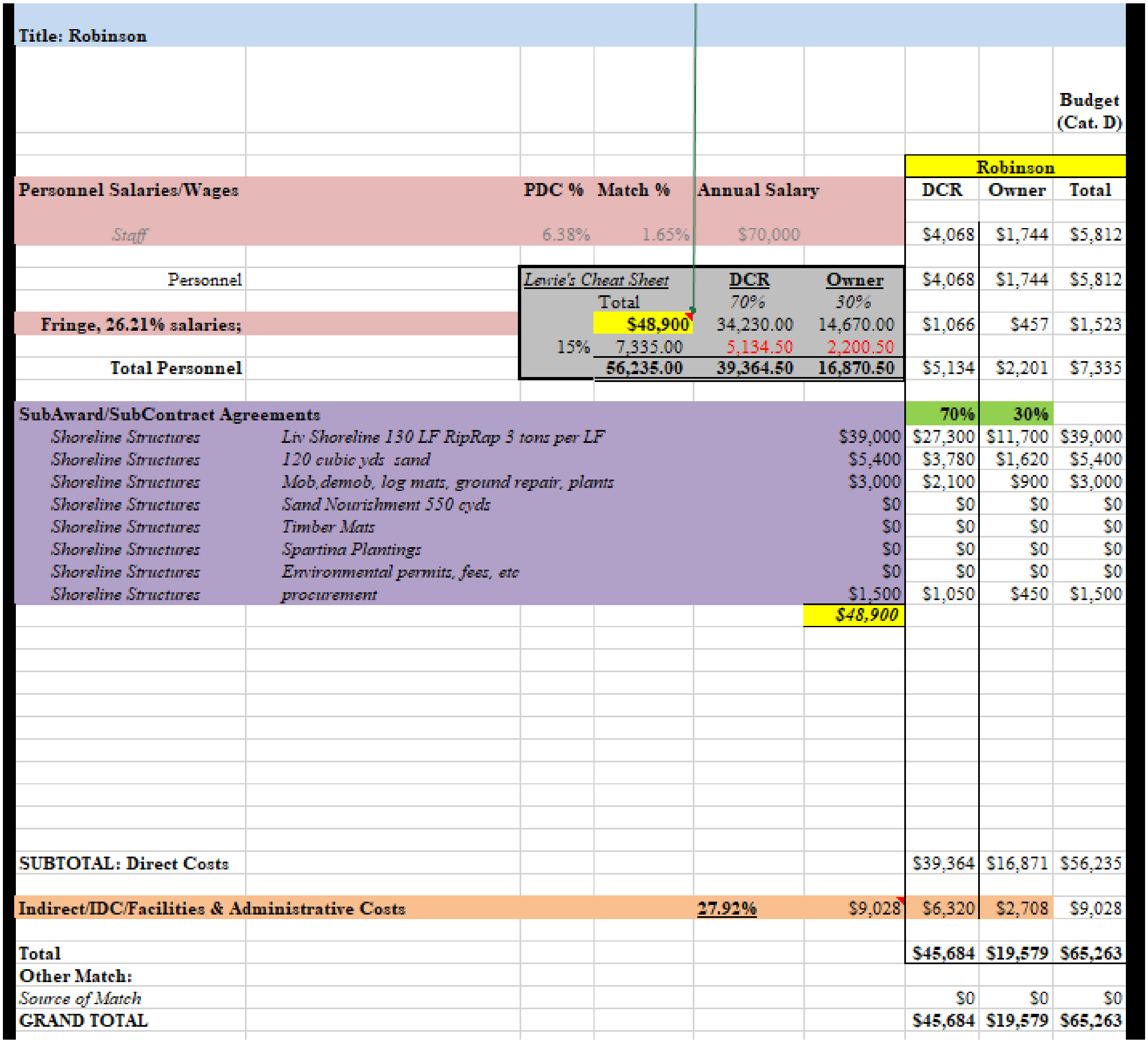


From: Ron Robinson
Sent: Thursday, October 21, 2021 2:21 PM
To: Lewis Lawrence
Subject: Re: Flood Fund Round 1 Application - Status Update

I will accept Option 1 and voluntarily agree to be re-classified as non low income geographic
And accept 70% funding of my project costs instead of 80%.
Ronald Robinson
Sent from my iPhone

Amended Budget Request

DCR Funding:	$ 45,684
Owner:	$ 19,579
Total	$ 65,263



Title: Robinson								
								Budget (Cat. D)
							Robinson	
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		6.38%	1.65%	$70,000		$4,068	$1,744	$5,812
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$4,068	$1,744	$5,812
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			**$48,900**	34,230.00	14,670.00	$1,066	$457	$1,523
		15%	7,335.00	5,134.50	2,200.50			
Total Personnel			**56,235.00**	**39,364.50**	**16,870.50**	$5,134	$2,201	$7,335
SubAward/SubContract Agreements						**70%**	**30%**	
Shoreline Structures	*Liv Shoreline 130 LF RipRap 3 tons per LF*				$39,000	$27,300	$11,700	$39,000
Shoreline Structures	*120 cubic yds sand*				$5,400	$3,780	$1,620	$5,400
Shoreline Structures	*Mob,demob, log mats, ground repair, plants*				$3,000	$2,100	$900	$3,000
Shoreline Structures	*Sand Nourishment 550 cyds*				$0	$0	$0	$0
Shoreline Structures	*Timber Mats*				$0	$0	$0	$0
Shoreline Structures	*Spartina Plantings*				$0	$0	$0	$0
Shoreline Structures	*Environmental permits, fees, etc*				$0	$0	$0	$0
Shoreline Structures	*procurement*				$1,500	$1,050	$450	$1,500
					$48,900			
SUBTOTAL: Direct Costs						$39,364	$16,871	$56,235
Indirect/IDC/Facilities & Administrative Costs				**27.92%**	$9,028	$6,320	$2,708	$9,028
Total						**$45,684**	**$19,579**	**$65,263**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$45,684**	**$19,579**	**$65,263**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

Project Title: Chesapeake Bay – Robinson's Nature-based Solution Construction Project

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):
 ____Capacity Building/Planning X Project _____Study

NFIP/DCR Community Identification Number (CID): Mathews County (510096)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ________________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) _________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ____

Project Grants (Check All that Apply)

☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**

☑ **Wetland restoration.**

☑Floodplain restoration.

☐ Construction of swales and settling ponds.

☑Living shorelines and vegetated buffers.

☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.

☐ Storm water system upgrades.

☐ Medium and large-scale Low Impact Development (LID) in urban areas.

☐ Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

☐ Dam restoration or removal.

☑ Stream bank restoration or stabilization.

☑ Restoration of floodplains to natural and beneficial function.

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County
NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No
Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No Flood Zone(s) (If Applicable): VE Zone
Flood Insurance Rate Map Number(s) (If Applicable): 51115C0060E

Total Cost of Project: **$63,279**

Total Amount Requested **$50,624**

INTRODUCTION –

FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). This proposal is a Nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions*, June 2021).

Specifically, this project proposes to construct a nature-based solution on a private property located on the Chesapeake Bay in Mathews County. The nature-based solution will entail the installation of a 75 linear feet breakwater, 412 cubic yards of beach nourishment and 100 linear feet of living shoreline. This project will be a partnership between the MPPDC and one private property owner and is supported by Mathews County (See the community support letter in **Attachment 1**).

- A link or copy to the approved resilience plan: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf within the plan please see Section 4 (page 25). This Section includes historical hazard data within the region.
- Here's a link to the Mathews County Comprehensive Plan: https://www.mathewscountyva.gov/DocumentCenter/View/621/2030-Comprehensive-Plan-Updated-2018?bidId=

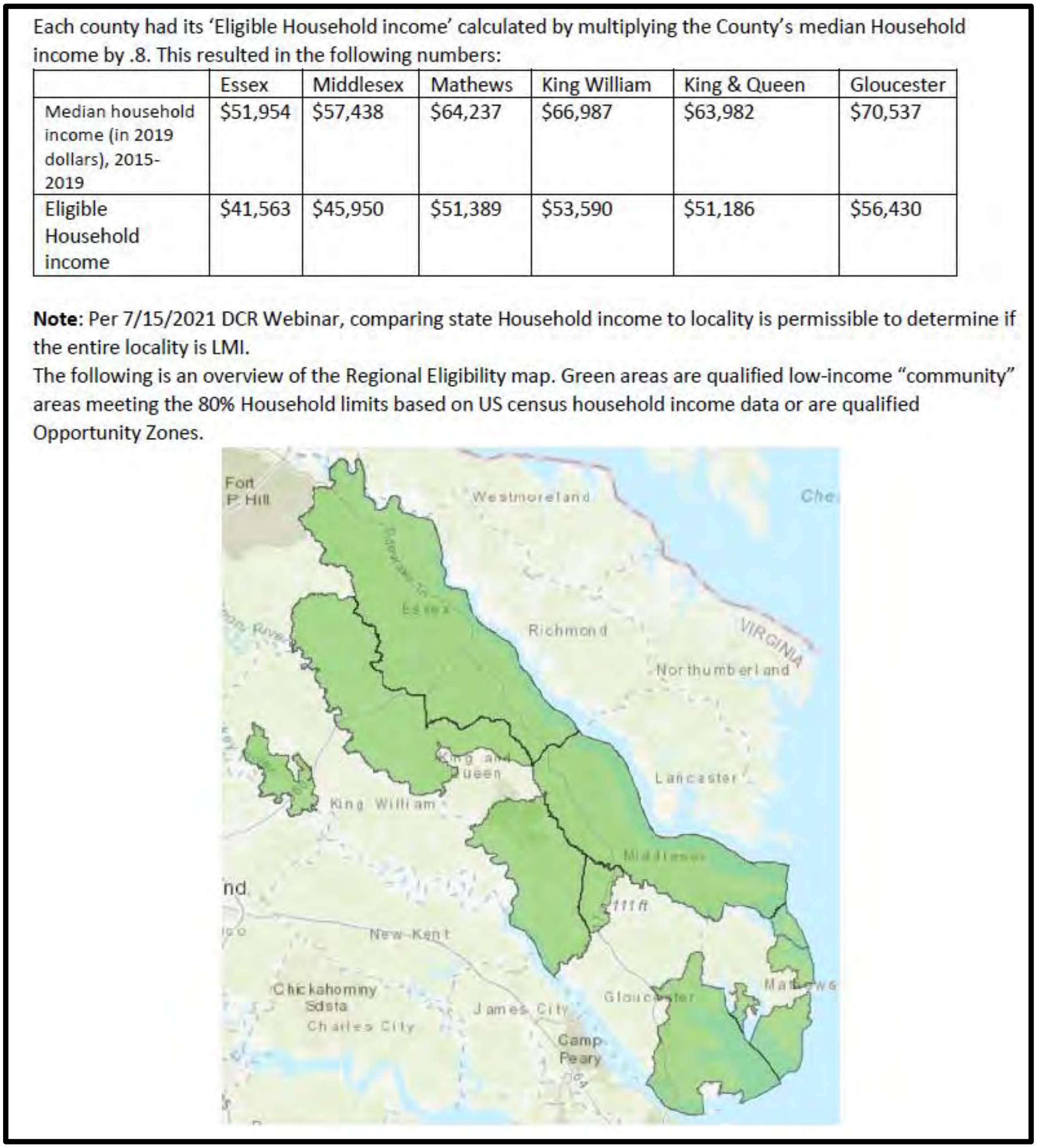
PROJECT LOCATION INFORMATION – This project proposes to construct a nature-based solution on one private property on the Chesapeake Bay in Mathews County (**Figure 1 and 2**).

FIGURE 1: COUNTY MAP OF PROJECT LOCATION.

FIGURE 2: PARCEL MAP OF PROJECT LOCATION.

Mathews County is located at the eastern edge of Virginia's Middle Peninsula and has an abundance of forests, wetlands, and special environmental areas. The County is comprised of 86 square miles of land and 350 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 3** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

FIGURE 3: MAP OF MIDDLE PENINSULAS LOW INCOME GEOGRAPHIC AREAS QUALIFYING UNDER DCR GUIDELINES.



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

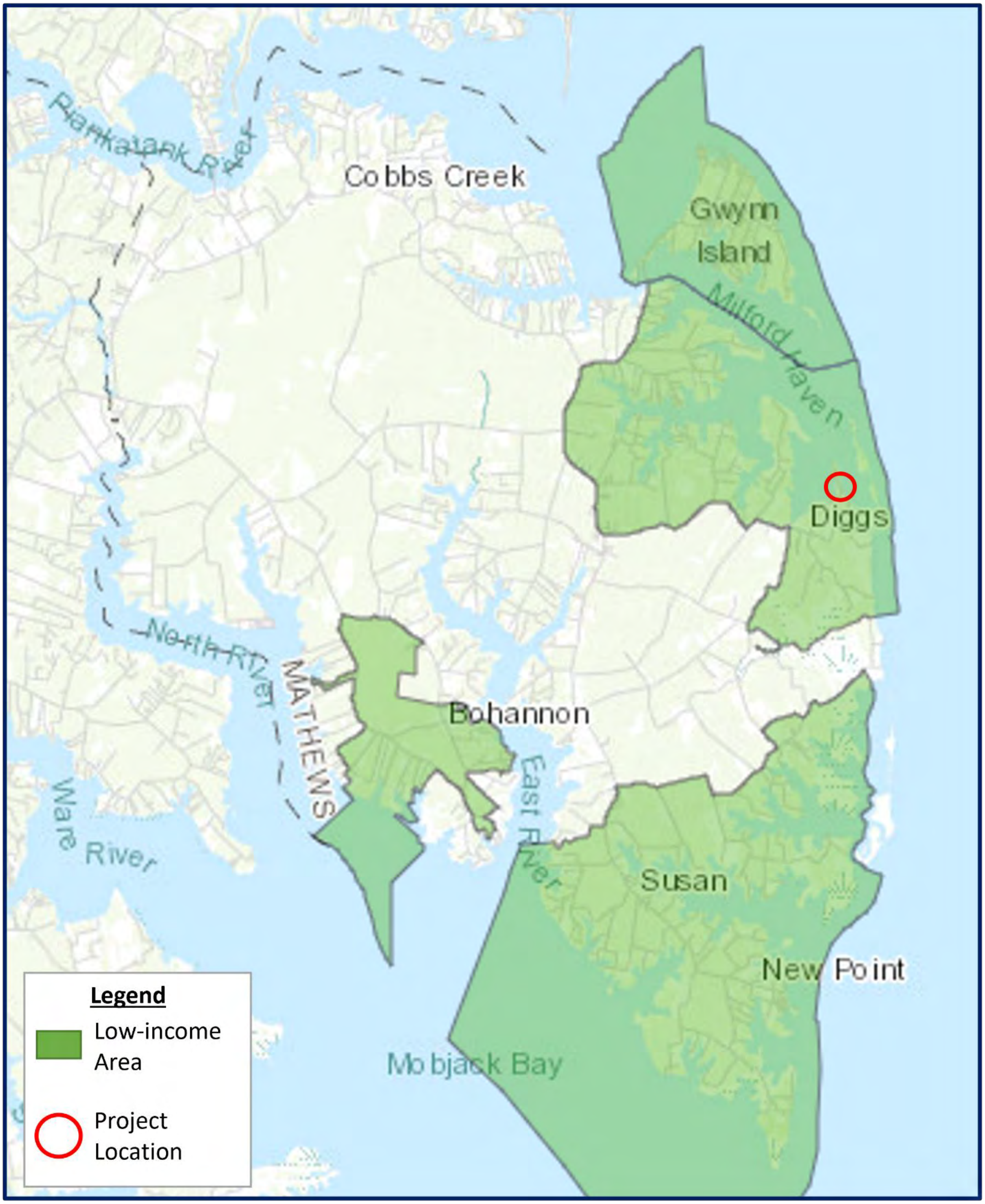
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

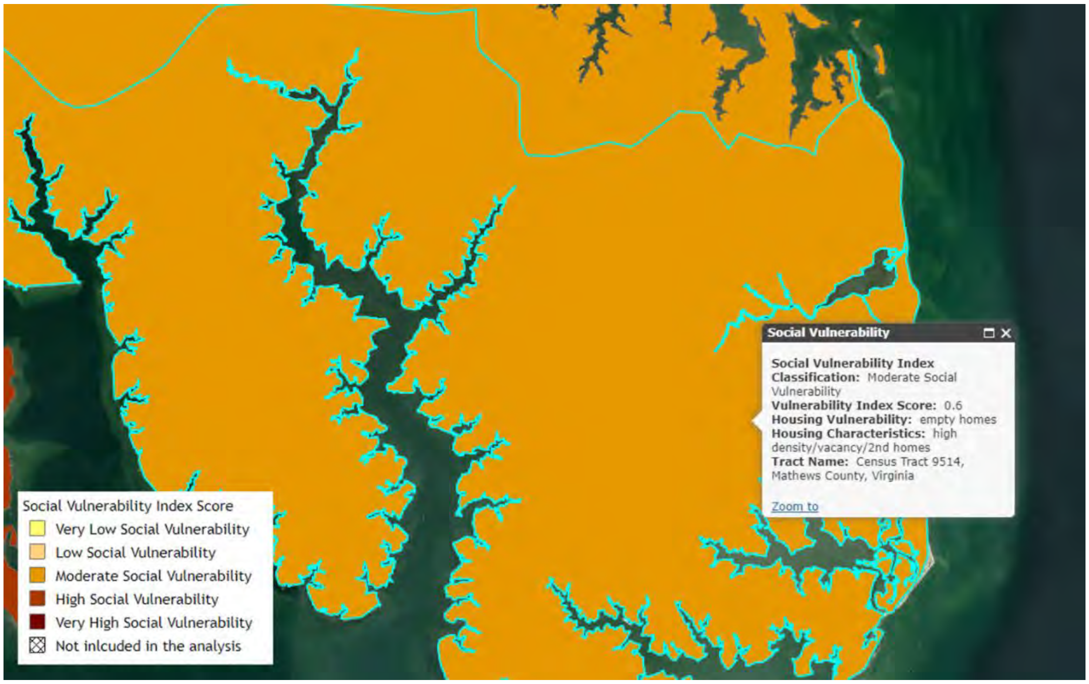
Please see **Figure 4** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

FIGURE 4: MAP OF THE PROJECT LOCATION WITHIN THE GREEN LOW-INCOME AREA.



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score (**Figure 5**). Additionally, the FEMA National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, classifies the site's social vulnerability as relatively moderate level of vulnerability, which is in agreement with h VDAPT Social Vulnerability Index Score (**Figure 6**).

FIGURE 5: VIRGINIA'S SOCIAL VULNERABILITY INDEX SCORE MAP FOR THE PROJECT LOCATION.



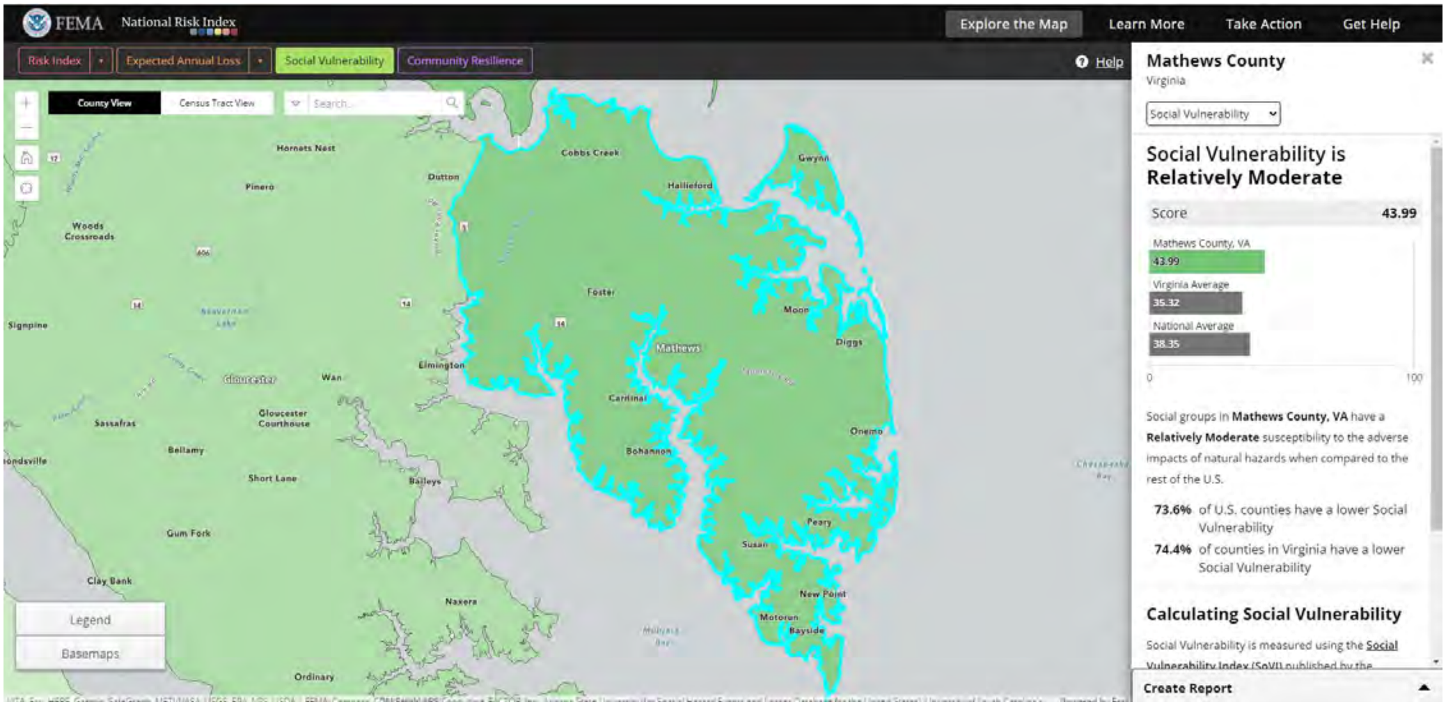
Social Vulnerability

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Zoom to

Social Vulnerability Index Score
- ☐ Very Low Social Vulnerability
- ☐ Low Social Vulnerability
- ■ Moderate Social Vulnerability
- ■ High Social Vulnerability
- ■ Very High Social Vulnerability
- ▨ Not inlcuded in the analysis

FIGURE 6: FEMA NATION RISK INDEX OF CENSUS TRACK WHERE THE PROJECT LOCATION.



Mathews County
Virginia

Social Vulnerability is Relatively Moderate

Score	43.99
Mathews County, VA	43.99
Virginia Average	35.32
National Average	38.35

Social groups in **Mathews County, VA** have a **Relatively Moderate** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

73.6% of U.S. counties have a lower Social Vulnerability
74.4% of counties in Virginia have a lower Social Vulnerability

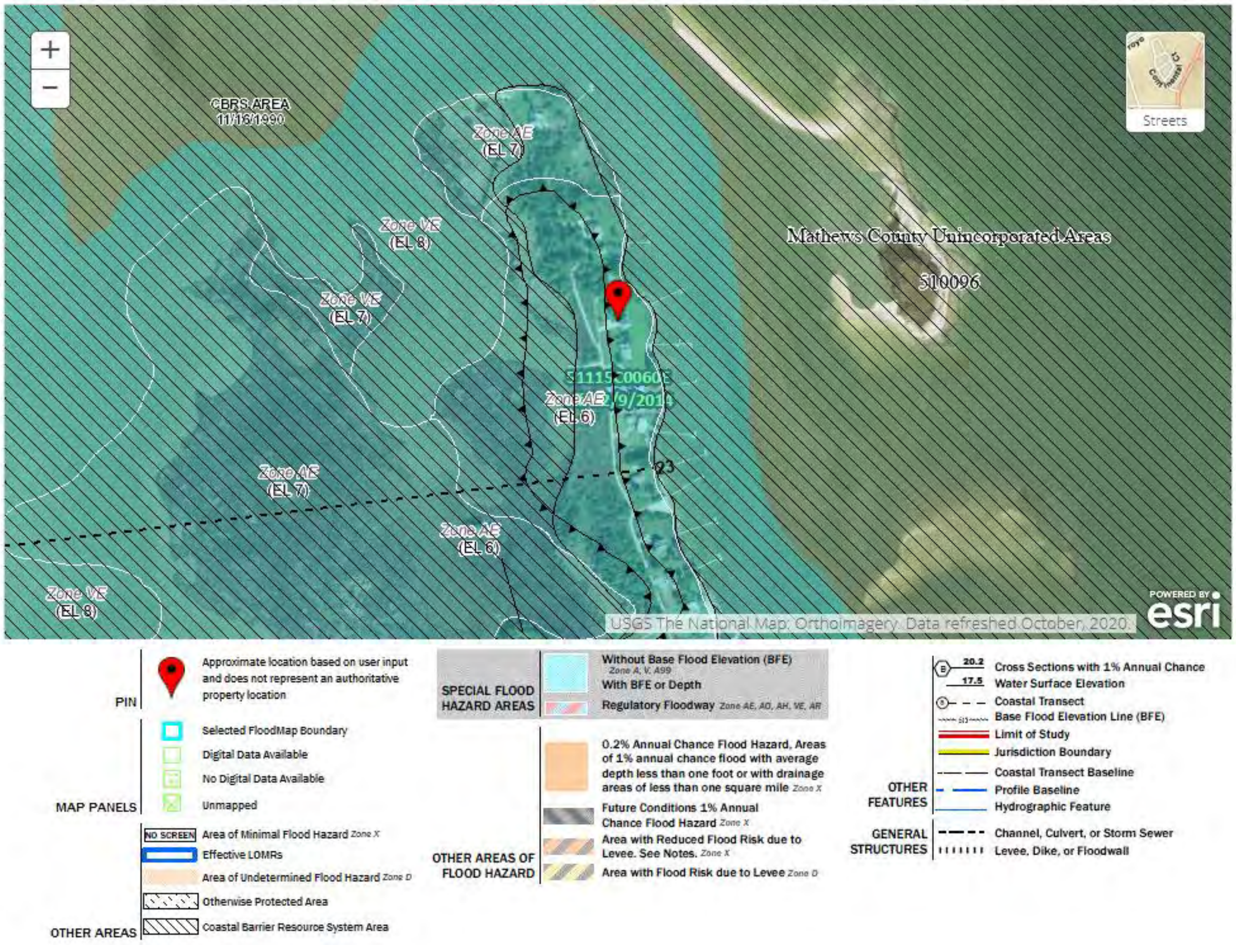
Calculating Social Vulnerability

Social Vulnerability is measured using the Social Vulnerability Index (SoVI) published by the

Create Report

The project is located at 162 Rigby Lane Diggs, VA 23045 (37.449067, -76.260698). The construction project will involve the installation of a 75 linear feet breakwater, 412 cubic yards of beach nourishment, and 100 linear feet of living shoreline. Within the project area there are 2 structures on the property including 1 residential home and 1 detached garage. Additionally, between the residential home and the Chesapeake Bay sits the residential septic system. Based on the location of the septic drain field and its proximity to the Bay, the drain field is at high risk of flooding and ultimately causing local water quality impairments. The structures are not classified as severe repetitive loss structures or repetitive loss structures. This site is located within the VE flood zone (**Figure 7**). Please see **Attachment 2** for the FIRMettes (last mapped 12/09/2014).

FIGURE 7: MAP OF FEMA FLOOD ZONES.



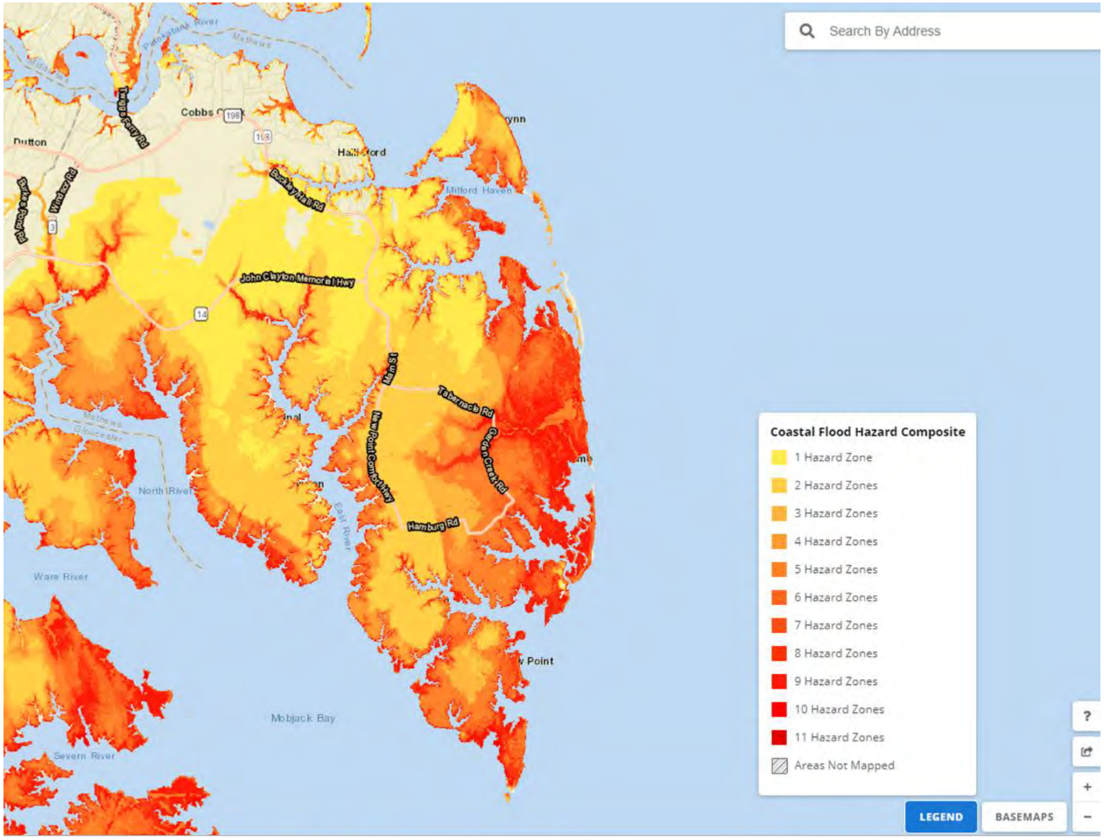
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 8** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 6,345.5 square feet of shoreline. Additionally, Figure 9 shows that approximately a quarter mile from the shoreline there was once a robust barrier island, known as Rigby Island, that protected this area of Mathews County from direct wave energy and winds from the Chesapeake Bay; however, between 1937 to 2017 Rigby Island has shrunk to less than a quarter of what it was. Consequently, this exposes the project location to the Chesapeake Bay and the site continues to become increasingly vulnerability to impacts by tropical, sub-tropical, and nor'easter events. **Attachment 3** lists 82 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

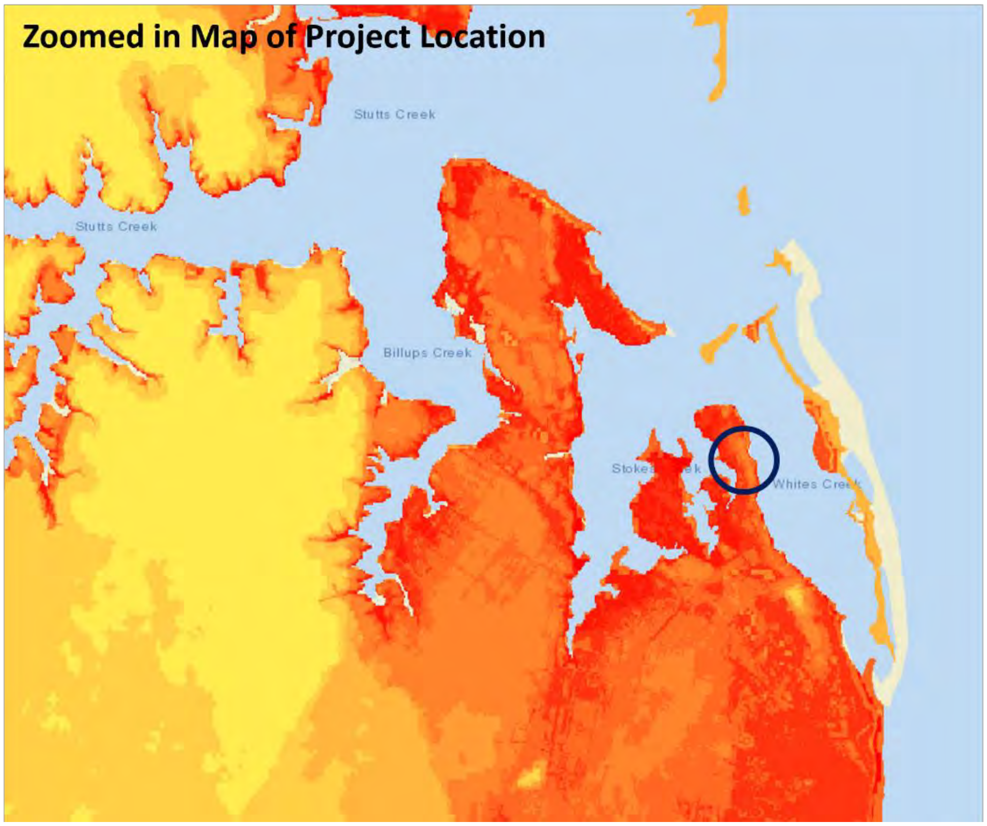
FIGURE 8: PROJECT LOCATION AND MAP OF THE SHORELINE CHANGE BETWEEN 1937 AND 2017. PLEASE NOTE THAT THE PROJECT AREA PARCEL IS OUTLINED IN WHITE.

FIGURE 9: MAP OF PROJECT LOCATION AND THE SHRINKING RIGBY ISLAND.

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding (**Figure 10**).

FIGURE 10: MAP OF PROJECT LOCATION AND RISK OF COASTAL FLOODING (NOAA, 2021).





For more information about this project area please see:

- The Middle Peninsula All Hazards Mitigation Plan identifies all hazards that impact the region - https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf .
- Mathews County Building Department administers the NFIP. Here is the link to the current floodplain ordinance: https://ecode360.com/8426620

NEED FOR ASSISTANCE –

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of $1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from $750,000 to over $1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The need for assistance is two-fold.

First, Mathews County's proximity to the Chesapeake Bay and numerous tidal rivers, coupled with the County's low elevation, creates an area at high risk of coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from the Virginia Institute of Marine Science (VIMS), relative sea level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et al. 2010). In addition to sea level rise, Mathews County has a history of being impacted by hurricanes, tropical storms, and recurrent flooding. As storms pass over or near the coast the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds causing a storm surge. Additionally, when a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide". In Mathews County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below mean sea level (FEMA 1987, 6). Thus, if a severe hurricane were to make landfall during high tide, an additional 1.2 feet of water would be added to the highest storm surge possible, which could create a storm tide of 16.2 feet (Rygel, 2005). Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and produce hurricane-force winds that push large amounts of sea water inland.

According to a study conducted by the Center for Coastal Resources Management (CCRM), a one-and-a-half-foot rise in sea level coupled with a three-foot storm surge, like what would be experienced in a strong tropical storm, could lead to 29% of Mathews County land mass being flooded. Also, this could potentially flood 139 miles of roads within the county. As a result, the County implements several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on the community. Getting projects such as the proposed constructed creates a more resilient community as flooding impacts persist and increase in intensity and frequency.

Second, at this project location, the shoreline is experiencing high erosion rates. At one time there was a barrier island approximately a quarter mile in front of the property that protected this area of Mathews County from direct wave energy and winds from the Chesapeake Bay. Now, as the barrier island complex has shrunk to a fourth of its original size, it no longer offers protection to this property. Therefore, the project location has seen the loss of bushes/shrubs on the shoreline as well as marsh grasses in just the past three years (**Figure 12**) The shoreline is now exposed and bears the brunt of the Chesapeake Bay and coastal storms. Without offering this section of shoreline some protection with the installation of a nature-based solution this property will continue to see their land erode into the Chesapeake Bay and flood waters will come closer to the structures on the property. Please see **Figure 11** for project location photos and **Attachment 4** for more photos.

FIGURE 11: PHOTOS OF THE ROBINSON PROPERTY.

Flooding in yard after an average rain event.

Extensive shoreline erosion.

FIGURE: 12: PHOTOS OF THE SHORELINE IN 2018 VS. 2021 THAT SHOWS THE LOSS OF MARSH GRASS AND BUSHES. THE BUSHES IN QUESTION ARE CIRCLED WITH A DOTTED LINE.

Photo taken in 2018 shows bushes on shoreline

Photos taken in 2021. Bushes are no longer protecting the shoreline

ALTERNATIVES –
Alternatives are not applicable to this project. This project employs a nature-based solution, and this project cost is not greater than $3 Million.

GOALS AND OBJECTIVES –
This project will install a 75 linear feet breakwater, 412 cubic yards of beach nourishment, and 100 linear feet of living shoreline. This project will reduce erosion, stabilize the shoreline, and build community resiliency. This nature-based solution will be installed as designed and permitted through the JPA process. Please see the permit package for each site within the project area in **Attachment 5**.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.
Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.
Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode.

Goal 2: Improve water quality
Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.
Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the living shoreline installed at this project location will:

1. **Stabilize the shoreline and reduce the overall erosion rate at the project location**. According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

2. **Provide ecosystem services to the community.** Since this project is proposing the installation of living shorelines, this project will have nutrient and sediment reduction benefit to local waters. According to a report titled, <u>Removal Rates of Shoreline Management Project</u>, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb./lf./yr.) and a phosphorus removal rate of 0.00861 lbs./lf./yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb./lf./yr. Therefore,

with a proposed project of 100 linear feet of living shoreline this has the ability of removing 1.218 pounds of nitrogen per year, 0.861 pounds of phosphorus per year and 4,200 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

3. **Prevent loss of property and life.** The installation of the proposed shoreline and flood protection measures will reduce erosion and flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Mathews County, which is local government.

APPROACH, MILESTONES, AND DELIVERABLES –

This project will follow the designs outlined and approved in the Joint Permit Application. Please see Attachment 5 for the JPA application, Design, and Permit Package. The below table outlines the components of the living shoreline and what will be installed at the project location.

	Total Project Location
Breakwater	75 Linear Feet (LF)
Living Shoreline	100 LF
Sand Nourishment	412 cubic yards

The anticipated timeline for this project could be as quick as 1 year, but no more than two years. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a two-year timeline will offer potential windows for planting the living shoreline - one in 2022 and one in 2023. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses for living shorelines should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them develop strong roots and leafy growth.

Below is the project timeline and project milestones for this project.

Receive funding notice - October 2021
Coordinate with property owners and the project contractor Earth Resources, INC. to review project timeline and project expectations – October 2021
Initiate site preparation at the project location - November 2021 to May 2022
Construction of the living shoreline – June 2022 to September 2022
Project Close out – November 2022

RELATIONSHIP TO OTHER PROJECTS –

For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 6** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program.** This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN –

The approved VMRC permits does not require a maintenance plan; therefore, the maintenance of this construction project will be in accordance with the permit requirements.

CRITERIA –

For local governments that are not towns, cities, or counties, the documentation providedfor the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
   YES.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   YES. Here's the link: Approved-8_19_DCR-packet_letterandplan.pdf (fighttheflood va.com)

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   YES. Please see **Attachment 1.**

4. **Has the applicant provided evidence of an ability to provide the required match funds?**
   YES. Please see the match commitment letter in **Attachment 8.**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of**

the project or study on prevention of flooding?
YES.

BUDGET NARRATIVE -
Below is the estimated budget for the proposed flood prevention and protection construction project that will result in a nature-based solution located in a low-income geographic area. Therefore, MPPDC staff is requesting 80% funding from DCR and will provide 20% match. Please see match commitment letters from the property owners in **Attachment 11**.

			DCR (80%)	Match from Owner (20%)	Project Total
Project Management Costs					
	Personnel		$ 4,494	$ 1,123	$ 5,617
	Fringe (26.58% on Salaries)		$ 1,195	$ 298	$ 1,493
SubAward/SubContract Agreement					
	Robinson	*Liv Shoreline 130 LF RipRap 3 tons per LF*	$31,200	$ 7,800	$ 39,000
	Robinson	*120 cubic yds sand*	$4,320	$ 1,080	$ 5,400
	Robinson	*Mobilization, demobolition, log mats, ground repair, plants*	$2,400	$ 600	$ 3,000
Indirect/IDC/Facilities & Administrative Costs (27.31%)			$ 7,015	$ 1,754	$ 8,769
Project totals			$ 50,624	$ 12,655	$ 63,279

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.

Also please note that the cost estimates for the construction of this project were supplied by the contractor, Earth Resources, Inc. Please see **Attachment 7**.

In summary:

Estimated total project cost:	$63,279
Amount of funds requested from the Fund (80% project total):	$50,624
Amount of cash funds available (20% project total):	$12,655

Finally, please see the authorization to request for funding in **Attachment 9.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission

Eligibility Information

Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**

Applicant Name:	Middle Peninsula Planning District Commission

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

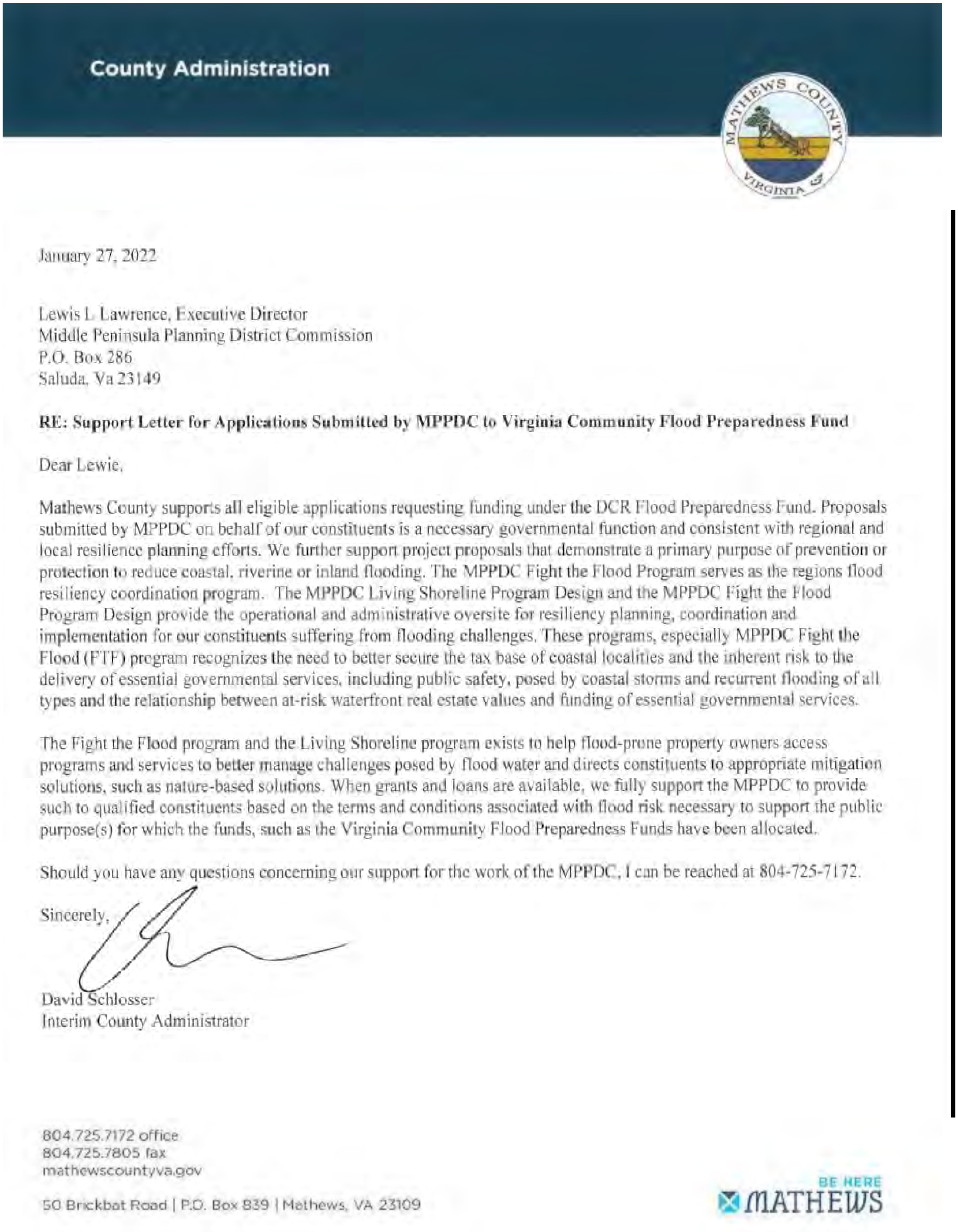
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		128

Appendix D: Checklist All Categories

Virginia Department of Conservation and RecreationCommunity Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter



County Administration

January 27, 2022

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Lewie,

Mathews County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-725-7172.

Sincerely,

David Schlosser
Interim County Administrator

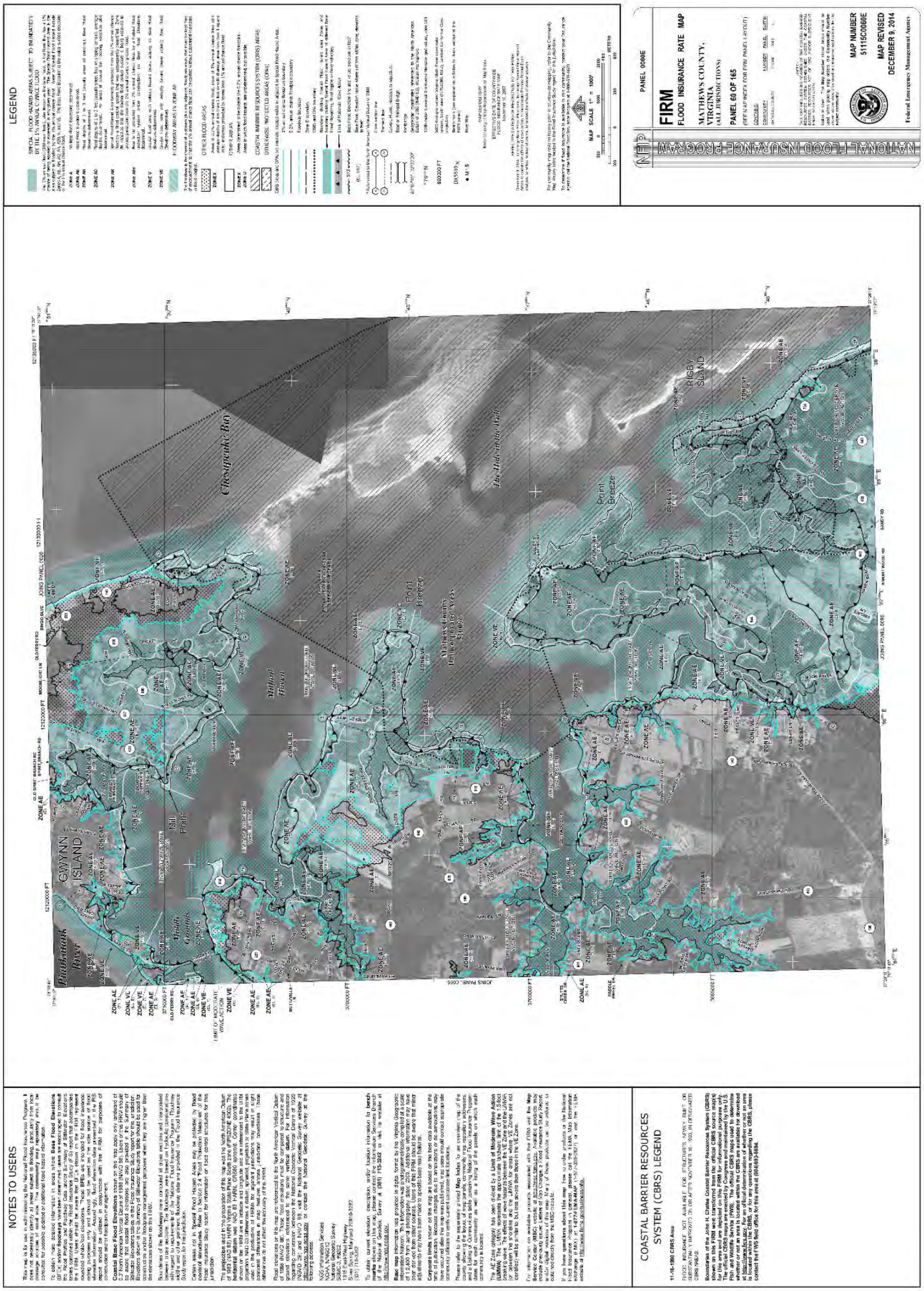
804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE
MATHEWS

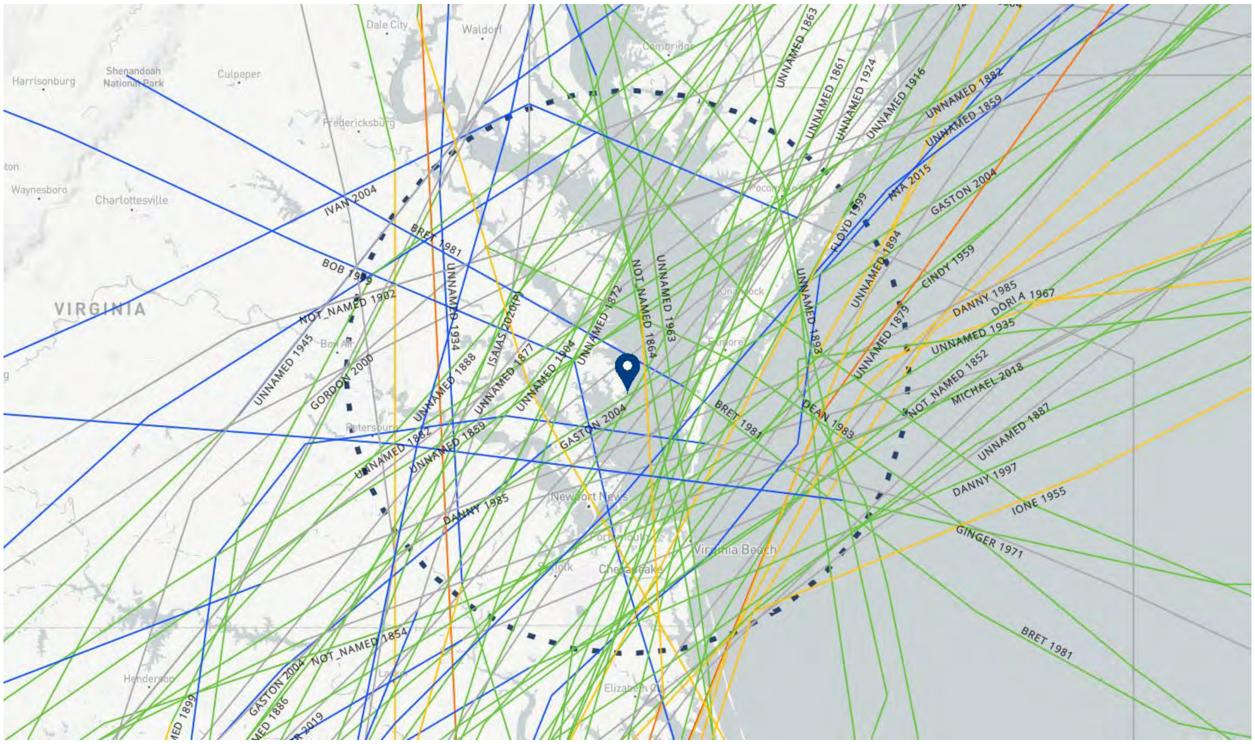
Attachment 2: Project Location FIRMette

Robinson Property (FIRMette #: **51115C0060E**)



Attachment 3: List of historic hurricanes impacting the project area.

Hurricane List



Search Filter Criteria

Location: 37.449067, -76.260698

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: Photos of the Robinson property shoreline.

Shoreline showing severe erosion and dying vegetation.

Since Robinson has only owned the property since 2018, he has not been through major storm events on this property, therefore he has provided photos of his neighbor's property during Hurricane Anna in 2015 that caused flood waters to come to the front steps of the house and damaged the pier.

Attachment 5: Robinson’s JPA, Design, and Permit Package

From: Roger MCKINLEY, SR.
To: jpa permits; Jeff Brown; iceman23233@yahoo.com
Subject: NEW JPA FOR RON ROBINSON
Date: Wednesday, April 21, 2021 9:02:38 AM
Attachments: RONROBINSON.pdf

--
ROGER MCKINLEY
691 MILLPOINT DR
HEATHSVILLE VA 22473
804-724-8094

- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA # 21-0900

APPLICANTS

Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply

Pre-Construction Notification (PCN) ☐ NWP # ____ (*For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned*)	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: MATHEWS COUNTY

Waterway at project site: WHITES' CREEK, CHESAPEAKE BAY

PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)

Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html

Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address: Contact Information:

MR. RONALD E. ROBINSON
3718 WILLOW BEND PLACE
RICHMOND, VA. 23233

Home (804) 405-3269
Work ( ) ________
Fax ( ) ________
Cell ( ) ________
e-mail ________

State Corporation Commission Name and ID Number (if applicable) ________

2. Property owner(s) legal name* and complete address, if different from applicant: Contact Information:

SAME

Home ( ) ________
Work ( ) ________
Fax ( ) ________
Cell ( ) ________
e-mail ________

State Corporation Commission Name and ID Number (if applicable) ________

3. Authorized agent name* and complete mailing address (if applicable): Contact Information:

ROGER MC KINLEY, SR.
691 MILL POINT DRIVE
HEATHSVILLE, VA. 22473

Home (804) 724-8094
Work ( ) ________
Fax ( ) ________
Cell (804) 436-6484
e-mail 691MILLPOINT6541@GMAIL.COM

State Corporation Commission Name and ID Number (if applicable) ________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

THE APPLICANT IS PROPOSING TO CONSTRUCT 1 ARMOR STONE BREAKWATER, WITH TWO ASSOCIATED ARMOR STONE SPURS.

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? X Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

   Contractor's name* and complete mailing address:

   MR. JEFF BROWN
   EARTH RESOURCES INC.
   PO. BOX 520
   LANCASTER, VA. 22503

   Contact Information:
   Home ( )
   Work (804) 435-1085
   Fax ( )
   Cell ( )
   email

   State Corporation Commission Name and ID Number (if applicable) ____________________

*** If multiple contractors, each must be listed and each must sign the applicant signature page.**

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

   Name and complete mailing address:
   SOUTHSIDE SENTINAL
   URBANNA, VA.

   Telephone number
   ( ) ________________

7. Give the following project location information:
   Street Address (911 address if available) 162 RIGBY LANE, DIGGS, VA.
   Lot/Block/Parcel# COUNTY SEC. # 22-A-117H
   Subdivision ____________________
   City / County MATHEWS COUNTY ZIP Code ________
   Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
   37-26-58.74 N / -76-15-38.59 W (Example: 36.41600/-76.30733)

   If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

   FROM THE INTX. OF RT 14 AND RT. 198, TURN ONTO RT. 643, HAVEN BRANCH ROAD, AND FOLLOW FOR 3.1 MILES TO A LEFT ONTO RT. 682, WHITES CREEK LANE, FOLLOW W.C.L. FOR 1.0 MI. TO THE PROPERTY ON THE RIGHT.

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose may be "to protect property from erosion due to boat wakes" and the secondary purpose may be "to provide safer access to a pier."

   THE PRIMARY PURPOSE OF THIS PROJECT IS TO STOP THE CURRENT EROSION THAT IS TAKING PLACE AND PROTECT THE APPLICANTS PROPERTY.

Part 1 - General Information (continued)

9. Proposed use (check one):
   X Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

    THIS PROJECT WILL BE PERFORMED FROM THE LAND WITH LANDSCAPE MATS BEING PLACED OVER ANY VEGETATION, ALLOWING ACCESS TO THE SITE.

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes X No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $ $35,000
    Approximate cost of that portion of the project that is channelward of mean low water:
    $ $16,000

13. Completion date of the proposed work: SEPTEMBER 30, 2021 - ______

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

    COUNTY SECTION 22A-117E
    ALI ABBASSI
    PO. BOX 749
    MATHEWS, VA. 23109

    COUNTY SECTION 22A-A- 117D
    NEIL V. D'AMATO
    118 RIGBY LANE
    DIGGS, VA. 23045

Part 2 - Signatures

1. Applicants and property owners (if different from applicant).
NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, U.S. Army Corps of Engineers, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

MR. RONALD ROBINSON
Applicant's Name (printed/typed) (Use if more than one applicant)

Ronald Robinson
Applicant's Signature (Use if more than one applicant)

4/13/2021
Date

SAME
Property Owner's Name (printed/typed) (If different from Applicant) (Use if more than one owner)

Property Owner's Signature (Use if more than one owner)

Date

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we), R. ROBINSON (Applicant's name(s)), hereby certify that I (we) have authorized ROGER MCKINLEY (Agent's name(s)) to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

R. McKinley
(Agent's Signature)

(Use if more than one agent)

04-09-21
(Date)

Ronald Robinson
(Applicant's Signature)

(Use if more than one applicant)

4/13/2021
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), R. ROBINSON (Applicant's Name(s)), have contracted MR. JEFF BROWN (Contractor's Name(s)) to perform the work described in this Joint Permit Application, signed and dated 04-15-21.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

EARTH RESOURCES
Contractor's name or name of firm

PO. BOX 520
LANCASTER, VA. 22503
Contractor's or firms address

VA# 2701029544
Contractor's License Number

Contractor's signature and title

Ronald Robinson
Applicant's signature

(use if more than one applicant)

4/13/2021
Date

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APPENDIX B

U.S. Army Corps
Of Engineers
Norfolk District

REGIONAL PERMIT 17 CHECKLIST

Expires: September 5, 2023

Please review the 18-RP-17 enclosure before completing this form and note 18-RP-17 can only be used for proposed PRIVATE USE structure(s) that comply with the terms and conditions of 18-RP-17. Copies can be obtained online at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/.

YES☒ NO☐	**(1)** Has the permittee reviewed the 18-RP-17 enclosure and verified that the proposed structure(s) is in compliance with all the terms, conditions, and limitations of 18-RP-17?
YES☒ NO☐	**(2)** Does the proposed structure(s) extend no more than one-fourth of the distance across the waterway measured from either mean high water (MHW) to MHW (including all channelward wetlands) or ordinary high water (OHW) to OHW (including all channelward wetlands)?
YES☒ NO☐	**(3)** Does the proposed structure(s) extend no more than 300 feet from MHW or OHW (including all channelward wetlands)?
YES☒ NO☐ N/A☐	**(4)** Does the proposed structure(s) attach to the upland at a point landward of MHW or OHW (including all channelward wetlands)?
YES☐ NO☐ N/A☒	**(5)** If the proposed structure(s) crosses wetland vegetation, is it an open-pile design that has a maximum width of five (5) feet and a minimum height of four (4) feet between the decking and the wetland substrate?
YES☐ NO☐ N/A☒	**(6)** Does the proposed structure(s) include no more than two (2) boatlifts and no more than two (2) boat slips?
YES☐ NO☐ N/A☒	**(7)** Is the open-sided roof structure designed to shelter a boat ≤ 700 square feet and/or is the open sided roof structure or gazebo structure designed to shelter a pier ≤ 400 square feet?
YES☐ NO☐ N/A☒	**(8)** Are all piles associated with the proposed structure(s) non-steel, less than or equal to 12" in diameter, and will less than or equal to 25 piles be installed channelward of MHW?
YES☐ NO☐ N/A☒	**(9)** Is all work occurring behind cofferdams, turbidity curtains, or other methods to control turbidity being utilized when operationally feasible and federally listed threatened or endangered species may be present?
YES☒ NO☐ N/A☐	**(10)** If the proposed structure(s) is to be located within an anadromous fish use area, the prospective permittee will adhere to the anadromous fish use area time of year restriction (TOYR) prohibiting in-water work from occurring between February 15 through June 30 of any given year if (1) piles are to be installed with a cushioned impact hammer and there is less than 492 feet between the most channelward pile and mean low water (MLW) on the opposite shoreline or (2) piles are to be installed with a vibratory hammer and there is less than 384 feet between the most channelward pile and MLW on the opposite shoreline.
YES☒ NO☐	**(11)** Is all work occurring outside of submerged aquatic vegetation (SAV) mapped by the Virginia Institute of Marine Sciences' (VIMS) most recent survey year and 5 year composite?
YES☒ NO☐	**(12)** Has the permittee ensured the construction and/or installation of the proposed structure(s) will not affect federally listed threatened or endangered species or designated critical habitat?
YES☒ NO☐	**(13)** Will the proposed structure be located outside of Broad Creek in Middlesex County, Fisherman's Cove in Norfolk, or the Salt Ponds in Hampton?
YES☒ NO☐	**(14)** Will the proposed structure(s) be located outside of the waterways containing a Federal Navigation Project listed in Permit Specific Condition 12 of 18-RP-17 and/or will all portions of the proposed structure(s) be located more than 85 feet from the Federal Navigation Project?

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YES☒ NO☐ **(15)** Will the proposed structure(s) be located outside a USACE Navigation and Flood Risk Management project area?

YES☒ NO☐ **(16)** Will the proposed structure(s) be located outside of any Designated Trout Waters?

YES☐ NO☐ N/A☒ **(17)** If the proposed structure(s) includes flotation units, will the units be made of materials that will not become waterlogged or sink if punctured?

YES☐ NO☐ N/A☒ **(18)** If the proposed structure(s) includes flotation units, will the floating sections be braced so they will not rest on the bottom during periods of low water?

YES☒ NO☐ **(19)** Is the proposed structure(s) made of suitable materials and practical design so as to reasonably ensure a safe and sound structure?

YES☒ NO☐ **(20)** Will the proposed structure(s) be located on the property in accordance with the local zoning requirements?

YES☐ NO☐ N/A☒ **(21)** If the proposed structure(s) includes a device used for shellfish gardening, will the device be attached directly to a pier and limited to a total of 160 square feet?

YES☐ NO☐ N/A☒ **(22)** If the proposed structure(s) includes a device used for shellfish gardening, does the permittee recognize this RP does not negate their responsibility to obtain an oyster gardening permit (General Permit #3) from Virginia Marina Resources Commission's Habitat Management Division?

YES ☒ NO ☐ **(23)** Does the permittee recognize this RP does not authorize any dredging or filling of waters of the United States (including wetlands) and does not imply that future dredging proposals will be approved by the Corps?

YES☒ NO☐ **(24)** Does the permittee understand that by accepting 18-RP-17, the permittee accepts all of the terms and conditions of the permit, including the limits of Federal liability contained in the 18-RP-17 enclosure? Does the permittee acknowledge that the structures permitted under 18-RP-17 may be exposed to waves caused by passing vessels and that the permittee is solely responsible for the integrity of the structures permitted under 18-RP-17 and the exposure of such structures and vessels moored to such structures to damage from waves? Does the permittee accept that the United States is not liable in any way for such damage and that it shall not seek to involve the United States in any actions or claims regarding such damage?

IF YOU HAVE ANSWERED "NO" TO ANY OF THE QUESTIONS ABOVE, REGIONAL PERMIT 17 (18-RP-17) DOES NOT APPLY AND YOU ARE REQUIRED TO OBTAIN WRITTEN AUTHORIZATION FROM THE CORPS PRIOR TO PERFORMING THE WORK.

IF YOU HAVE ANSWERED "YES" (OR "N/A", WHERE APPLICABLE) TO ALL OF THE QUESTIONS ABOVE, YOU ARE IN COMPLIANCE WITH REGIONAL PERMIT 17 (18-RP-17). PLEASE SIGN BELOW, ATTACH, AND SUBMIT THIS CHECKLIST WITH YOUR COMPLETED JOINT PERMIT APPLICATION (JPA). THIS SIGNED CERTIFICATE SERVES AS YOUR LETTER OF AUTHORIZATION FROM THE CORPS. YOU WILL NOT RECEIVE ANY OTHER WRITTEN AUTHORIZATION FROM THE CORPS; HOWEVER, YOU MAY NOT PROCEED WITH CONSTRUCTION UNTIL YOU HAVE OBTAINED ALL OTHER NECESSARY STATE AND LOCAL PERMITS.

I CERTIFY THAT I HAVE READ AND UNDERSTAND ALL CONDITIONS OF THE REGIONAL PERMIT 17 (18-RP-17), DATED SEPTEMBER 2018, ISSUED BY THE US ARMY CORPS OF ENGINEERS, NORFOLK DISTRICT REGULATORY BRANCH (CENAO-WRR), NORFOLK, VIRGINIA.

R. McKinley AGENT
Signature of Property Owner(s) or Agent

Date APRIL 15, 2021

Proposed work to be located at:
162 RIGBY LANE
DIGGS, VA. 23045

VMRC Number: SAME

Part 3 – Appendices (continued)

Appendix B: Projects for Shoreline Stabilization in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS.

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

   THIS PROJECT INCLUDES ONE ARMOR STONE BREAKWATER, 16' WIDE AND 75' LONG, FOR A TOTAL FOOTPRINT OF 1,200 SQ. FT. THIS APPLICATION ALSO INCLUDES TWO ASSOCIATED ARMOR STONE SPURS, THE FIRST MEASURING 12' X 45', WITH A FOOTPRINT OF 540 SQ. FT, THE SECOND SPUR MEASURES APPROX. 44' X 12', FOR A TOTAL FOOTPRINT OF 528 SQ. FT. ALL STRUCTURES WILL BE PLACED ON FILTER CLOTH.

2. What is the maximum encroachment channelward of mean high water? 36' feet.
   Channelward of mean low water? 20' feet.
   Channelward of the back edge of the dune or beach? 36' feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 00000000000 square feet
   - Non-vegetated wetlands 620 square feet
   - Subaqueous bottom 1,500 square feet
   - Dune and/or beach 0000000000 square feet

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? N/A Yes____ No.

   If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____Yes ____No.

   If no, please provide an explanation for the purpose and need for the additional encroachment.

Part 3 – Appendices (continued)

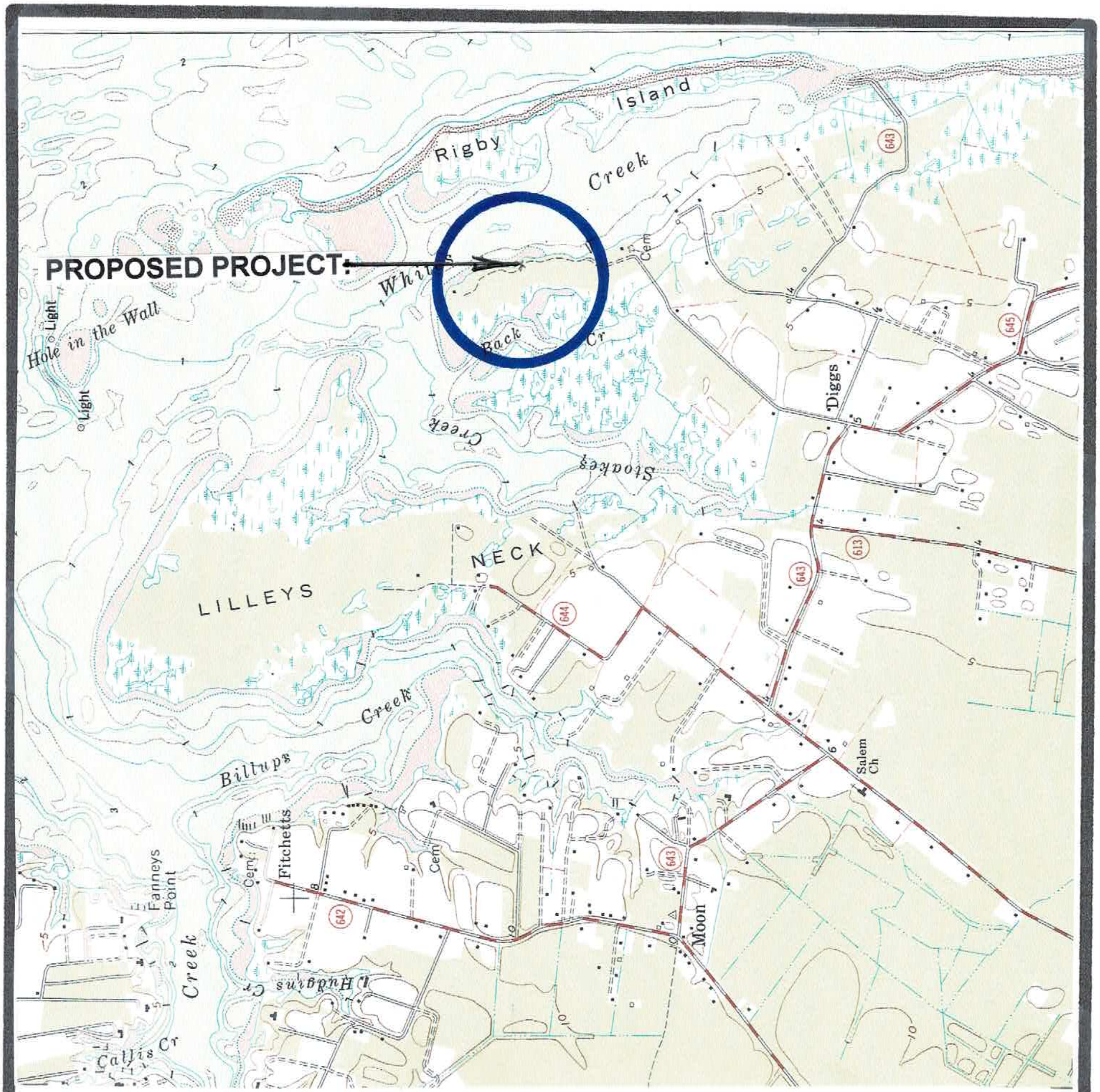
5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
   NOTE: Drawings must include construction details, including dimensions, design and all materials, including fittings if used.

   ALL OF THE PROPOSED STRUCTURES WILL BE CONSTRUCTED OF QUARRY STONE, CLASS II, ARMOR STONE, 150 TO 500 LBS. PER STONE. ALL WILL BE PLACED ON FILTER CLOTH.

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
   Core (inner layer) material 25 TO 75 pounds per stone Class size A1
   Armor (outer layer) material 150 TO 500 pounds per stone Class size CLASS II,

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

- Volume of material
  ____________ cubic yards channelward of mean low water
  ____________ cubic yards landward of mean low water
  ____________ cubic yards channelward of mean high water
  ____________ cubic yards landward of mean high water
- Area to be covered
  ____________ square feet channelward of mean low water
  ____________ square feet landward of mean low water
  ____________ cubic yards channelward of mean high water
  ____________ cubic yards landward of mean high water
- Source of material, composition (e.g. 90% sand, 10% clay):______________________________
- Method of transportation and placement:
  ____
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:



VICINITY MAP: 37-26-58.74 N 76-15-38.59 W

ROGER MC KINLEY, INC.
691 MILL POINT DRIVE
HEATHSVILLE, VA. 22473
804-724-8094

PROPOSED BREAKWATERS
CHESAPEAKE BAY
MATHEWS COUNTY
COUNTY SEC. #22-A-117H

MR. RON E. ROBINSON
3718 WILLOW BEND PLACE
RICHMOND, VA. 23233
APRIL 15, 2021

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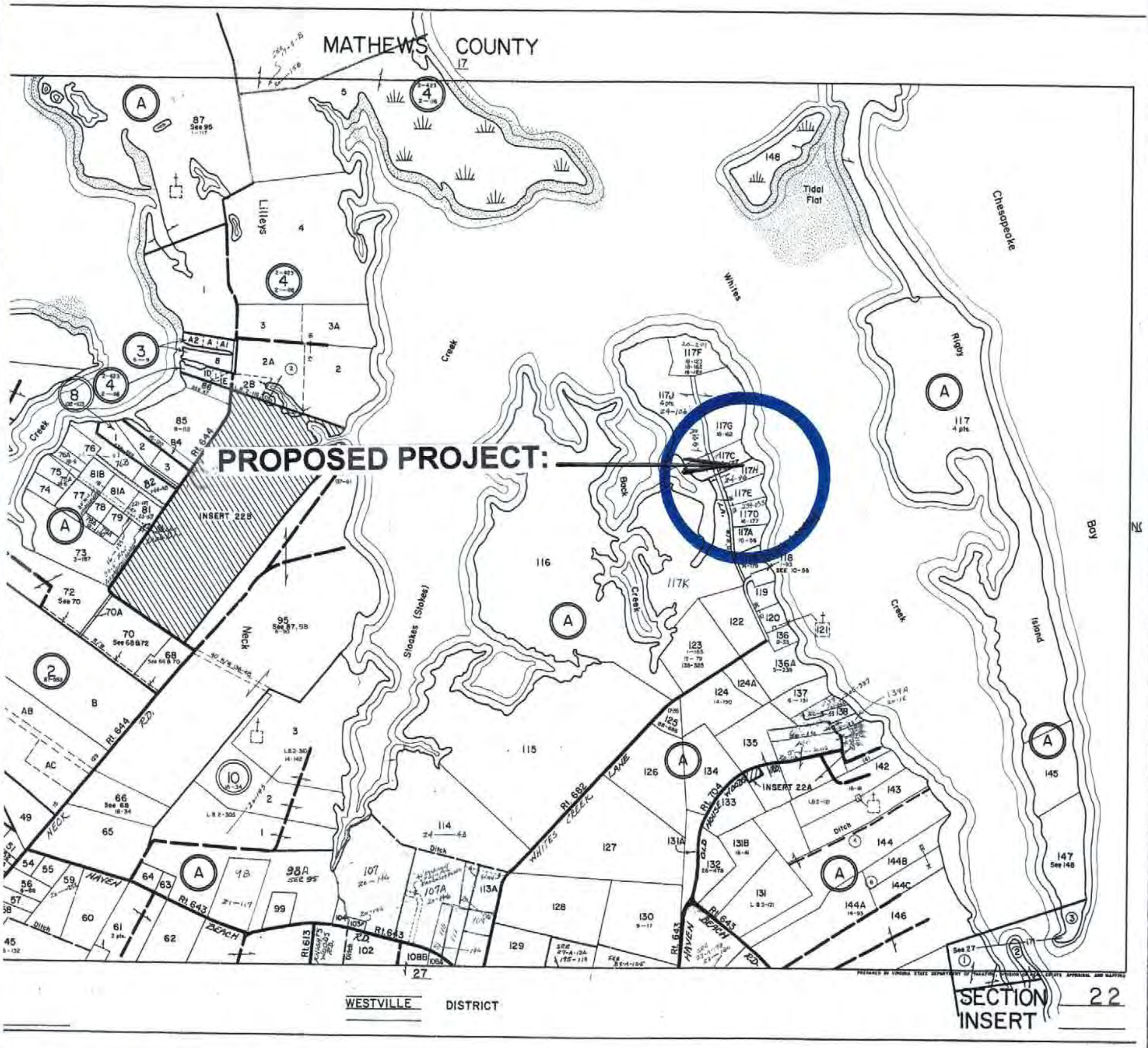

COUNTY SECTION MAP:

ROGER MC KINLEY, INC.
691 MILL POINT DRIVE
HEATHSVILLE, VA. 22473
804-724-8094

PROPOSED BREAKWATERS
CHESAPEAKE BAY
MATHEWS COUNTY
COUNTY SEC. #22-A-117H

MR. RON E. ROBINSON
3718 WILLOW BEND PLACE
RICHMOND, VA. 23233
APRIL 15, 2021

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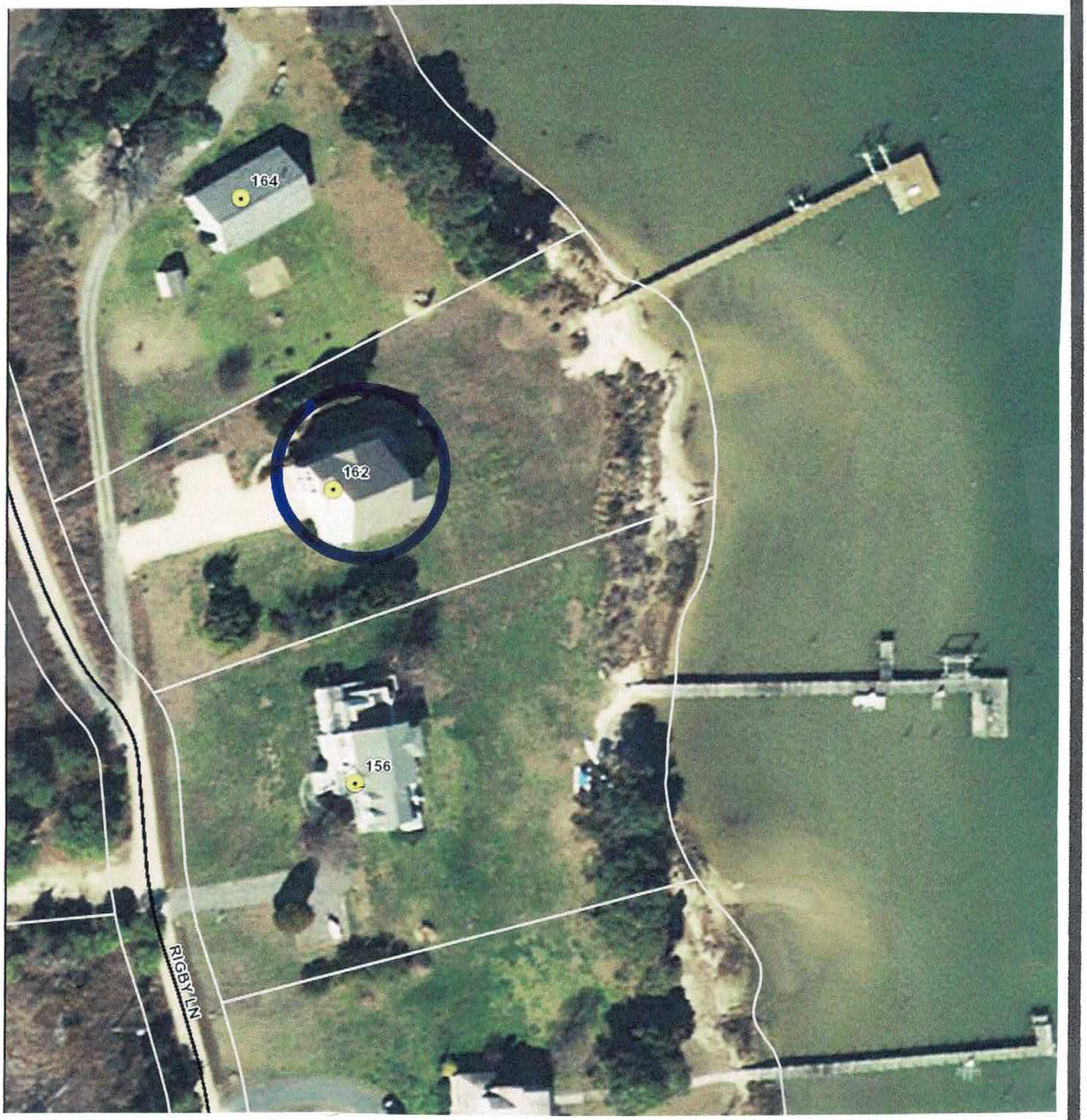
Received by VMRC April 21, 2021 /blh



ROGER MC KINLEY, INC.
691 MILL POINT DRIVE
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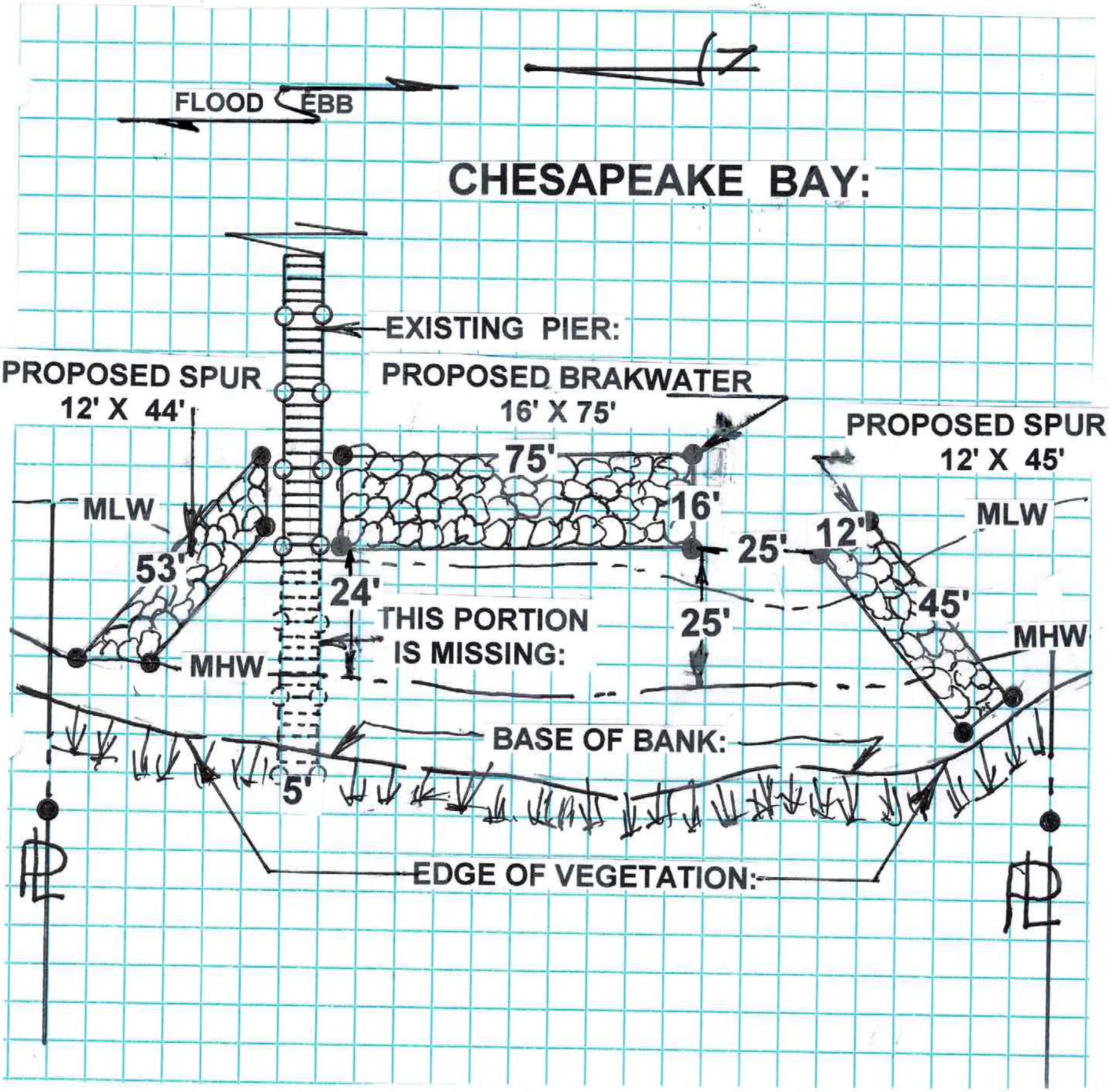
PROPOSED BREAKWATERS
CHESAPEAKE BAY
MATHEWS COUNTY
COUNTY SEC. #22-A-117H

MR. RON E. ROBINSON
3718 WILLOW BEND PLACE
RICHMOND, VA. 23233
APRIL 15, 2021



PLAN VIEW, BREAKWATERS: SCALE: 1" = 30'

ROGER MC KINLEY, INC.
691 MILL POINT DRIVE
HEATHSVILLE, VA. 22473
804-724-8094

PROPOSED BREAKWATERS
CHESAPEAKE BAY
MATHEWS COUNTY
COUNTY SEC. #22-A-117H

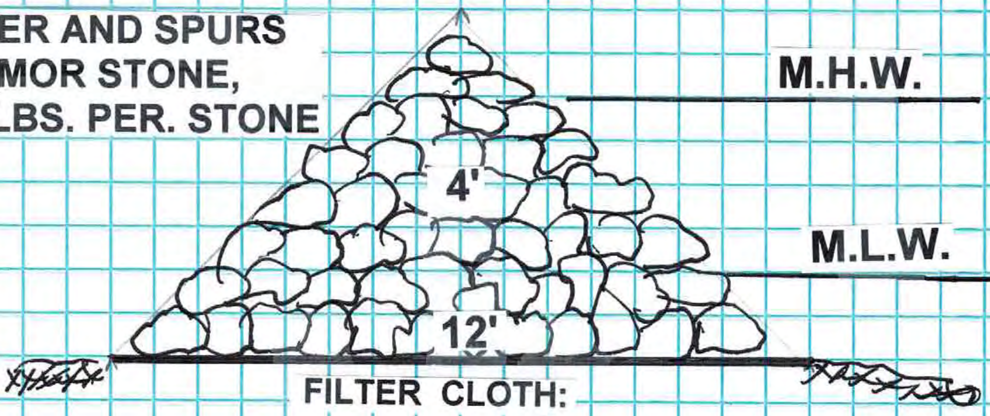
MR. RON E. ROBINSON
3718 WILLOW BEND PLACE
RICHMOND, VA. 23233
APRIL 15, 2021

BREAKWATER IS 16' WIDE
3/1 SLOPE ON SEAWARD SIDE
1 1/2 TO 1 ON LANDWARD SIDE
APPROX. 3.5 TONS PER FOOT.
1 FOOT ABOVE MHW.

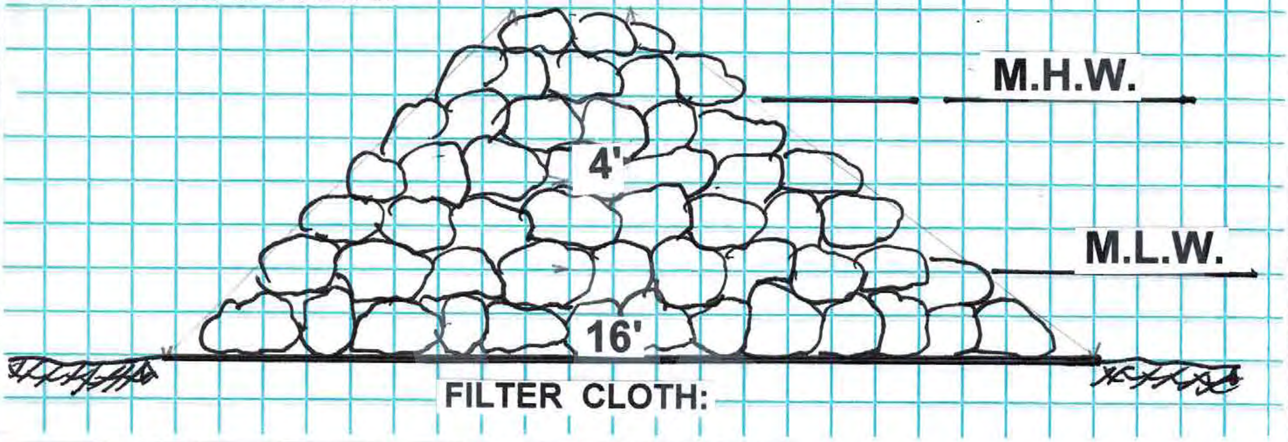
SPURS ARE 12 FEET WIDE
VARYING LENGTHS
2/1 SLOPE BOTH SIDES
3 TONS PER FOOT.
1 FEET ABOVE MHW.

BREAKWATER AND SPURS
CLAS II, ARMOR STONE,
150 TO 500 LBS. PER. STONE

SPURS:



BREAKWATER:



SECTION VIEW, BREAKWATER, AND GROINS:

ROGER MC KINLEY, INC.
691 MILL POINT DRIVE
HEATHSVILLE, VA. 22473
804-724-8094

PROPOSED BREAKWATERS
CHESAPEAKE BAY
MATHEWS COUNTY
COUNTY SEC. #22-A-117H

MR. RON E. ROBINSON
3718 WILLOW BEND PLACE
RICHMOND, VA. 23233
APRIL 15, 2021

Virginia Marine Resources Commission
Permit Application 20210900
Printed: Friday August 13, 2021 9:35 PM

Applicant: Ronald E. Robinson
3718 Willow Bend Place
Richmond, VA 23233

Application Number:	20210900	**Engineer:**	Mike Johnson
Application Date:	April 21, 2021	**Locality:**	Mathews
Permit Type:	VMRC Subaqueous	**Waterway:**	Chesapeake Bay West
Permit Status:	Paid Application Fees	**Expiration Date:**	July 31, 2024
Wetlands Board Action:	Approved as Proposed	**Public Hearing Date:**	July 7, 2021

Project Description: Breakwater

Project Dimensions:

BeachNourishment: 412 Cubic Yards

Breakwater: 75 Linear Feet

Living Shoreline: 100 Linear Feet

Virginia Marine Resources Commission

Photos for Permit Application 20210900

Printed: Friday August 13, 2021 9:35 PM

Date Photo Taken: 2021:06:23 13:27:26

Date Photo Taken: 2021:06:23 13:27:21

MATHEWS COUNTY WETLANDS BOARD PERMIT

Pursuant to Chapter 166 of the Mathews County Ordinance, the Mathews County Wetlands Zoning Board, hereinafter referred to as the Board, hereby grants unto **Ronald Robinson, 3718 Willow Bend Pl., Richmond, VA 23233,** hereinafter referred to as the Permittee, permission to undertake the following described project:

Tax Map #: 22 (A) 117 H Physical Address: 162 Rigby Ln.

Permit authorizing the installation of a stone breakwater to be 75' x 16' and two spurs. One spur will be 12' x 44' the other spur will be 12' x 45'. Project will take place along a portion of the Chesapeake Bay shoreline.

For a more complete description of said project, reference is hereby made to the Permittee's Application for Wetlands Permit, **Wetlands Application #21-0900;** however, information on the Permittee's Permit supersedes any conflicting information on the application.

This permit is granted subject to the following terms and conditions:

1. Permittee shall comply with all applicable laws, ordinances, rules and regulations affecting the conduct of the project. Failure to comply may lead to revocation of this permit. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining any and all other permits of authority required for the project.
2. The duly authorized agents of the Board shall have the right to enter upon the premises at any reasonable time for the purpose of inspecting the work being done pursuant to this permit.
3. This permit grants no authority to the Permittee to encroach upon the property rights, including riparian rights, of others.
4. The Permittee agrees to indemnify and save harmless the Commonwealth of Virginia and the County of Mathews from any liability arising from the establishment, operation or maintenance of said project.
5. The Permittee shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties, wetlands, and the natural resources of the County of Mathews, including implementation of sediment control measures such as silt fences and/or straw bales as needed. Failure to comply may lead to revocation of this permit.
6. This permit shall not be transferred without the prior written approval of the Board.

7. The project, **approved by the Board on July 7, 2021**, **shall be completed in 18 months** after which time this permit shall be void; however, upon proper application to the Board, the time for the completion of the project may be extended by the Board at its discretion. Any such application for extension of time shall be in writing prior to the expiration date hereof and shall specify the reasons for such extension and the expected date of completion of the project. **Expiration date of this project is January 7, 2023.**

8. This permit may be revoked at any time by the Board upon the failure of the Permittee to comply with any of the terms and conditions herein, including description of project.

IN WITNESS WHEREOF, the Mathews County Wetlands Zoning Board has caused these presents to be executed on its behalf by **Katy Walden, Chairman or James Knighton, Planner/Wetlands & Marine Projects Coordinator**. The signature of **Ronald Robinson or their agent** is affixed hereto as evidence of his/her acceptance of the terms and conditions hereof.

________________________________ ______________________________________

PERMITTEE MATHEWS COUNTY WETLANDS BOARD

STATE OF VIRGINIA, CITY/COUNTY OF _____________________, to-wit:
The foregoing instrument was acknowledged before me this ____ day of _________, 20___,

by _______________________________

Notary Public Signature: ______________________ My Commission expires: ______________

STATE OF VIRGINIA, CITY/COUNTY OF _____________________, to-wit:
The foregoing instrument was acknowledged before me this ____ day of _________, 20___,

by _______________________________

Notary Public Signature: ______________________ My Commission expires: ______________

Attachment 6: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)
The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and

~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000-$180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

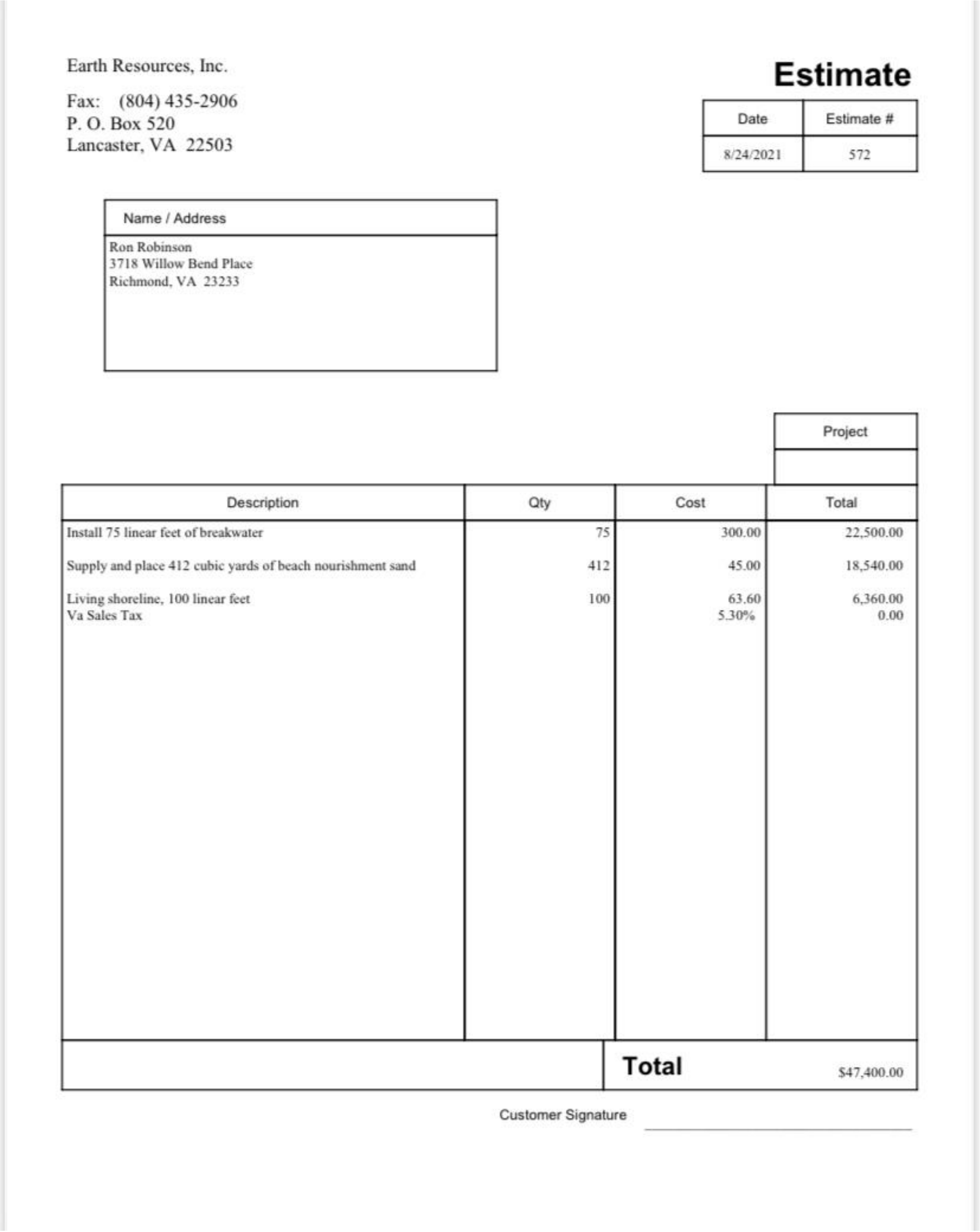
Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

Attachment 7: Project cost estimates



Earth Resources, Inc.

Fax: (804) 435-2906
P. O. Box 520
Lancaster, VA 22503

Estimate

Date	Estimate #
8/24/2021	572

Name / Address

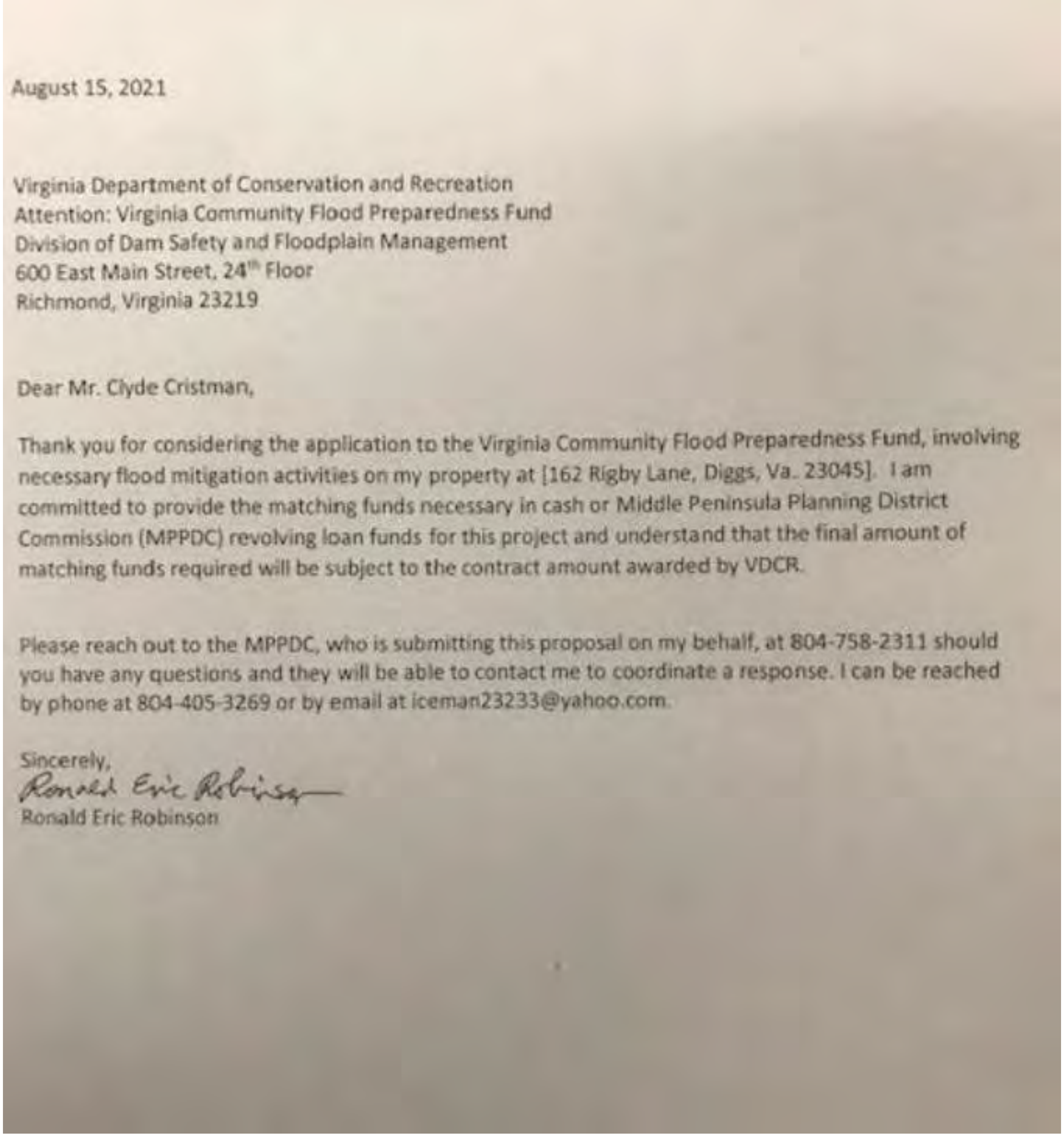
Ron Robinson
3718 Willow Bend Place
Richmond, VA 23233

Project

Description	Qty	Cost	Total
Install 75 linear feet of breakwater	75	300.00	22,500.00
Supply and place 412 cubic yards of beach nourishment sand	412	45.00	18,540.00
Living shoreline, 100 linear feet	100	63.60	6,360.00
Va Sales Tax		5.30%	0.00
		Total	$47,400.00

Customer Signature

Attachment 8: Match Commitment Letters



August 15, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

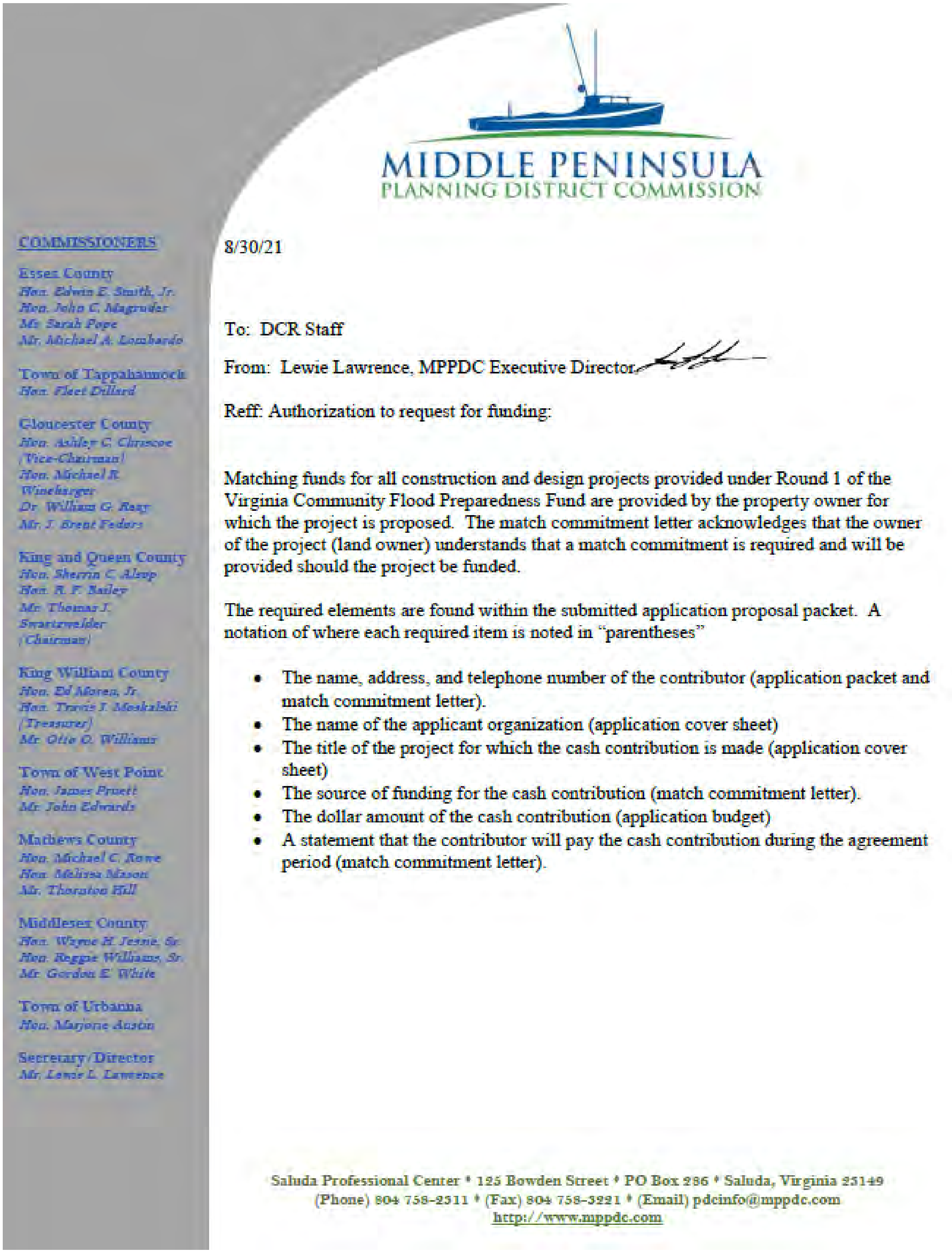
Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [162 Rigby Lane, Diggs, Va. 23045]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-405-3269 or by email at iceman23233@yahoo.com.

Sincerely,
Ronald Eric Robinson
Ronald Eric Robinson

Attachment 9: Authorization to request for funding



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

March 28, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Matthew Wells,

Enclosed in this packet are five applications for flood protection and prevention projects that involve implementation of nature-based shoreline solutions.

Among the applications are projects which are currently at the design stage. Design projects are requesting funds for professional designs and development of Joint Permit Applications which are needed before the property owner can move to construction of a nature-based flood protection solution.

Below is short summary of proposed projects in Middlesex County:

A. **Flood Prevention and Protection for Shore Drive for Gallimore**
(CID): 510098 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. There is significant erosion along the applicant's approximately 40 feet of shoreline due to wave and wind action. One river birch tree along the shoreline is close to falling into the water. The County of Middlesex previously made the property owner's deceased husband plant two river birch trees to replace one of the river birch trees after the tree had died. The owner prefers natural solutions for this location. Given that her husband is recently deceased, she has very limited financial means to help stabilize this communal front yard area.

B. **Flood Prevention and Protection for Bucks Landing for Lively**
(CID): 510098 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft Joint Permit Application or DEQ Water Quality Impact Assessment depending on the jurisdictional determination for the application to

reduce the impacts of storm events, flooding, and wetland loss. Rapid rainwater runoff is steadily eroding the property's steep bank located on Urbanna Creek, a tributary of the Rappahannock River (length of shoreline is approximately 165 feet). This has occurred over a period of years the property was purchase by the current owners. The primary concern is the flood-induced erosion that is undermining posts supporting steps to a pier and accelerated undermining tree roots causing tree loss. A steep bank under the pier steps and to each side of the pier steps is in danger of becoming a cliff that will not support pier steps or sustain plants. There is a potential design solution in mind. Enviro-Lock (Enviro-Lock.com) provides a system and products utilizing soil and sandbags that can be stacked five to eight feet and planted with natural plants creating a stable living shoreline "bank" minimizing or avoiding the utilization of traditional "rip rap" rock or other gray infrastructure.

C. Flood Prevention and Protection for Oakes Landing Road for Sandbach

(CID): 510098 Total Cost (from individual project application): $24,963

This proposal requests funding for the development of a nature-based shoreline design solution and draft Joint Permit Application to reduce the impacts of storm events, flooding, and wetland loss. The project is located at 1387 Oakes Landing Road, Saluda, VA 23149 (-76.5831, 37.62254). The property was purchased in 2019 and has experienced a number of issues (length of shoreline in approximately 200 feet). When the property was purchased, there was an undercut like a cave along the shoreline. Some of it has subsequently caved in. When it rains hard, the hill is eroding from the top; now lots of roots are showing on the hill. Several trees have come down and more are in danger of falling. The location is on Urbanna Creek which experiences lots of wave action from boating traffic. Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his recommendation is included and incorporated into the proposal.

D. Flood Prevention and Protection for Wooldridge Cove Drive for Stone

(CID): 510098 Total Cost (from individual project application): $24,963

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. Relative sea-level rise and tidal and storm surge waters are undercutting the banks along the property (length of shoreline is 540 feet). An old, deteriorating wood bulkhead has holes in it which is allowing the backfill to behind the bulkhead to erode. There are also trees falling into the water with several more having roots exposed to salt water at the base of the steep eroding bank. Chris Davis of ReadyReef Inc. has visited the site and suggested some possible nature-based solutions that made sense in lieu of riprap. As with many other properties, the last few years have been more damaging than in past decades. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included.

E. **Flood Prevention and Protection for Bland Point Road**
(CID): 510098 Total Cost (from individual project application): $17,399
This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. This private property has a 330-foot shoreline that is steep and the water is undercutting the bank; therefore, the top of the bank is steeply facing down toward Moore's Creek causing significant runoff. The trees that are along the bank are now at risk of falling into the water as the erosion continues. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included.

The total project costs for Middlesex County Round 3 design applications are **$102,123** and MPPDC staff are requesting **$71,490** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at llawrence@mppdc.com or by phone at 804-758-2311.

Lewis Lawrence
Executive Director

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Shore Drive for Gallimore

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510098

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Middlesex County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510098

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51119C0215E

Total Cost of Project: **$17,399**

Total Amount Requested: **$12,180**

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. There is significant erosion along the applicant's approximately 40 feet of shoreline due to wave and wind action. One river birch tree along the shoreline is close to falling into the water. The County of Middlesex previously made the property owner's deceased husband plant two river birch trees to replace one of the river birch trees after the tree had died. The owner prefers natural solutions for this location. Given that her husband is recently deceased, she has very limited financial means to help stabilize this communal front yard area, but with no guidelines the applicant must be treated as all other applicants.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe.
Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem-based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely "green" (i.e., consisting of only ecosystem elements) or "hybrid" (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Shore Drive in Middlesex County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*

  - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Middlesex's Comprehensive Plan can be found at: https://www.co.middlesex.va.us/252/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

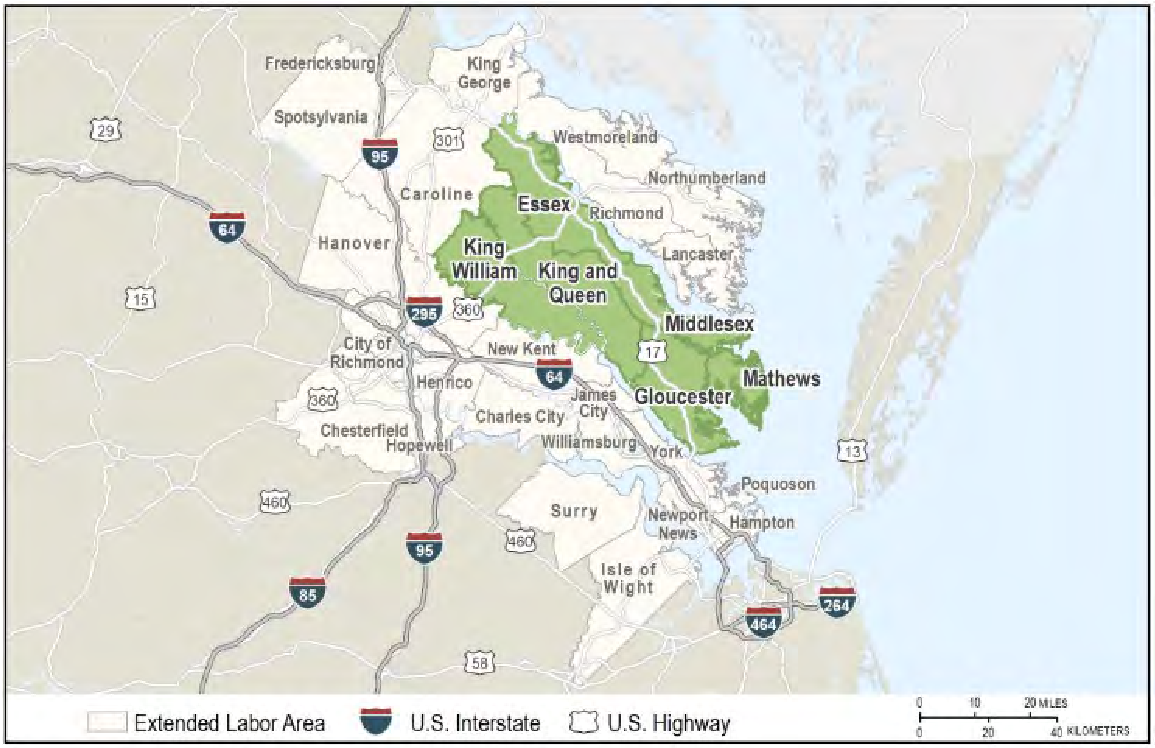
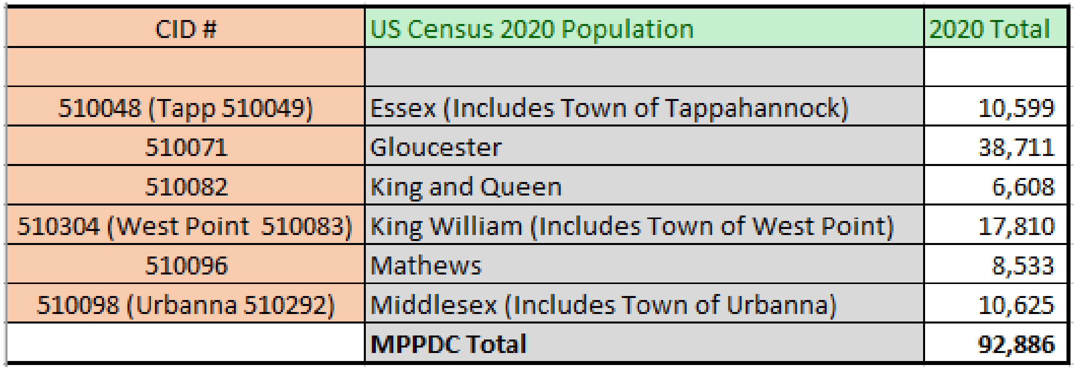


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature-based solution on one private property on Shore Drive in Middlesex County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

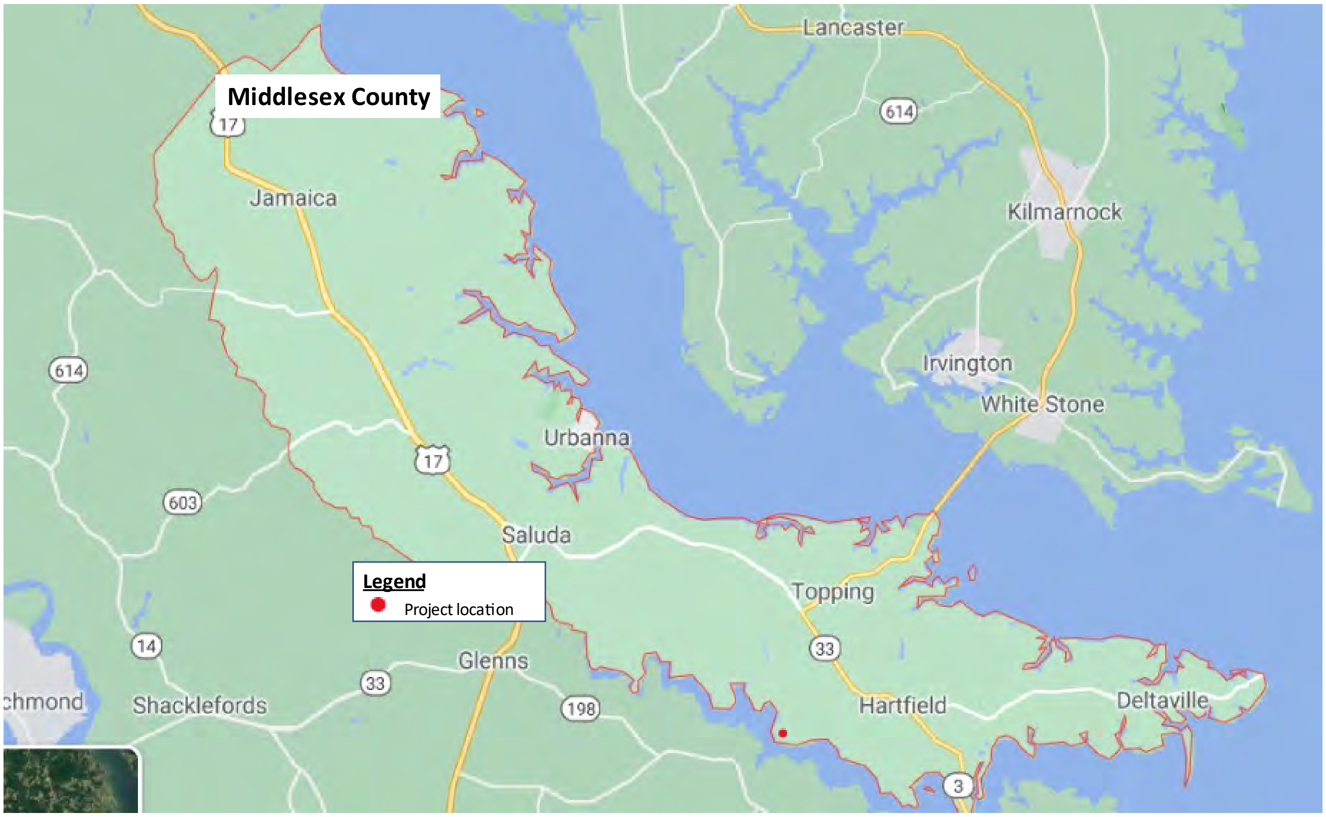
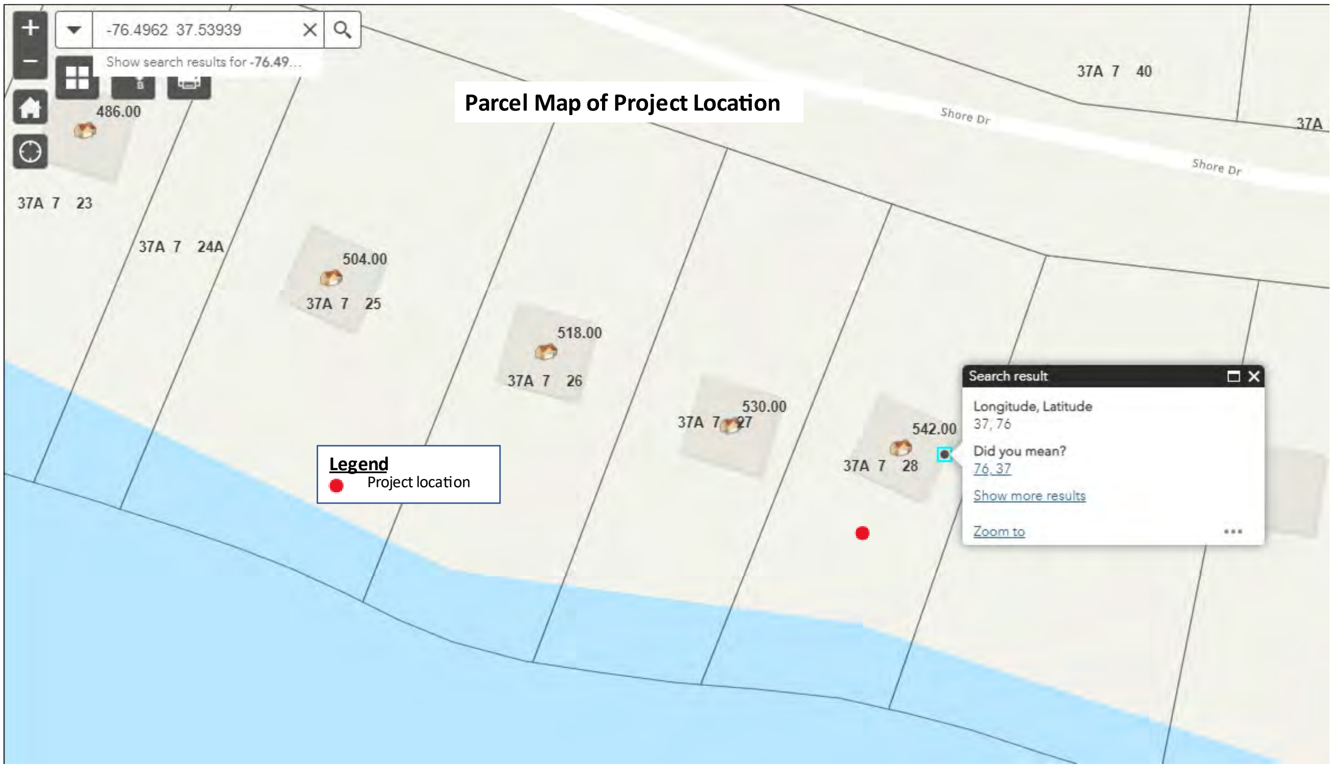
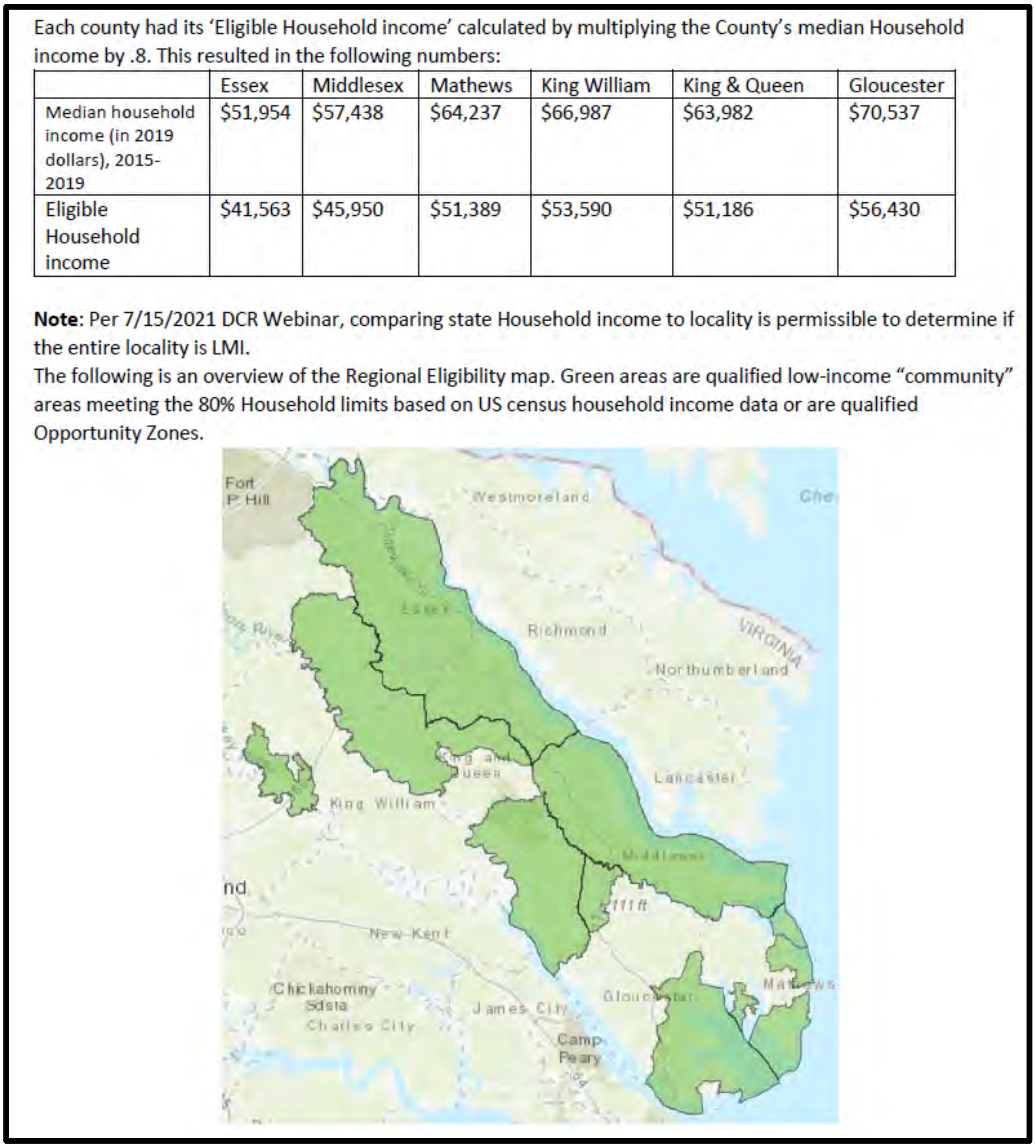


Figure 4. Parcel Map of Project Location



Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

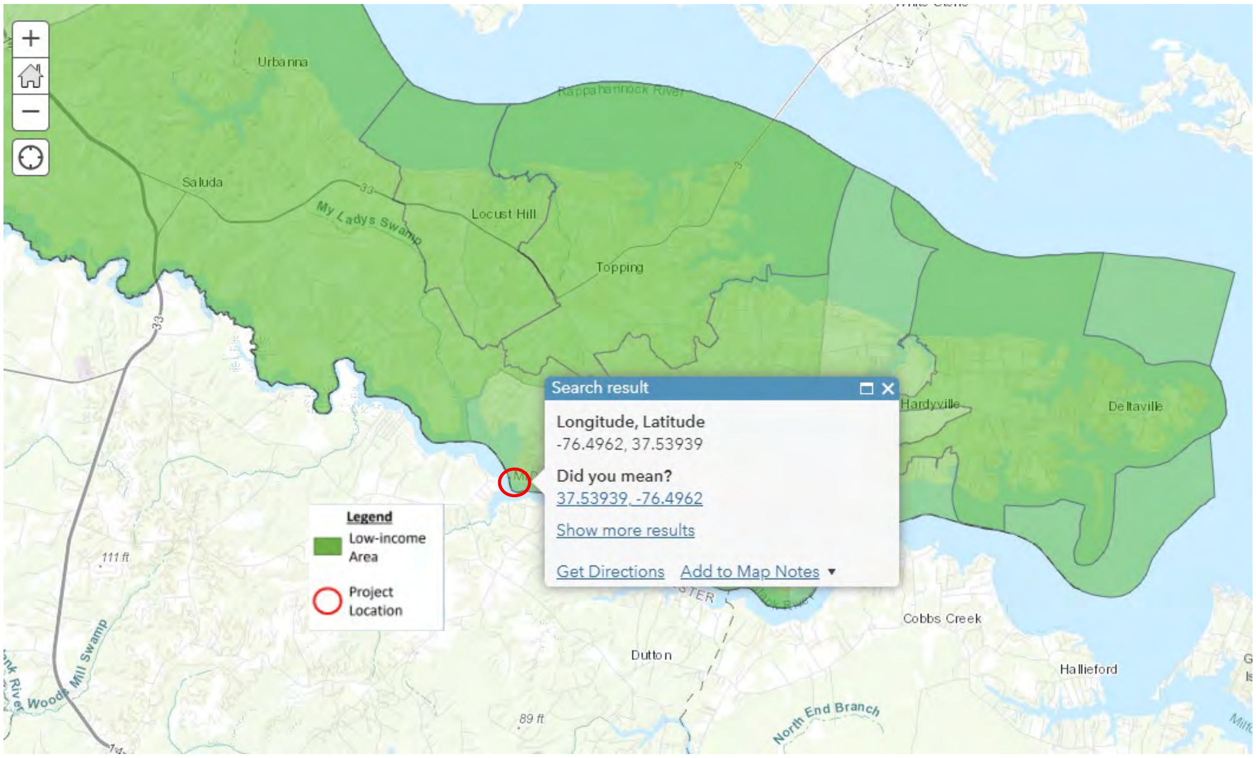
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

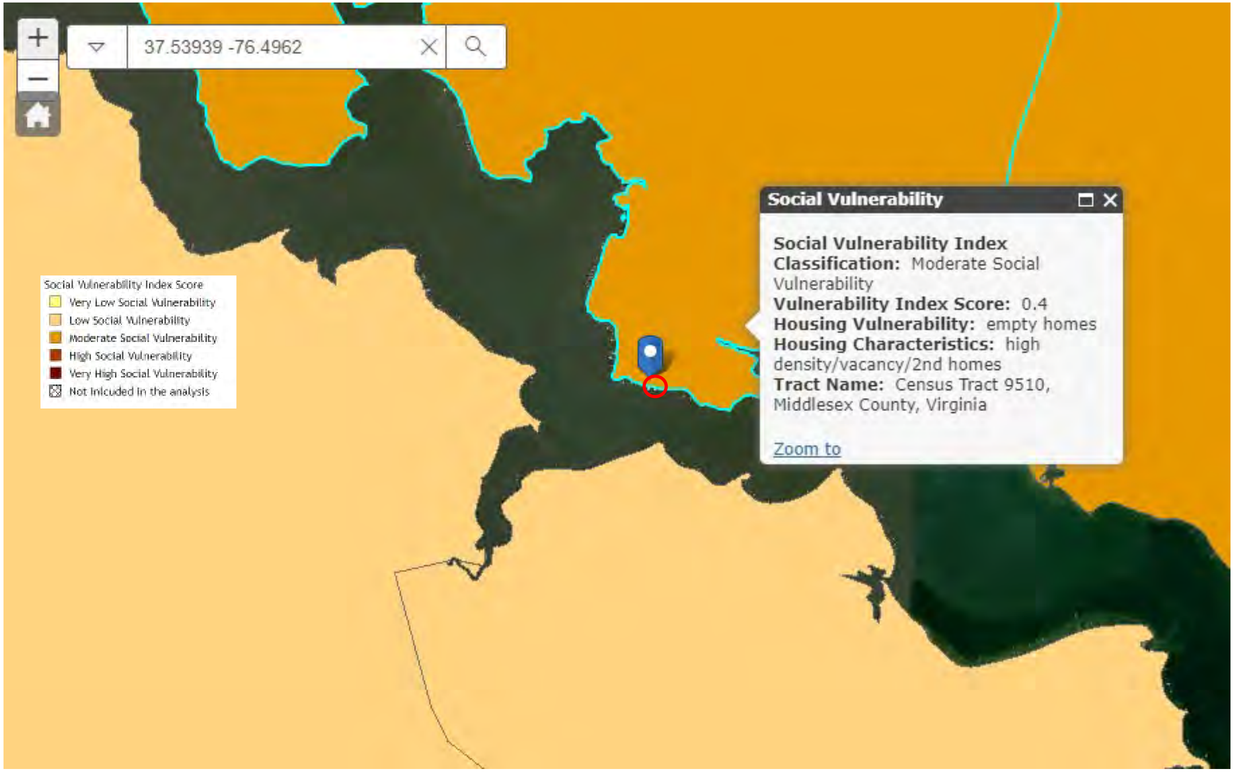
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

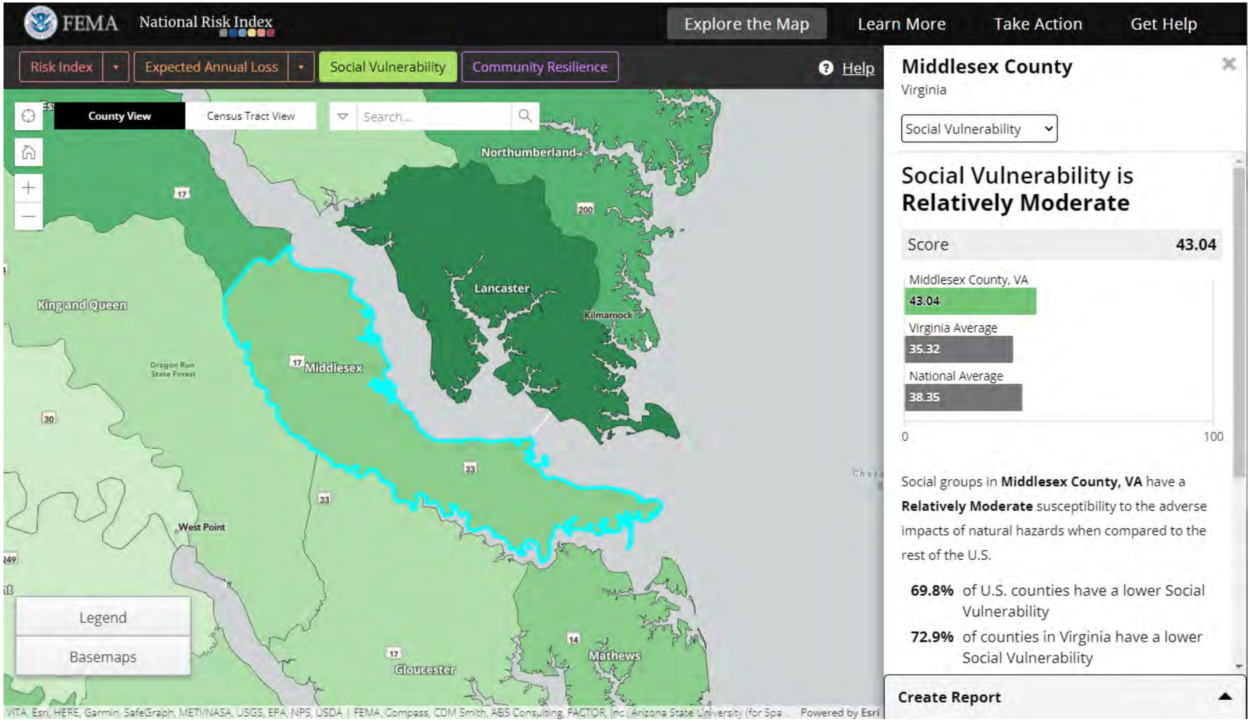


37.53939 -76.4962

Social Vulnerability

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.4
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9510, Middlesex County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Middlesex County
Virginia

Social Vulnerability

Social Vulnerability is **Relatively Moderate**

Score 43.04

Social groups in **Middlesex County, VA** have a **Relatively Moderate** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

69.8% of U.S. counties have a lower Social Vulnerability

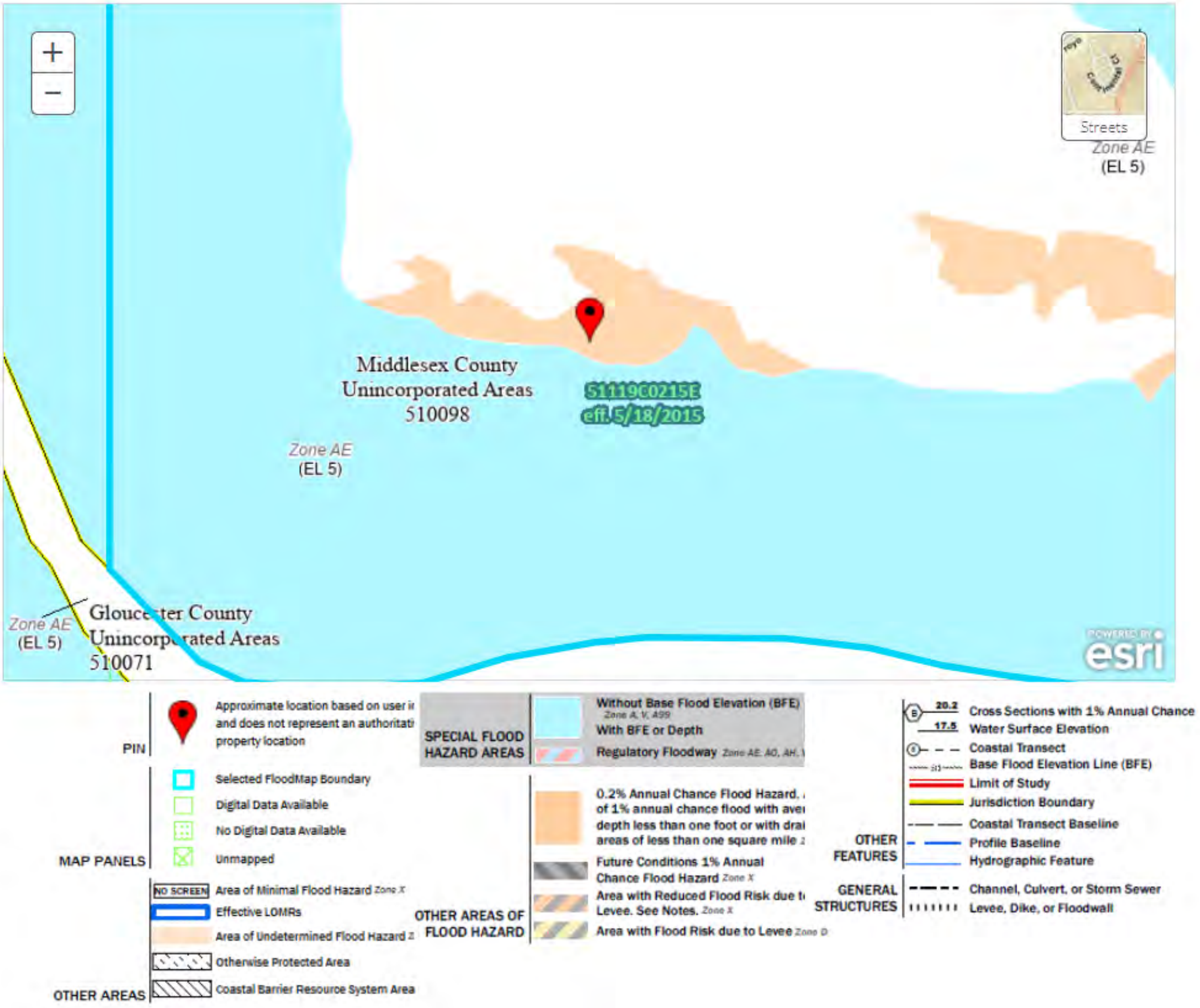
72.9% of counties in Virginia have a lower Social Vulnerability

The project is located at 542 Shore Drive, Hartfield, VA 23071 (-76.4962, 37.53939). The property was purchased in 1988 and has experienced a number of issues over the past 30 plus years. There is significant erosion along the shoreline due to wave and wind action (length of shoreline is approximately 40 feet). One river birch tree is close to falling into the water. The County of Middlesex previously made the property owner's deceased husband planted two river birch trees to "replace" one of the river birch trees he removed after it died. Natural water plants are idea for this location as a matter of a nature-based solution. The property owner has made the pier an open access location for the community to utilize. Given that her husband is recently deceased, she has very limited financial means to help stabilize this communal front yard area. See accompanying pictures below.

Please see **Appendix 2** for additional property photos.

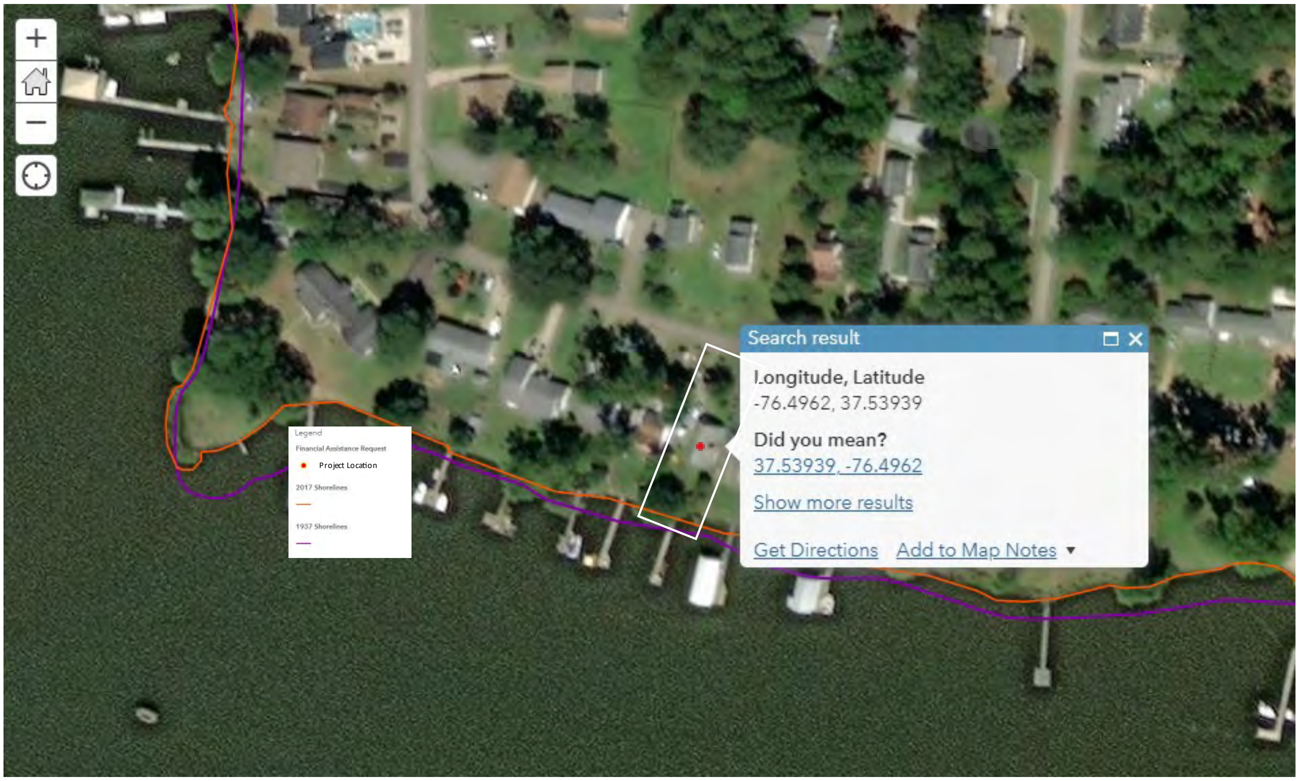
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 5/18/2015).

Figure 9: Map of FEMA Flood Zones



Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 1,106.8 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017



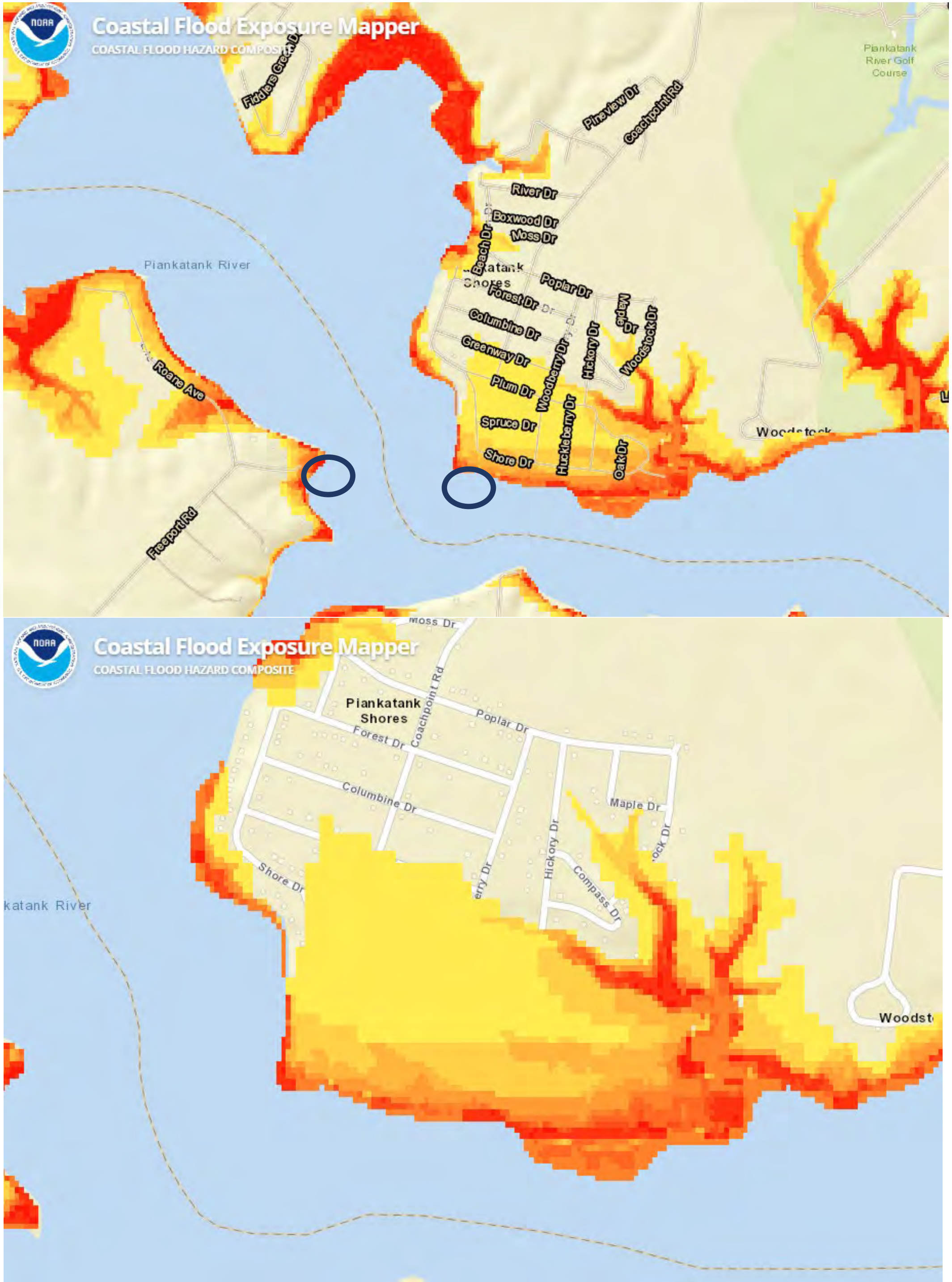
Search result

Longitude, Latitude
-76.4962, 37.53939

Did you mean?
37.53939, -76.4962

Finally, according to NOAA’s Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Middlesex County's current floodplain ordinance can be found at:*

https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF.

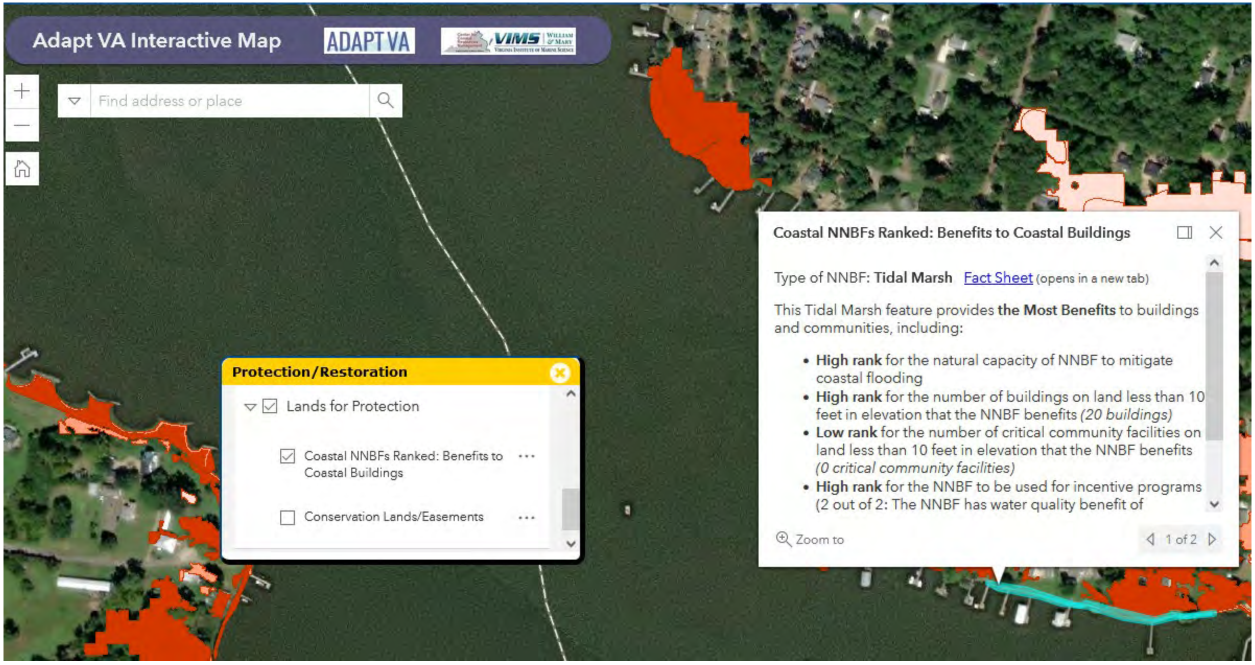
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in Figure 12. All Round 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Tidal Marsh** Fact Sheet (opens in a new tab)

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **High rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(20 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs (2 out of 2: The NNBF has water quality benefit of

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

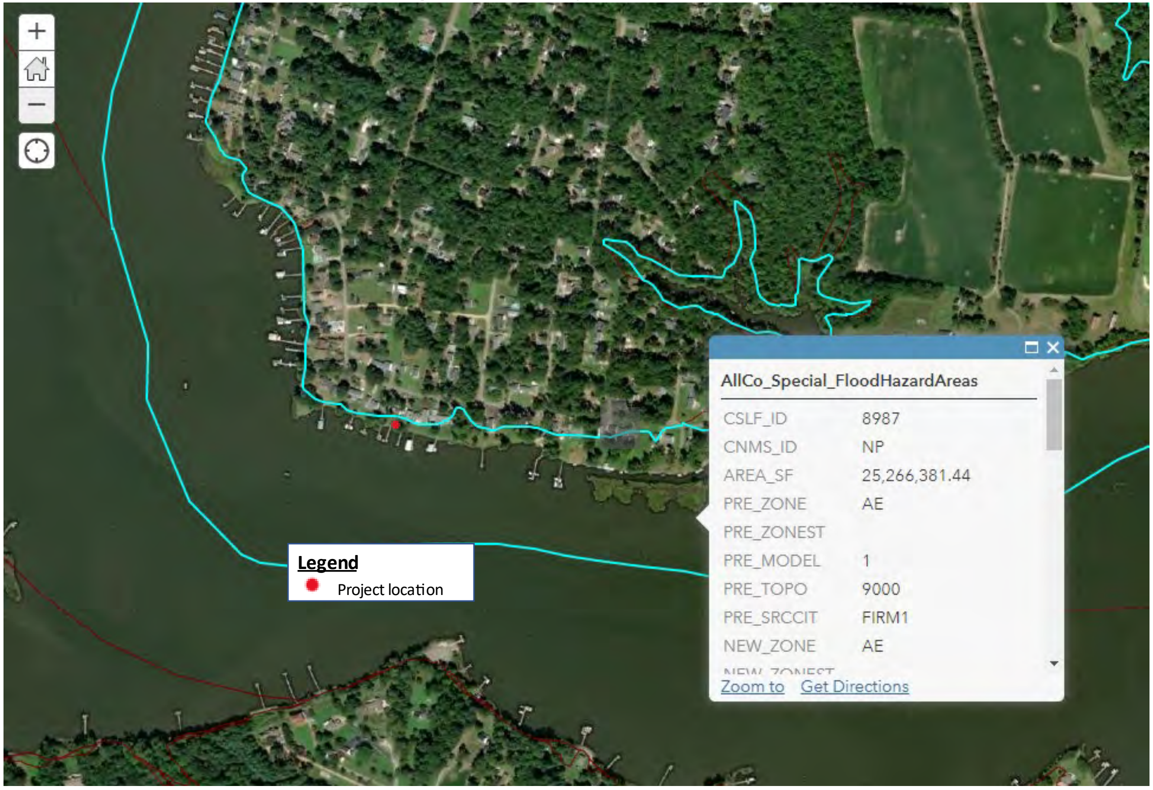
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	8987
CNMS_ID	NP
AREA_SF	25,266,381.44
PRE_ZONE	AE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	9000
PRE_SRCCIT	FIRM1
NEW_ZONE	AE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

A maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	X Yes ☐No

Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration X Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. Any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)]		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

SCOPE OF WORK CHECKLIST.

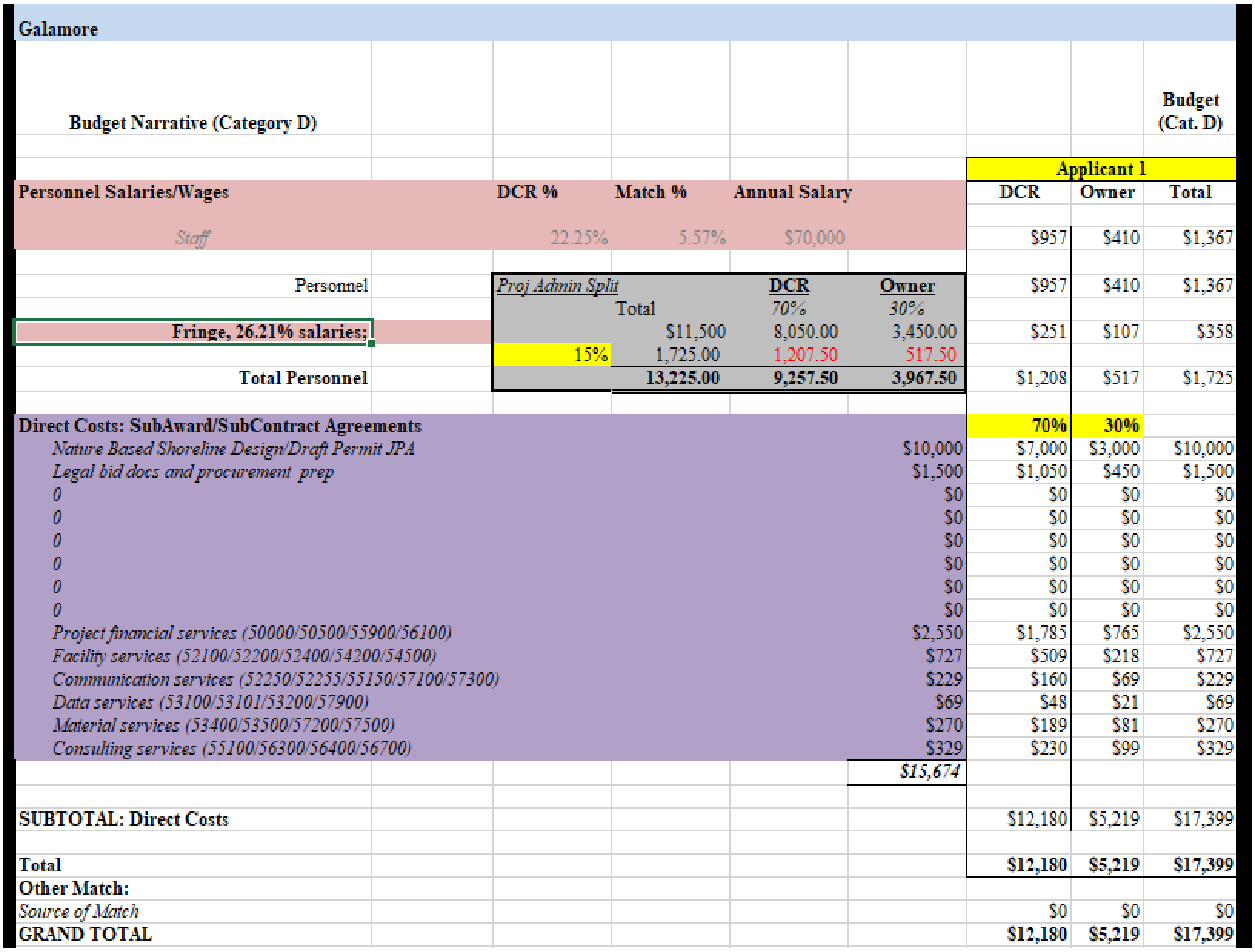
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

If the applicant is determined to be low-income, MPPDC will attempt to use loan forgiveness from VRA revolving loan funding to help to reduce or eliminate the match requirement. To be able to do this, MPPDC will rely on DCR staff to advise how to determine if the applicant is low income.

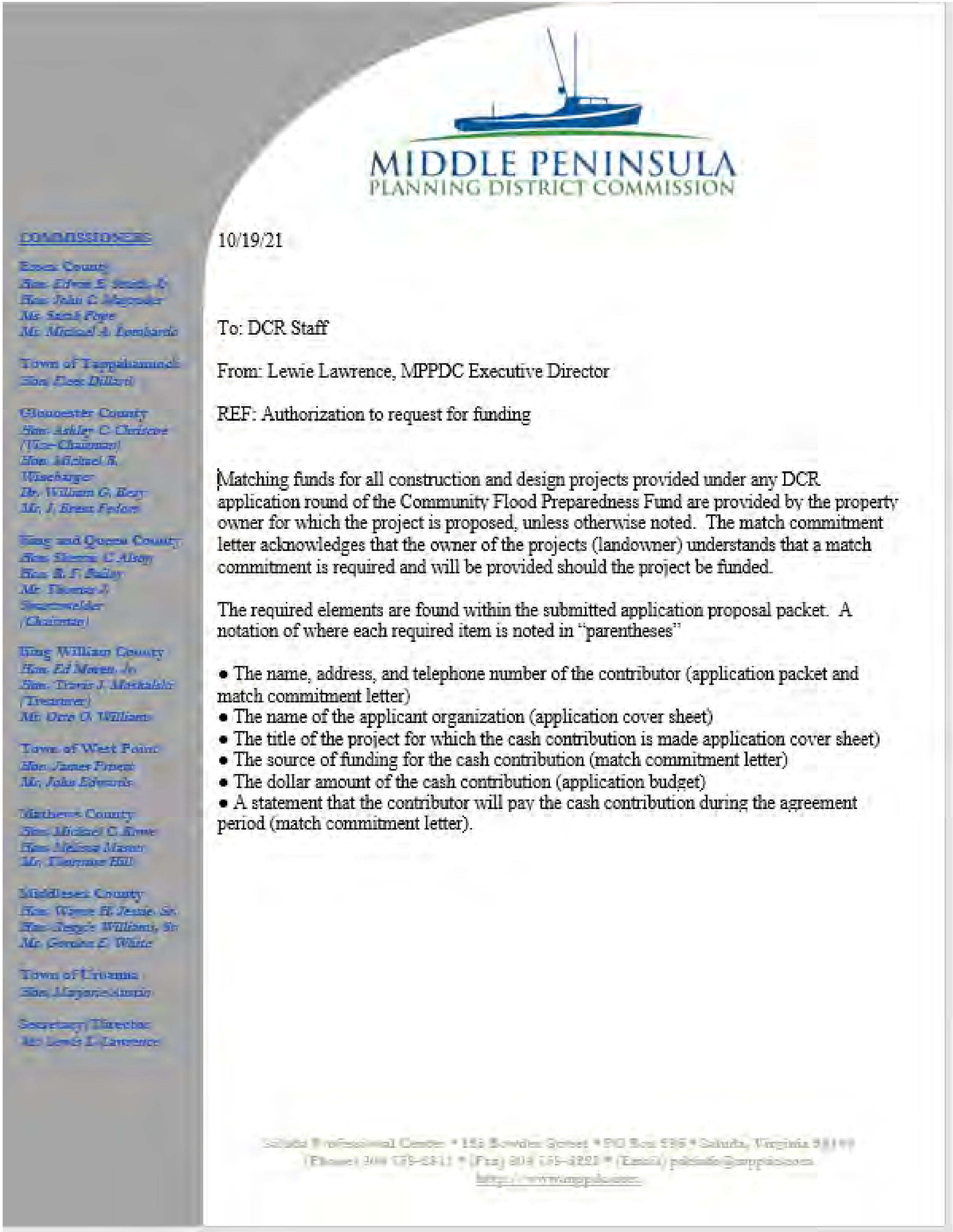
- ***Estimated total project cost:*** *$17,399*
- ***Amount of funds requested from the Fund:*** *$12,180*



Galamore								
Budget Narrative (Category D)								**Budget (Cat. D)**
						Applicant 1		
Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		22.25%	5.57%	$70,000		$957	$410	$1,367
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			$11,500	8,050.00	3,450.00	$251	$107	$358
		15%	1,725.00	1,207.50	517.50			
Total Personnel			**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
0					$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)					$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)					$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)					$229	$160	$69	$229
Data services (53100/53101/53200/57900)					$69	$48	$21	$69
Material services (53400/53500/57200/57500)					$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)					$329	$230	$99	$329
					$15,674			
SUBTOTAL: Direct Costs						$12,180	$5,219	$17,399
Total						**$12,180**	**$5,219**	**$17,399**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$12,180**	**$5,219**	**$17,399**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe
(Vice-Chairman)
Hon. Michael R.
Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J.
Swartzwelder
(Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski
(Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

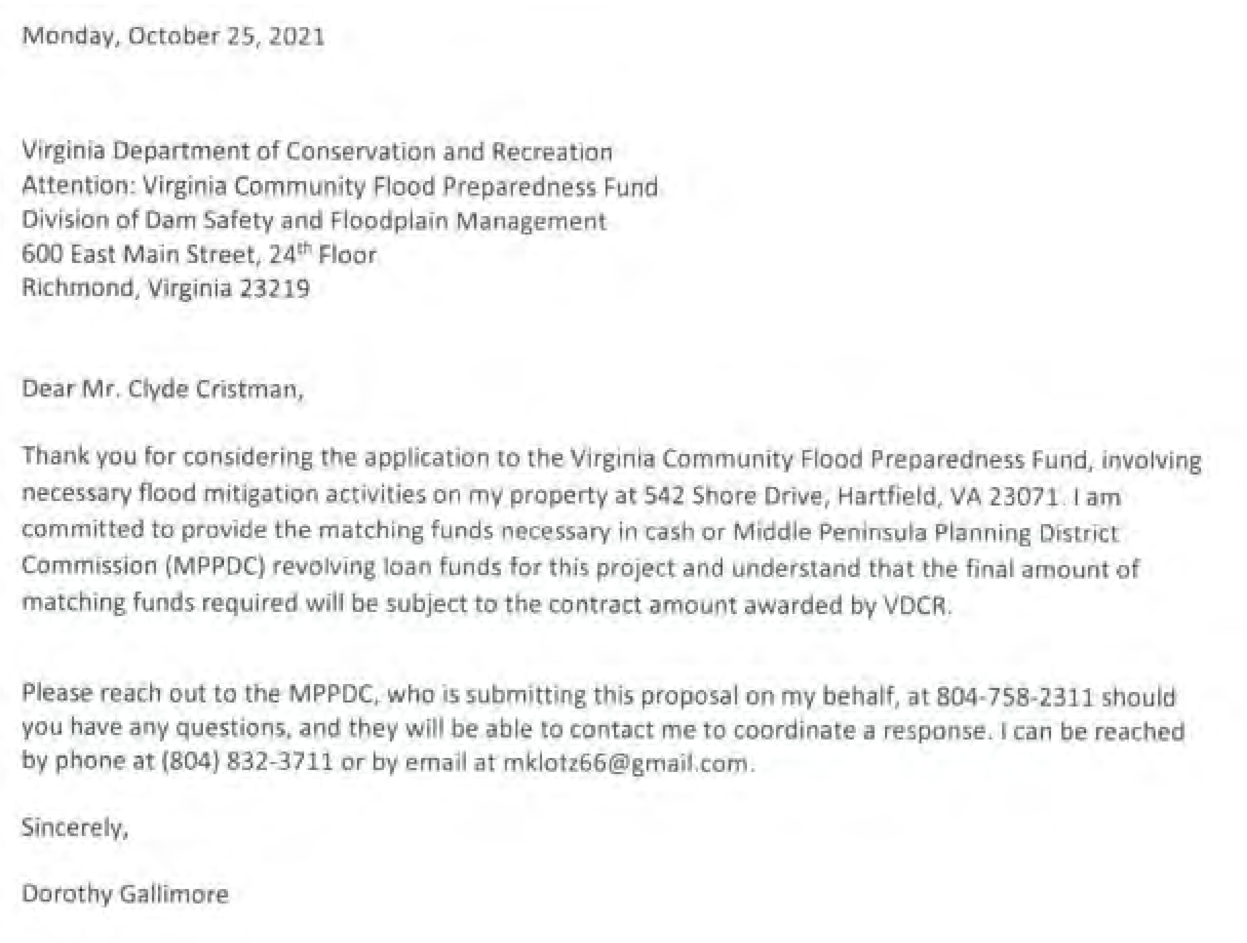
REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:



Monday, October 25, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 542 Shore Drive, Hartfield, VA 23071. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (804) 832-3711 or by email at mklotz66@gmail.com.

Sincerely,

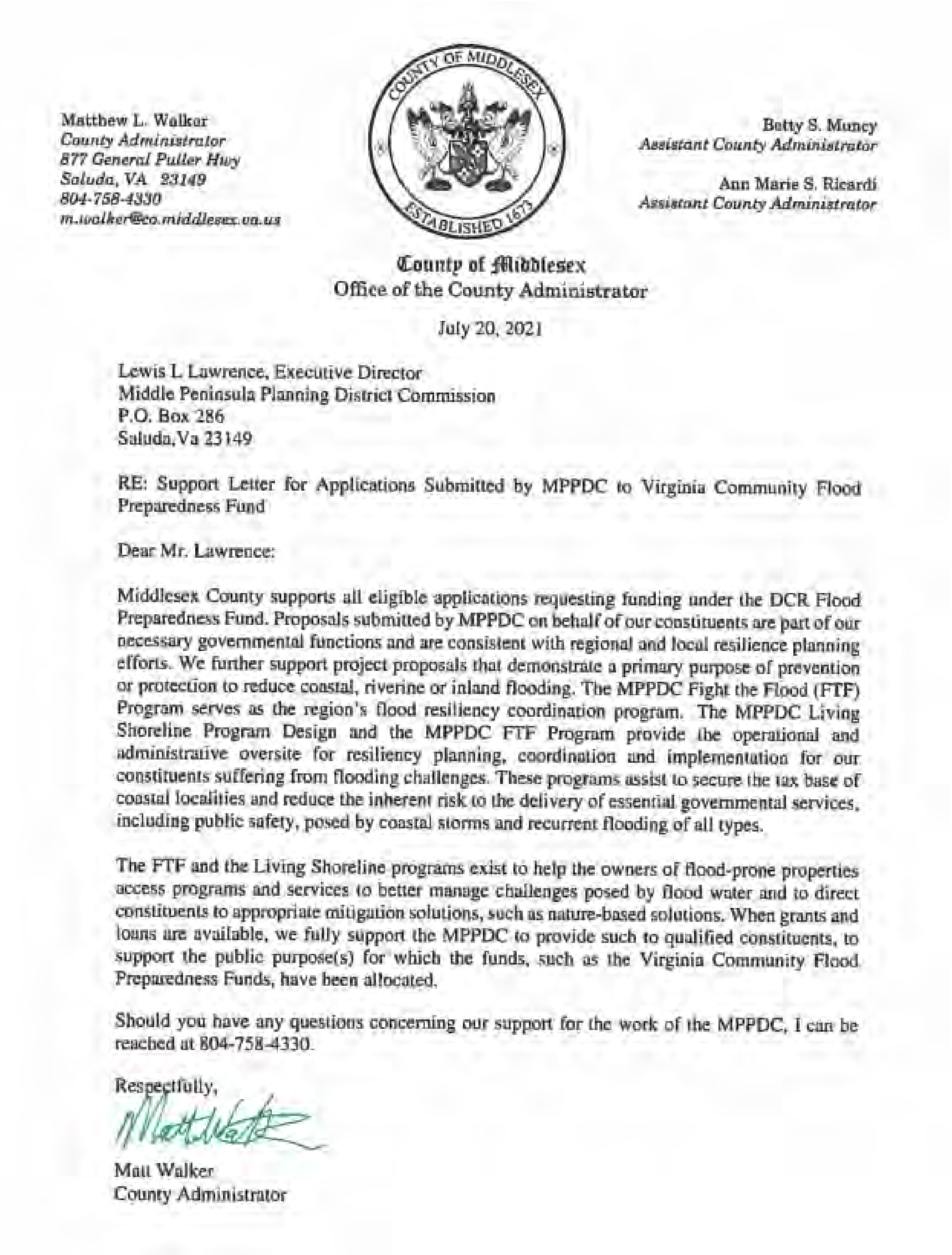
Dorothy Gallimore

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Matthew L. Walker
County Administrator
877 General Puller Hwy
Saluda, VA 23149
804-758-4330
m.walker@co.middlesex.va.us

Betty S. Muncy
Assistant County Administrator

Ann Marie S. Ricardi
Assistant County Administrator

County of Middlesex
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda,Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker
County Administrator

APPENDIX 2

Additional Property Photos

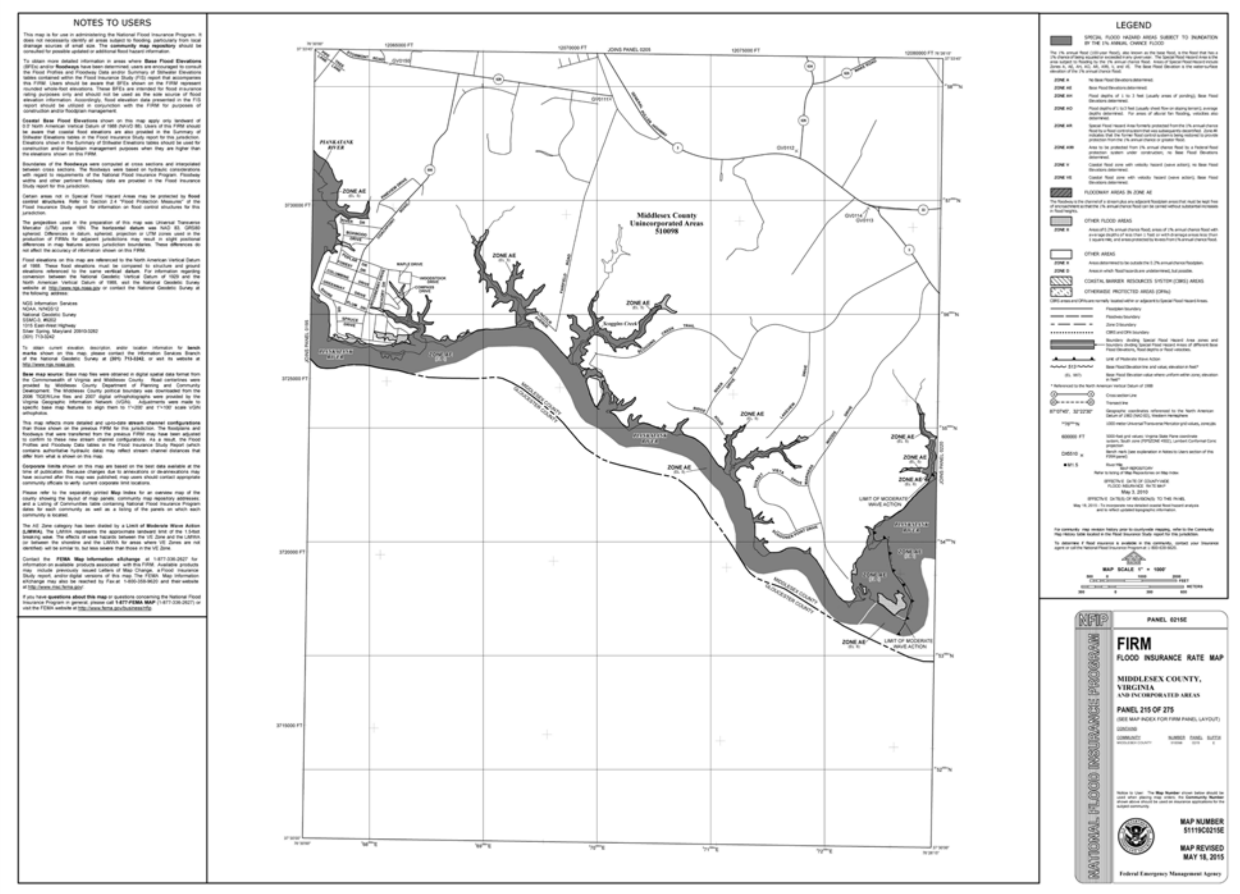
Photo of eroding shoreline.

Photo of eroding shoreline and nearby mature river branch trees.

APPENDIX 3

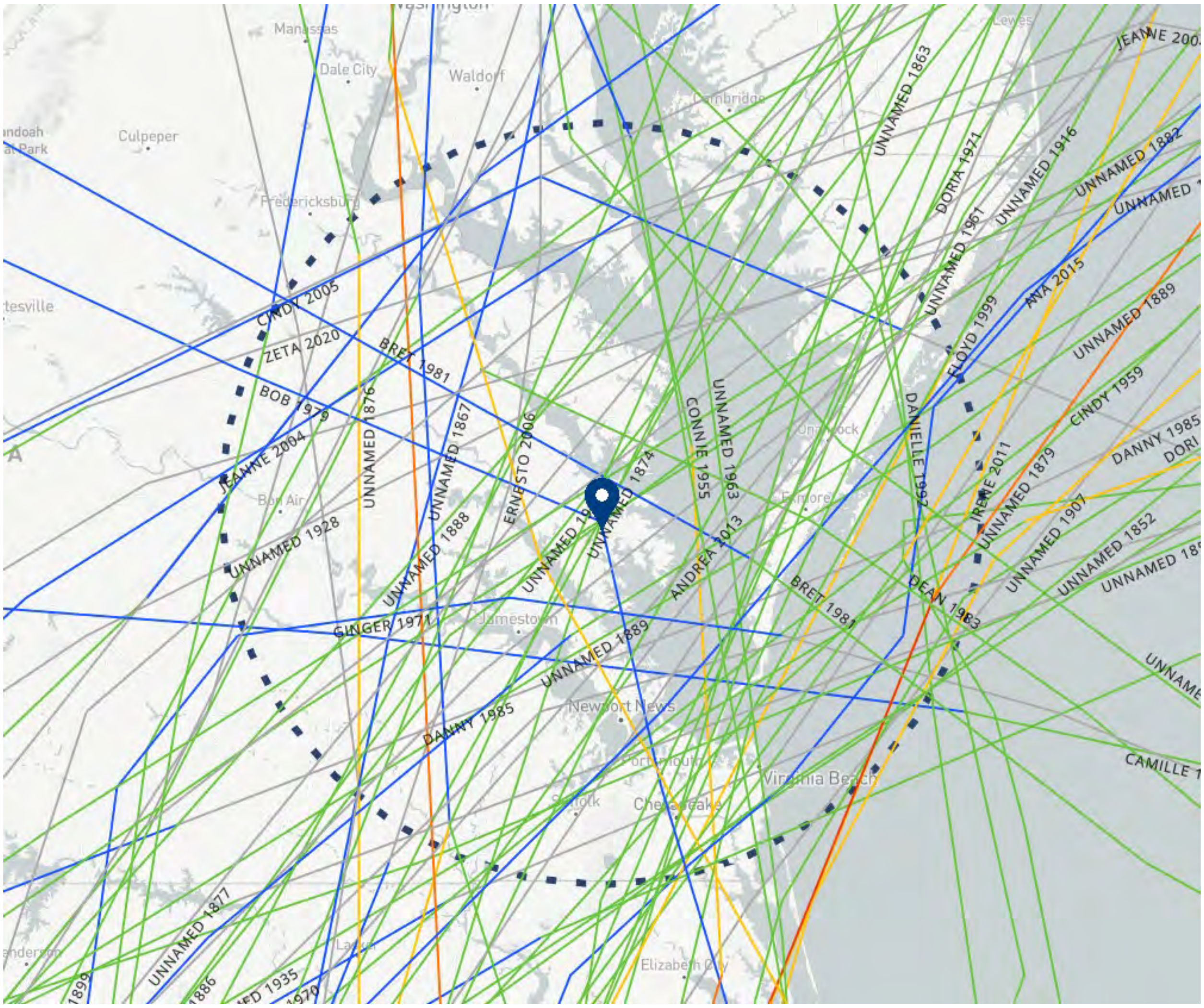
Project Location FIRMette

(FIRMette #: 51119C0215E)



APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.53939 -76.4962

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)
The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)
Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)
In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

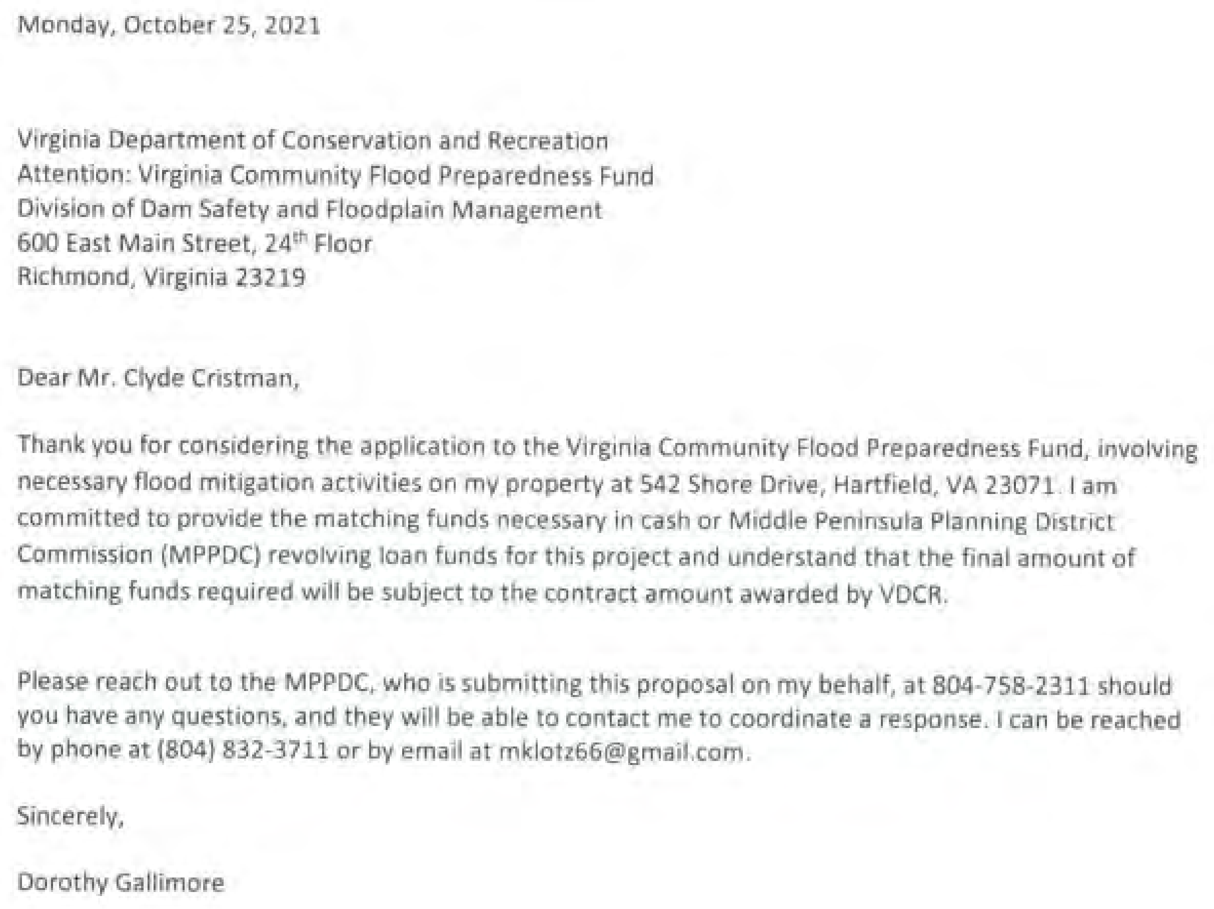
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



Monday, October 25, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

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Sincerely,

Dorothy Gallimore

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Bucks Landing for Lively

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510098

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ______________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Middlesex County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510098

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51119C0114E

Total Cost of Project: _____________$17,399____

Total Amount Requested: _________$12,180__________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft Joint Permit Application or DEQ Water Quality Impact Assessment depending on the jurisdictional determination for the application to reduce the impacts of storm events, flooding, and wetland loss. Rapid rainwater runoff is steadily eroding the property's steep bank located on Urbanna Creek, a tributary of the Rappahannock River (length of shoreline is approximately 165 feet). This has occurred over a period of years the property was purchase by the current owners. The primary concern is the flood-induced erosion that is undermining posts supporting steps to a pier and accelerated undermining tree roots causing tree loss. A steep bank under the pier steps and to each side of the pier steps is in danger of becoming a cliff that will not support pier steps or sustain plants. There is a potential design solution in mind. Enviro-Lock (Enviro-Lock.com) provides a system and products utilizing soil and sandbags that can be stacked five to eight feet and planted with natural plants creating a stable living shoreline "bank" minimizing or avoiding the utilization of traditional "rip rap" rock or other gray infrastructure.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Bucks Landing in Middlesex County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Middlesex's Comprehensive Plan can be found at: https://www.co.middlesex.va.us/252/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

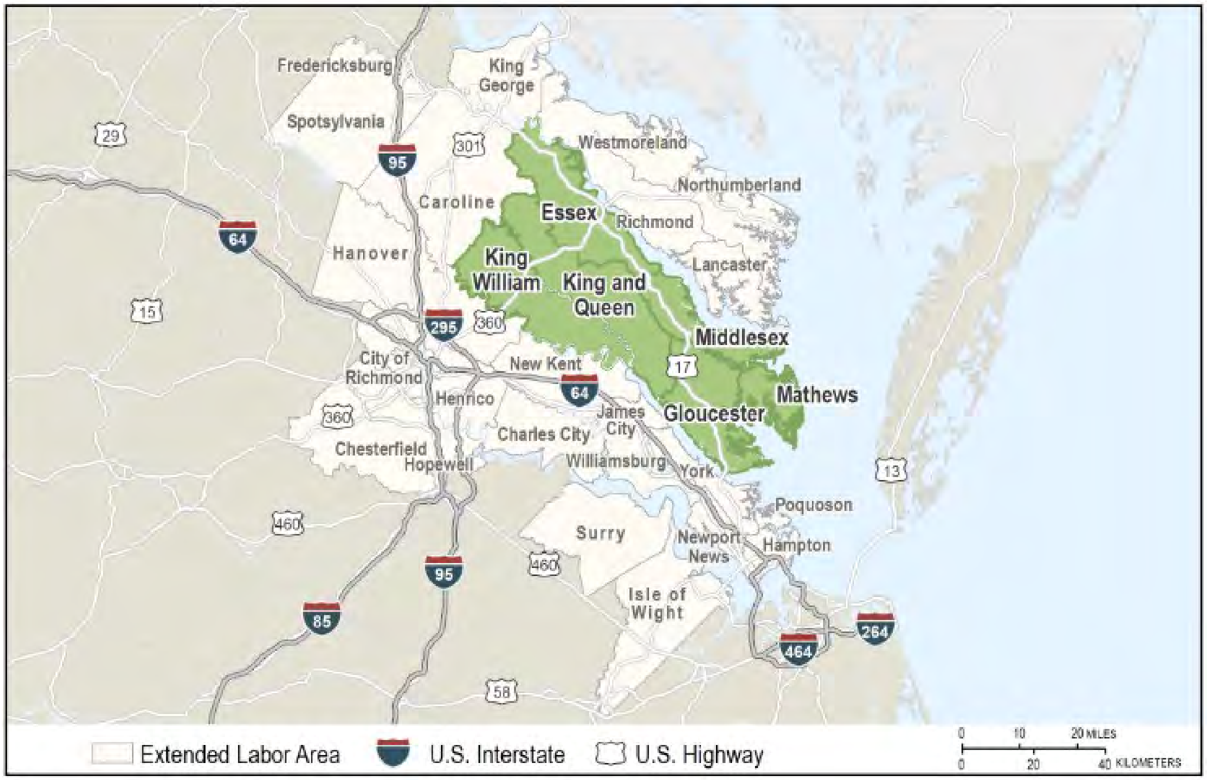


Figure 2. Middle Peninsula Population

CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature-based solution on one private property on Bucks Landing in Middlesex County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

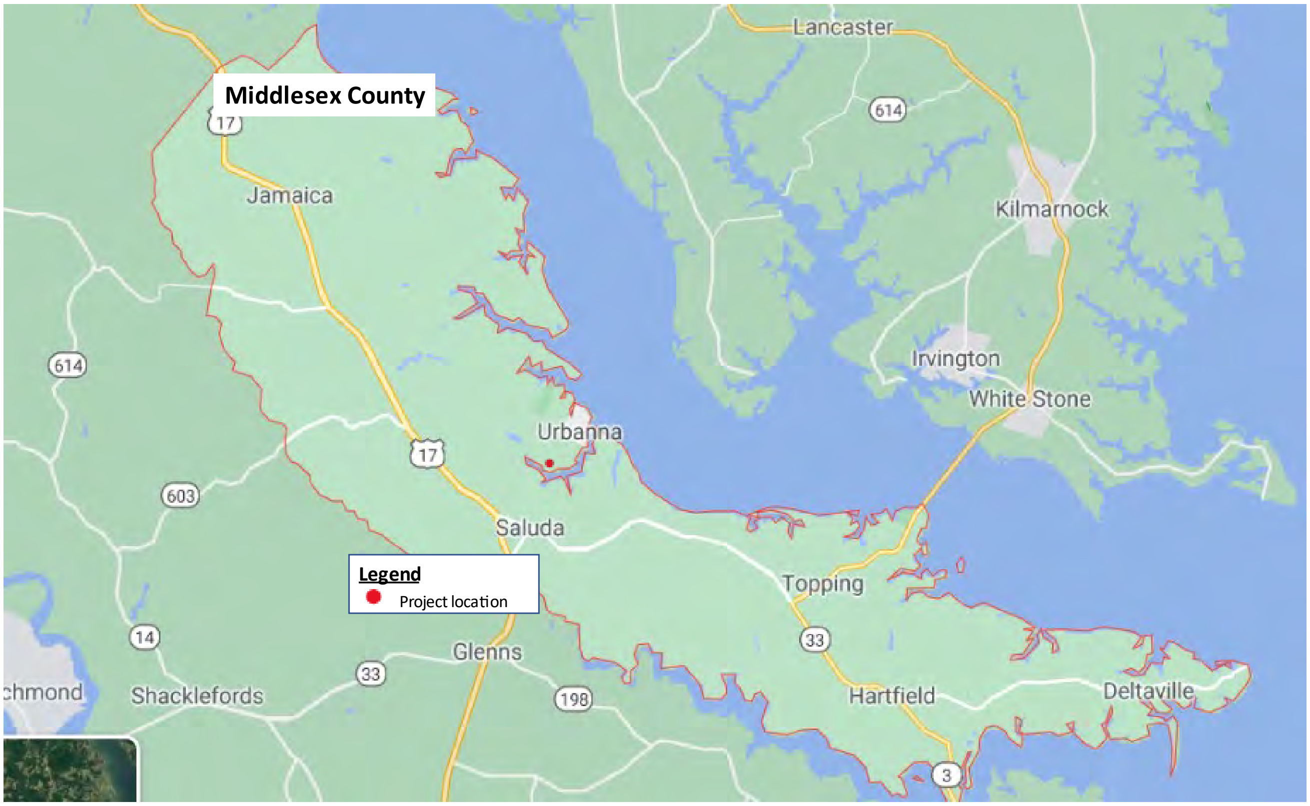
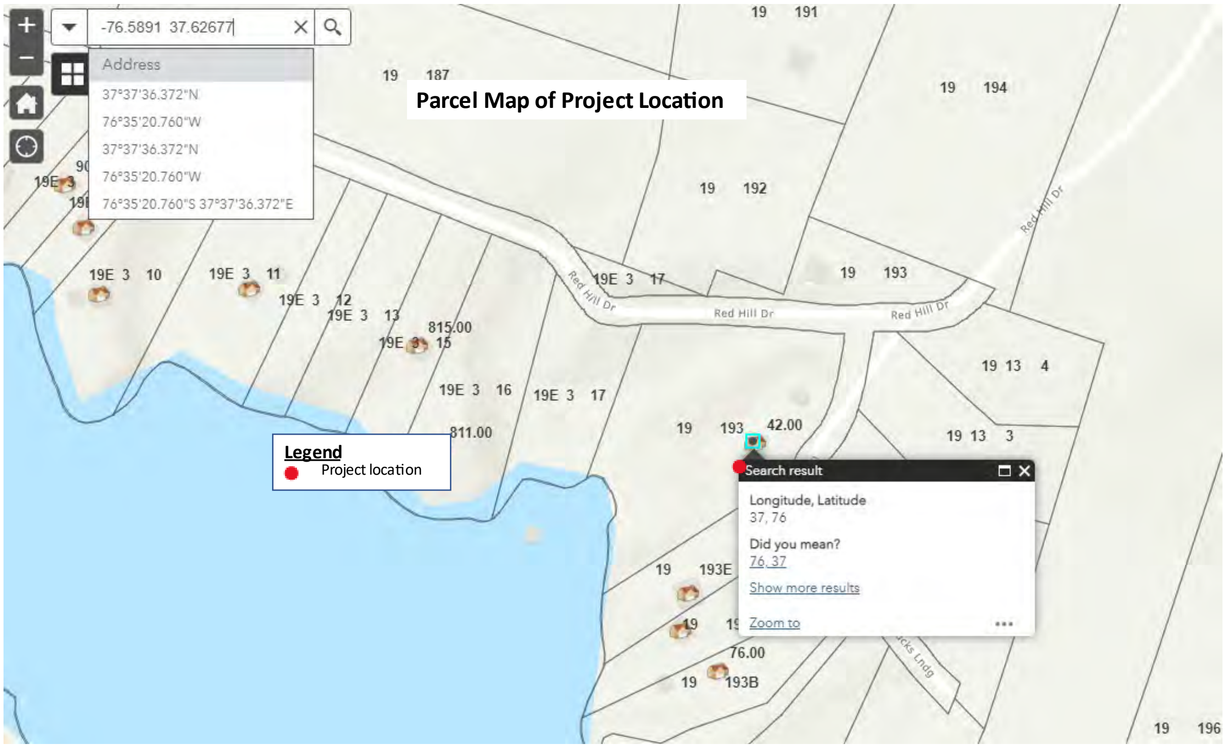


Figure 4. Parcel Map of Project Location


-76.5891 37.62677

Address
37°37'36.372"N
76°35'20.760"W
37°37'36.372"N
76°35'20.760"W
76°35'20.760"S 37°37'36.372"E

Search result

Longitude, Latitude
37, 76

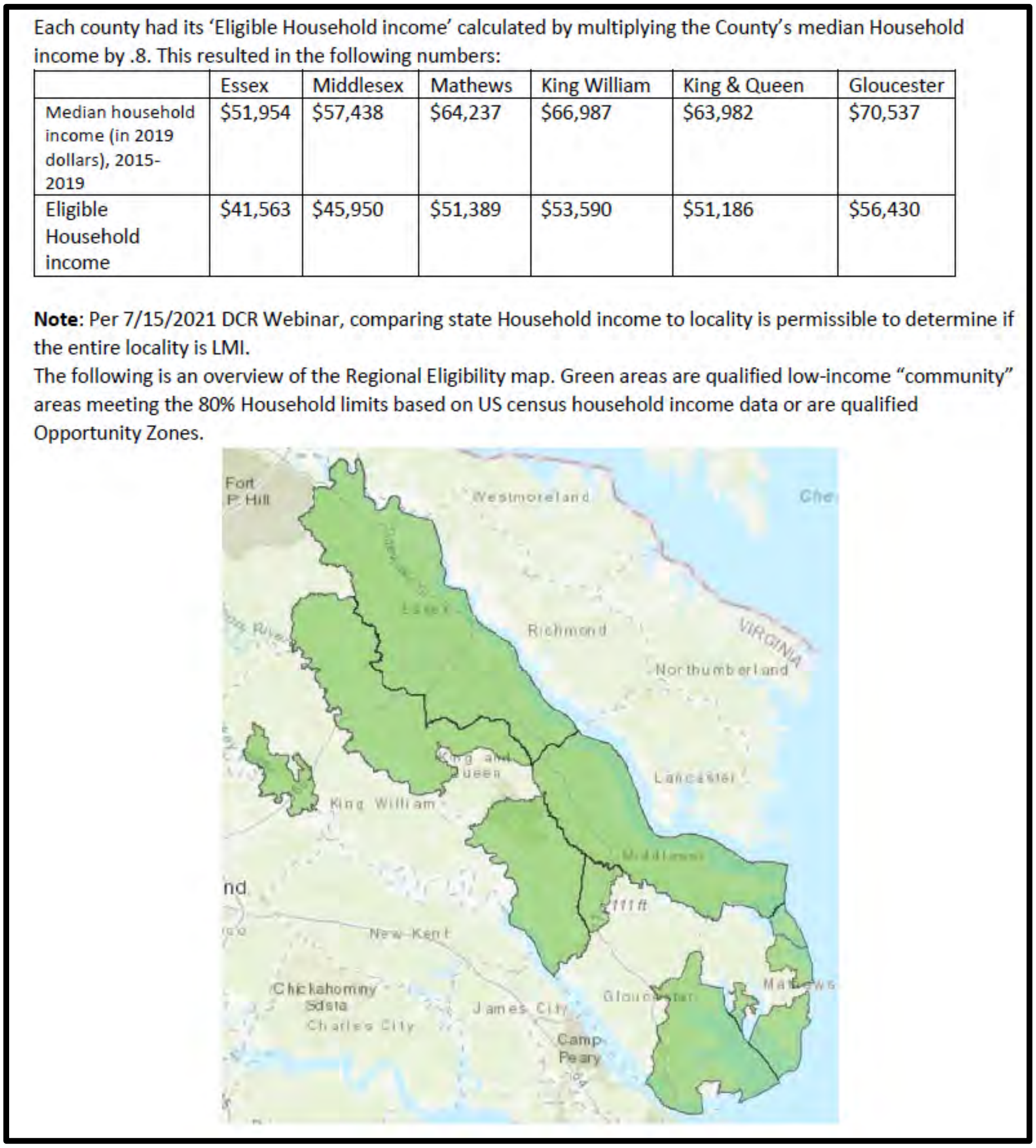
Did you mean?
76, 37

Show more results

Zoom to

Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

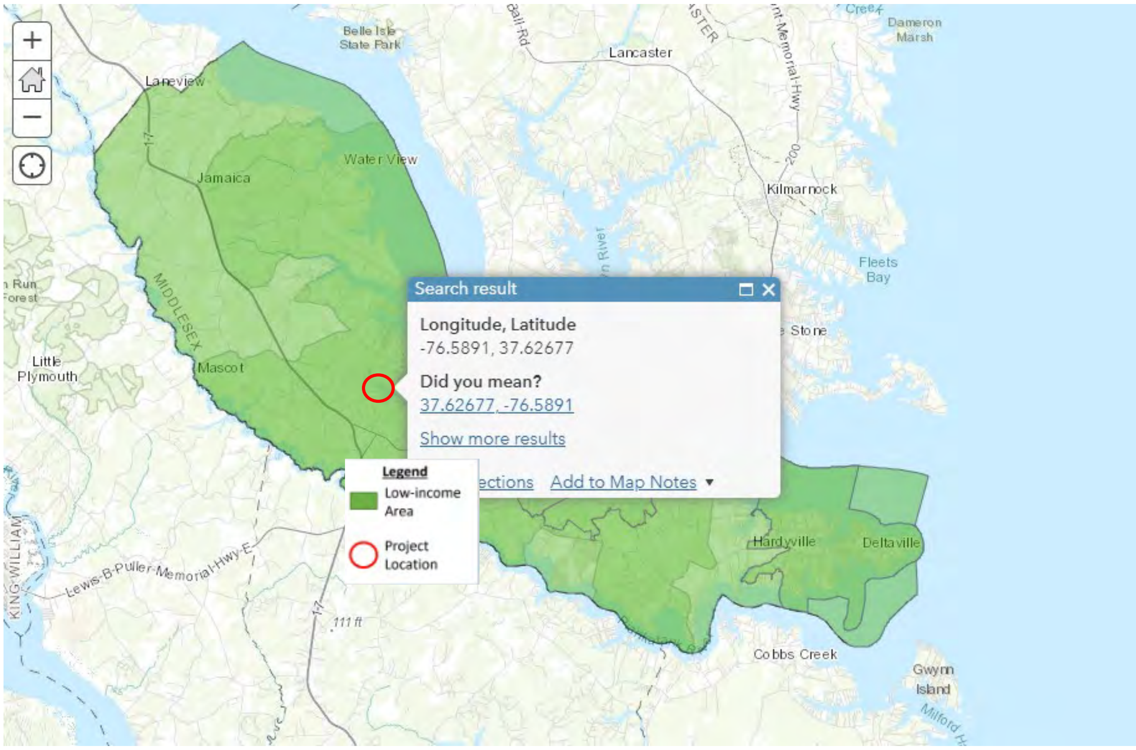
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



Search result

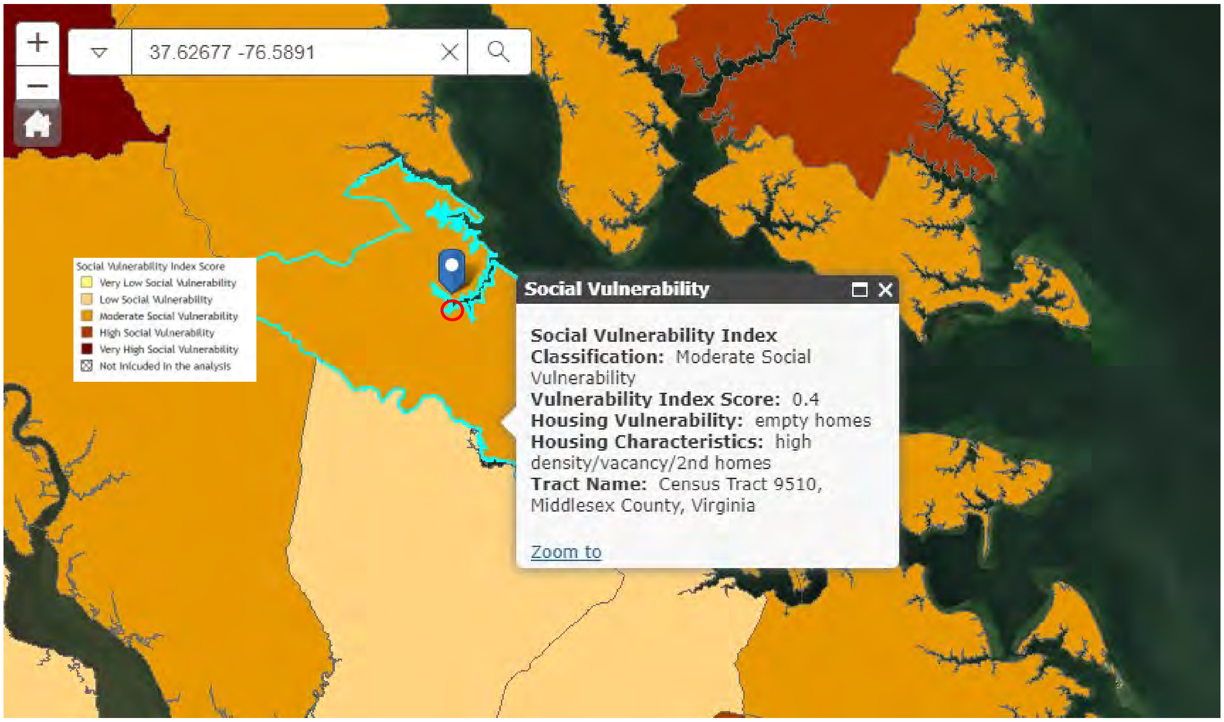
Longitude, Latitude
-76.5891, 37.62677

Did you mean?
37.62677, -76.5891

Show more results

According to the VDAPT Virginia’s Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA’s National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

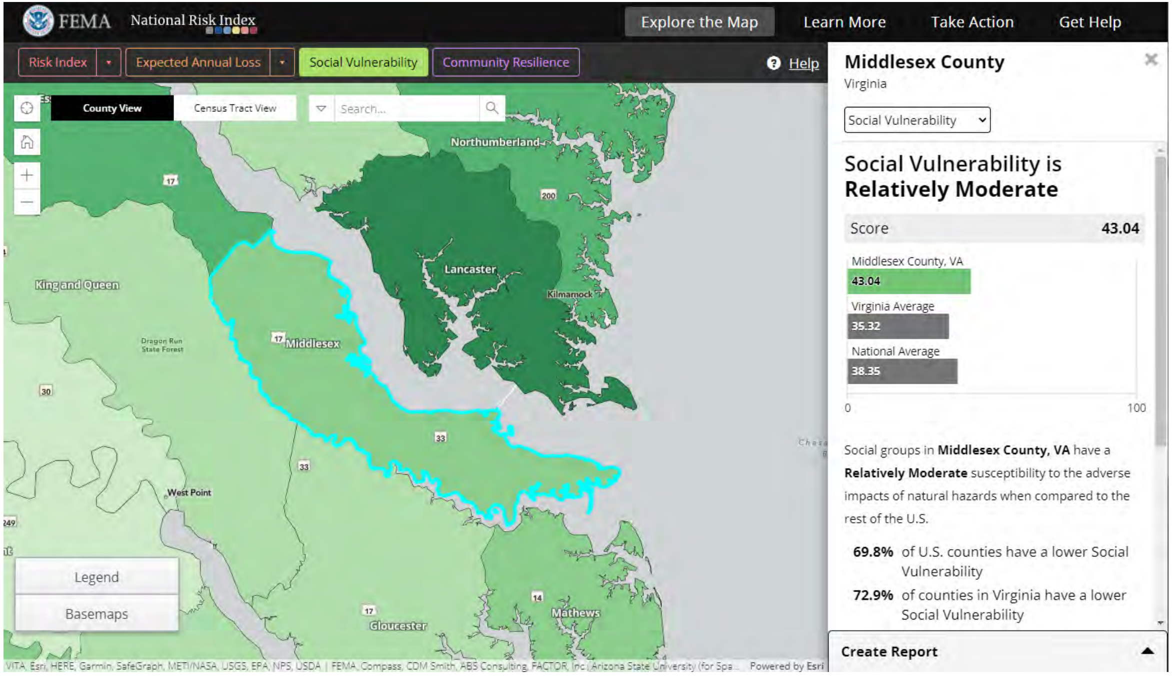
Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.4
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9510, Middlesex County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Middlesex County
Virginia

Social Vulnerability is Relatively Moderate

Score	43.04
Middlesex County, VA	43.04
Virginia Average	35.32
National Average	38.35

Social groups in **Middlesex County, VA** have a **Relatively Moderate** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

69.8% of U.S. counties have a lower Social Vulnerability

72.9% of counties in Virginia have a lower Social Vulnerability

The project is located at 42 Bucks Landing, Urbanna, VA 23175 (-76.5891, 37.62677). The property was purchased in 2008 and has experienced a number of issues. Rapid rainwater runoff is steadily eroding the property's steep bank located on Urbanna Creek off of the Rappahannock River (length of shoreline is approximately 165 feet). This has occurred over a period of years since the property was purchased by the current homeowners. The primary concern is the flood-induced erosion that is undermining posts supporting steps to a pier and undermining tree roots causing tree loss. The steep bank under pier steps and to each side of the pier steps is in danger of becoming a cliff that will not support pier steps or sustain plants. Part of the homeowner's eroding bank is in front of a neighbor's home that is located close to the bank. One tree has died (two years ago) and fallen into the water and opened up the creek bank. Three additional trees have died. One of those dead trees is about 12 feet tall with no top. The two other additional dead trees were alive last year and died this summer. Another tree was partially alive but hollow and leaning over the pier. A permit was secured for that tree as part of a "Friends of the Rappahannock" Living Shoreline project and was cut. There is a remaining tree stump and severe erosion exposed roots. There is one other live tree on the bank leaning toward the water that will likely succumb to death in the next few years. There is one other old tree stump with severe erosion exposed roots.

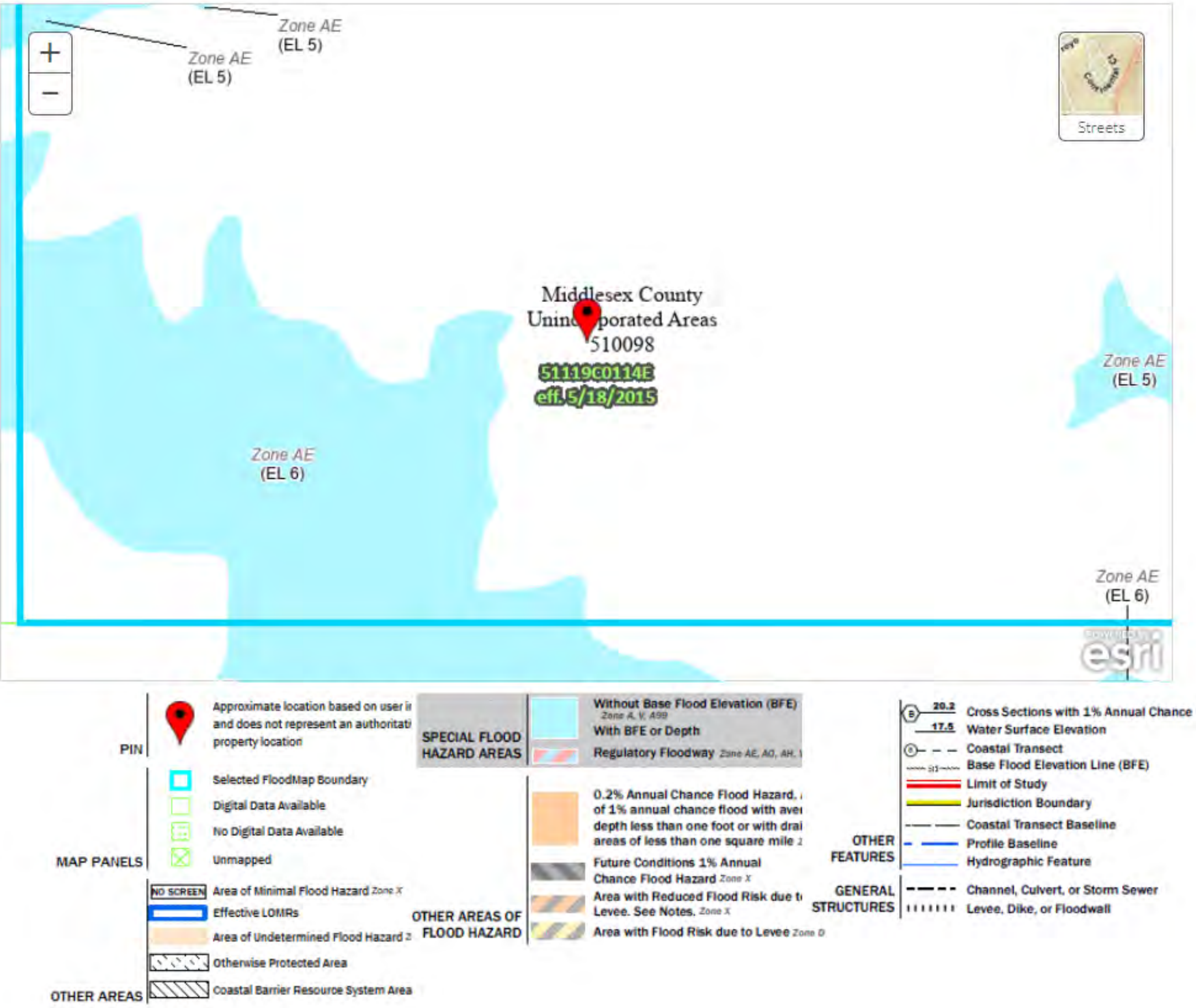
There is a potential design solution in mind. Enviro-Lock (Enviro-Lock.com) provides a system and products utilizing soil/sandbags that can be stacked five to eight feet and planted with natural plants creating a stable living shoreline "bank" minimizing or avoiding the utilization of traditional "rip rap" rock or other gray infrastructure. The homeowners have observed two creek bank erosion projects (one completed and one in the process of being completed) in Middlesex County that are using this system/product and prefer this natural solution. The preliminary plan includes additional soil and plantings of the remaining bank above the soil and sandbags and plantings. The area beneath and adjacent to the pier steps may require rock rip rap unless it is feasible to utilize the soil sand bags. The contractor, in process of completing "Friends of the Rappahannock "living shoreline project that involves oyster bag reef, sand and natural plantings, alerted homeowner to Enviro-Lock system/products and showed homeowners the other projects utilizing the Enviro-Lock system/products. The current "Friends of the Rappahannock" living shoreline project will not solve the serious erosion issue caused by the rainwater runoff. No contractor for design work has been contacted at this point.

See accompanying pictures below of the site conditions.

Please see **Appendix 2** for additional property photos.

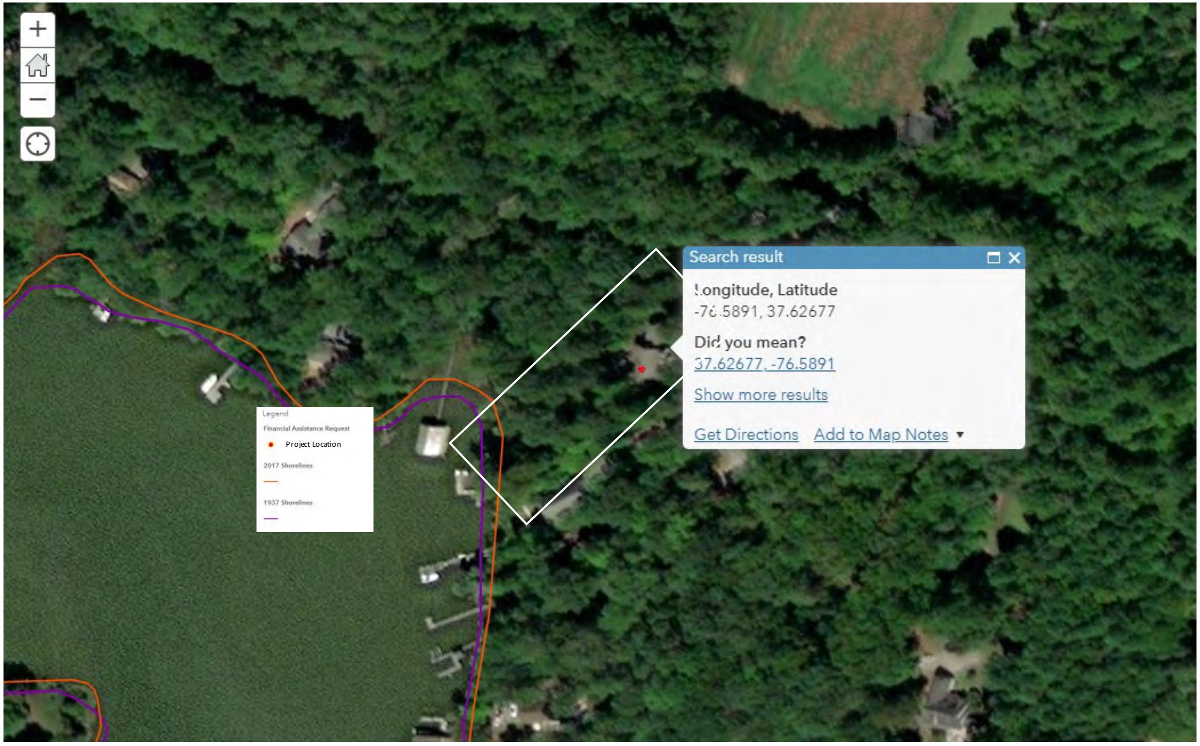
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 5/18/2015).

Figure 9: Map of FEMA Flood Zones



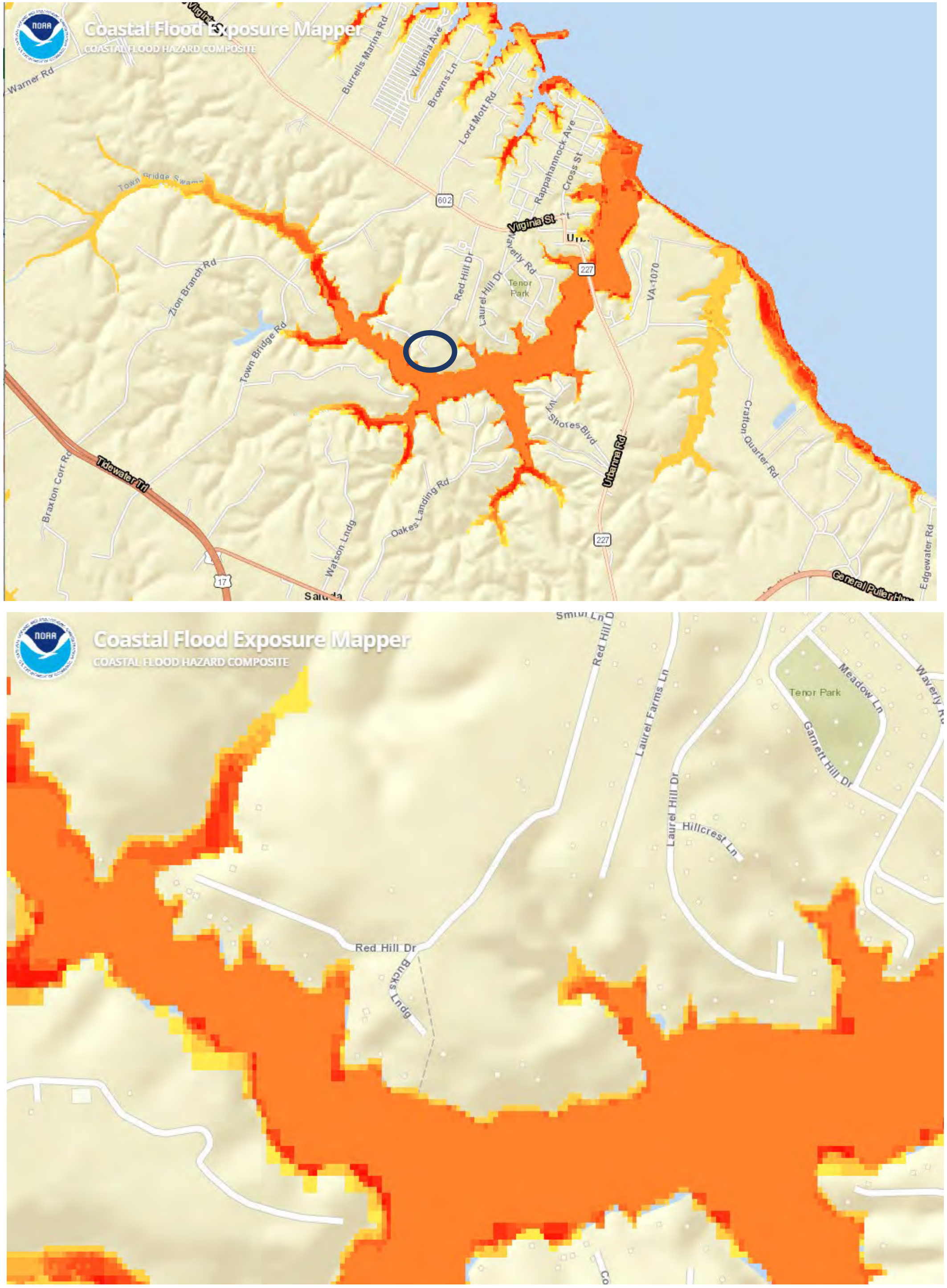
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 4,815.7 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 74 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017



Finally, according to NOAA’s Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Middlesex County's current floodplain ordinance can be found at:*

https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF.

COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits

Coastal NNBFs Ranked: Benefits to Coastal Buildings

42 Bucks Landing, Urbanna, VA 23

This Tidal Marsh feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Low rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(0 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs (2 out of 2: The NNBF has water quality benefit of

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, <u>Removal Rates of Shoreline Management Project</u>, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300

pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

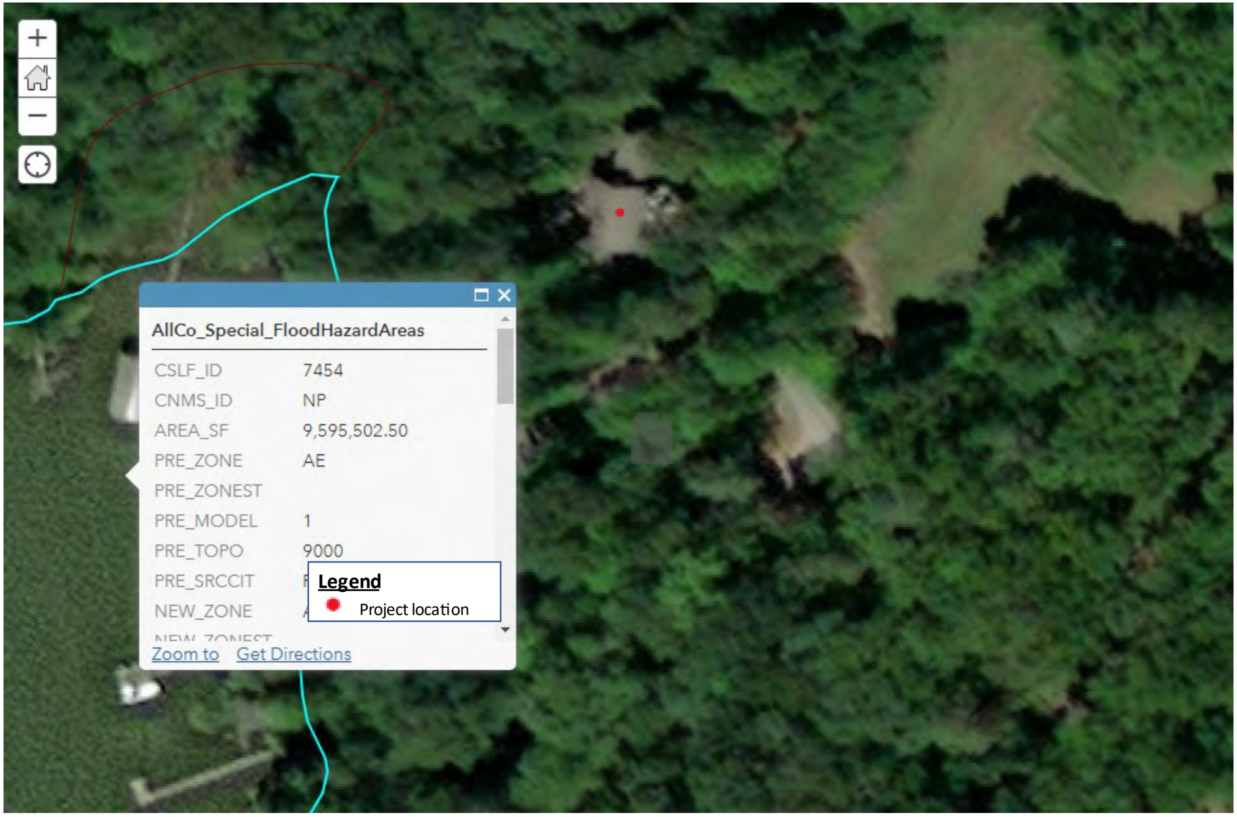
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	7454
CNMS_ID	NP
AREA_SF	9,595,502.50
PRE_ZONE	AE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	9000
PRE_SRCCIT	
NEW_ZONE	

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

<u>Long Term Planning</u>

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration XLiving shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. Any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

SCOPE OF WORK CHECKLIST.

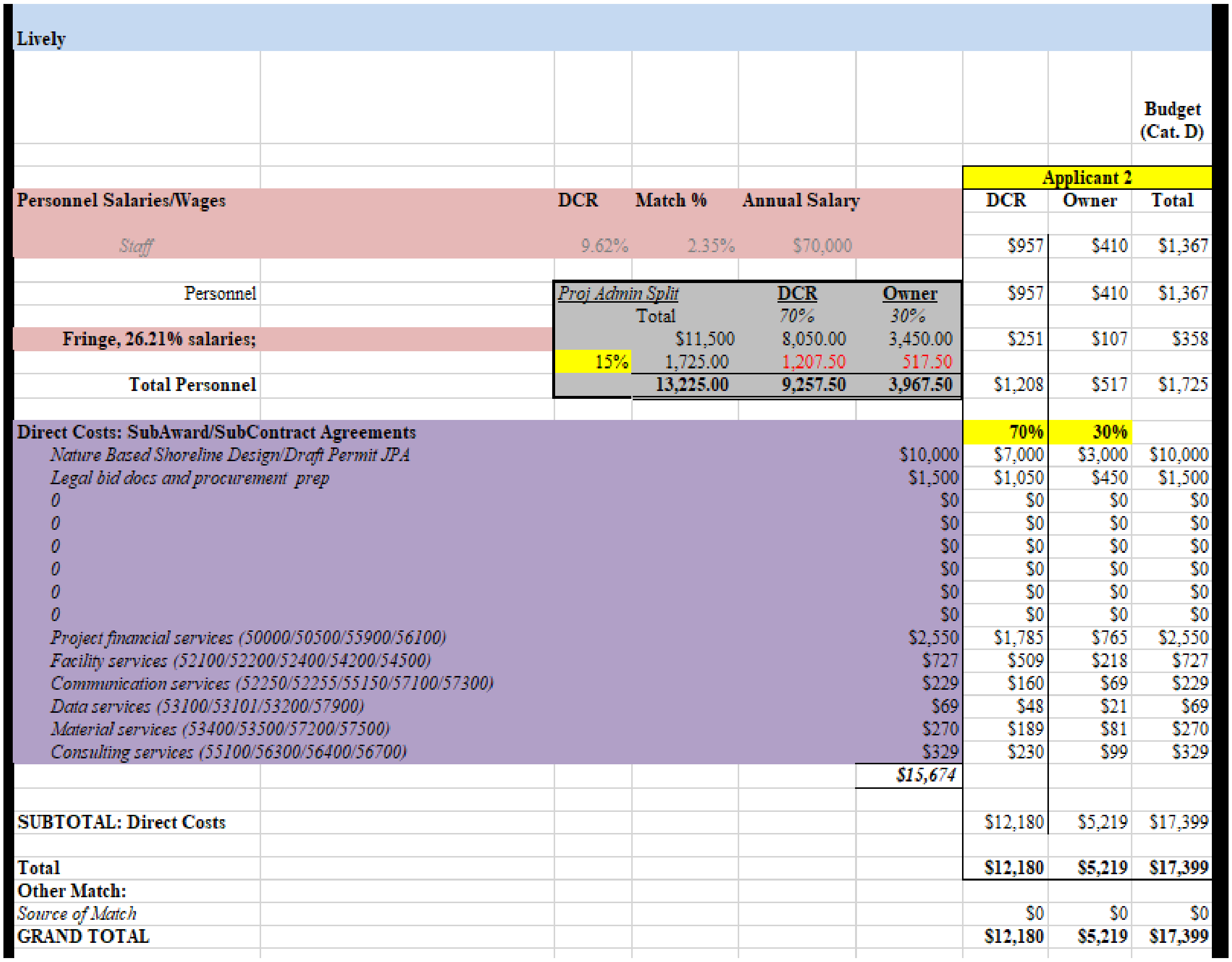
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

This project may require usage of the new DEQ State Water Control Board regulations to manage flooding within the RPA. Middlesex County will be required to make regulatory determination as to who is the permitting authority VMRC/DEQ or both.

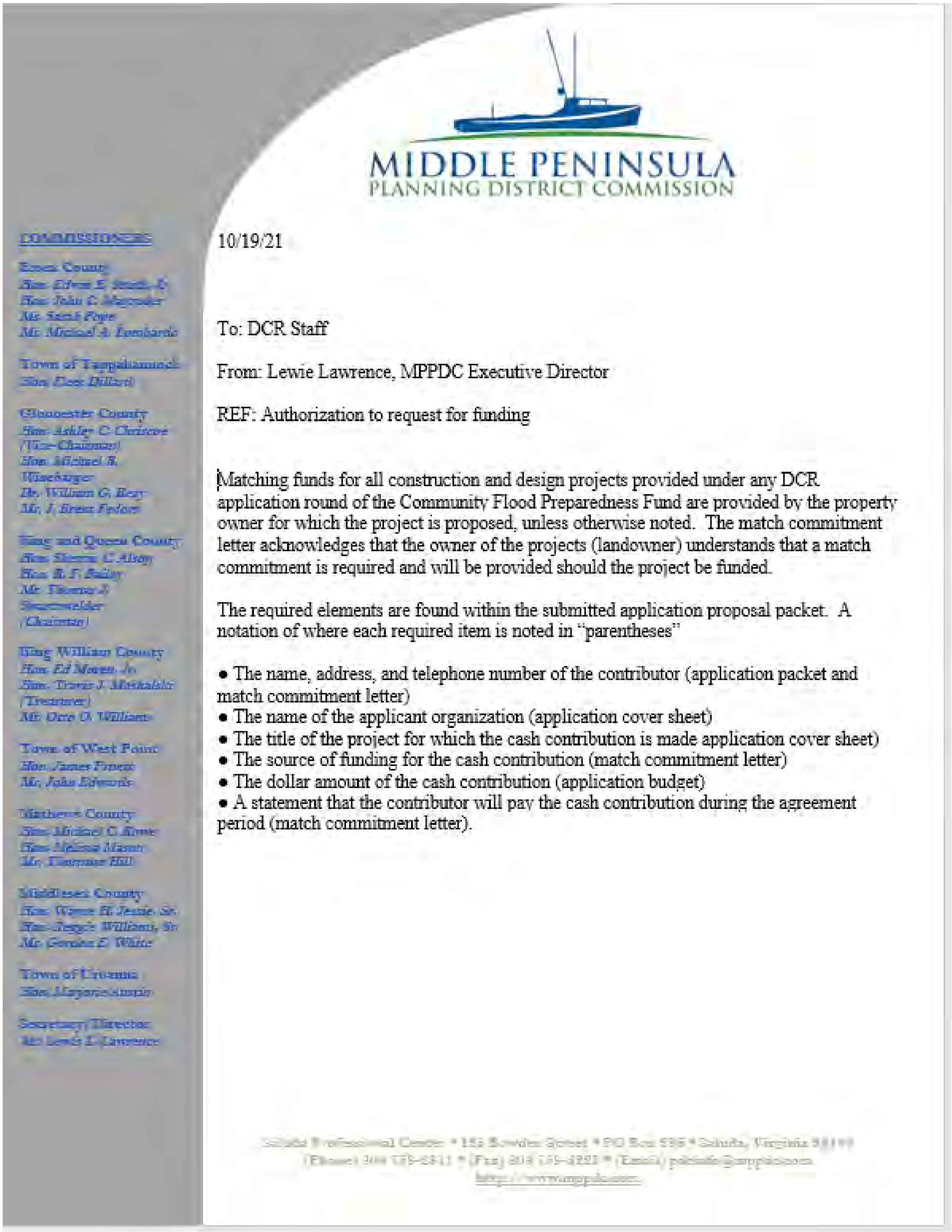
- ***Estimated total project cost: $17,399***
- ***Amount of funds requested from the Fund: $12,180***



Lively							
							Budget (Cat. D)
					Applicant 2		
Personnel Salaries/Wages	**DCR**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	9.62%	2.35%	$70,000		$957	$410	$1,367
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
		Total	*70%*	*30%*			
Fringe, 26.21% salaries;		$11,500	8,050.00	3,450.00	$251	$107	$358
	15%	1,725.00	1,207.50	517.50			
Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
Direct Costs: SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$2,550	$1,785	$765	$2,550
Facility services (52100/52200/52400/54200/54500)				$727	$509	$218	$727
Communication services (52250/52255/55150/57100/57300)				$229	$160	$69	$229
Data services (53100/53101/53200/57900)				$69	$48	$21	$69
Material services (53400/53500/57200/57500)				$270	$189	$81	$270
Consulting services (55100/56300/56400/56700)				$329	$230	$99	$329
				$15,674			
SUBTOTAL: Direct Costs					$12,180	$5,219	$17,399
Total					**$12,180**	**$5,219**	**$17,399**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$12,180**	**$5,219**	**$17,399**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authroration to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:

10/13/2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 42 Bucks Landing, Urbanna Virginia, 23175. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (757) 268-6479 or by email at L1vely6@aol.com.

Sincerely,

[redacted]

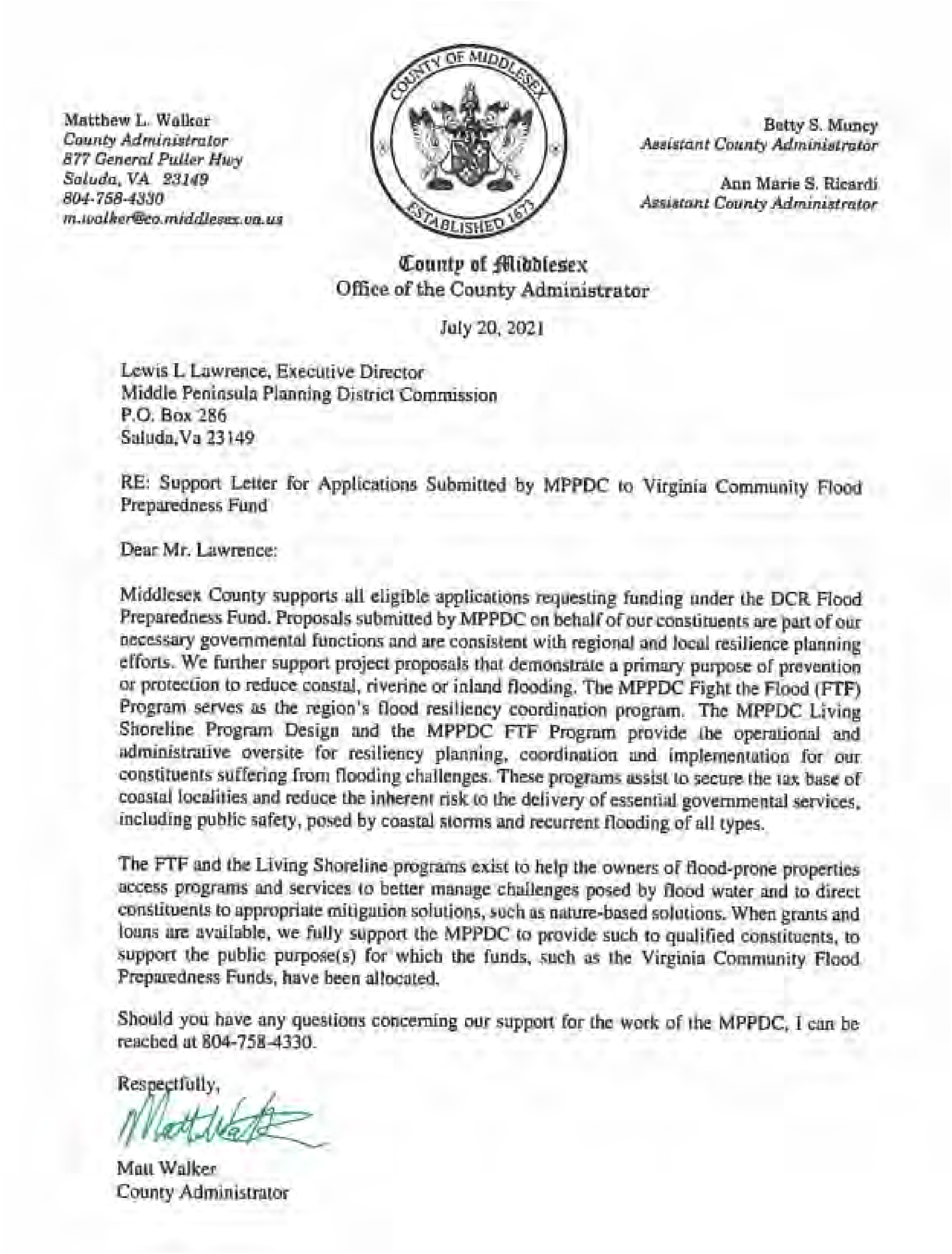
David G. Lively

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Matthew L. Walker
County Administrator
877 General Puller Hwy
Saluda, VA 23149
804-758-4330
m.walker@co.middlesex.va.us

Betty S. Muncy
Assistant County Administrator

Ann Marie S. Ricardi
Assistant County Administrator

County of Middlesex
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda,Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker
County Administrator

APPENDIX 2

Additional Property Photos

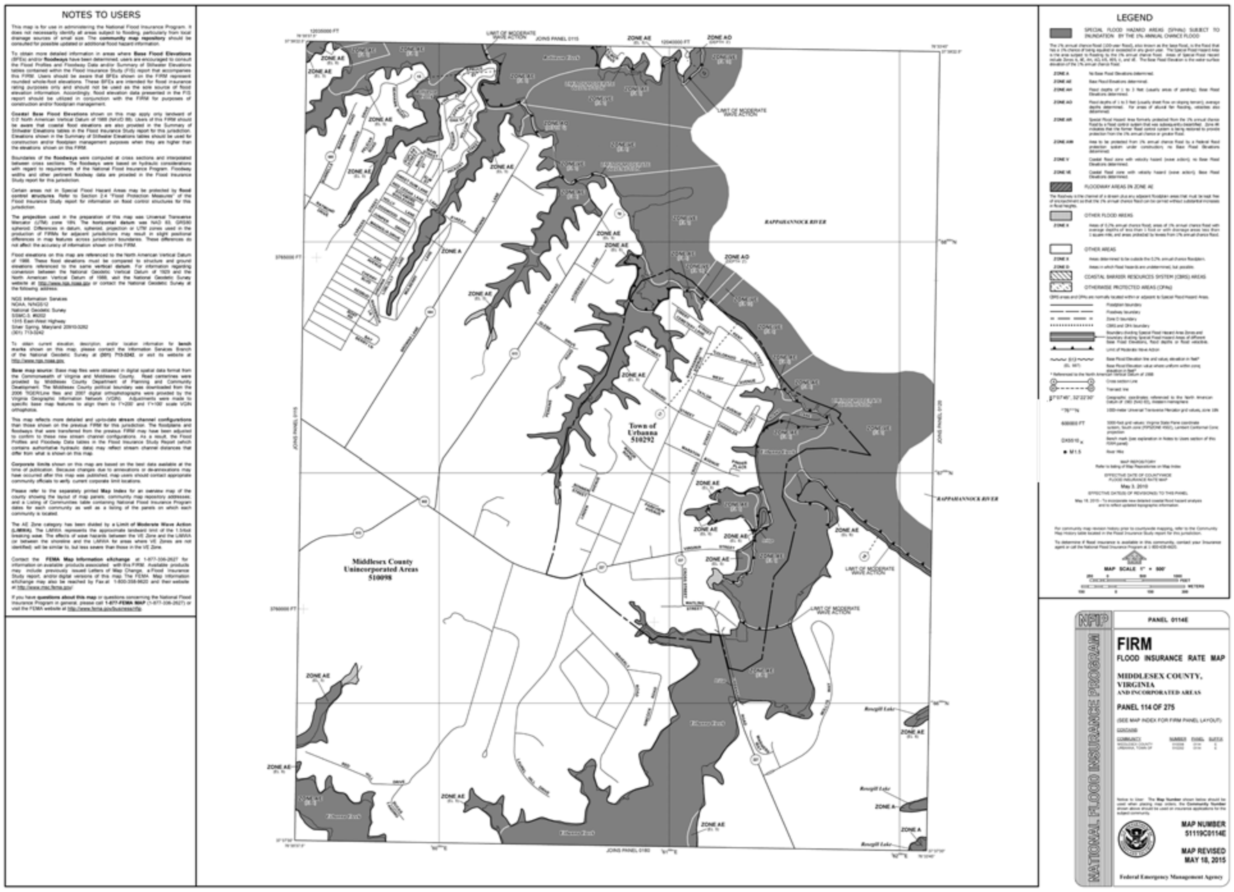
Shoreline erosion threatening the vegetation on the bank.

Oyster bags on the left side of photo helps to support the eroding bank but more needs to be done to protect the shoreline.

APPENDIX 3

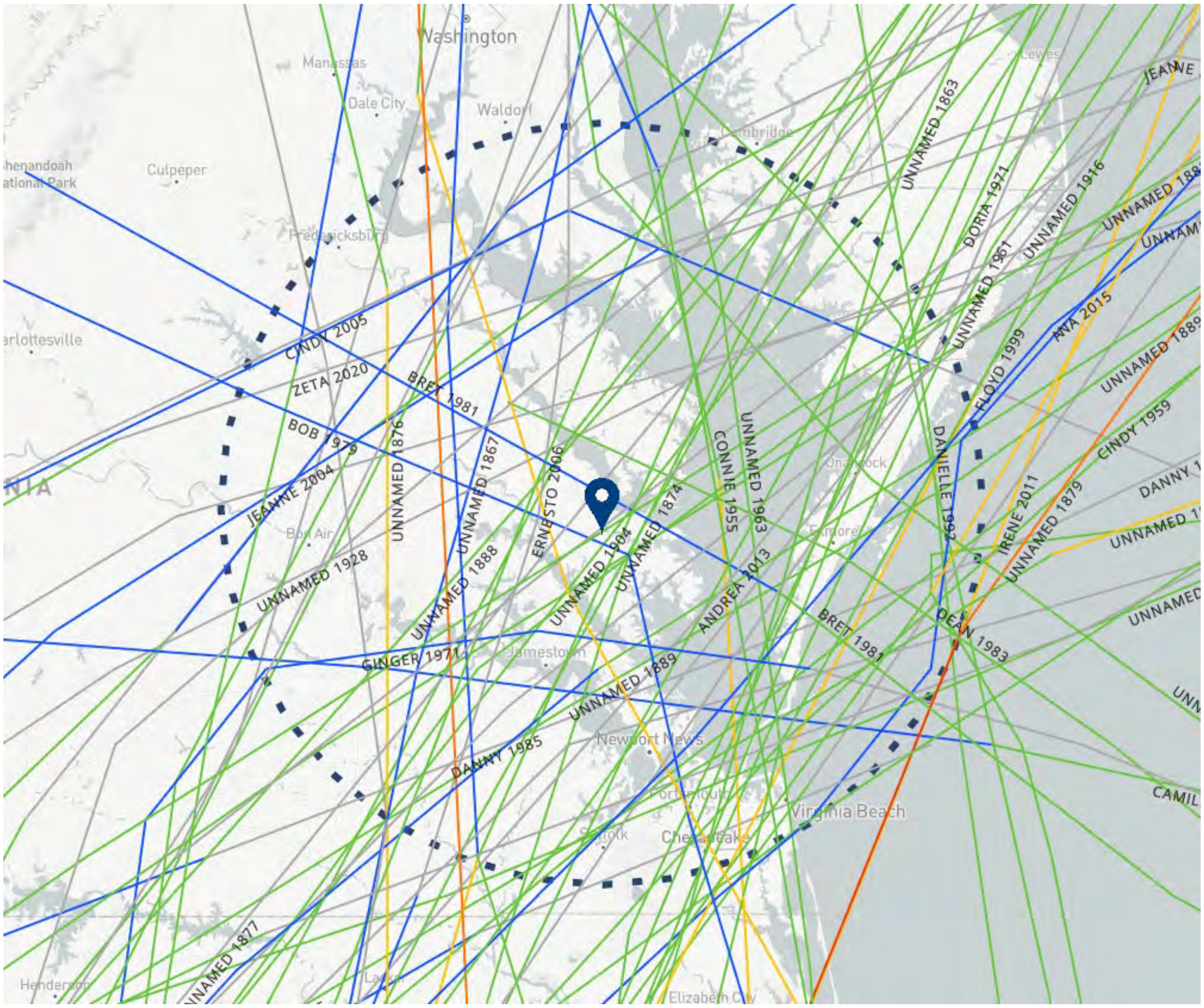
Project Location FIRMette

(FIRMette #: 51119C0114E)



APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.62677 -76.5891

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter

10/13/2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 42 Bucks Landing, Urbanna Virginia, 23175. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (757) 268-6479 or by email at L1vely6@aol.com.

Sincerely,

David G. Lively

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Oakes Landing Road for Sandbach

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510098

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ____
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) _________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Middlesex County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510098

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51119C0180E

Total Cost of Project: ____________$24,963____

Total Amount Requested: ________$17,475___________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft Joint Permit Application to reduce the impacts of storm events, flooding, and wetland loss. The project is located at 1387 Oakes Landing Road, Saluda, VA 23149 (-76.5831, 37.62254). The property was purchased in 2019 and has experienced a number of issues (length of shoreline in approximately 200 feet). When the property was purchased, there was an undercut like a cave along the shoreline. Some of it has subsequently caved in. When it rains hard, the hill is eroding from the top; now lots of roots are showing on the hill. Several trees have come down and more are in danger of falling. The location is on Urbanna Creek which experiences lots of wave action from boating traffic. Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his recommendation is included and incorporated into the proposal.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Oakes Landing Road in Middlesex County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Middlesex's Comprehensive Plan can be found at: https://www.co.middlesex.va.us/252/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

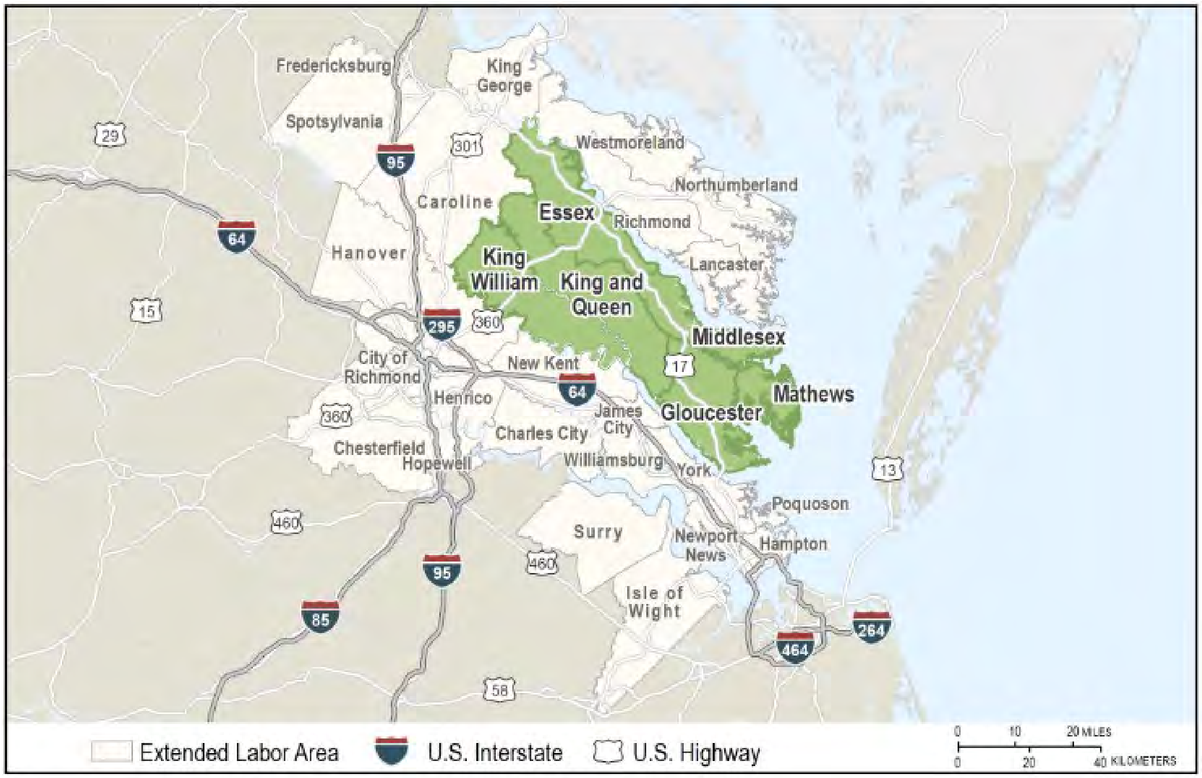
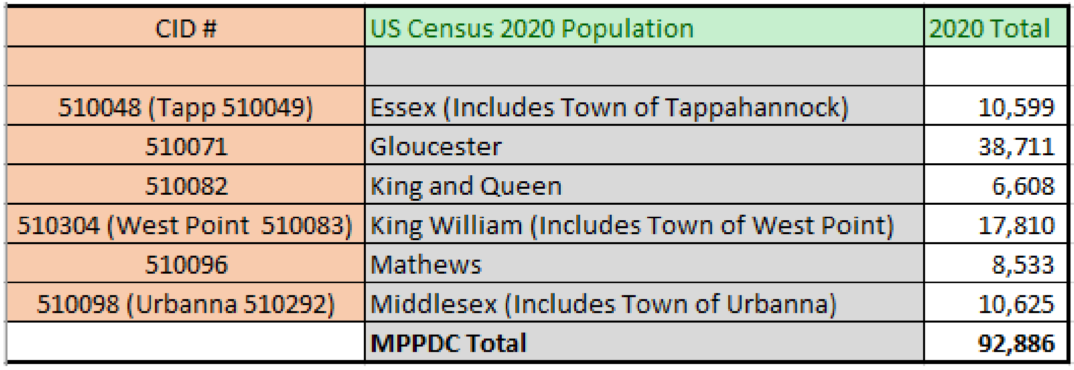


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature-based solution on one private property on Oakes Landing Road in Middlesex County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

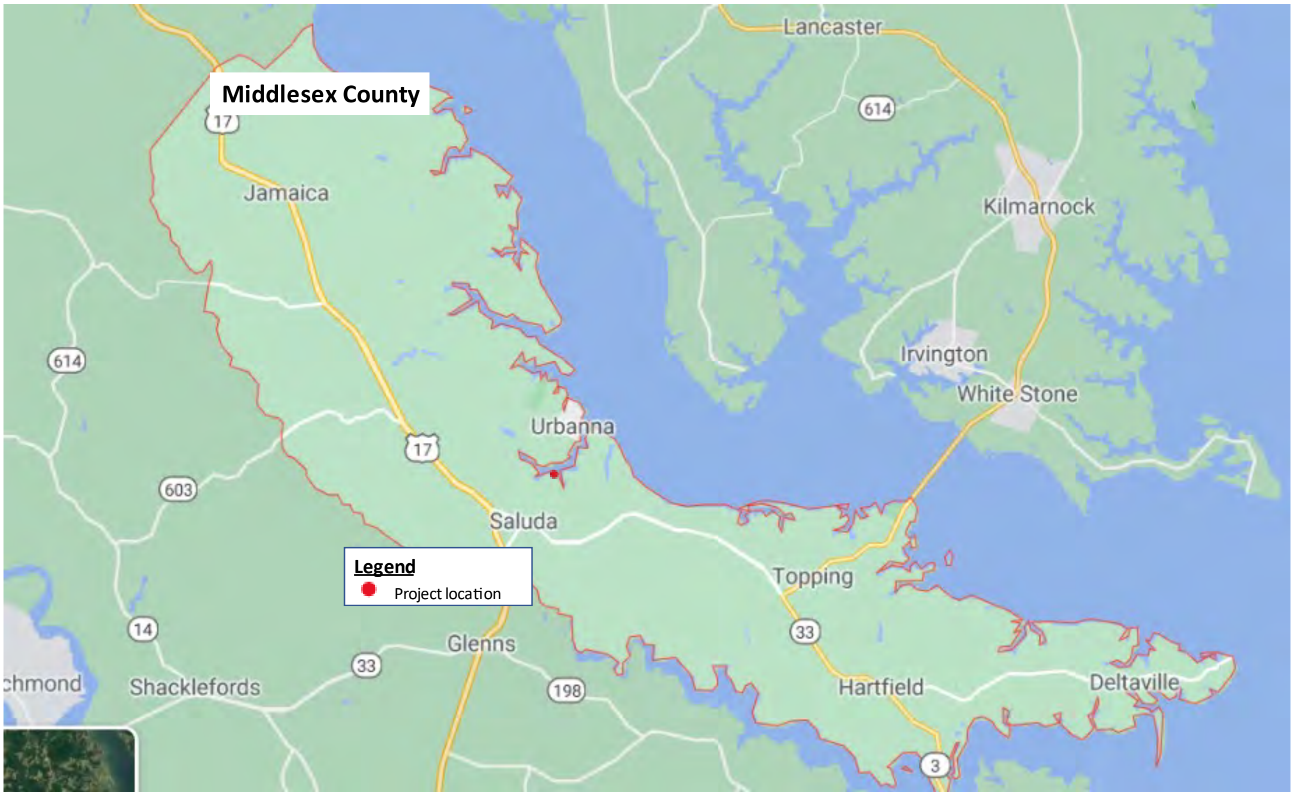
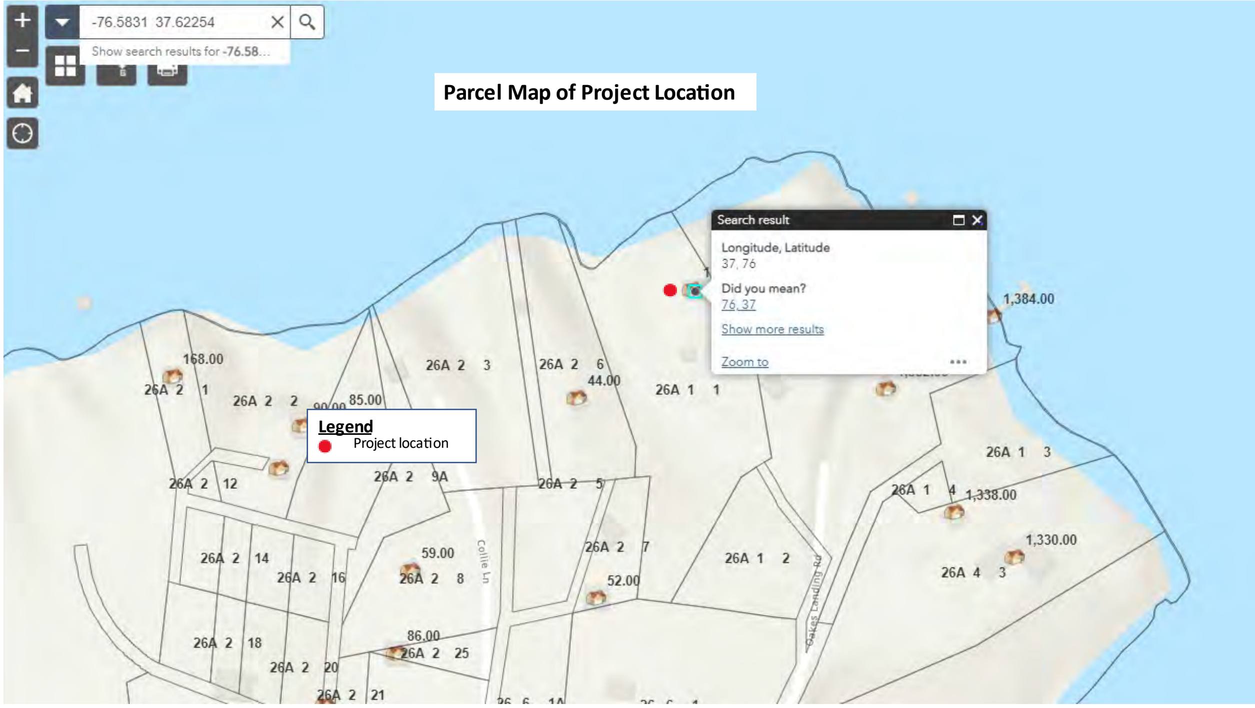
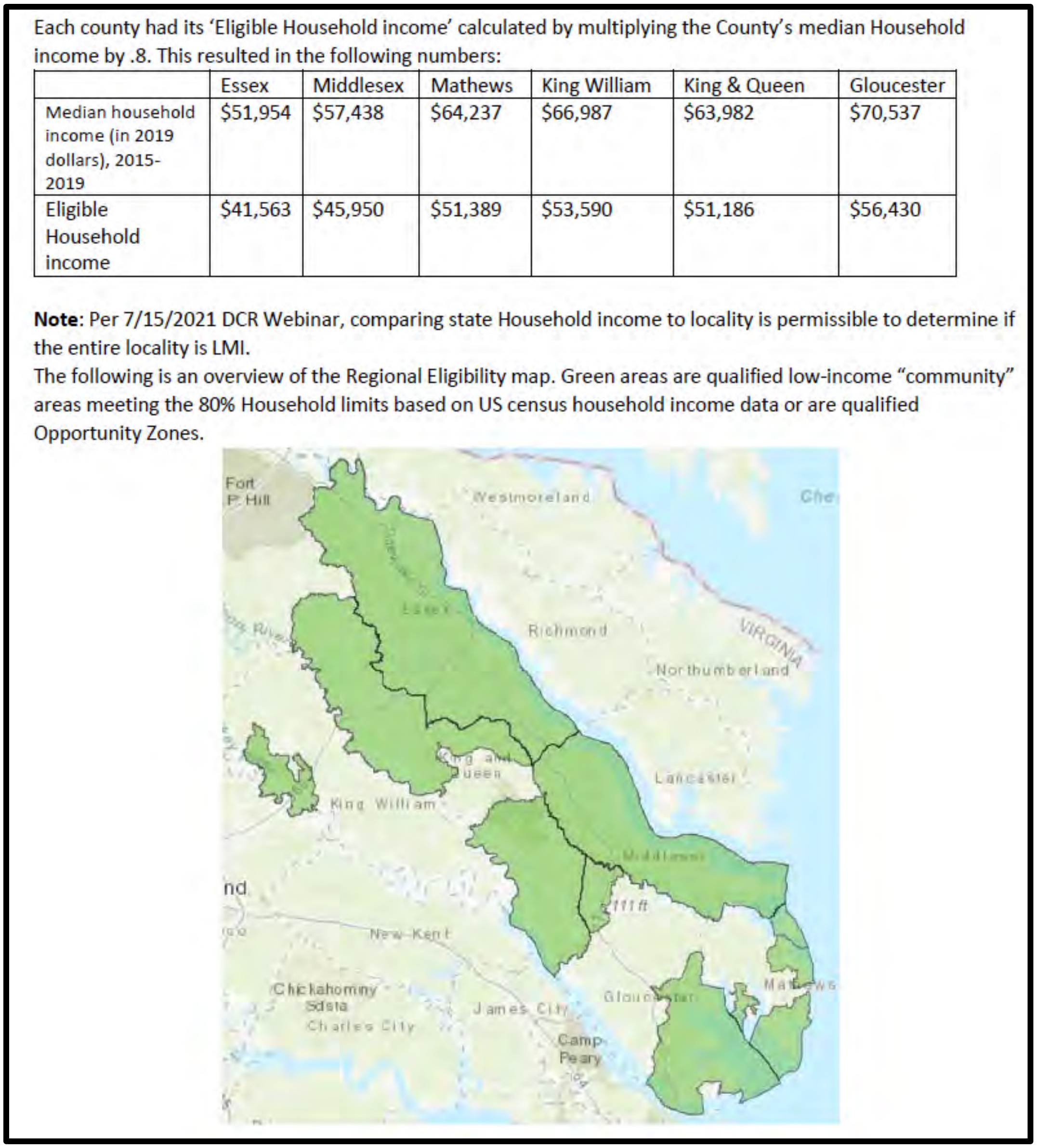


Figure 4. Parcel Map of Project Location



Middlesex County is located at Virginia’s Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

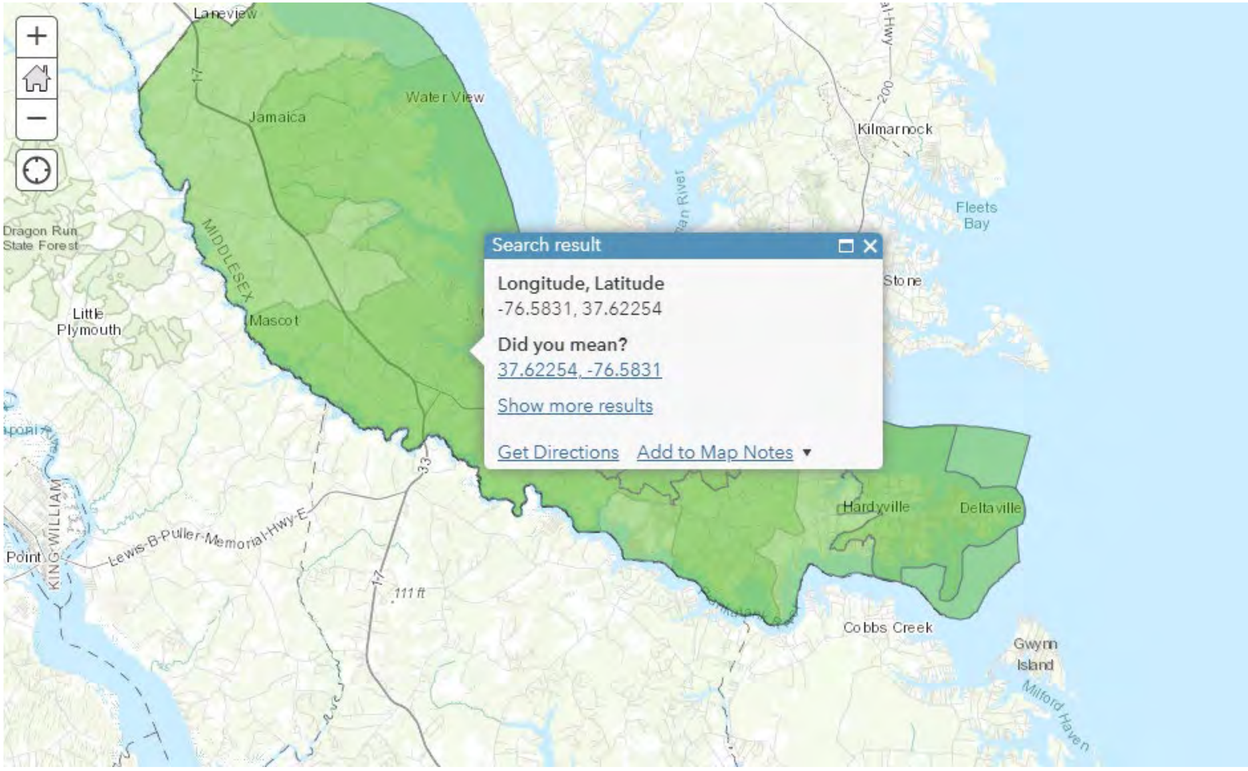
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



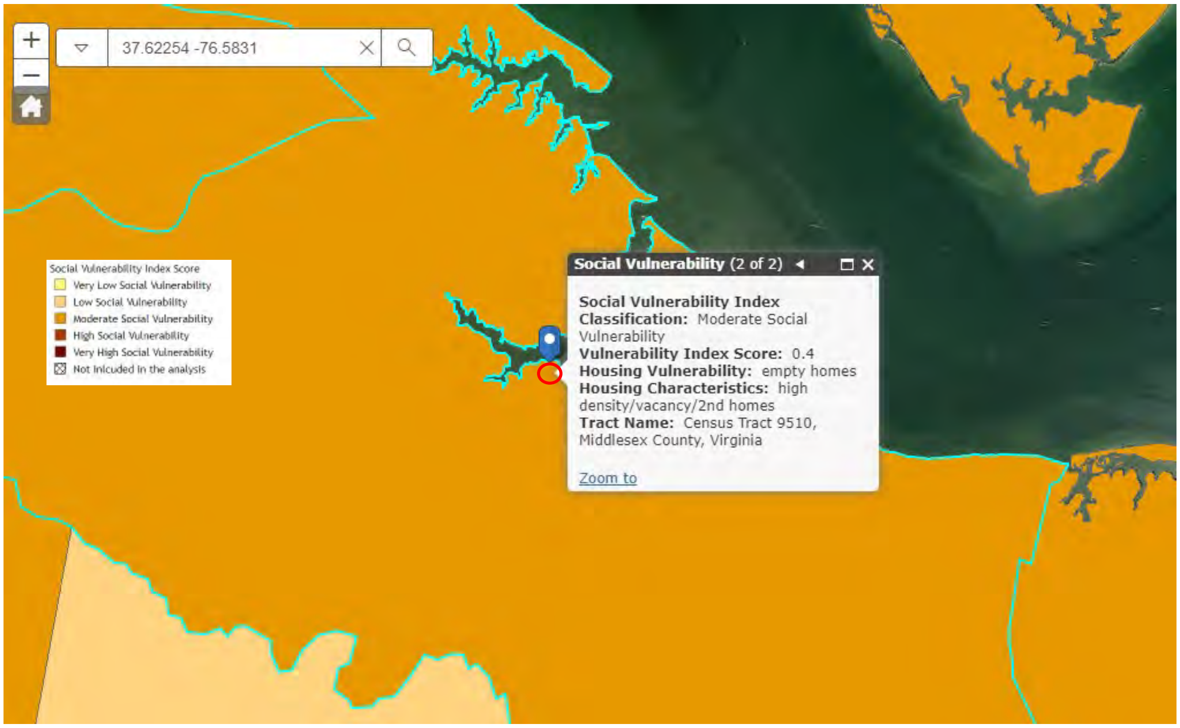
Search result

Longitude, Latitude
-76.5831, 37.62254

Did you mean?
37.62254, -76.5831

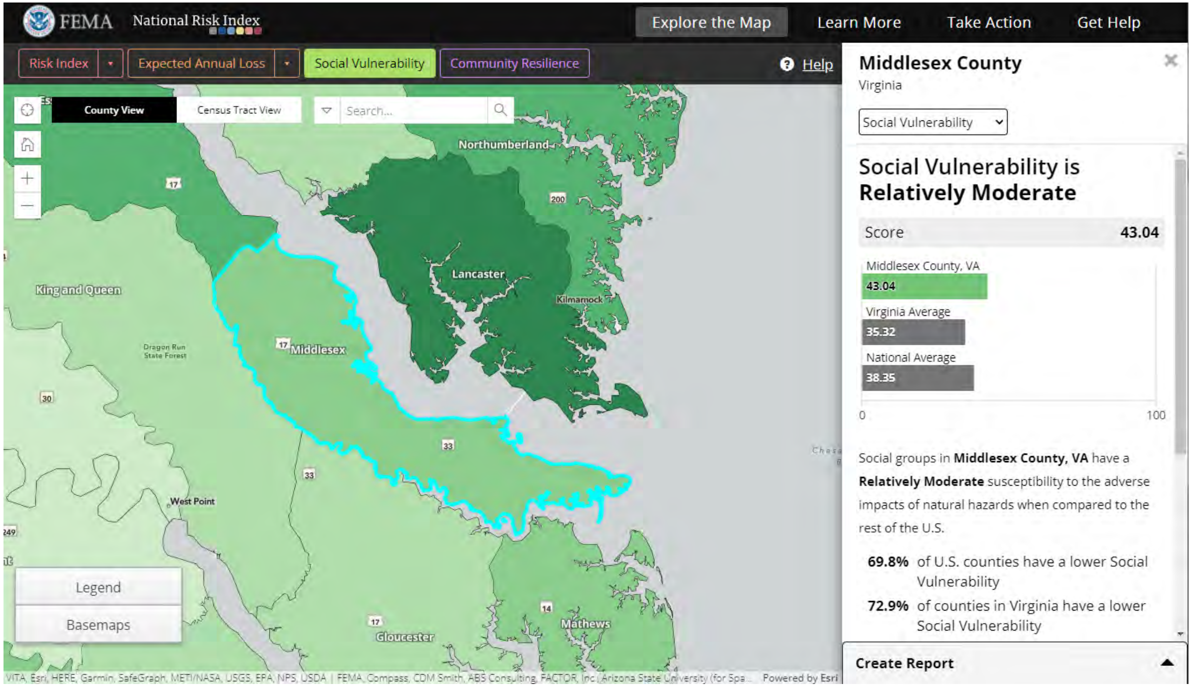
According to the VDAPT Virginia’s Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA’s National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.4
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9510, Middlesex County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Middlesex County
Virginia

Social Vulnerability is Relatively Moderate

Score	43.04

Social groups in **Middlesex County, VA** have a **Relatively Moderate** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

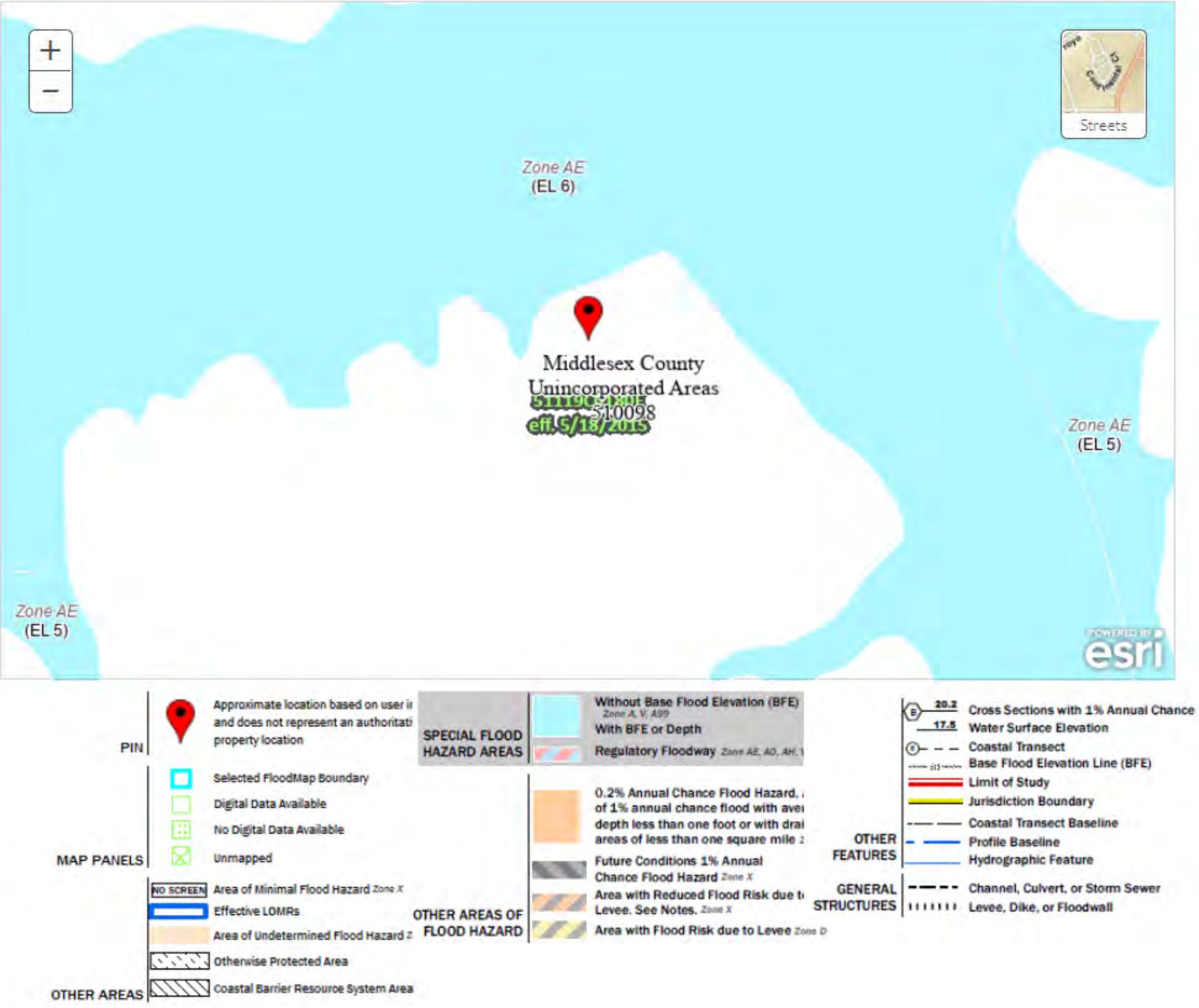
69.8%	of U.S. counties have a lower Social Vulnerability
72.9%	of counties in Virginia have a lower Social Vulnerability

The project is located at 1387 Oakes Landing Road, Saluda, VA 23149 (-76.5831, 37.62254). The property was purchased in 2019 and has experienced a number of issues (length of shoreline in approximately 200 feet). When the property was purchased, there was an undercut like a cave along the shoreline. Some of it has subsequently caved in. When it rains hard, the hill is eroding from the top; now lots of roots are showing on the hill. Several trees have come down and more are in danger of falling. The location is on Urbanna Creek and experiences lots of wave action from boating traffic. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included as **Appendix 2**. This recommendation is valued highly, especially the permitting process in following the recommendation of the Shoreline Engineer to construct a riprap marsh sill and breakwater. See accompanying pictures of the site conditions below.

Please see **Appendix 3** for additional property photos.

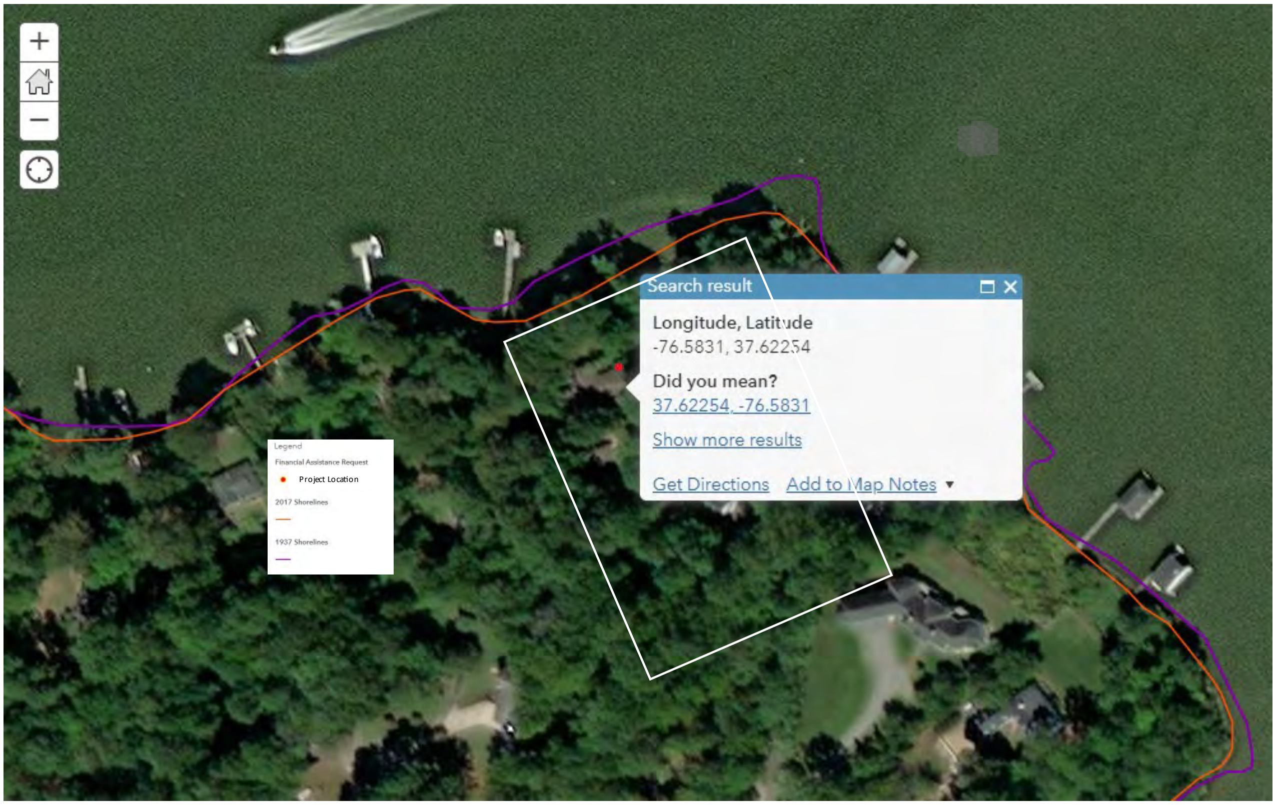
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 4** for the FIRMettes (last mapped 5/18/2015).

Figure 9: Map of FEMA Flood Zones



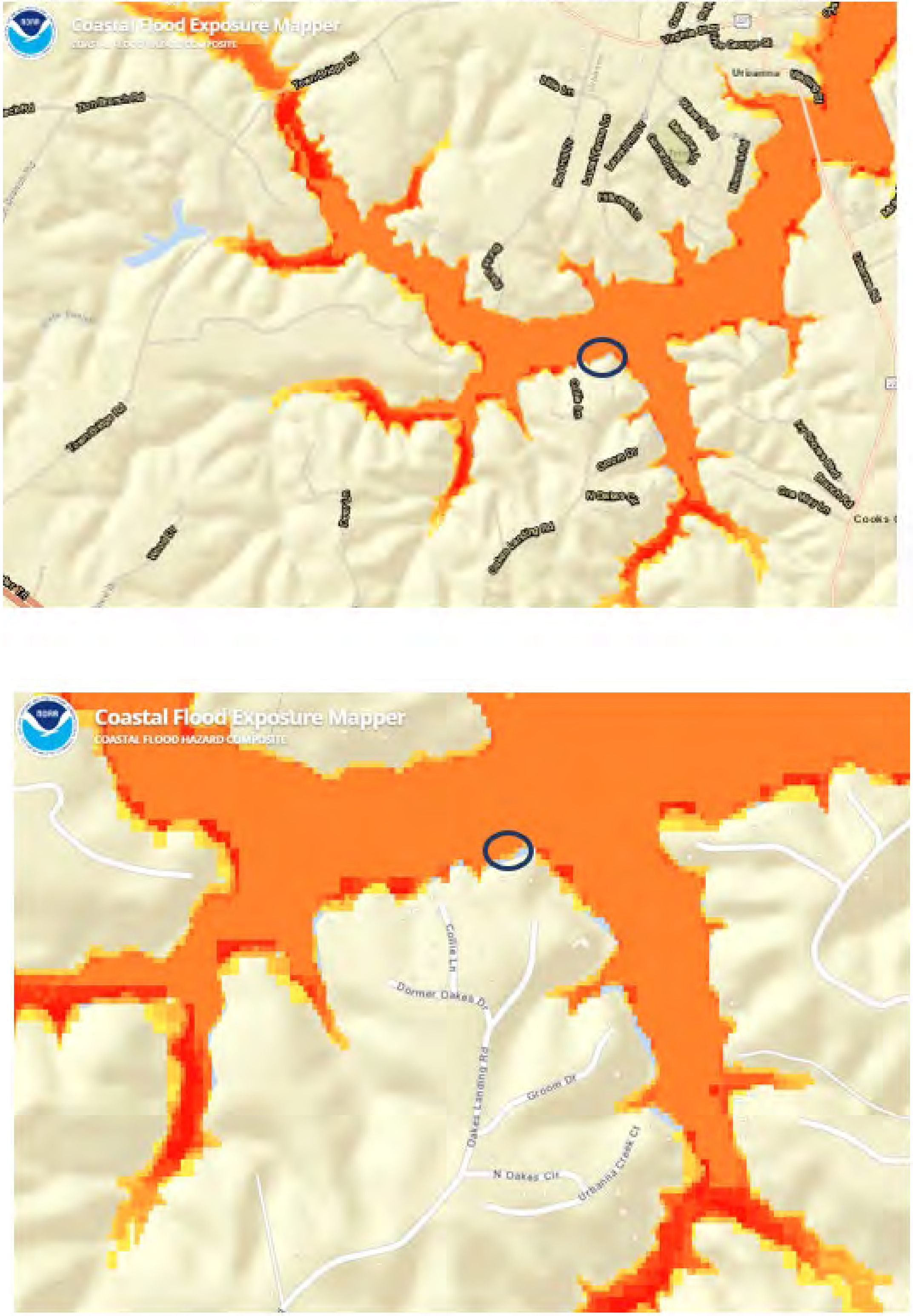
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 26,145.2 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 5** lists 75 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Middlesex County's current floodplain ordinance can be found at: https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF.*

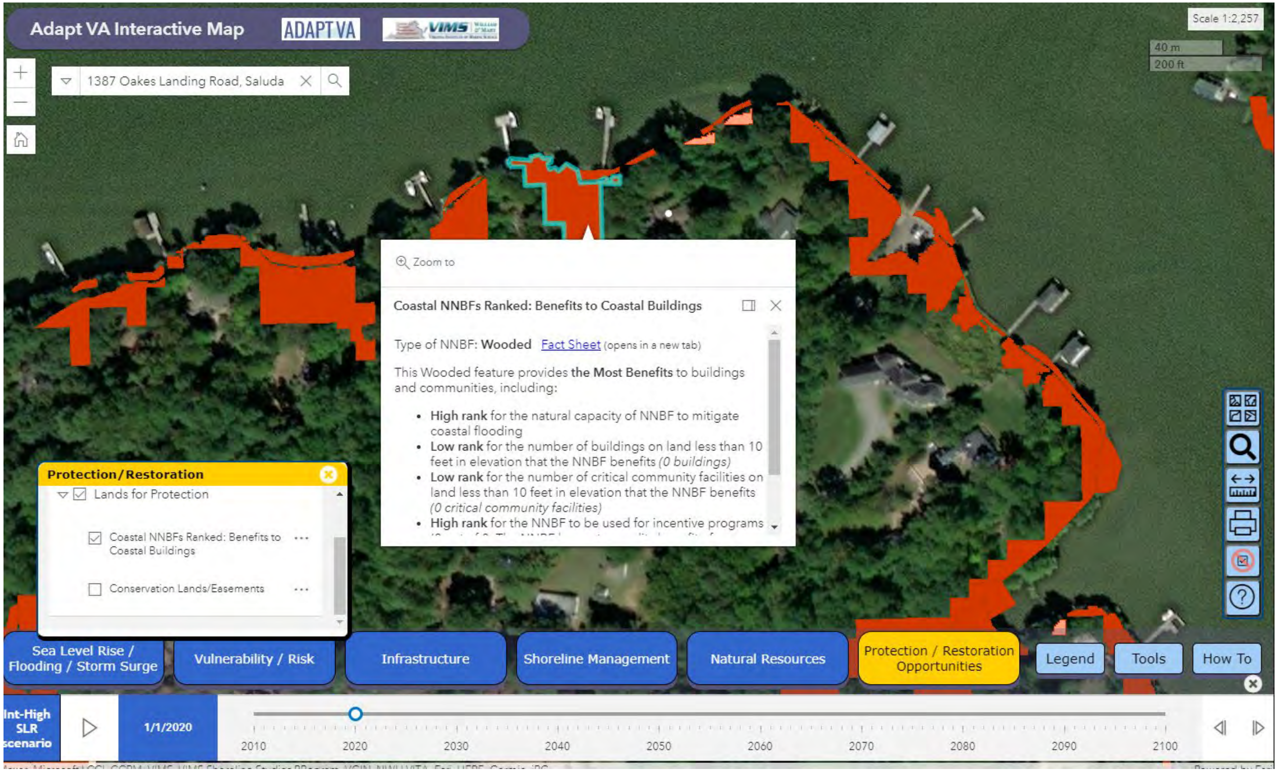
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Low rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(0 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice* *that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as recommended by SEAS, as the installation of a nature-based solution will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300

pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

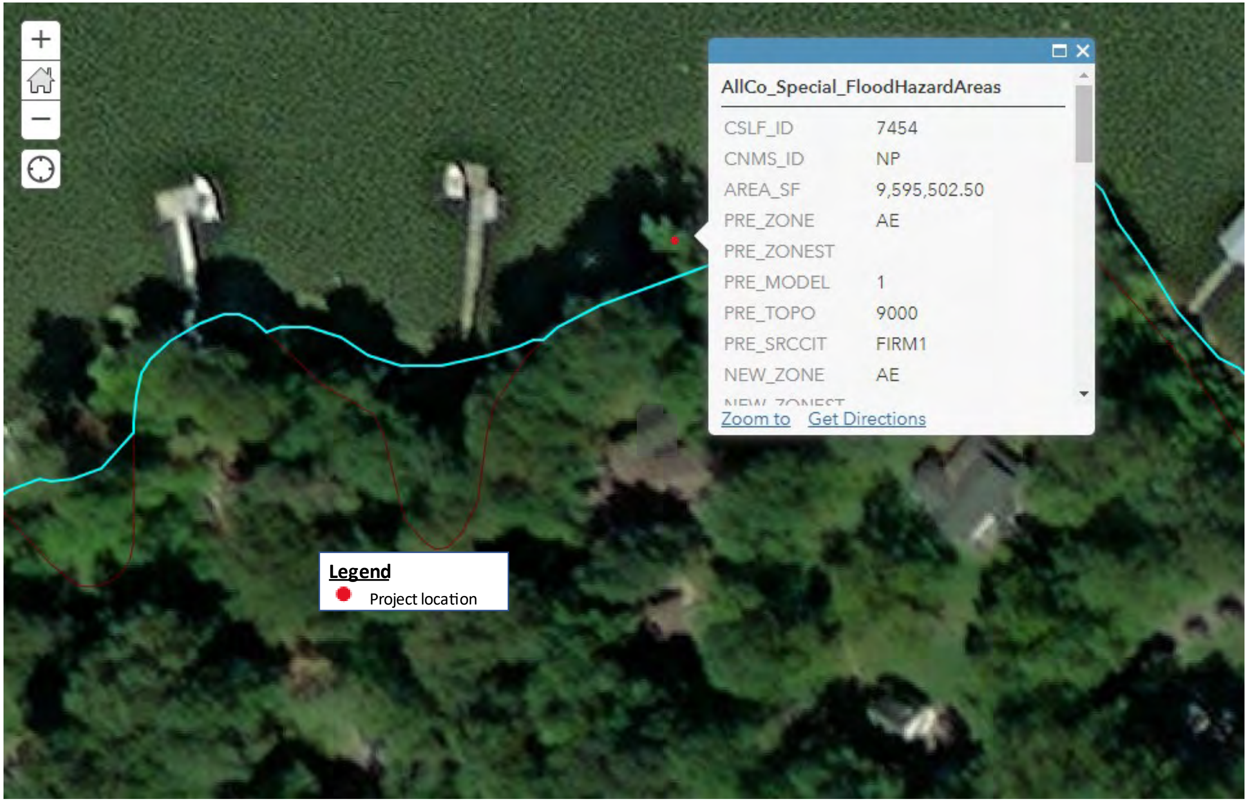
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to design a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**. In previous efforts the landowner has worked with a contractor to receive a cost estimate and summary (**Appendix 6**) for potential nature-based solutions to stabilize their shoreline; however more work needs to be done in order to select the appropriate nature-based or hybrid design that best suits the property.

Figure 13. Project Flood Hazard Area



AllCo_Special_FloodHazardAreas

CSLF_ID	7454
CNMS_ID	NP
AREA_SF	9,595,502.50
PRE_ZONE	AE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	9000
PRE_SRCCIT	FIRM1
NEW_ZONE	AE
NEW_ZONEST	

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 7.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 8.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

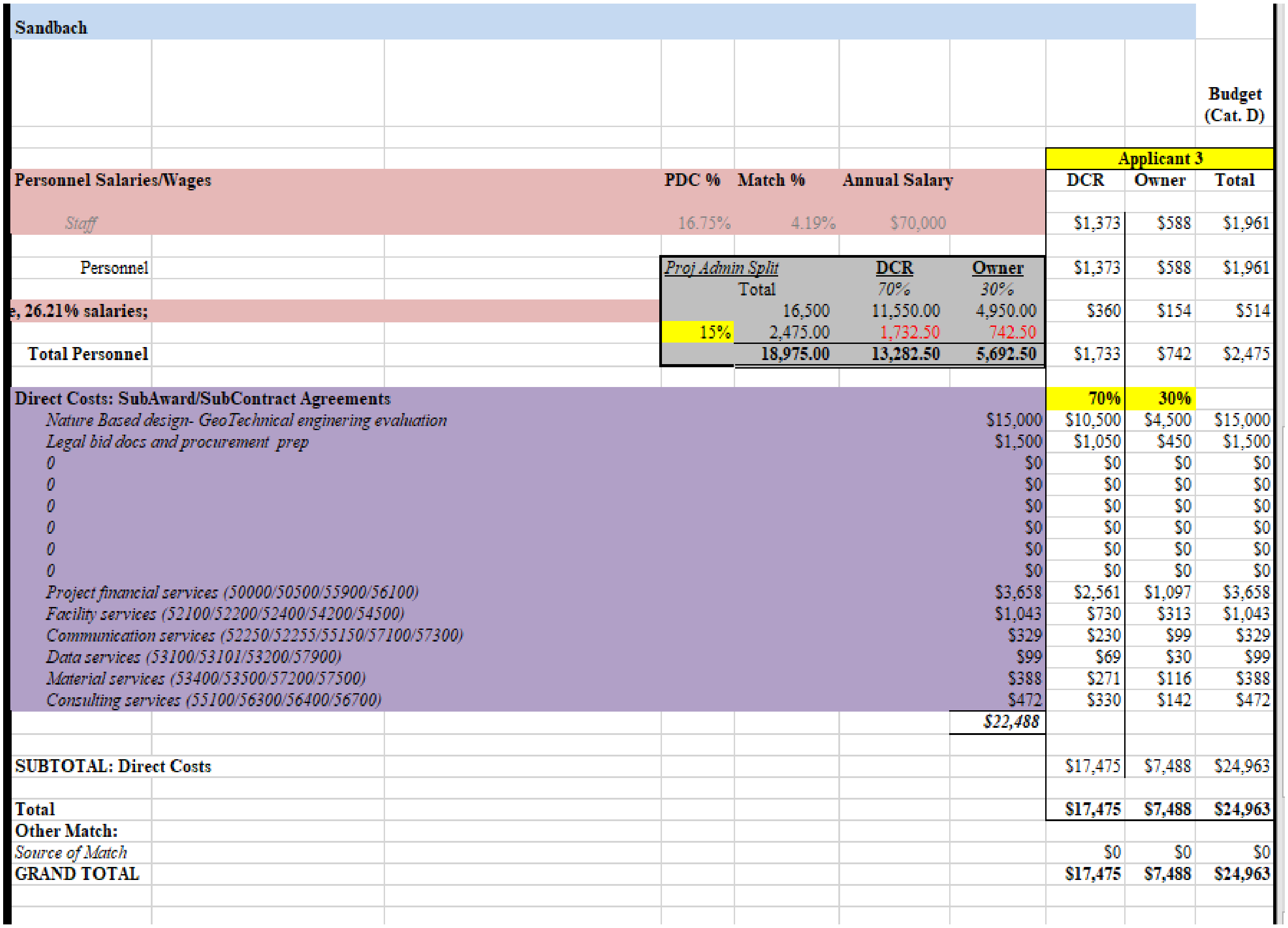
SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

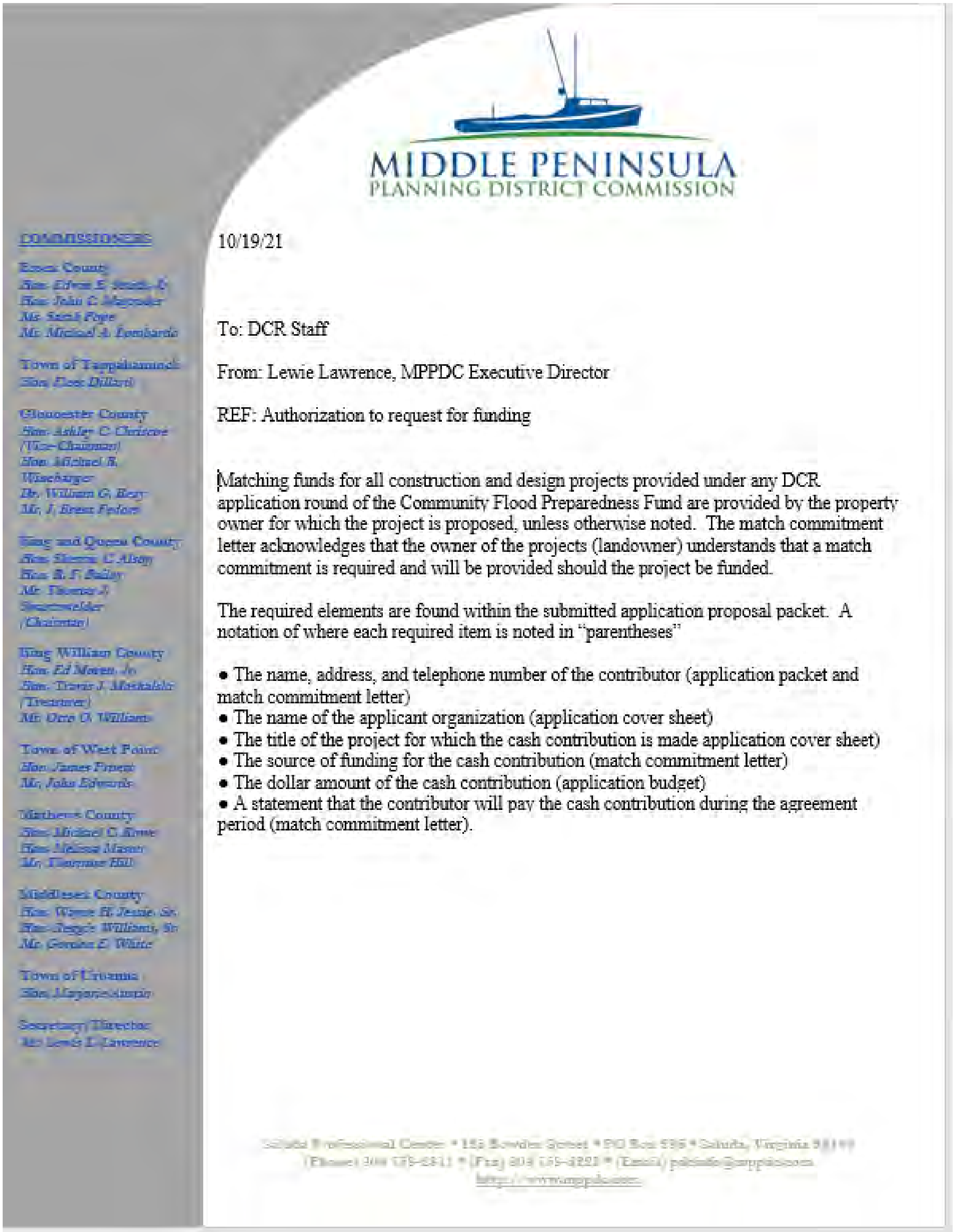
- ***Estimated total project cost:*** *$24,963*
- ***Amount of funds requested from the Fund:*** $17,475



Sandbach							
							Budget (Cat. D)
					Applicant 3		
Personnel Salaries/Wages	**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	16.75%	4.19%	$70,000		$1,373	$588	$1,961
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$1,373	$588	$1,961
		Total	*70%*	*30%*			
e, 26.21% salaries;		16,500	11,550.00	4,950.00	$360	$154	$514
	15%	2,475.00	1,732.50	742.50			
Total Personnel		**18,975.00**	**13,282.50**	**5,692.50**	$1,733	$742	$2,475
Direct Costs: SubAward/SubContract Agreements					**70%**	**30%**	
Nature Based design- GeoTechnical enginering evaluation				$15,000	$10,500	$4,500	$15,000
Legal bid docs and procurement prep				$1,500	$1,050	$450	$1,500
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$3,658	$2,561	$1,097	$3,658
Facility services (52100/52200/52400/54200/54500)				$1,043	$730	$313	$1,043
Communication services (52250/52255/55150/57100/57300)				$329	$230	$99	$329
Data services (53100/53101/53200/57900)				$99	$69	$30	$99
Material services (53400/53500/57200/57500)				$388	$271	$116	$388
Consulting services (55100/56300/56400/56700)				$472	$330	$142	$472
				$22,488			
SUBTOTAL: Direct Costs					$17,475	$7,488	$24,963
Total					**$17,475**	**$7,488**	**$24,963**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$17,475**	**$7,488**	**$24,963**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

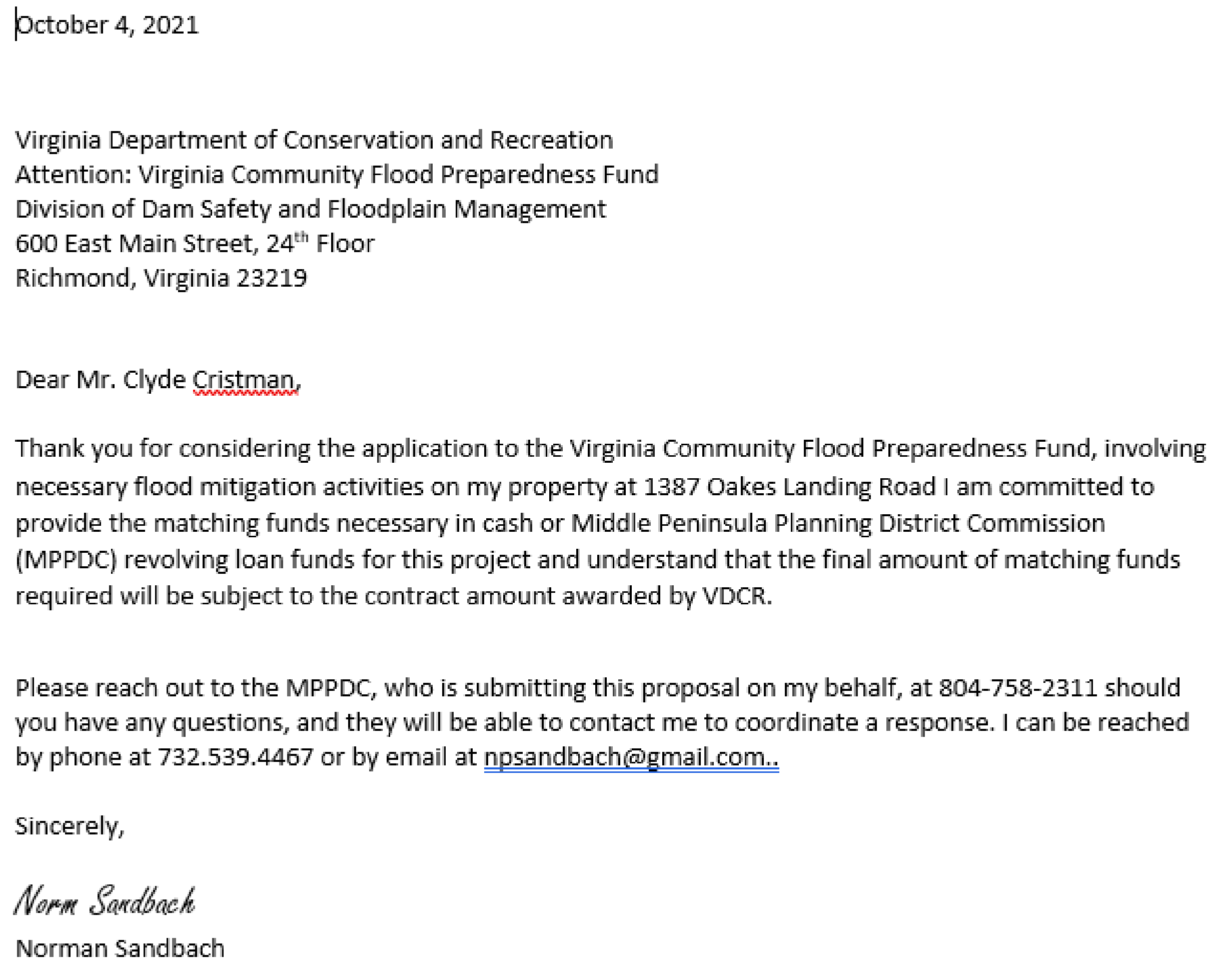
REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).
]

Signed pledge agreement from each contributing organization:



October 4, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 1387 Oakes Landing Road I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 732.539.4467 or by email at npsandbach@gmail.com..

Sincerely,

Norm Sandbach

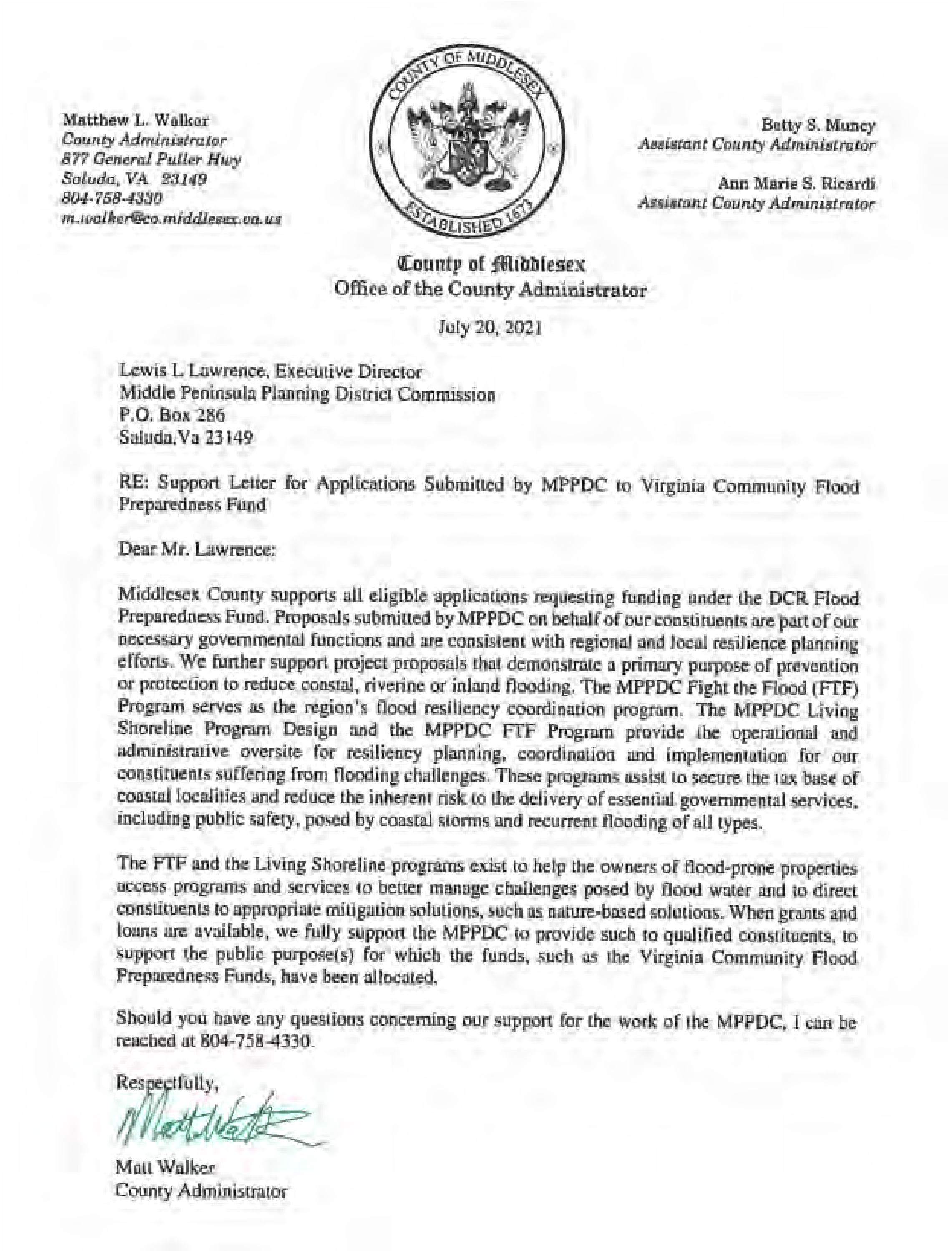
Norman Sandbach

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Matthew L. Walker
County Administrator
877 General Puller Hwy
Saluda, VA 23149
804-758-4330
m.walker@co.middlesex.va.us

Betty S. Muncy
Assistant County Administrator

Ann Marie S. Ricardi
Assistant County Administrator

County of Middlesex
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda,Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

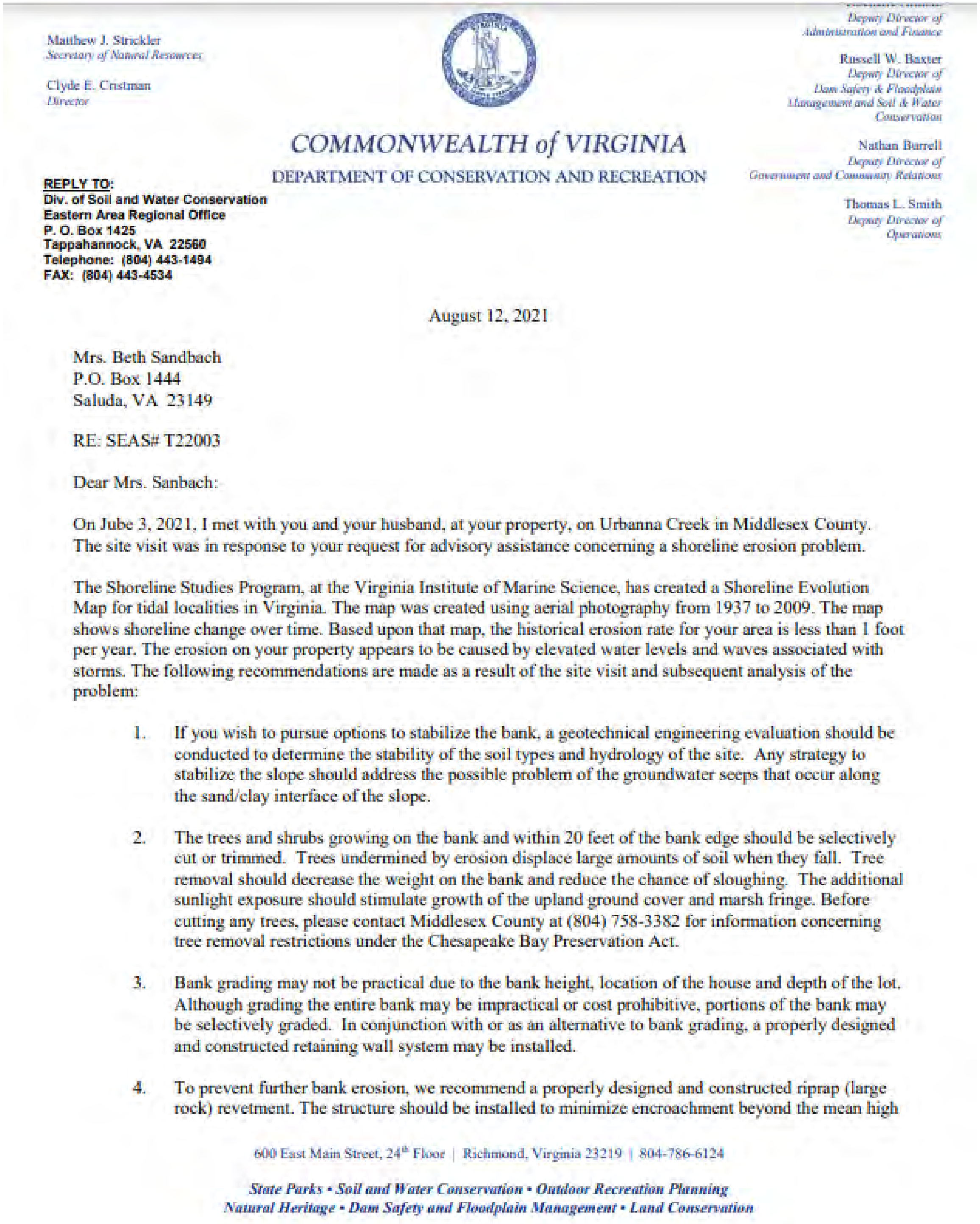
Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker
County Administrator

APPENDIX 2

DCR Site Visit Letter



Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH *of* VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Deputy Director of
Administration and Finance

Russell W. Baxter
Deputy Director of
Dam Safety & Floodplain
Management and Soil & Water
Conservation

Nathan Burrell
Deputy Director of
Government and Community Relations

Thomas L. Smith
Deputy Director of
Operations

REPLY TO:
Div. of Soil and Water Conservation
Eastern Area Regional Office
P. O. Box 1425
Tappahannock, VA 22560
Telephone: (804) 443-1494
FAX: (804) 443-4534

August 12, 2021

Mrs. Beth Sandbach
P.O. Box 1444
Saluda, VA 23149

RE: SEAS# T22003

Dear Mrs. Sanbach:

On Jube 3, 2021, I met with you and your husband, at your property, on Urbanna Creek in Middlesex County. The site visit was in response to your request for advisory assistance concerning a shoreline erosion problem.

The Shoreline Studies Program, at the Virginia Institute of Marine Science, has created a Shoreline Evolution Map for tidal localities in Virginia. The map was created using aerial photography from 1937 to 2009. The map shows shoreline change over time. Based upon that map, the historical erosion rate for your area is less than 1 foot per year. The erosion on your property appears to be caused by elevated water levels and waves associated with storms. The following recommendations are made as a result of the site visit and subsequent analysis of the problem:

1. If you wish to pursue options to stabilize the bank, a geotechnical engineering evaluation should be conducted to determine the stability of the soil types and hydrology of the site. Any strategy to stabilize the slope should address the possible problem of the groundwater seeps that occur along the sand/clay interface of the slope.
2. The trees and shrubs growing on the bank and within 20 feet of the bank edge should be selectively cut or trimmed. Trees undermined by erosion displace large amounts of soil when they fall. Tree removal should decrease the weight on the bank and reduce the chance of sloughing. The additional sunlight exposure should stimulate growth of the upland ground cover and marsh fringe. Before cutting any trees, please contact Middlesex County at (804) 758-3382 for information concerning tree removal restrictions under the Chesapeake Bay Preservation Act.
3. Bank grading may not be practical due to the bank height, location of the house and depth of the lot. Although grading the entire bank may be impractical or cost prohibitive, portions of the bank may be selectively graded. In conjunction with or as an alternative to bank grading, a properly designed and constructed retaining wall system may be installed.
4. To prevent further bank erosion, we recommend a properly designed and constructed riprap (large rock) revetment. The structure should be installed to minimize encroachment beyond the mean high

water position. The riprap should be constructed on a 2:1 (horizontal/vertical) slope or flatter. A minimum of two layers of armor rock should be used. Each armor rock should weigh a minimum of 50 pounds. The toe of the riprap should be buried a minimum of 1 feet below the mean low water elevation. An alternative to the buried toe is a riprap apron. The apron consists of 2 layers of armor rock extending a minimum of 2 feet onto the bottom. A layer of filter cloth should be used under and behind the riprap. The riprap should be extended inland or properly connected to neighboring structures to prevent erosional flanking. Lists of filter cloth and riprap suppliers have been enclosed. See the enclosed cross-sectional view of a typical riprap revetment.

The above recommendations are made in my capacity as an advisory agent in shoreline erosion control matters. The suggestions should not be considered as binding you to any particular course of action, as they are intended to indicate what we think would be the best solution in terms of cost and effectiveness. Our examination of the site or this report does not constitute permission by the Commonwealth, or its agencies, to proceed with implementation of control measures. Permits from State and Federal agencies are generally required for shoreline modification.

You should also be aware that success in shoreline erosion control cannot be guaranteed, as there are many variables involved. In this regard, we suggest care in selecting a contractor. Our comments concerning construction are intended as guidelines developed from our experience in viewing structures that have been successful or have failed.

If you decide to construct a control measure, an assessment of the impacts of the project on the environment will be given by the regulatory agencies. Our advice is given with the idea of reducing environmental impacts associated with our recommendations. Although this has been considered in our recommendations, the permit reviewing agencies may desire additional information or measures.

Services available through this office include: review of the permit application; review of design and construction plans; and inspection of structures under construction when plans have been reviewed by this office. We recommend that a copy of this report be attached to the permit application.

If we may be of further assistance or if you have any questions, please let me know.

Sincerely,

Michael L. Vanlandingham

Michael L. Vanlandingham
Shoreline Engineer

Enclosures (5)

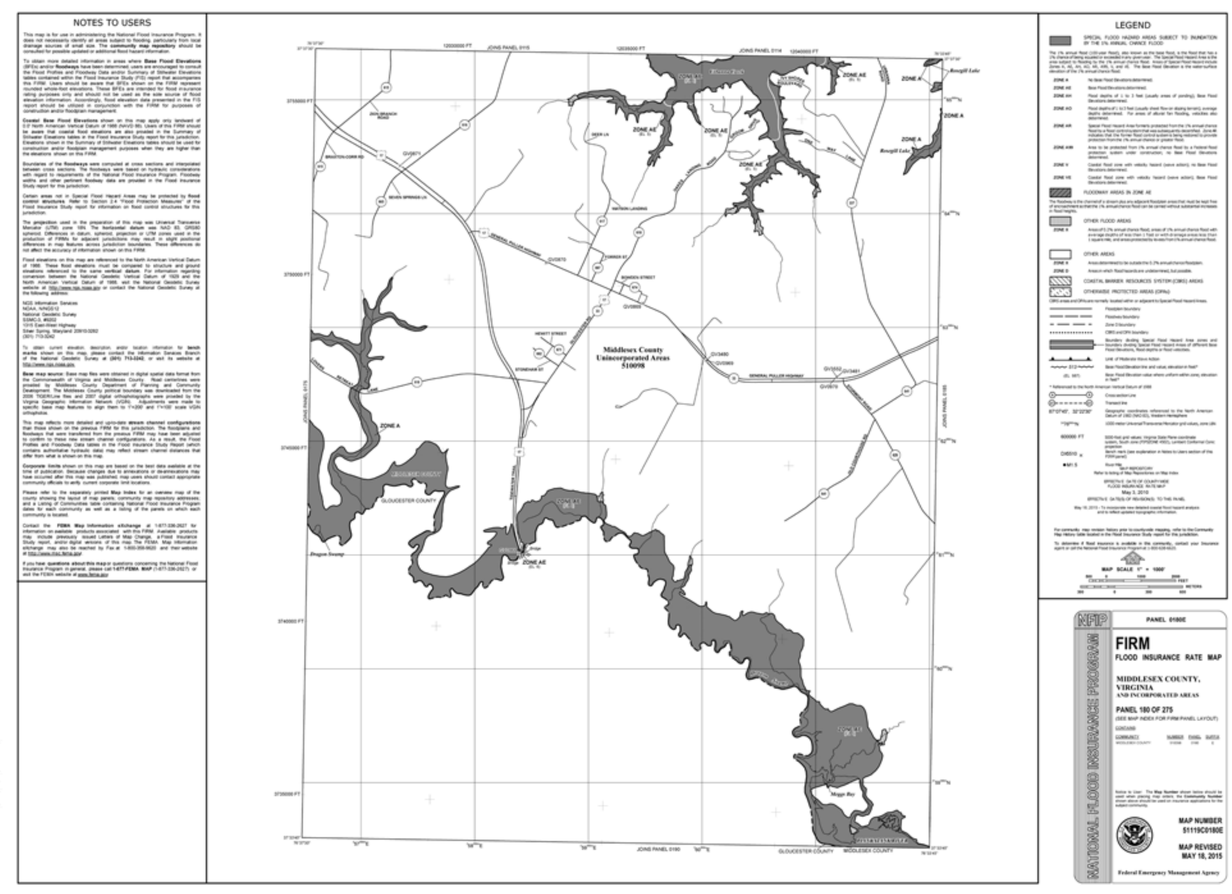
APPENDIX 3

Additional Property Photos

APPENDIX 4

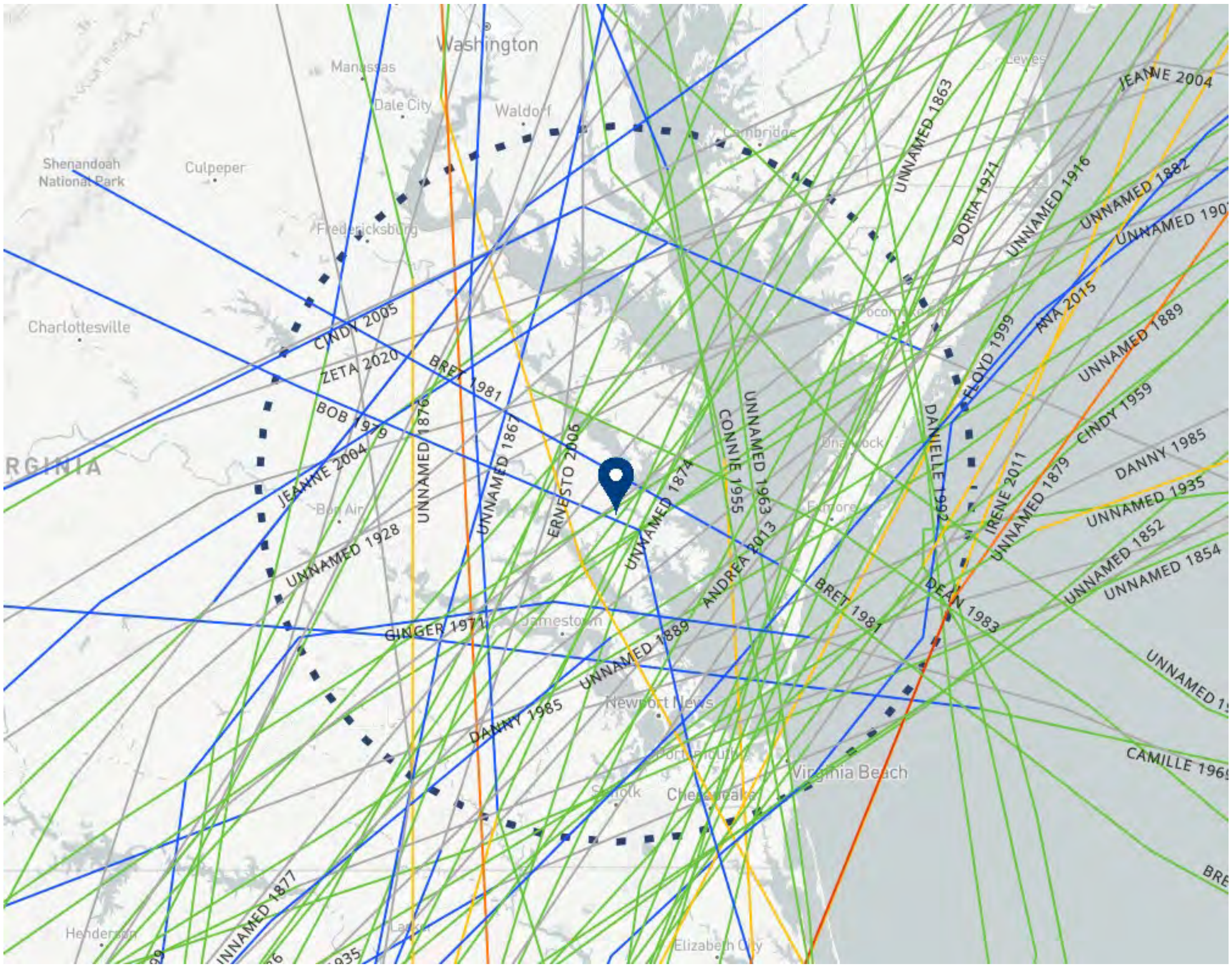
Project Location FIRMette

(FIRMette #: 51119C0180E)



APPENDIX 5

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.62254 -76.5831

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

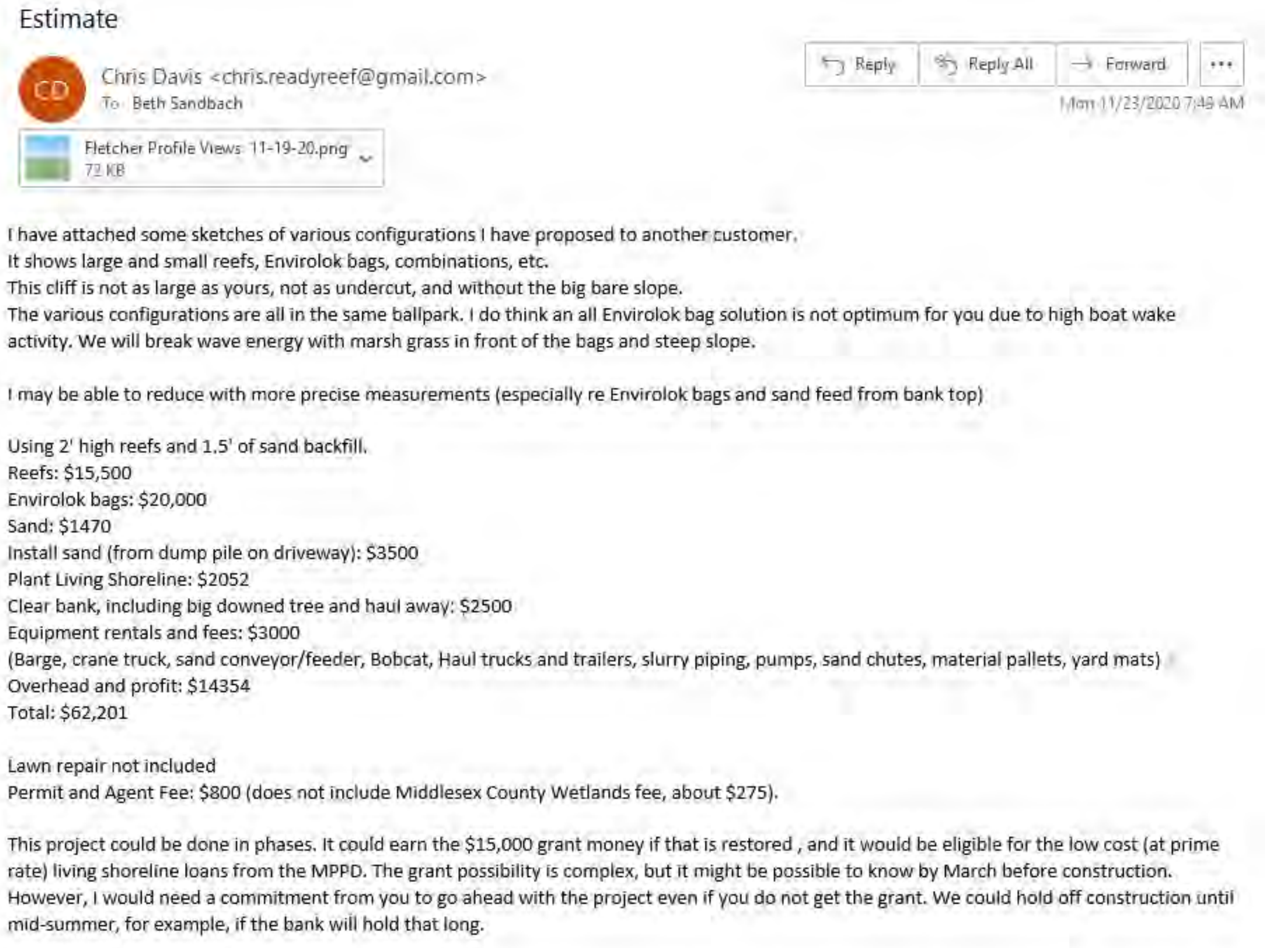
STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 6



Estimate

Chris Davis <chris.readyreef@gmail.com>
To Beth Sandbach

Mon 11/23/2020 7:48 AM

Fletcher Profile Views 11-19-20.png
72 KB

I have attached some sketches of various configurations I have proposed to another customer.
It shows large and small reefs, Envirolok bags, combinations, etc.
This cliff is not as large as yours, not as undercut, and without the big bare slope.
The various configurations are all in the same ballpark. I do think an all Envirolok bag solution is not optimum for you due to high boat wake activity. We will break wave energy with marsh grass in front of the bags and steep slope.

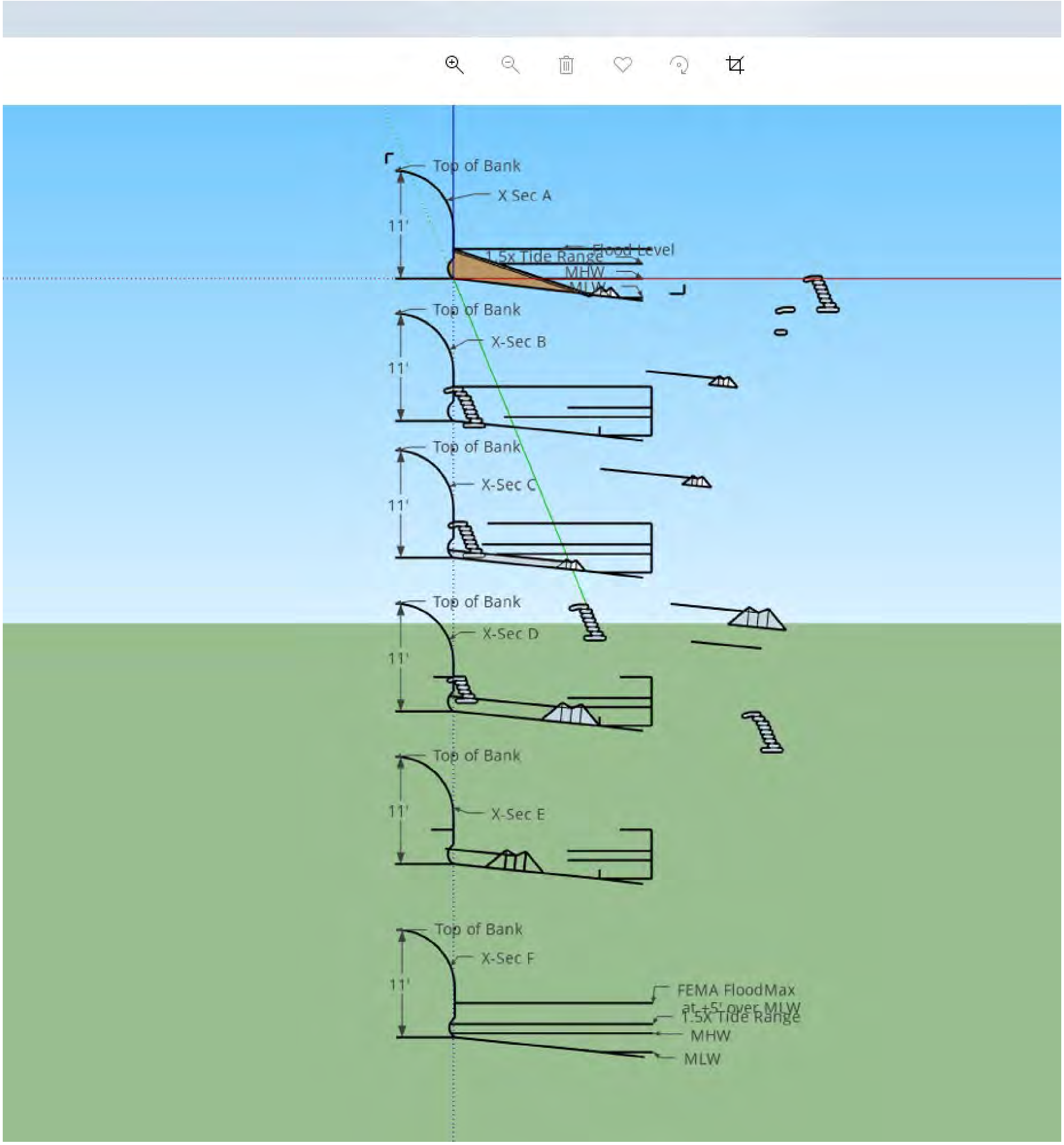
I may be able to reduce with more precise measurements (especially re Envirolok bags and sand feed from bank top)

Using 2' high reefs and 1.5' of sand backfill.
Reefs: $15,500
Envirolok bags: $20,000
Sand: $1470
Install sand (from dump pile on driveway): $3500
Plant Living Shoreline: $2052
Clear bank, including big downed tree and haul away: $2500
Equipment rentals and fees: $3000
(Barge, crane truck, sand conveyor/feeder, Bobcat, Haul trucks and trailers, slurry piping, pumps, sand chutes, material pallets, yard mats)
Overhead and profit: $14354
Total: $62,201

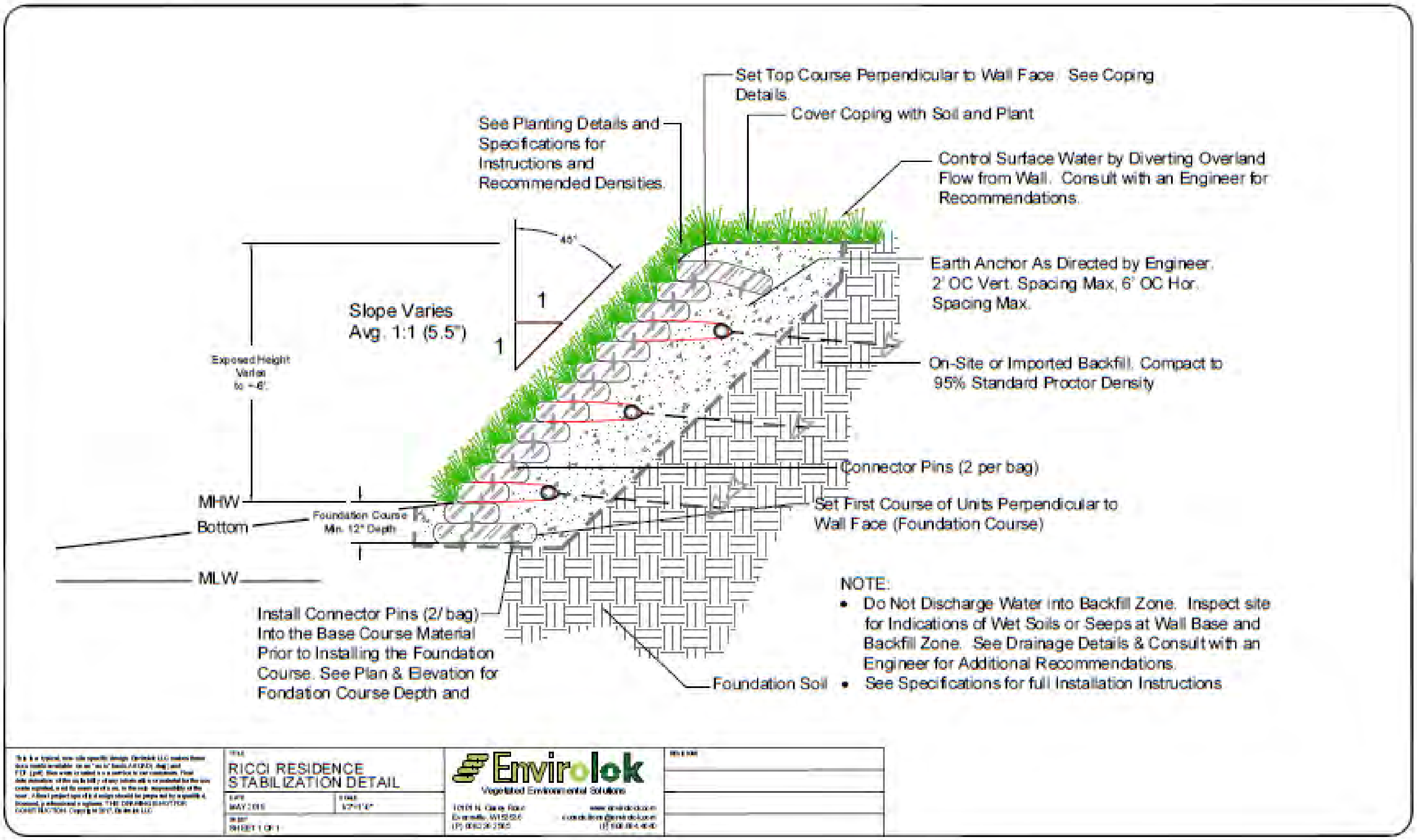
Lawn repair not included
Permit and Agent Fee: $800 (does not include Middlesex County Wetlands fee, about $275).

This project could be done in phases. It could earn the $15,000 grant money if that is restored , and it would be eligible for the low cost (at prime rate) living shoreline loans from the MPPD. The grant possibility is complex, but it might be possible to know by March before construction. However, I would need a commitment from you to go ahead with the project even if you do not get the grant. We could hold off construction until mid-summer, for example, if the bank will hold that long.

Email Attachment – “configurations I have proposed to another customer”



Envirolok Bag shoreline stabilization option:



APPENDIX 7

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 8

Match Commitment Letter

October 4, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 1387 Oakes Landing Road I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 732.539.4467 or by email at npsandbach@gmail.com..

Sincerely,

Norm Sandbach

Norman Sandbach

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Wooldridge Cove Drive for Stone

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510098

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ________________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X___ No ____

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Middlesex County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#): 510098

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51119C0240E

Total Cost of Project: __________________$24,963___________________________________

Total Amount Requested: ______________$17,475_____________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. Relative sea-level rise and tidal and storm surge waters are undercutting the banks along the property (length of shoreline is 540 feet). An old, deteriorating wood bulkhead has holes in it which is allowing the backfill to behind the bulkhead to erode. There are also trees falling into the water with several more having roots exposed to salt water at the base of the steep eroding bank. Chris Davis of ReadyReef Inc. has visited the site and suggested some possible nature-based solutions that made sense in lieu of riprap. As with many other properties, the last few years have been more damaging than in past decades. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem-based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Wooldridge Cove Drive in Middlesex County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in **Appendix 1**.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf.*
    - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Middlesex's Comprehensive Plan can be found at: https://www.co.middlesex.va.us/252/Comprehensive-Plan.*

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

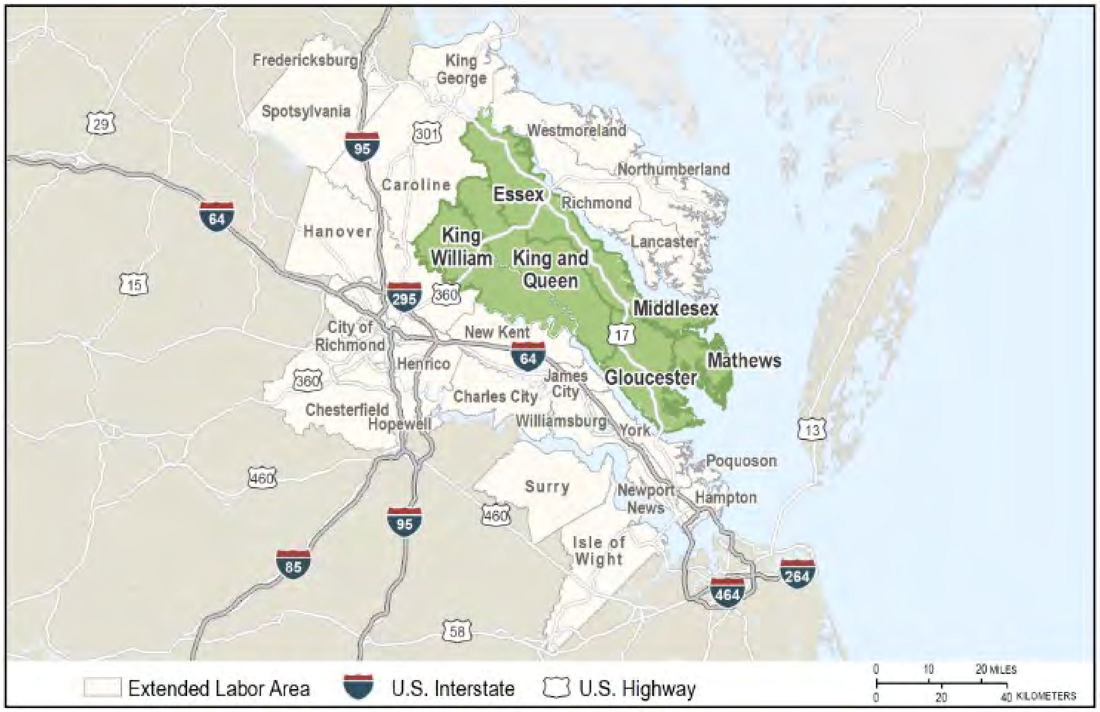
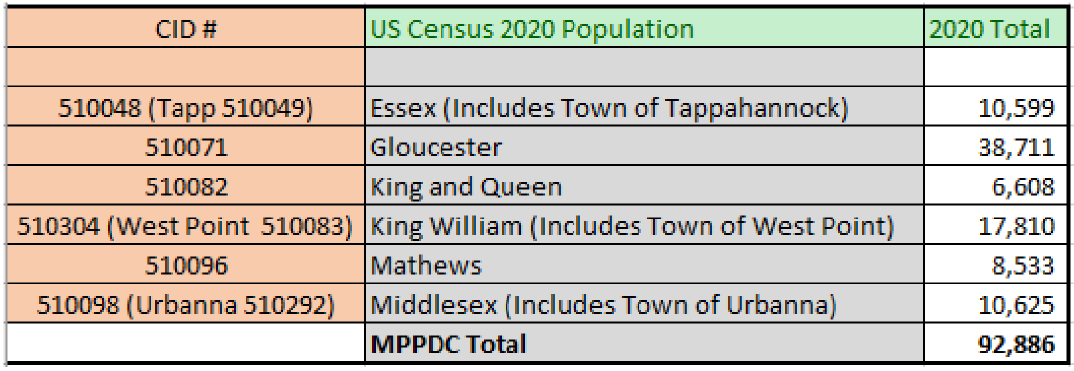


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to design a nature-based solution on one private property on Wooldridge Cove Drive in Middlesex County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

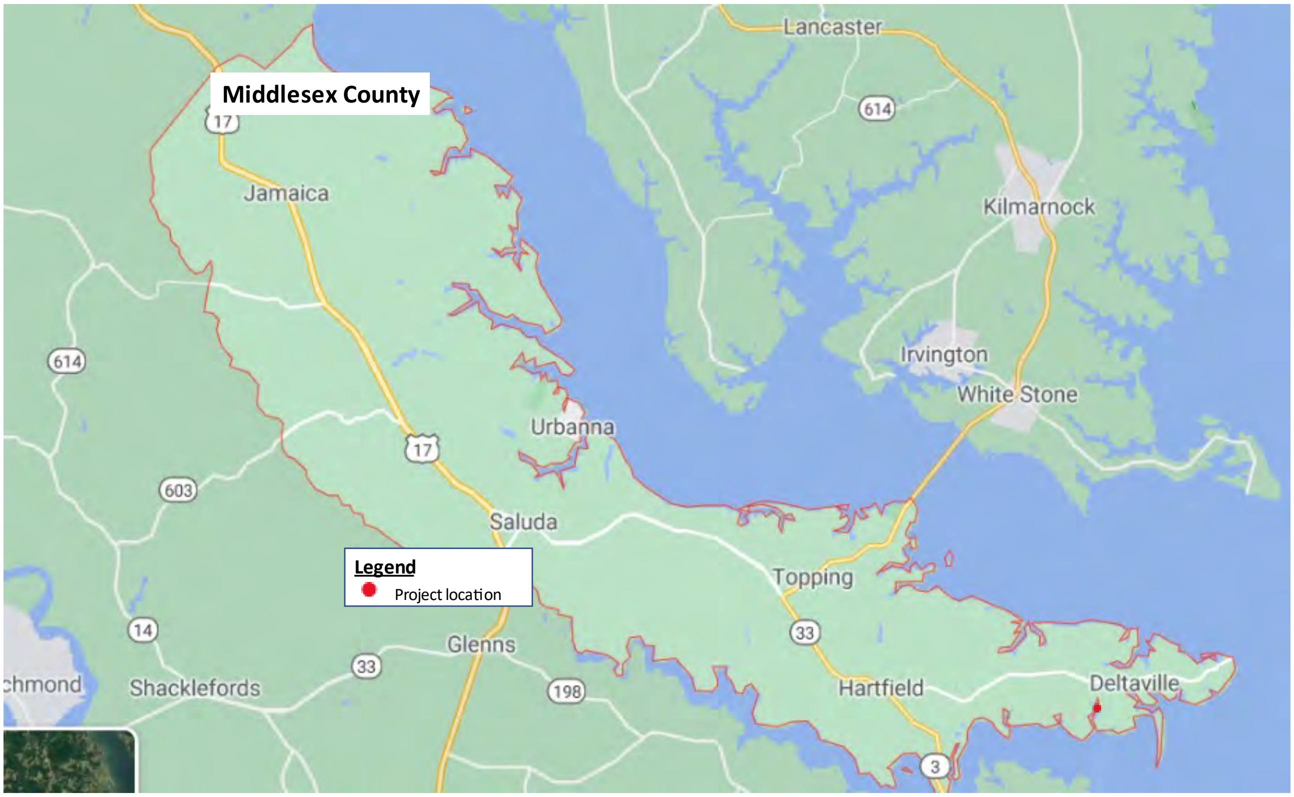
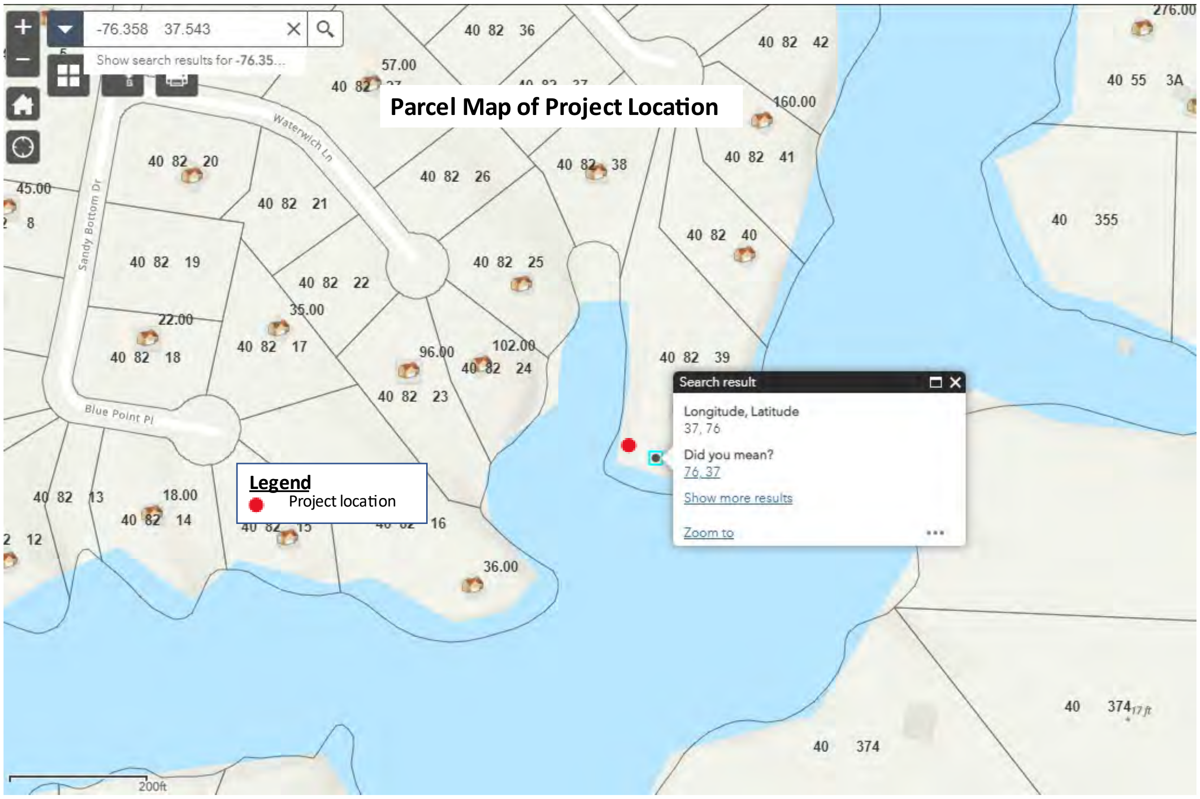


Figure 4. Parcel Map of Project Location



-76.358 37.543

Show search results for -76.35...

Search result

Longitude, Latitude
37, 76

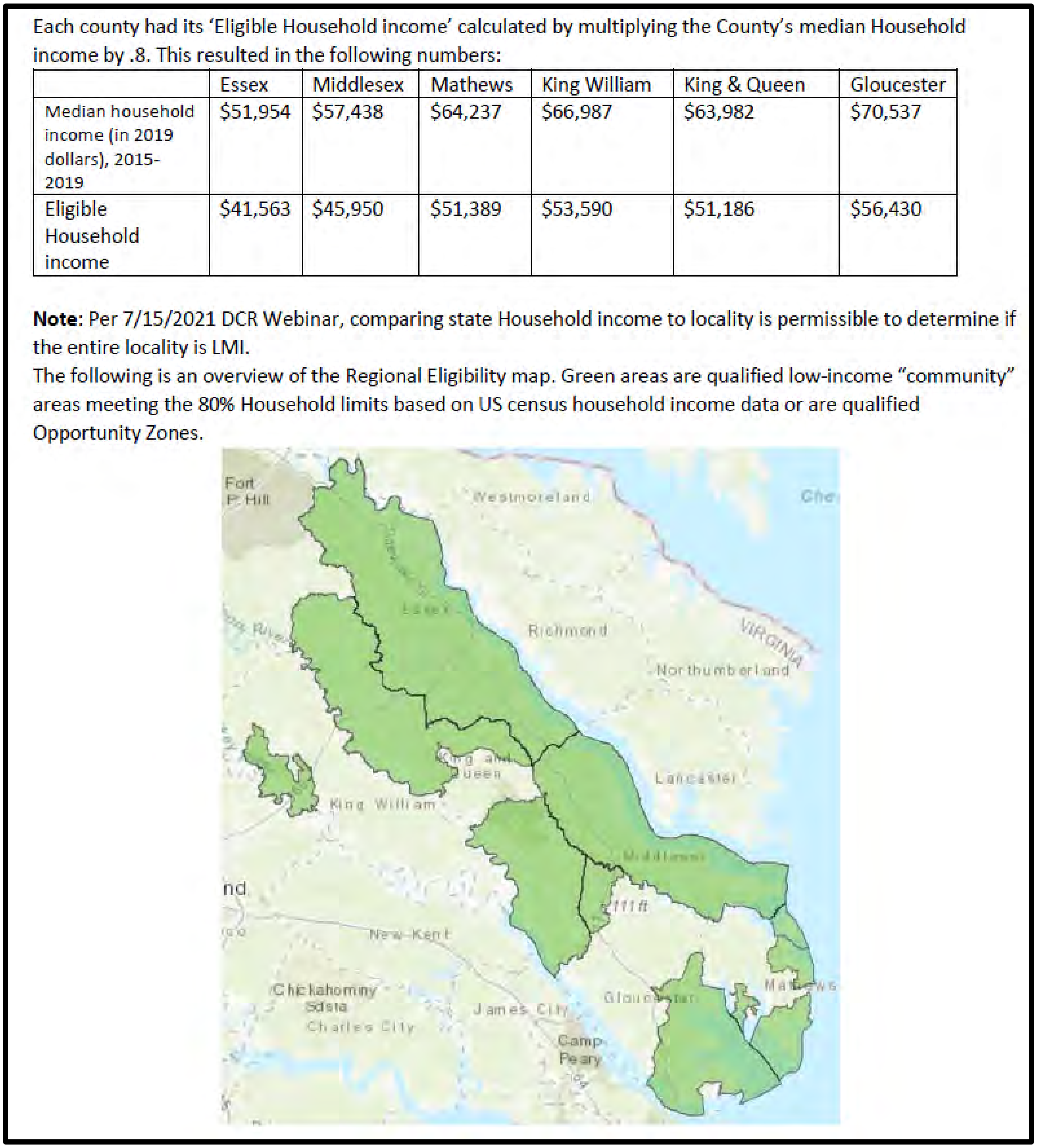
Did you mean?
76, 37

Show more results

Zoom to

Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

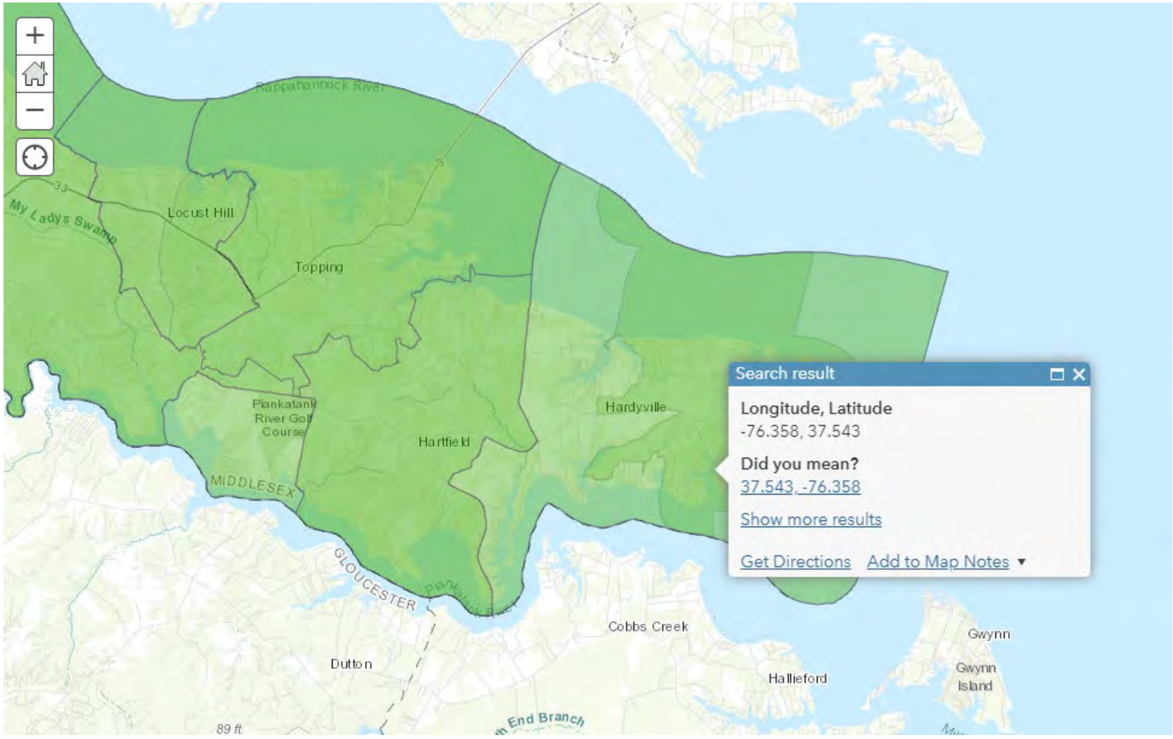
	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

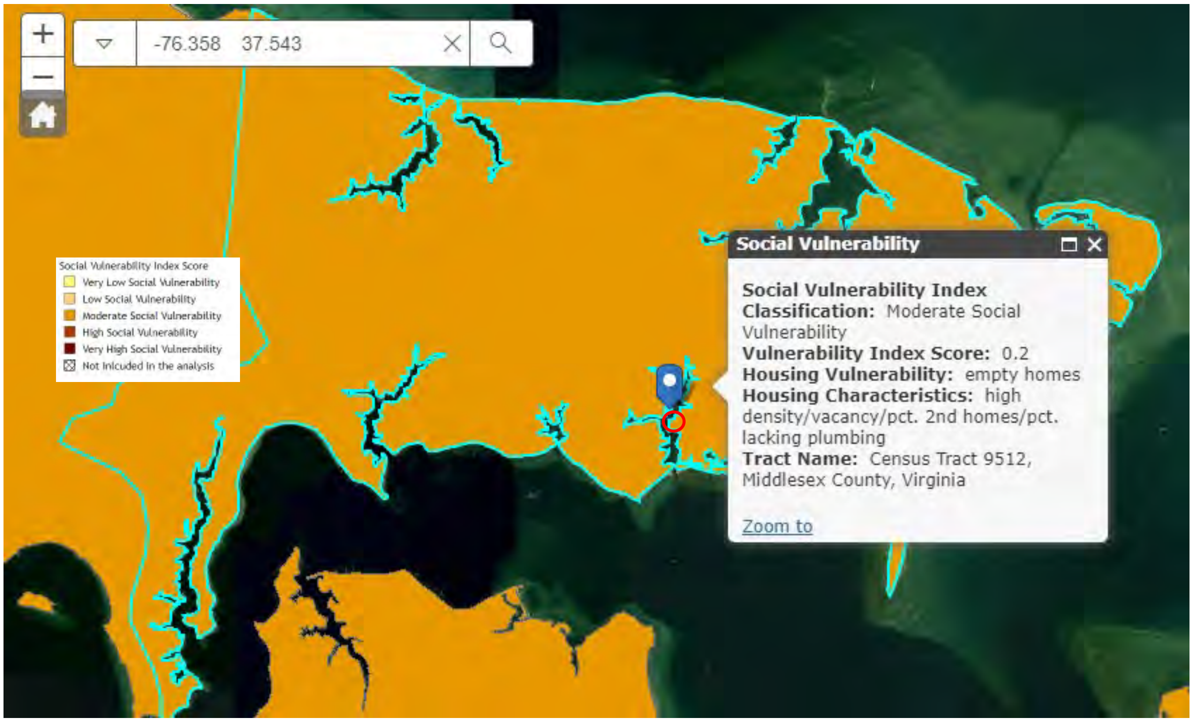
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area



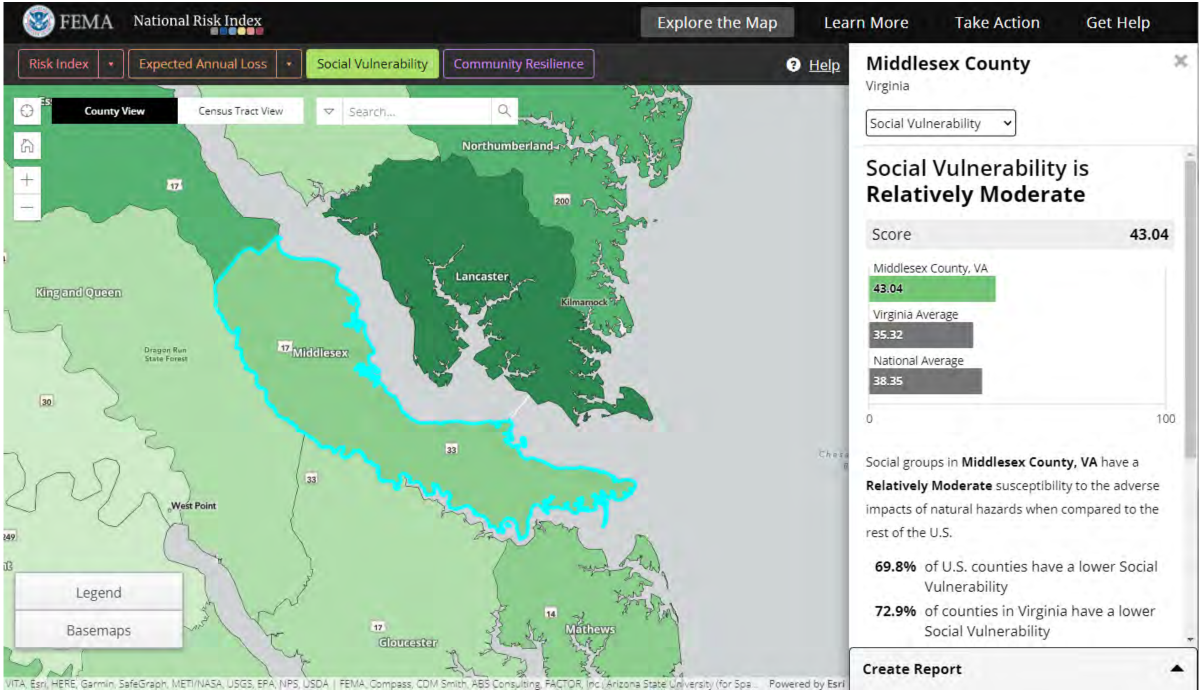
According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.2
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/pct. 2nd homes/pct. lacking plumbing
Tract Name: Census Tract 9512, Middlesex County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Middlesex County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Moderate

Score	43.04
Middlesex County, VA	43.04
Virginia Average	35.32
National Average	38.35

Social groups in **Middlesex County, VA** have a **Relatively Moderate** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

69.8% of U.S. counties have a lower Social Vulnerability

72.9% of counties in Virginia have a lower Social Vulnerability

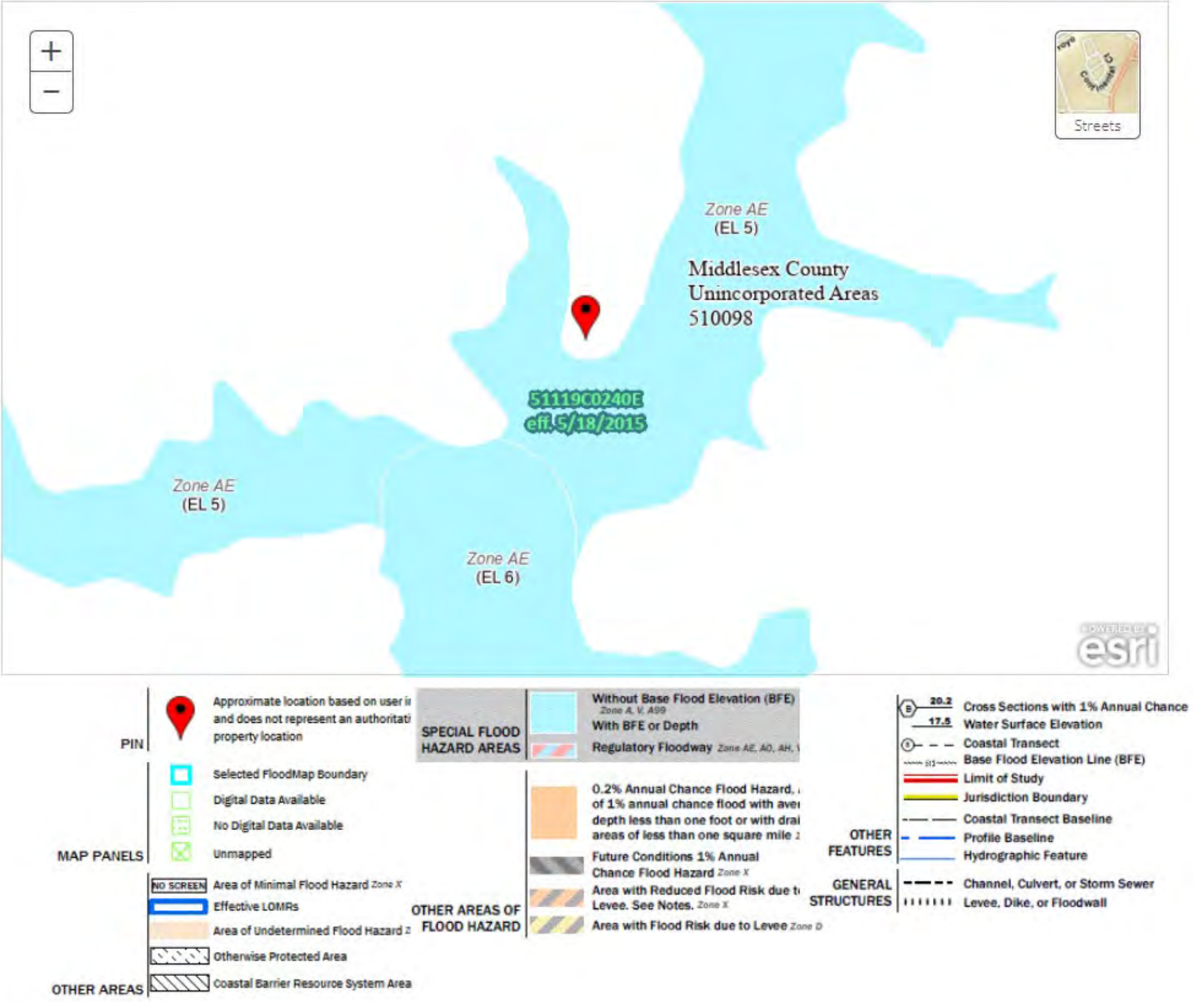
The project is located at 156 Wooldridge Cove Drive, Deltaville, VA 23043 (-76.358, 37.543).

The property was purchased in 2020 and has experienced a number of issues. Relative sea-level rise and tidal and storm surge waters are undercutting the banks along the property (length of shoreline is 540 feet). An old, deteriorating wood bulkhead is failing and has holes in it which is allowing the backfill bulkhead to erode. There are also trees falling into the water with several more having roots exposed to salt water at the base of the steep eroding bank. Chris Davis of ReadyReef Inc. has visited the site and suggested some possible nature-based solutions that made sense in lieu of riprap. As with many other properties, the last few years have been more damaging than in past decades. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included as **Appendix 2**. This recommendation is valued highly, especially the permitting process in following the recommendation of the Shoreline Engineer to construct a riprap marsh sill and breakwater. See accompanying pictures showing site conditions below.

Please see **Appendix 3** for additional property photos.

This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 4** for the FIRMettes (last mapped 5/18/2015).

Figure 9: Map of FEMA Flood Zones

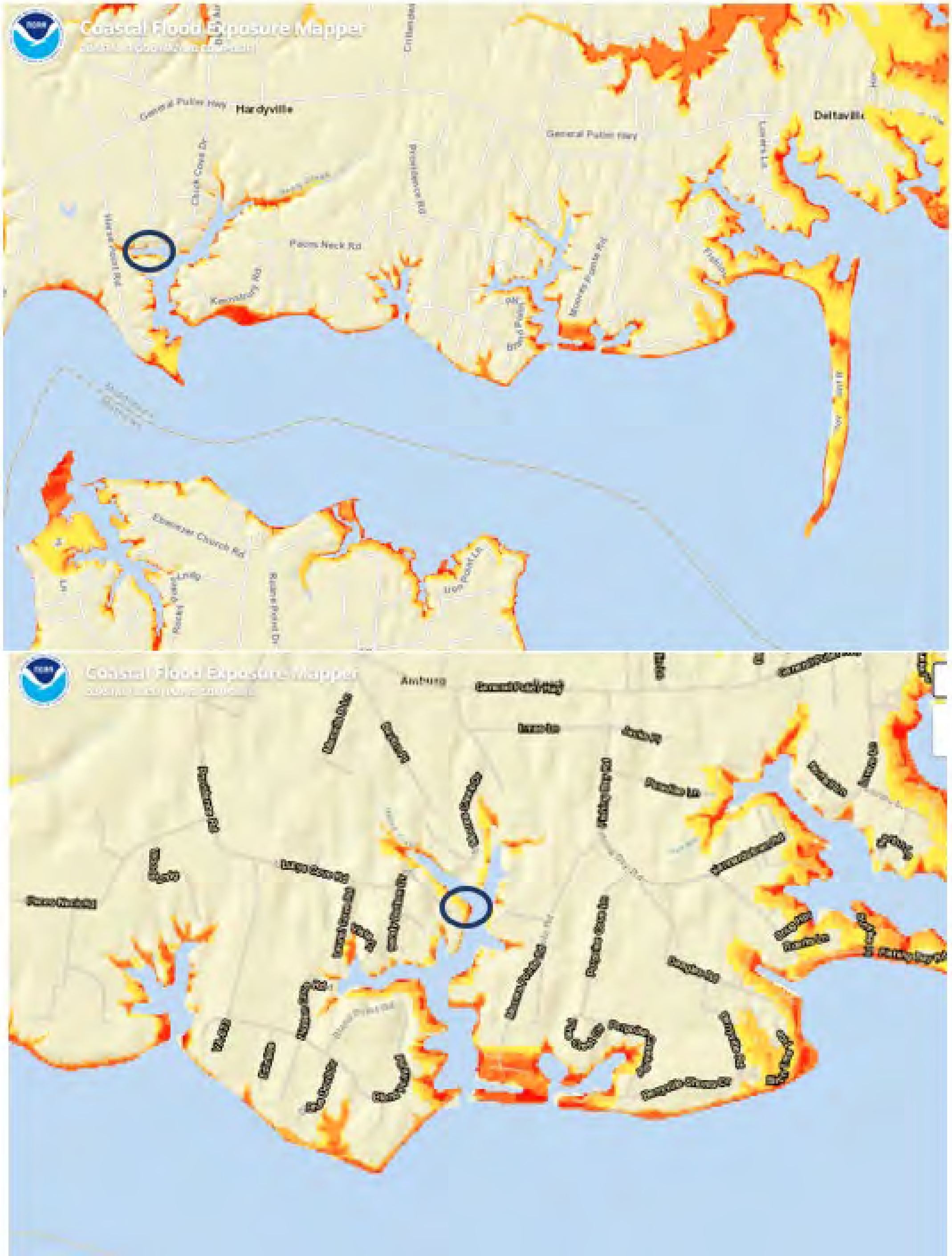


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 7,353.2 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 5** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017

Finally, according to NOAA’s Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Middlesex County's current floodplain ordinance can be found at: https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF.*

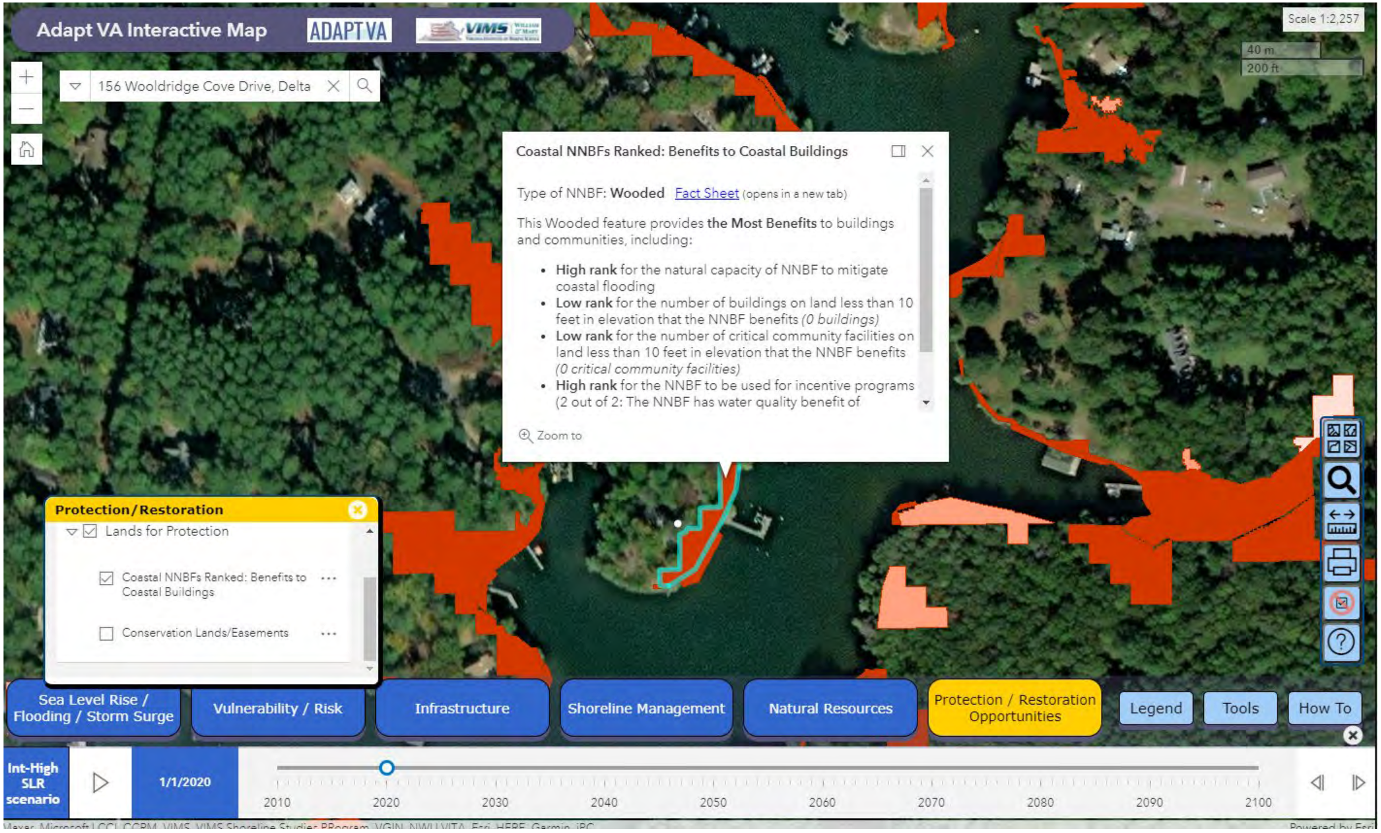
COMMUNITY SCALE BENEFITS.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Low rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits *(0 buildings)*
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits *(0 critical community facilities)*
- **High rank** for the NNBF to be used for incentive programs (2 out of 2: The NNBF has water quality benefit of

CONCERNING ADVERSE IMPACTS.

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

ALTERNATIVES**.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline/nature solution will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

Figure 13. Project Flood Hazard Area

AllCo_Special_FloodHazardAreas

CSLF_ID	1923
CNMS_ID	NP
AREA_SF	1,138,116.47
PRE_ZONE	AE
PRE_ZONEST	
PRE_MODEL	1
PRE_TOPO	9000
PRE_SRCCIT	FIRM1
NEW_ZONE	AE

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 6.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 7.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration X Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. Any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

SCOPE OF WORK CHECKLIST.

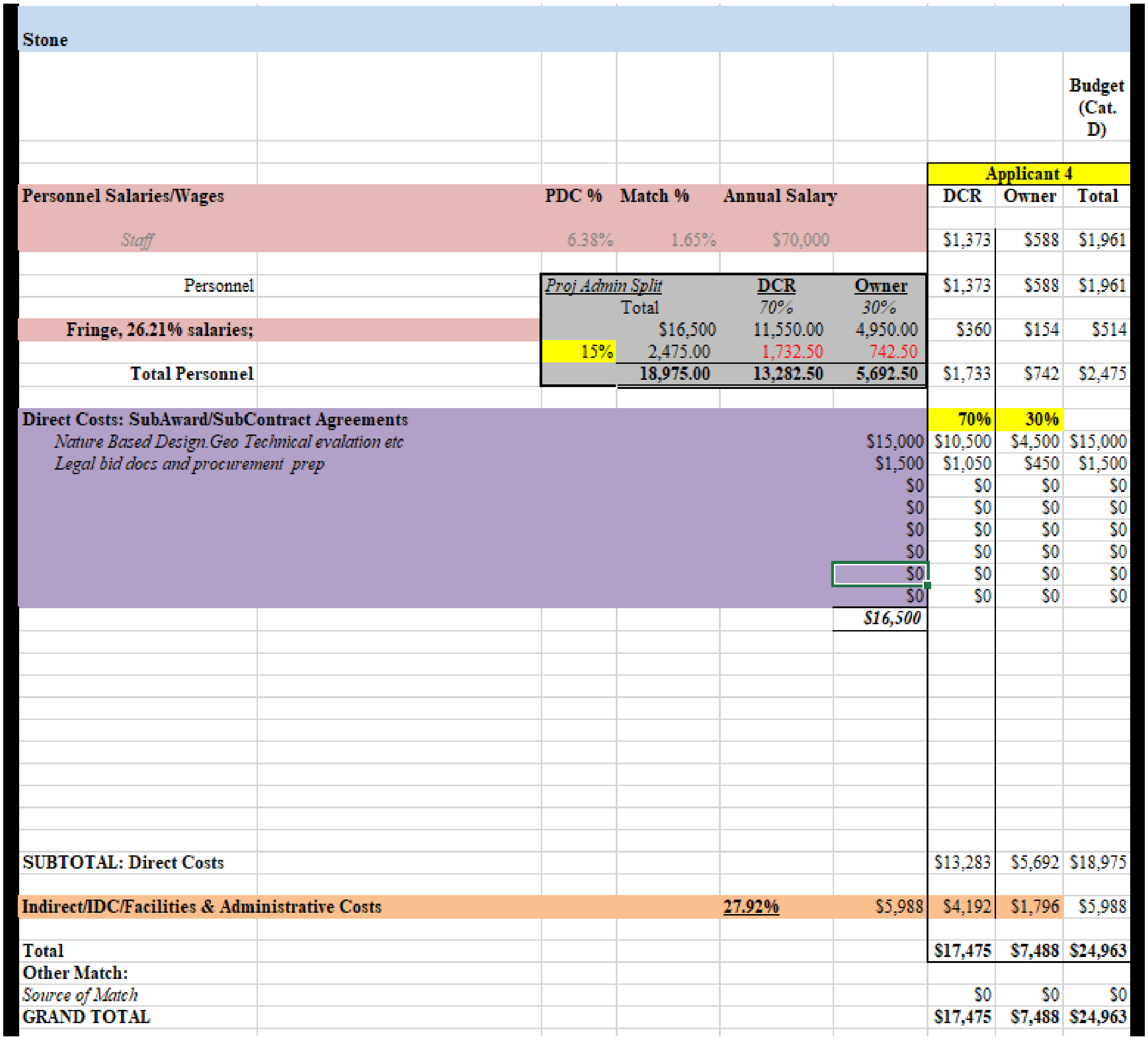
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

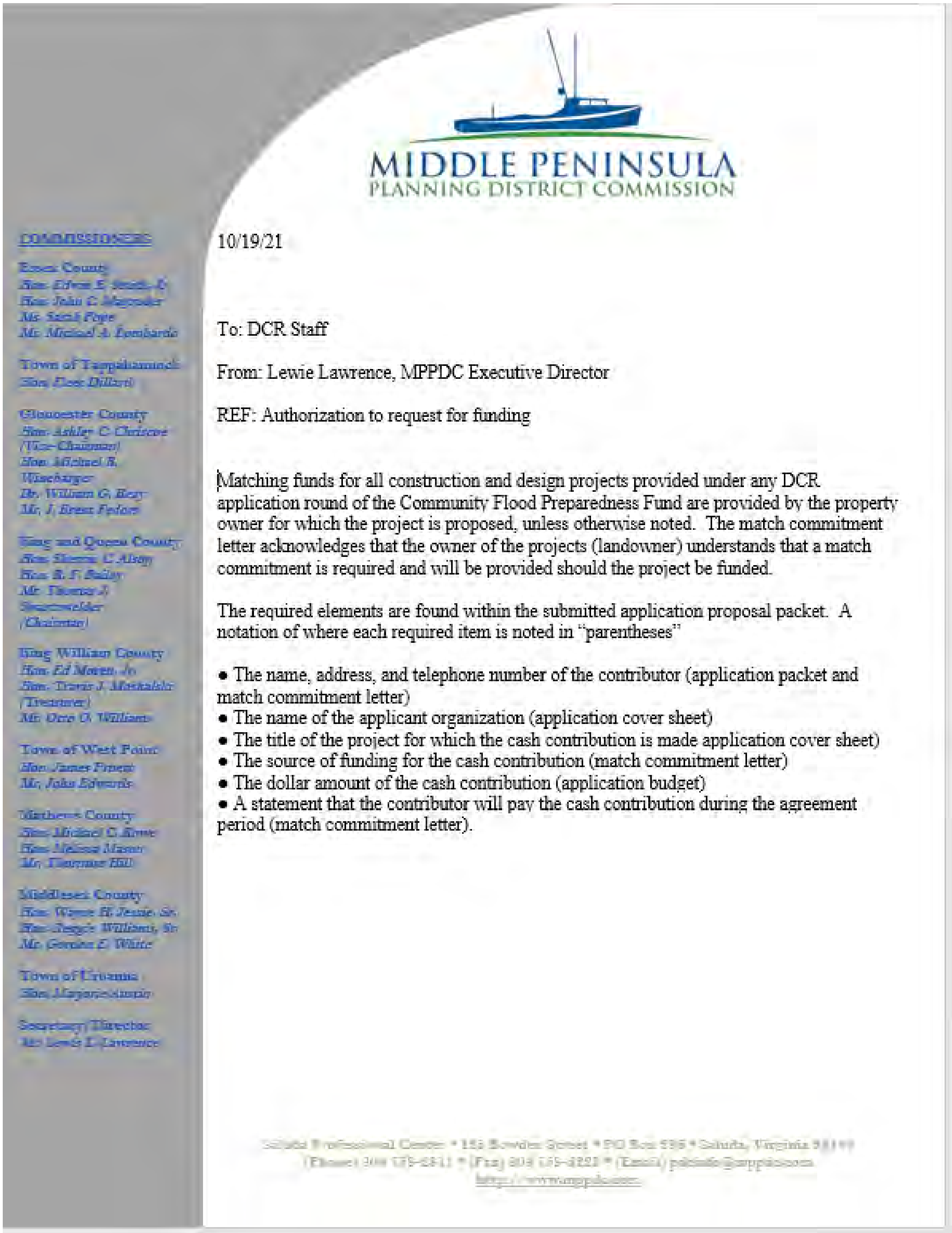
- ***Estimated total project cost: $ 24,963***
- ***Amount of funds requested from the Fund: $17,475***



Stone								
								Budget (Cat. D)
						Applicant 4		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		6.38%	1.65%	$70,000		$1,373	$588	$1,961
Personnel		*Proj Admin Split*		**DCR**	**Owner**	$1,373	$588	$1,961
			Total	*70%*	*30%*			
Fringe, 26.21% salaries;			$16,500	11,550.00	4,950.00	$360	$154	$514
		15%	2,475.00	1,732.50	742.50			
Total Personnel			**18,975.00**	**13,282.50**	**5,692.50**	$1,733	$742	$2,475
Direct Costs: SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Design.Geo Technical evalation etc					$15,000	$10,500	$4,500	$15,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$16,500			
SUBTOTAL: Direct Costs						$13,283	$5,692	$18,975
Indirect/IDC/Facilities & Administrative Costs				**27.92%**	$5,988	$4,192	$1,796	$5,988
Total						**$17,475**	**$7,488**	**$24,963**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$17,475**	**$7,488**	**$24,963**

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

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King William County
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Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

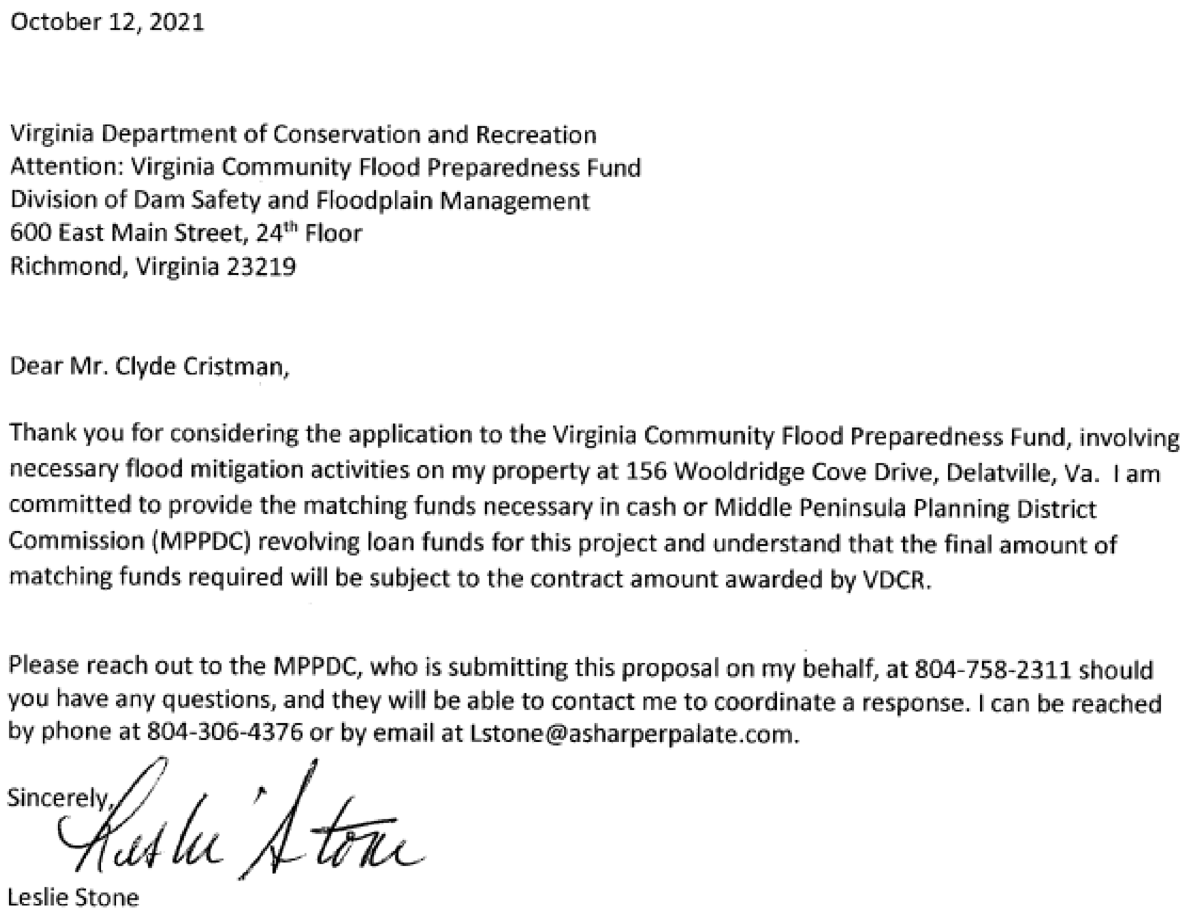
Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Signed pledge agreement from each contributing organization:



October 12, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 156 Wooldridge Cove Drive, Delatville, Va. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804-306-4376 or by email at Lstone@asharperpalate.com.

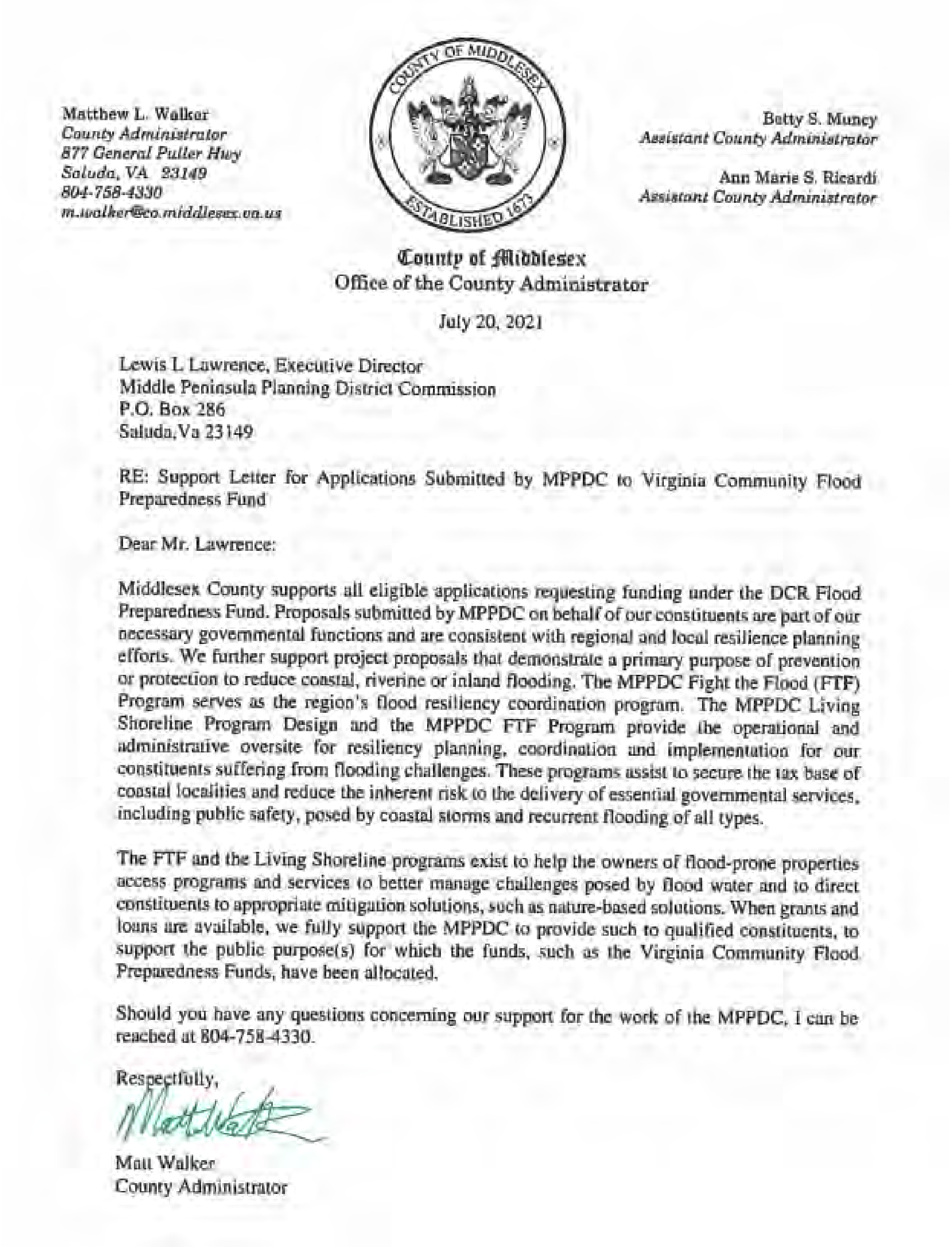
Sincerely,
Leslie Stone
Leslie Stone

I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

APPENDIX 1

Community Support Letter



Matthew L. Walker
County Administrator
877 General Puller Hwy
Saluda, VA 23149
804-758-4330
m.walker@co.middlesex.va.us

Betty S. Muncy
Assistant County Administrator

Ann Marie S. Ricardi
Assistant County Administrator

County of Middlesex
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda,Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

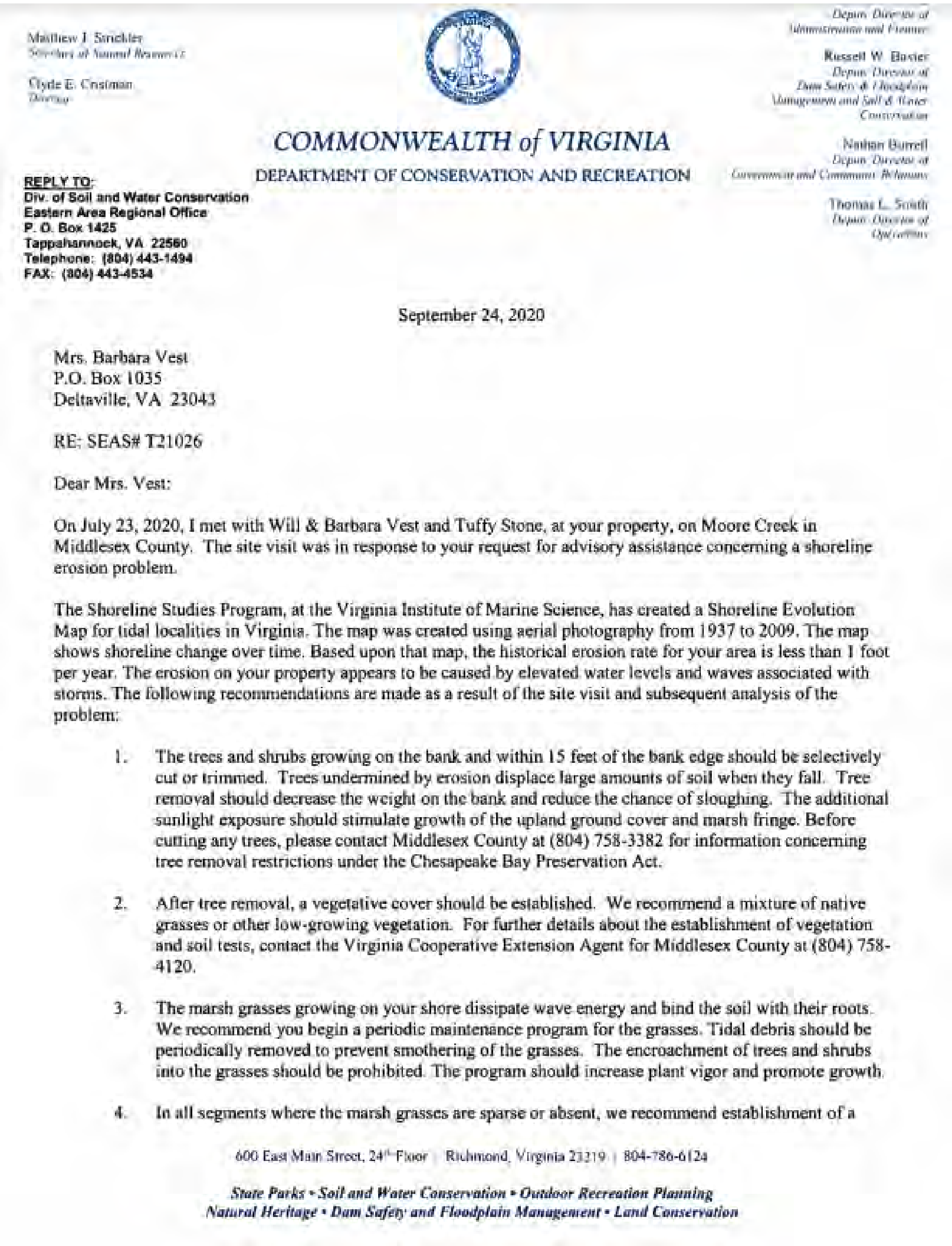
Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker
County Administrator

APPENDIX 2

DCR Site Visit Letter



Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH *of* VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Nathan Burrell
Deputy Director of Government and Community Relations

Thomas L. Smith
Deputy Director of Operations

REPLY TO:
Div. of Soil and Water Conservation
Eastern Area Regional Office
P. O. Box 1425
Tappahannock, VA 22560
Telephone: (804) 443-1494
FAX: (804) 443-4534

September 24, 2020

Mrs. Barbara Vest
P.O. Box 1035
Deltaville, VA 23043

RE: SEAS# T21026

Dear Mrs. Vest:

On July 23, 2020, I met with Will & Barbara Vest and Tuffy Stone, at your property, on Moore Creek in Middlesex County. The site visit was in response to your request for advisory assistance concerning a shoreline erosion problem.

The Shoreline Studies Program, at the Virginia Institute of Marine Science, has created a Shoreline Evolution Map for tidal localities in Virginia. The map was created using aerial photography from 1937 to 2009. The map shows shoreline change over time. Based upon that map, the historical erosion rate for your area is less than 1 foot per year. The erosion on your property appears to be caused by elevated water levels and waves associated with storms. The following recommendations are made as a result of the site visit and subsequent analysis of the problem:

1. The trees and shrubs growing on the bank and within 15 feet of the bank edge should be selectively cut or trimmed. Trees undermined by erosion displace large amounts of soil when they fall. Tree removal should decrease the weight on the bank and reduce the chance of sloughing. The additional sunlight exposure should stimulate growth of the upland ground cover and marsh fringe. Before cutting any trees, please contact Middlesex County at (804) 758-3382 for information concerning tree removal restrictions under the Chesapeake Bay Preservation Act.

2. After tree removal, a vegetative cover should be established. We recommend a mixture of native grasses or other low-growing vegetation. For further details about the establishment of vegetation and soil tests, contact the Virginia Cooperative Extension Agent for Middlesex County at (804) 758-4120.

3. The marsh grasses growing on your shore dissipate wave energy and bind the soil with their roots. We recommend you begin a periodic maintenance program for the grasses. Tidal debris should be periodically removed to prevent smothering of the grasses. The encroachment of trees and shrubs into the grasses should be prohibited. The program should increase plant vigor and promote growth.

4. In all segments where the marsh grasses are sparse or absent, we recommend establishment of a

marsh fringe. The establishment of a marsh fringe would involve planting smooth cordgrass between the mean low and mean high tide elevations. Plants for transplanting can be purchased or obtained from neighboring marsh areas with permission. When transplanting, care should be taken to plant the smooth cordgrass within the proper tidal zone.

To transplant smooth cordgrass, dig individual plants. You should obtain healthy plants with an adequate root mass. The plants should be planted on an 18-inch by 18-inch grid during late April through June. We recommend fertilization at the time of planting. A slow release fertilizer such as Osmocote can be placed in the hole with the plant. You should use approximately one ounce per plant. An alternative to Osmocote is any available fertilizer such as 10-10-10. Approximately two ounces of the alternate fertilizer should be side-dressed about six inches from the plant. To prevent damage to the source area, do not remove large numbers of plants from one section. The source area should be fertilized after plugging. If you wish to purchase plants or have someone do the planting for you, see the enclosed list of suppliers and contractors. See the enclosed information concerning a description of smooth cordgrass.

5. Along with enhancing the existing marsh fringe, you may consider the construction of a riprap marsh sill. The structure should have a trapezoidal cross section with 2:1 side slopes. It should have a top elevation 1-foot above the mean high water elevation. A minimum of two layers of armor rock should be used. Each armor rock should weigh a minimum of 50 pounds. Install the rock so that a "V" notch is placed about every 100 feet along the improved section to allow tidal flushing to occur. A layer of filter cloth should be used under the riprap. See the enclosed cross-sectional view of a typical riprap breakwater (modified).

   Immediately following construction, we recommend filling the area landward of the sill with good-quality, medium to coarse grain sand. The height of the sand fill against the bank should be such that mean high water no longer reaches the base of the bank. The slope of the sand nourishment should be 10:1 (horizontal:vertical). This slope will help promote positive drainage and mimics natural fringe marsh elevations. Moving mean high water off the base of the bank will should greatly reduce the under cutting of the bank. This sand will also provide an excellent planting media for marsh grasses.

6. Oyster shell bags, are plastic mesh bags filled with oyster shells. The bags can be used as an alternative to riprap for the marsh sill. The bags are stacked to create a trapezoidal shape. The design components for this alternative are similar to the riprap marsh sill.

7. Enhancing the existing fringe marsh by installing a sill, adding sand nourishment and planting marsh grasses is considered a "Living Shoreline" erosion control strategy. During the site visit we discussed possible funding assistance for living shoreline projects through the Tidewater Soil and Water Conservation District. The program is called the Virginia Conservation Assistance Program (VCAP). If you would like to learn more about this program, please contact the District office. Their Phone number is (804) 699-3482.

8. The Middle Peninsula Planning District Commission offers a low interest loan program for living shoreline projects. To learn more about the loan program please contact them at (804) 758-3221.

9. Stormwater should be directed away from the bank. If that is not possible, the stormwater should be collected via a pipe system and conveyed to the base of the bank. The pipe outlet should have

sufficient outlet protection to prevent erosion.

The above recommendations are made in my capacity as an advisory agent in shoreline erosion control matters. The suggestions should not be considered as binding you to any particular course of action, as they are intended to indicate what we think would be the best solution in terms of cost and effectiveness. Our examination of the site or this report does not constitute permission by the Commonwealth, or its agencies, to proceed with implementation of control measures. Permits from State and Federal agencies are generally required for shoreline modification.

You should also be aware that success in shoreline erosion control cannot be guaranteed, as there are many variables involved. In this regard, we suggest care in selecting a contractor. Our comments concerning construction are intended as guidelines developed from our experience in viewing structures that have been successful or have failed.

If you decide to construct a control measure, an assessment of the impacts of the project on the environment will be given by the regulatory agencies. Our advice is given with the idea of reducing environmental impacts associated with our recommendations. Although this has been considered in our recommendations, the permit reviewing agencies may desire additional information or measures.

Services available through this office include: review of the permit application; review of design and construction plans; and inspection of structures under construction when plans have been reviewed by this office. We recommend that a copy of this report be attached to the permit application.

If we may be of further assistance or if you have any questions, please let me know.

Sincerely,

Michael L. Vanlandingham

Michael L. Vanlandingham
Shoreline Engineer

Enclosures (10)

APPENDIX 3

Additional Property Photos

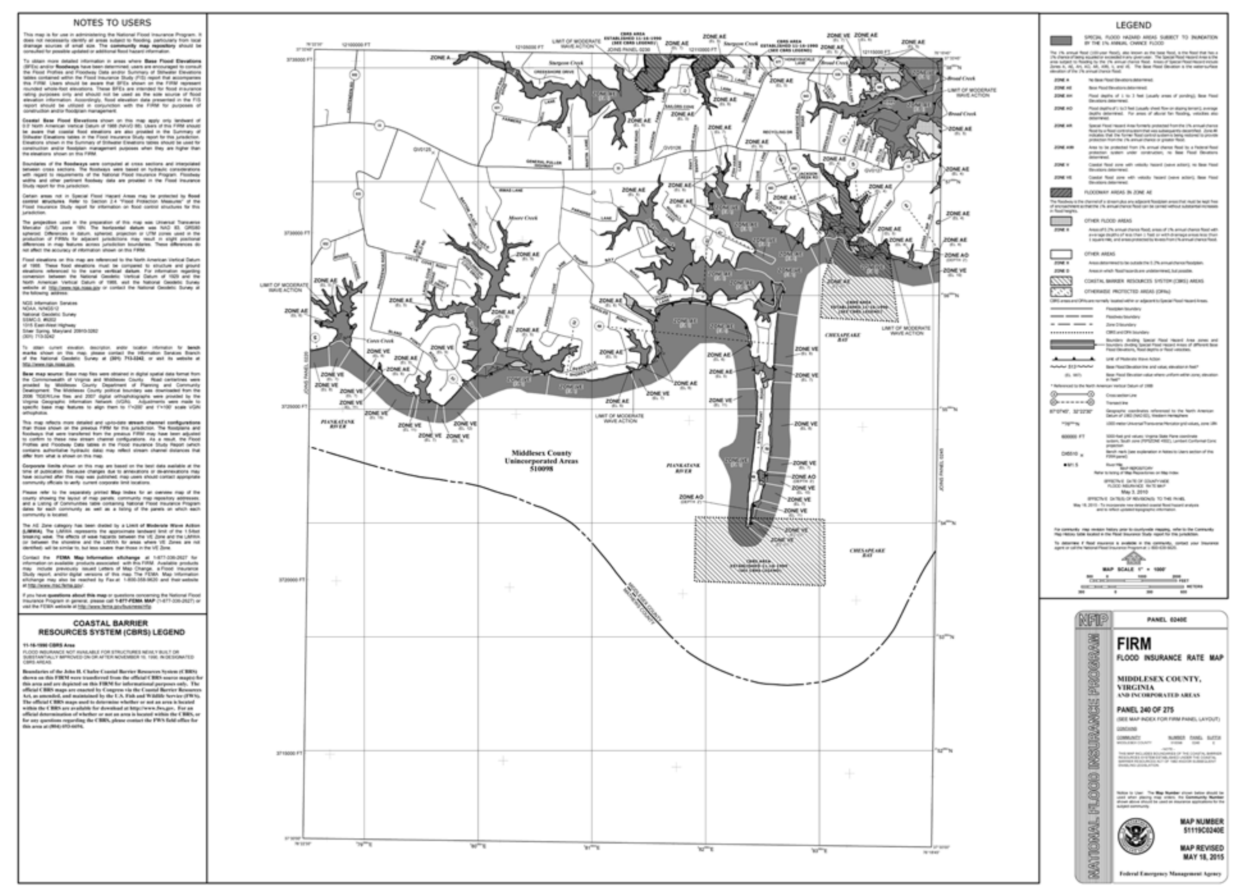





APPENDIX 4

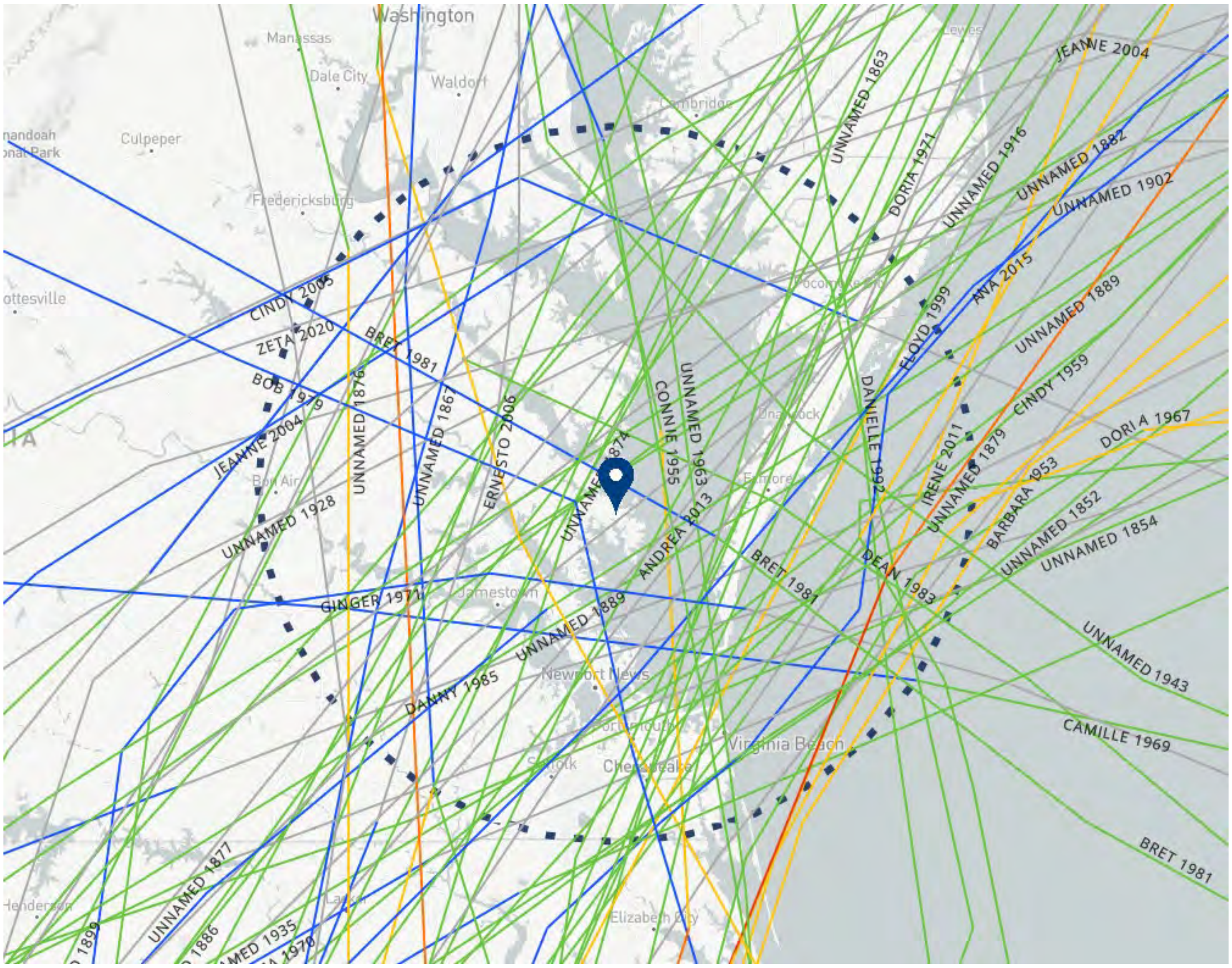
Project Location FIRMette

(FIRMette #: 51119C0240E)



APPENDIX 5

List of Historic Hurricanes Impacting the Property Location



Search Filter Criteria

Location: 37.543 -76.358

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 6

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 7

Match Commitment Letter

October 12, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 156 Wooldridge Cove Drive, Delatville, Va. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804-306-4376 or by email at Lstone@asharperpalate.com.

Sincerely,
Leslie Stone

Leslie Stone

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe (Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J. Swartzwelder (Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski (Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Kimbrough Shoreline Design** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

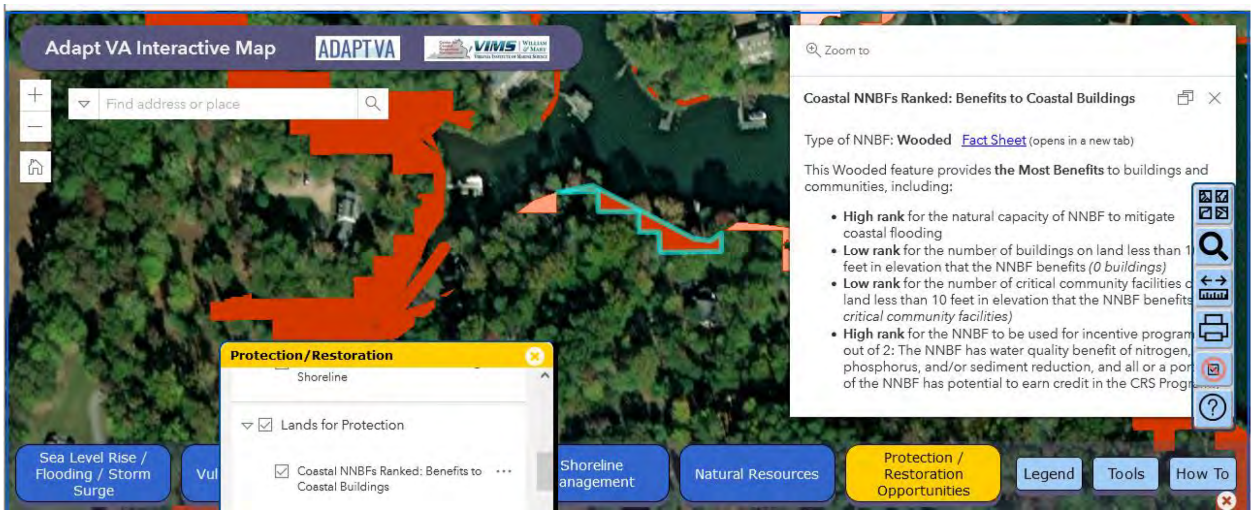
Issue #2

DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

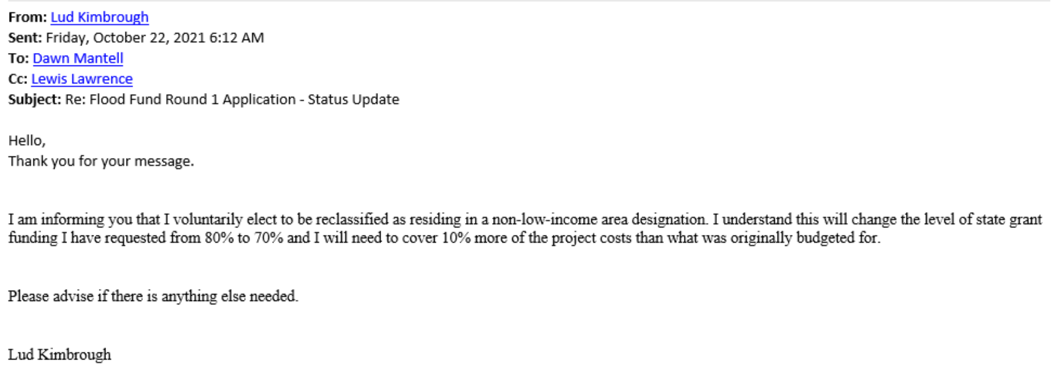
Type of NNBF: **Wooded** Fact Sheet (opens in a new tab)

This Wooded feature provides **the Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Low rank** for the number of buildings on land less than 1 feet in elevation that the NNBF benefits *(0 buildings)*
- **Low rank** for the number of critical community facilities o land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **High rank** for the NNBF to be used for incentive program out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a por of the NNBF has potential to earn credit in the CRS Progr

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



From: Lud Kimbrough
Sent: Friday, October 22, 2021 6:12 AM
To: Dawn Mantell
Cc: Lewis Lawrence
Subject: Re: Flood Fund Round 1 Application - Status Update

Hello,
Thank you for your message.

I am informing you that I voluntarily elect to be reclassified as residing in a non-low-income area designation. I understand this will change the level of state grant funding I have requested from 80% to 70% and I will need to cover 10% more of the project costs than what was originally budgeted for.

Please advise if there is anything else needed.

Lud Kimbrough

Amended Budget Request

DCR Funding:	$ 12,180
Owner:	$ 5,219
Total	$ 17,399

						Kimbrough		
Personnel Salaries/Wages		**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
	Staff	0.00%	0.00%	$70,000		$957	$410	$1,367
	Personnel	*Proj Admin Split*		**DCR**	**Owner**	$957	$410	$1,367
			Total	*70%*	*30%*			
e, 26.21% salaries;			**11,500**	8,050.00	3,450.00	$251	$107	$358
		15%	1,725.00	1,207.50	517.50			
	Total Personnel		**13,225.00**	**9,257.50**	**3,967.50**	$1,208	$517	$1,725
SubAward/SubContract Agreements						**70%**	**30%**	
Nature Based Shoreline Design/Draft Permit JPA					$10,000	$7,000	$3,000	$10,000
Legal bid docs and procurement prep					$1,500	$1,050	$450	$1,500
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$11,500			
SUBTOTAL: Direct Costs						$9,258	$3,967	$13,225
Indirect/IDC/Facilities & Administrative Costs				**27.92%**		$2,922	$1,252	$4,174
Total						**$12,180**	**$5,219**	**$17,399**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$12,180**	**$5,219**	**$17,399**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Application Form for Grant Requests for All Categories

I. ORGANIZATIONAL INFORMATION

Project Title: Flood Prevention and Protection for Bland Point Road

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning
X___Project
____Study

NFIP/DCR Community Identification Number (CID): 510098

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director
Signature of Authorized Official: ________________________________
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X__ No ___

Categories (select applicable project): Project Grants
Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- X Wetland restoration.
- X__Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- X__Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): County Name **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510098

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): AE Zone

Flood Insurance Rate Map Number(s) (If Applicable): 51119C0240E

Total Cost of Project: ___________$17,309____

Total Amount Requested: ___$13,846__________________________

II. SCOPE OF WORK NARRATIVE

INTRODUCTION.

This proposal request funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding and wetland loss.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely "green" (i.e., consisting of only ecosystem elements) or "hybrid" (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

PROJECT INFORMATION.

This proposal application seeks a design for a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal design will incorporate natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Bland Point Road in Middlesex County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in Appendix 1.

- *A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf*
    - *Please see Page 3-5, which notates the need to respond to emerging flood challenges.*
- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found*

at:
https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
  - *Please see Section 4 (page 25), which includes historical hazard data within the region.*
- *A link to the County of Middlesex's Comprehensive Plan can be found at:* *https://www.co.middlesex.va.us/252/Comprehensive-Plan*.

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

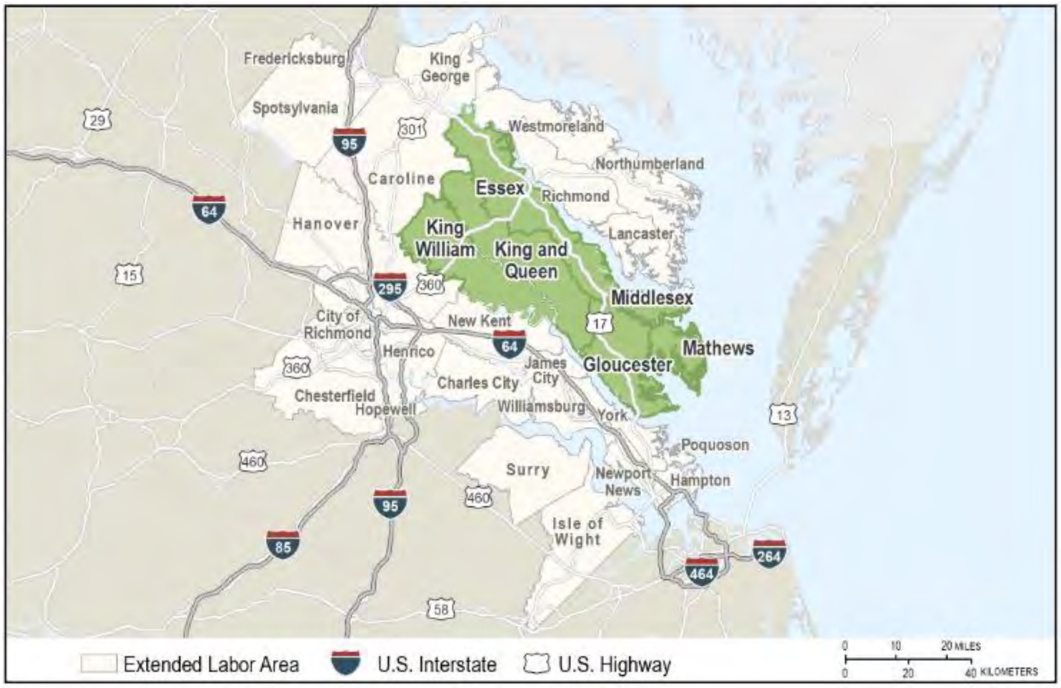
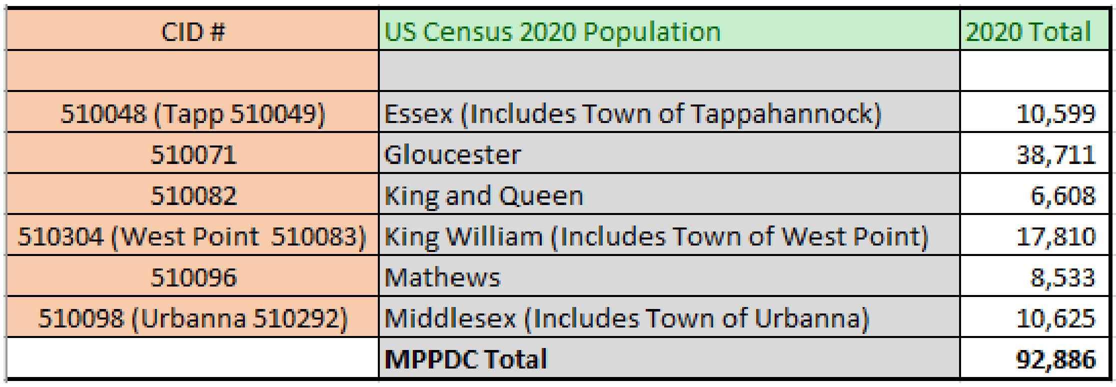


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to install living shorelines on one private property on Bland Point Road in Middlesex County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Location

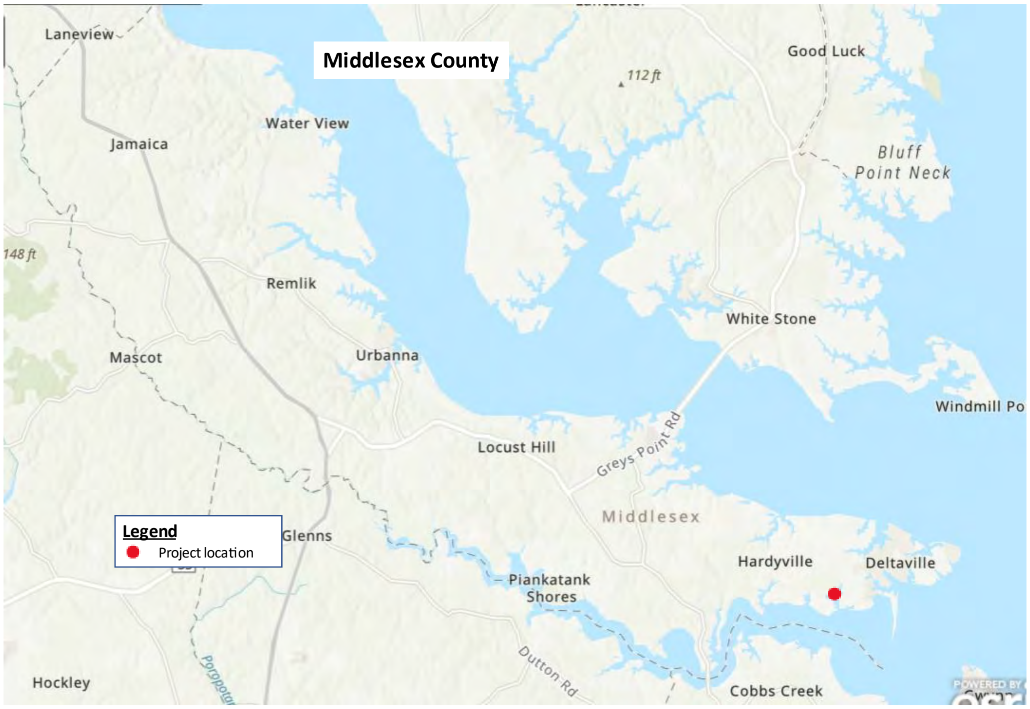
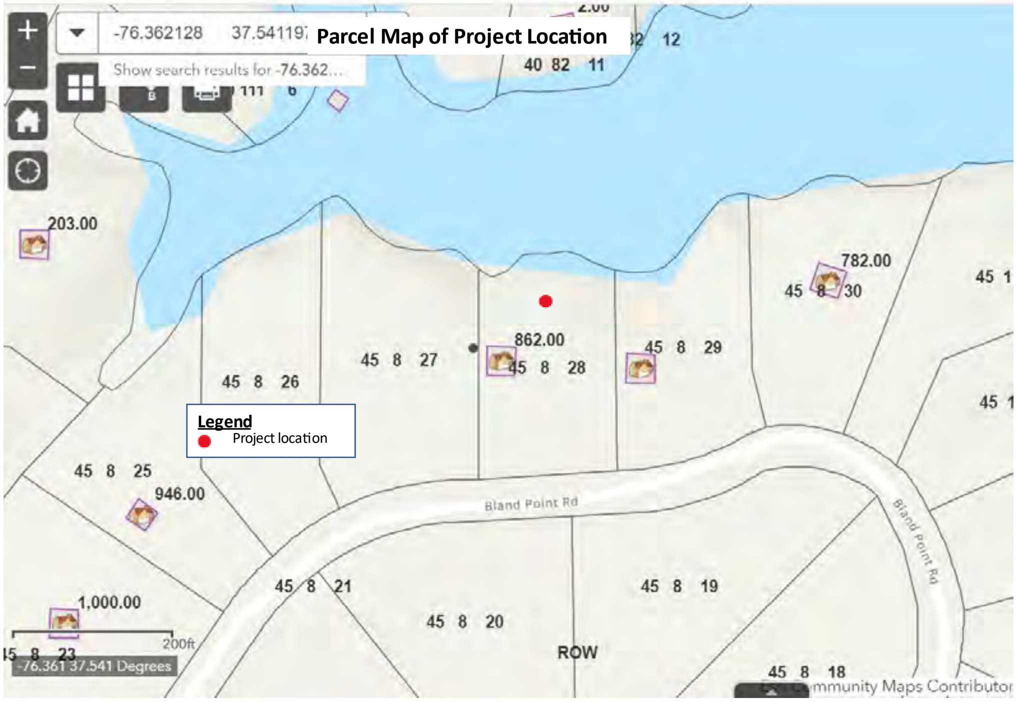


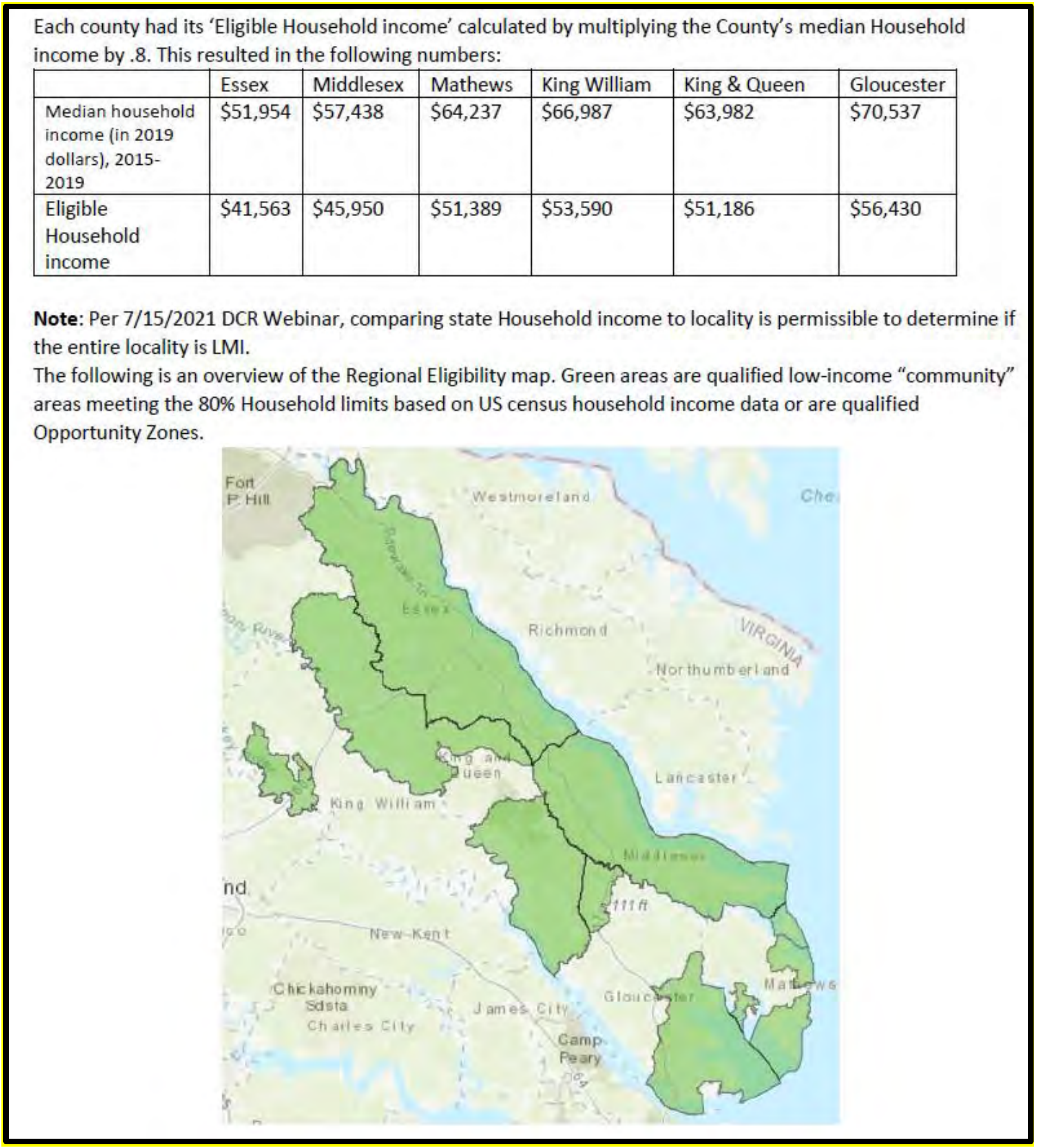
Figure 4. Parcel Map of Project Location



Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas


Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

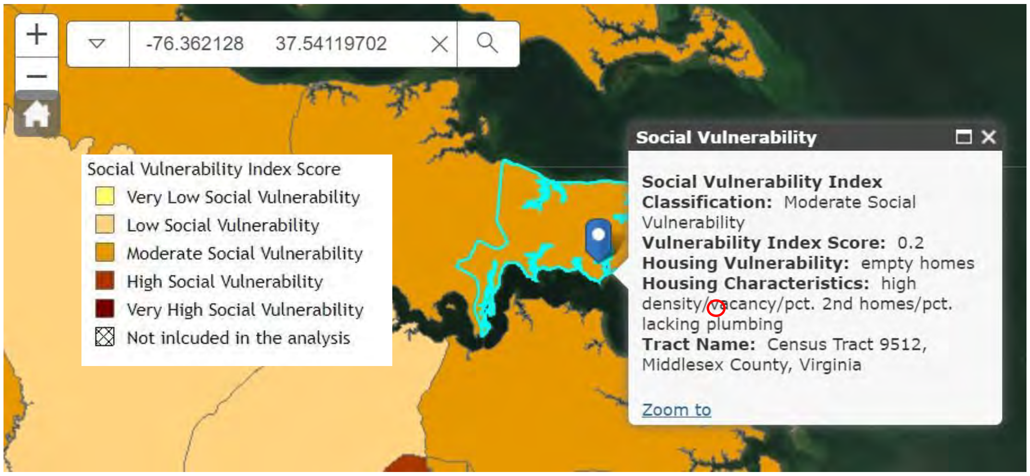
The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is not within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area

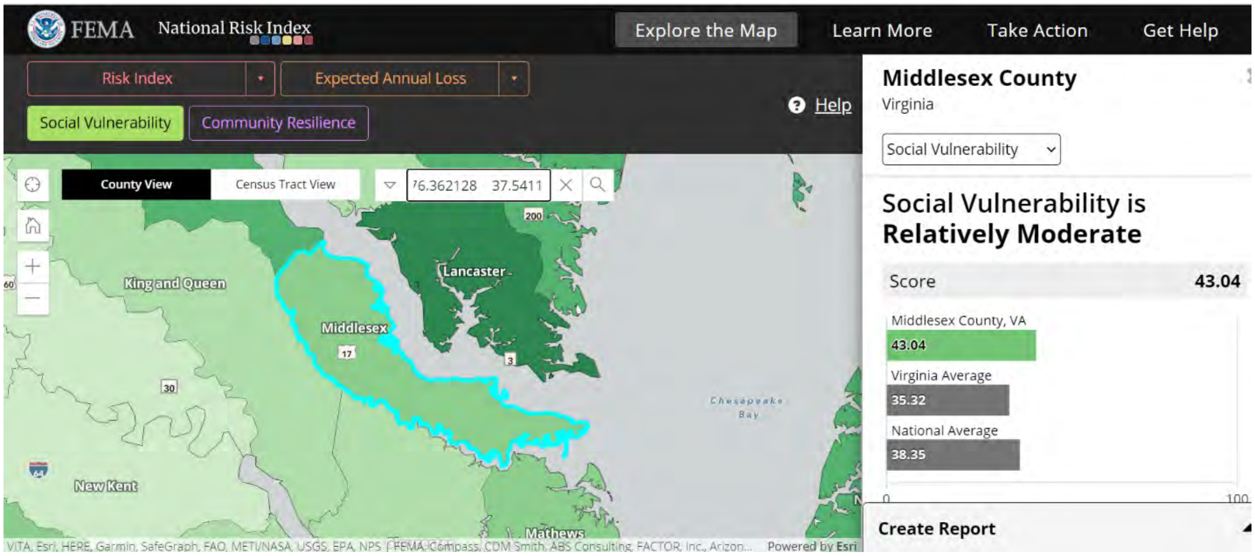
According to the VDAPT Virginia’s Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA’s National Risk Index (https://hazards.fema.gov/nri/map), which assesses vulnerability at a census track level, the social vulnerability is considered relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia’s Social Vulnerability Index Score Map of the Project Location



Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.2
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/pct. 2nd homes/pct. lacking plumbing
Tract Name: Census Tract 9512, Middlesex County, Virginia

Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Middlesex County
Virginia

Social Vulnerability

Social Vulnerability is Relatively Moderate

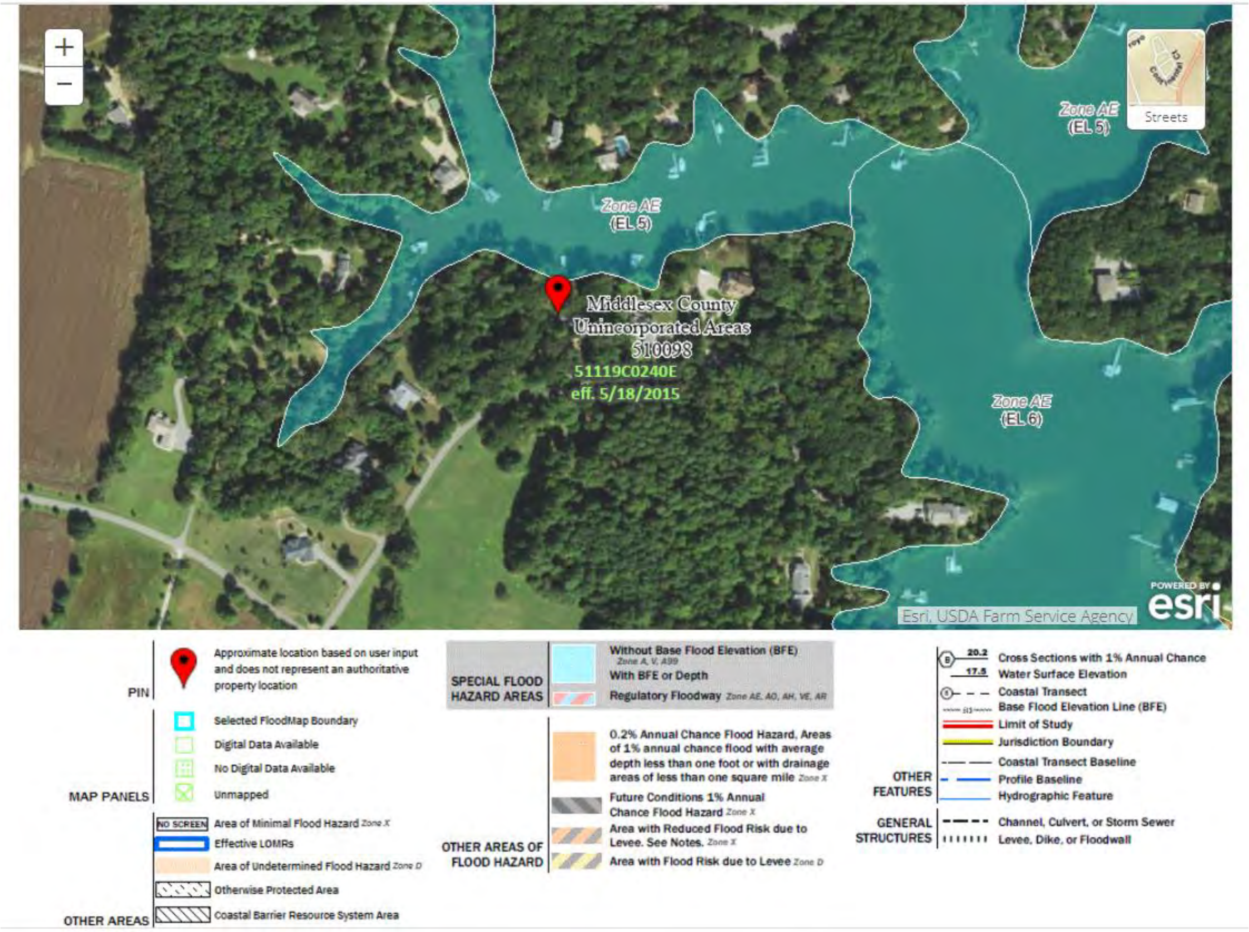
Score	43.04
Middlesex County, VA	43.04
Virginia Average	35.32
National Average	38.35

The project is located at 862 Bland Point Road, Deltaville, VA 23043 (-76.362128, 37.54119702). It was purchased just this year. It was built in 1993 by the previous owner. Today, the 330 foot shoreline is on a steep back and the water is undercutting the bank; therefore, the top of the bank is steeply facing down toward Moore's Creek causing significant runoff. The trees that are along the bank are now at risk of falling into the water as the erosion continues. Rift raft has been used across the way on another property and seems to be working for several property owners in this area; still, a natural based living shoreline design solution is preferable. The photos were taken at low tide, so you can see how the high tide reaches the bank, which is being undercut by the water, especially in unusual flood tides and storms that cause high turbulence. Rising water levels will cause more vegetative barrier failure and a major bank failure is our greatest concern. Wind is also a cause for concern if there is a direct storm impact.

This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 2** for the FIRMettes (last mapped 5/18/2015) and **Appendix 3** for additional property photos.

Figure 9: Map of FEMA Flood Zones

v

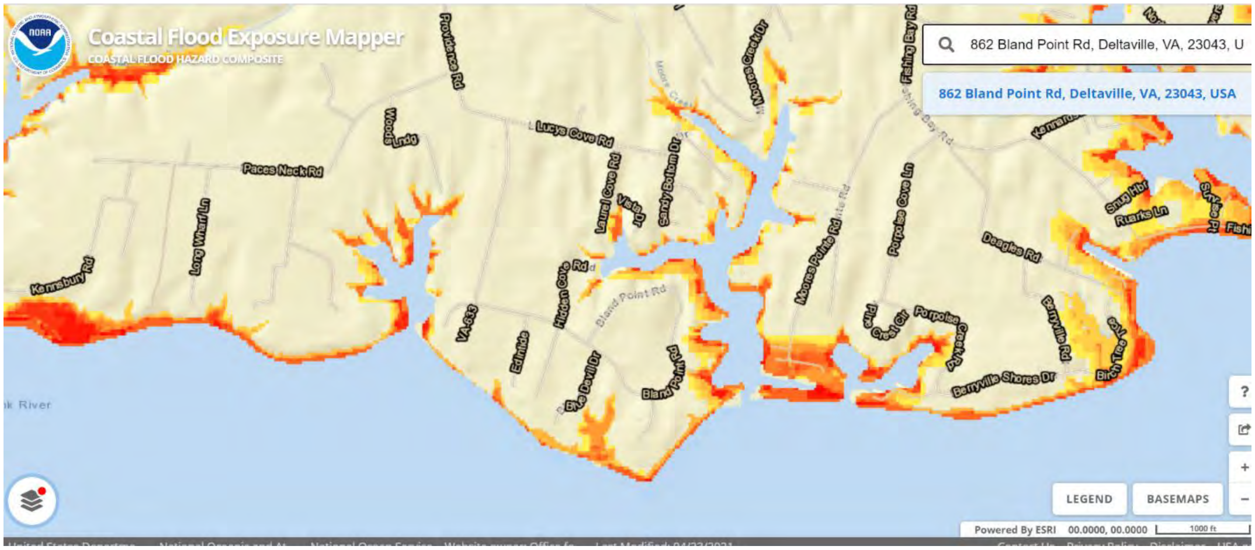


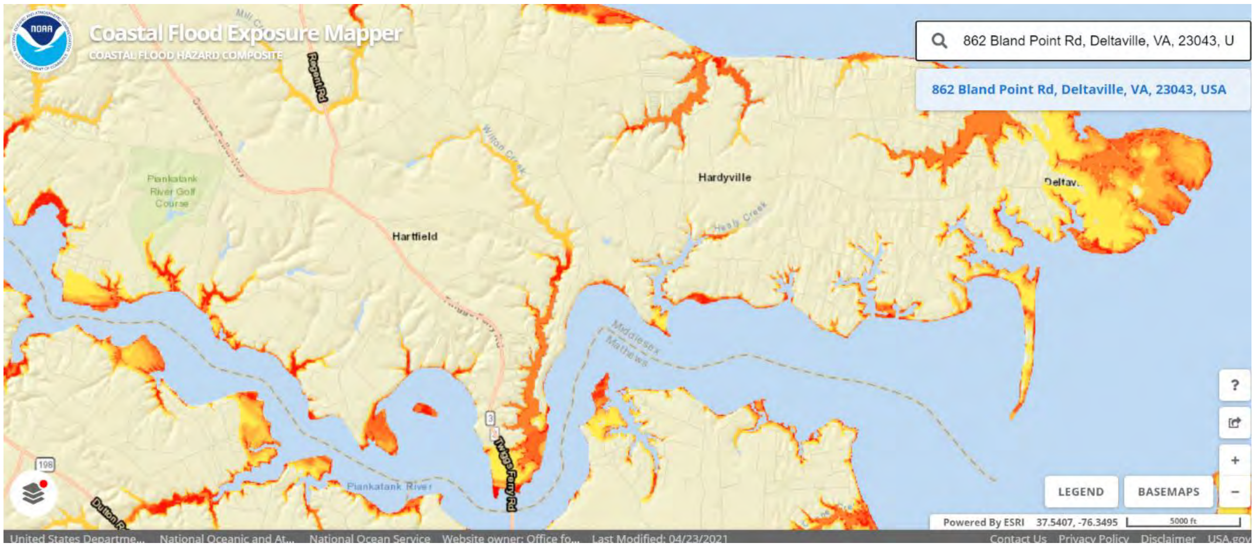
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 (purple)and 2017

Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure** 11.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)





For more information about this project area please see:

- *A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf*
- *A link to Middlesex County's current floodplain ordinance can be found at: https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF.*

***ALTERNATIVES*.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed $3 million.

***GOALS AND OBJECTIVES*.**

The Code of Virginia § 28.2-104.1. define "Living shoreline" *as shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

APPROACH, MILESTONES, AND DELIVERABLES.

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers. Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months year, but no more than six months years. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

It is anticipated that the proposed project will commence October 2021 and be completed by March 2022.

Action Item	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Phase 1 – Environmental Scan						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
Phase 2 – Solution Design						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
Phase 3 – Strategic Implementation						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with					X	X

implementing the nature-based or hybrid design solution						
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

***RELATIONSHIP TO OTHER PROJECTS*.**

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
    - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula FTF program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline as seen in **Appendix 5.**

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN.

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

CRITERIA.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

   The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

   The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

   The Middle Peninsula PDC does have support letters from all nine localities including the Counties of including Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

   The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6.**

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

   Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly orpursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to theplan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected localgovernments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously fundedby the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		X Yes ☐No
Applicant Name:	**Middle Peninsula Planning District Commission**	

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resiliencevalue by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar datadriven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. Any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0

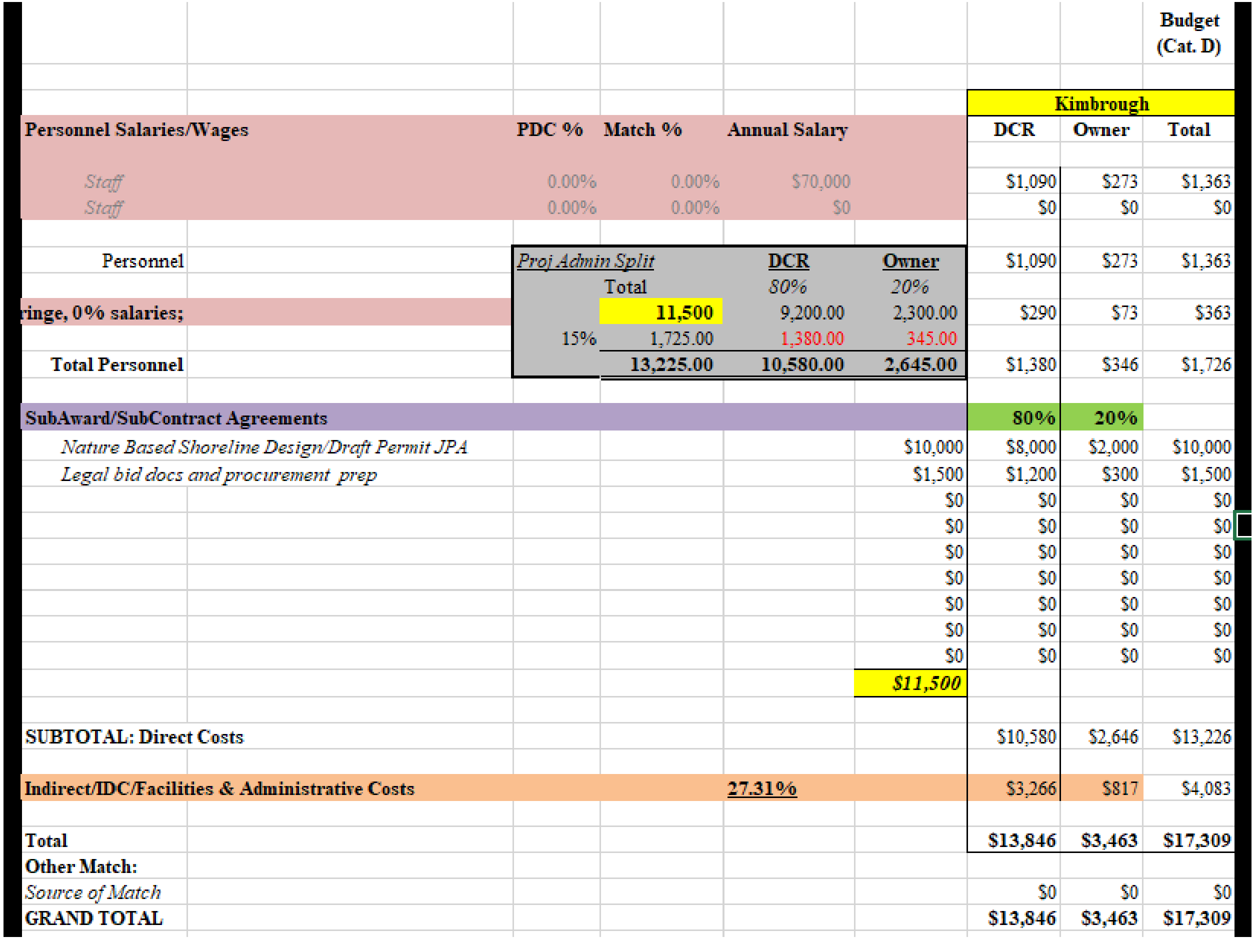
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		83

SCOPE OF WORK CHECKLIST.

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan forproject extending a minimum of 5 years from project close	☑Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of supportfrom affected communities	☑Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑Yes ☐ No ☐ N/A

III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of $17,309

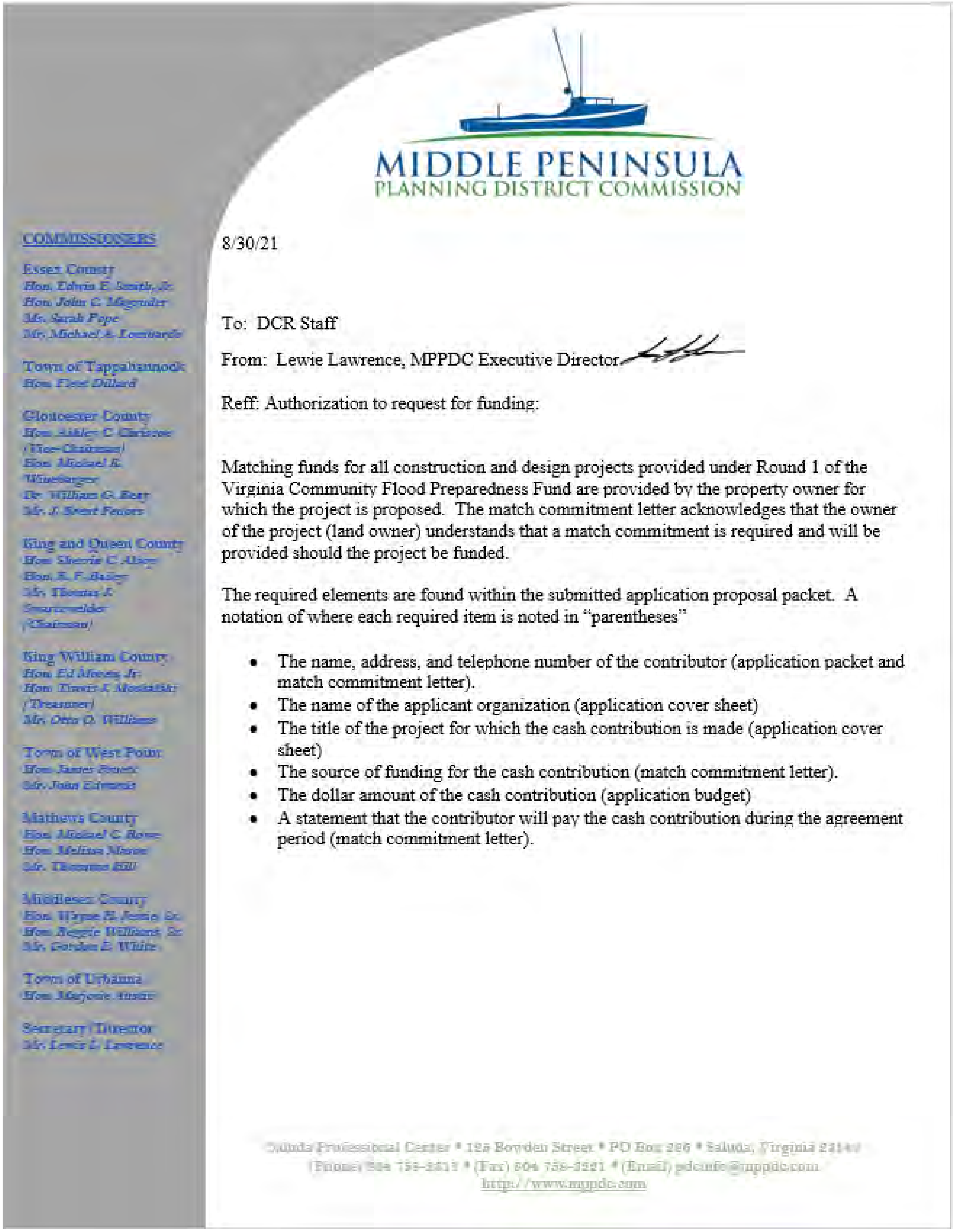


							Budget (Cat. D)
					Kimbrough		
Personnel Salaries/Wages	**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	0.00%	0.00%	$70,000		$1,090	$273	$1,363
Staff	0.00%	0.00%	$0		$0	$0	$0
Personnel	*Proj Admin Split*		**DCR**	**Owner**	$1,090	$273	$1,363
		Total	*80%*	*20%*			
ringe, 0% salaries;		**11,500**	9,200.00	2,300.00	$290	$73	$363
	15%	1,725.00	1,380.00	345.00			
Total Personnel		**13,225.00**	**10,580.00**	**2,645.00**	$1,380	$346	$1,726
SubAward/SubContract Agreements					**80%**	**20%**	
Nature Based Shoreline Design/Draft Permit JPA				$10,000	$8,000	$2,000	$10,000
Legal bid docs and procurement prep				$1,500	$1,200	$300	$1,500
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$0	$0	$0	$0
				$11,500			
SUBTOTAL: Direct Costs					$10,580	$2,646	$13,226
Indirect/IDC/Facilities & Administrative Costs			**27.31%**		$3,266	$817	$4,083
Total					**$13,846**	**$3,463**	**$17,309**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$13,846**	**$3,463**	**$17,309**

Cost estimates for shoreline nature-based design and draft joint permit application development was based on estimates provided by design professional who does shoreline design work. Given that the program is reimbursable, billing will be for actual cost, which we anticipate being lower cost than estimated in the budget. Additionally, it is anticipated that legal and procurement cost may be needed.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment

- *Authorization to request for funding*



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

COMMISSIONERS

Essex County
Hon. Edwin E. Smith, Jr.
Hon. John C. Magruder
Ms. Sarah Pope
Mr. Michael A. Lombardo

Town of Tappahannock
Hon. Fleet Dillard

Gloucester County
Hon. Ashley C. Chriscoe
(Vice-Chairman)
Hon. Michael R. Winebarger
Dr. William G. Reay
Mr. J. Brent Fedors

King and Queen County
Hon. Sherrin C. Alsop
Hon. R. F. Bailey
Mr. Thomas J. Swartzwelder
(Chairman)

King William County
Hon. Ed Moren, Jr.
Hon. Travis J. Moskalski
(Treasurer)
Mr. Otto O. Williams

Town of West Point
Hon. James Pruett
Mr. John Edwards

Mathews County
Hon. Michael C. Rowe
Hon. Melissa Mason
Mr. Thornton Hill

Middlesex County
Hon. Wayne H. Jessie, Sr.
Hon. Reggie Williams, Sr.
Mr. Gordon E. White

Town of Urbanna
Hon. Marjorie Austin

Secretary/Director
Mr. Lewis L. Lawrence

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

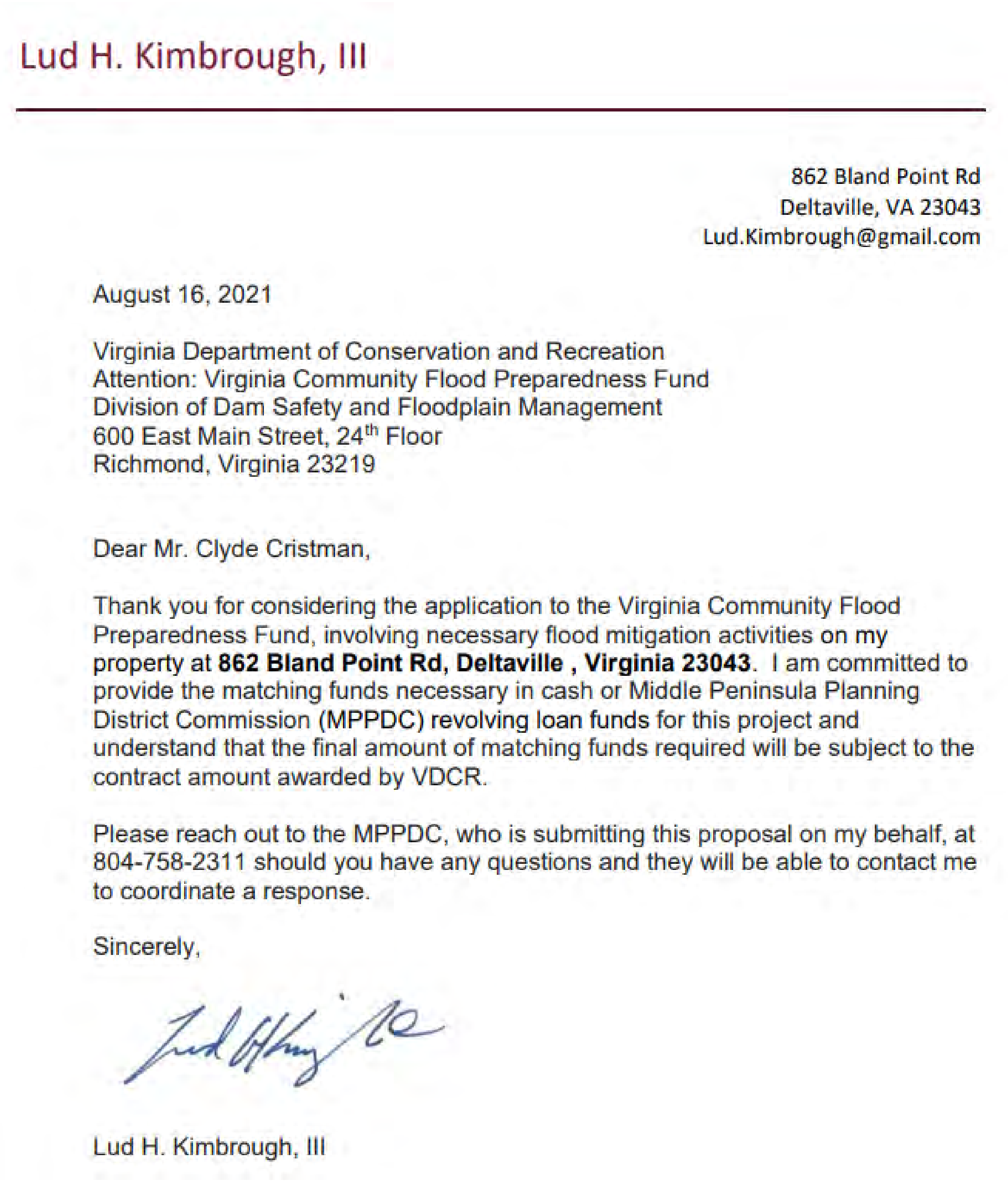
Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

- *Signed pledge agreement from each contributing organization*



Lud H. Kimbrough, III

862 Bland Point Rd
Deltaville, VA 23043
Lud.Kimbrough@gmail.com

August 16, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at **862 Bland Point Rd, Deltaville , Virginia 23043**. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response.

Sincerely,

Lud H. Kimbrough, III

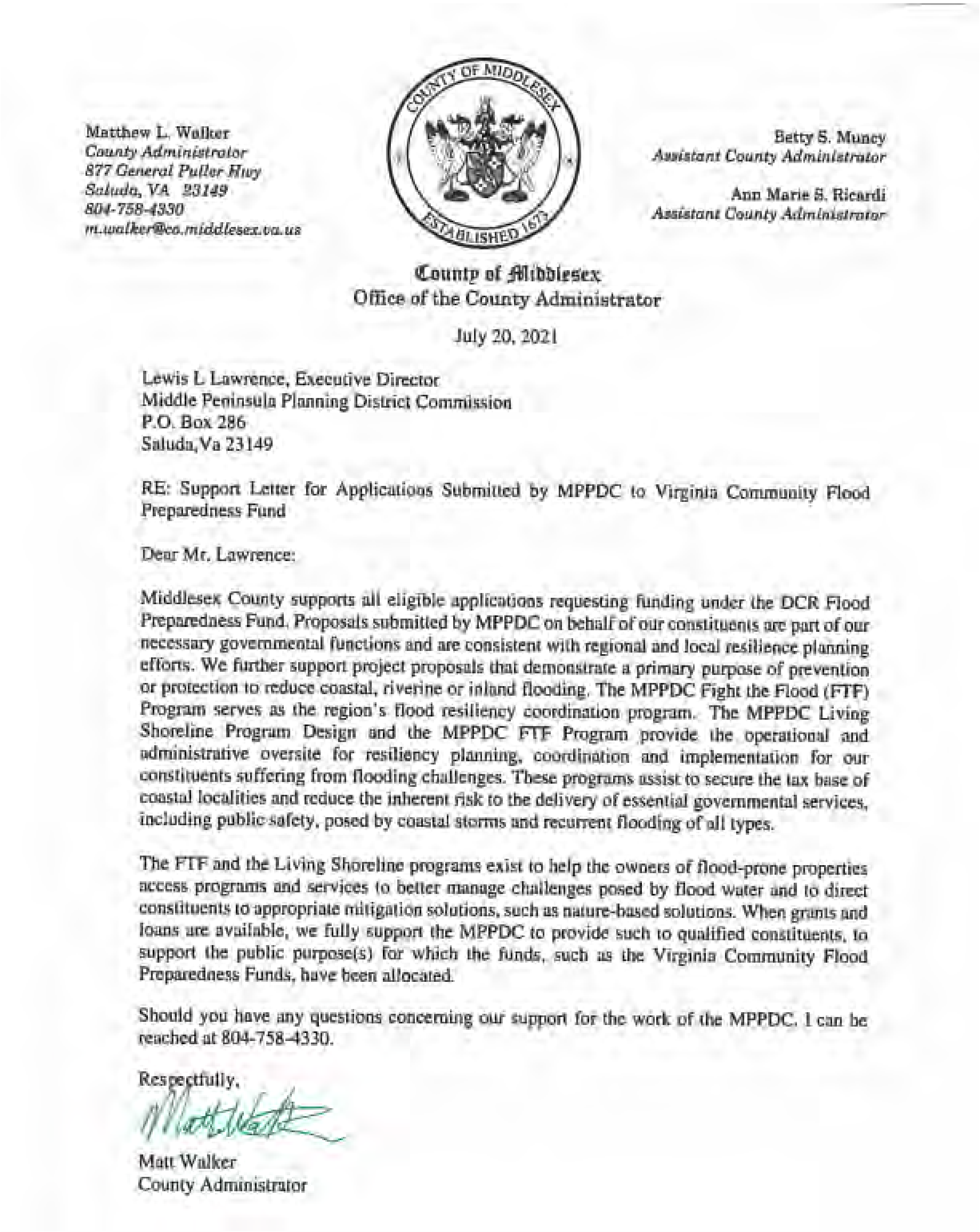
I. SUPPORTING DOCUMENTATION

☑ Letters of support from all affected local government
☑ Detailed map of the project area(s)
☑ FIRMette of the project area(s)
☑ Historic flood damage data and/or images

Cont to next page

APPENDIX 1

Community Support Letter



Matthew L. Walker
County Administrator
877 General Puller Hwy
Saluda, VA 23149
804-758-4330
m.walker@co.middlesex.va.us

Betty S. Muncy
Assistant County Administrator

Ann Marie S. Ricardi
Assistant County Administrator

County of Middlesex
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda,Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

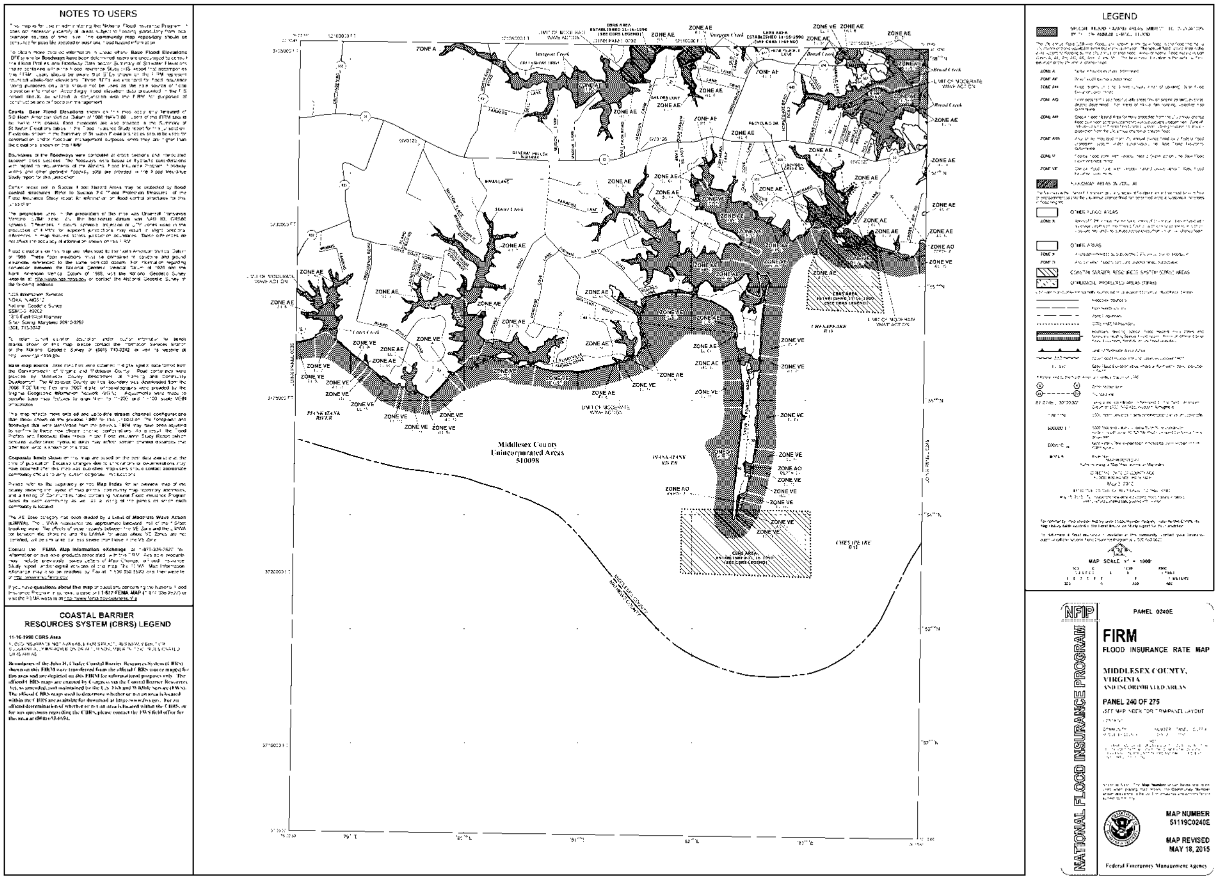
Respectfully,

Matt Walker
County Administrator

APPENDIX 2

Project Location FIRMette

Parker Property (FIRMette #: 51119C0240E)

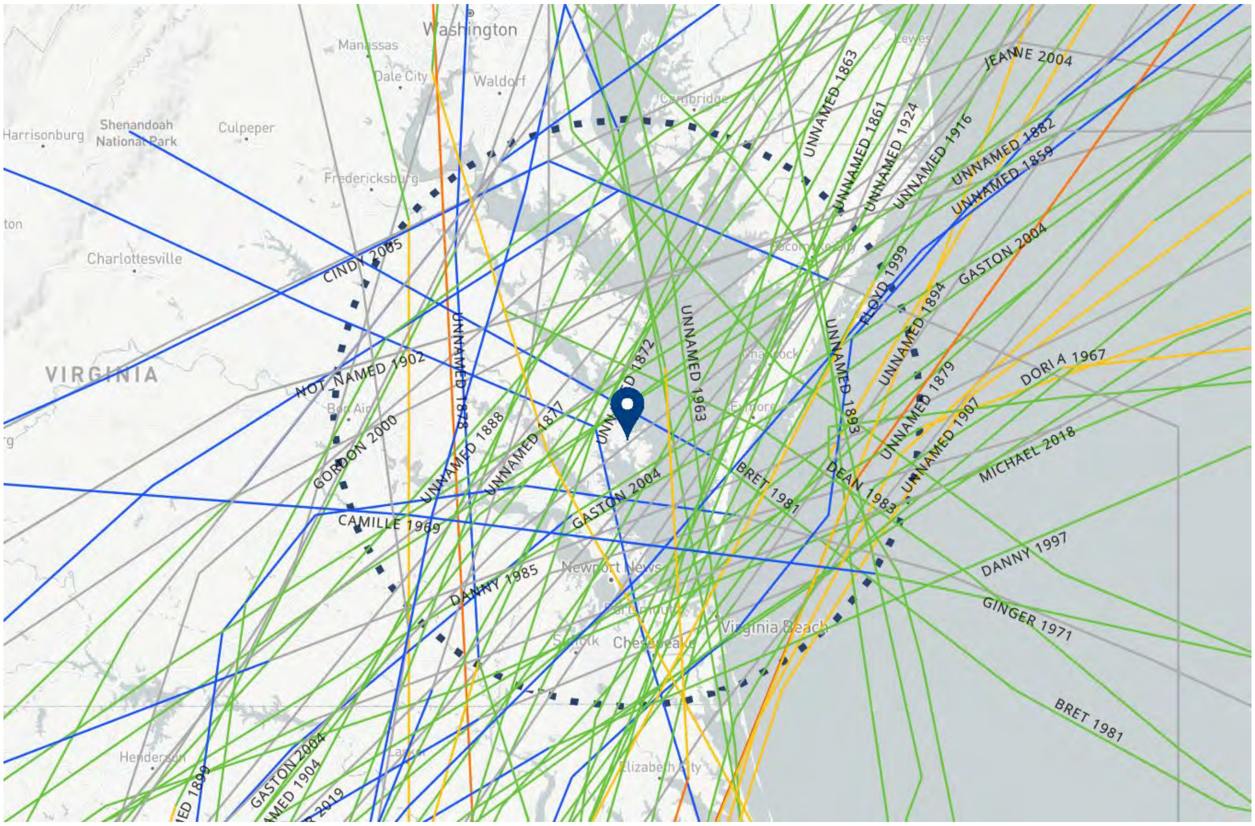


APPENDIX 3

Additional Property Photos

APPENDIX 4

List of Historic Hurricanes Impacting the Property Location



Location: 37.54119702, -76.362128

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05,	75	987	H1

	2020			
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005	65	991	H1

	to Jul 11, 2005			
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul	70	984	H1

	27, 1997			
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05,	95	959	H2

	1971			
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul	65	995	H1

	12, 1959			
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep	45	-1	TS

	04, 1934			
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep	70	-1	H1

	15, 1904			
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS

UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876	100	980	H3

	to Sep 19, 1876			
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18,	70	-1	H1

	1859			
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

APPENDIX 5

Flood Prevention Project and its Relevance to Other Projects

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change and Sea Level Rise (2009 to 2012)

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

Emergency Management – Hazard Mitigation Planning (2009 to Present)

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014)

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014)
Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

Mathews County Rural Ditch Enhancement Study (2015)
In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015)
This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in Virginia Resources Authority loan funding and ~$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. Middle Peninsula PDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project – VCPC White Papers (2017)
This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017)
This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018)
This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

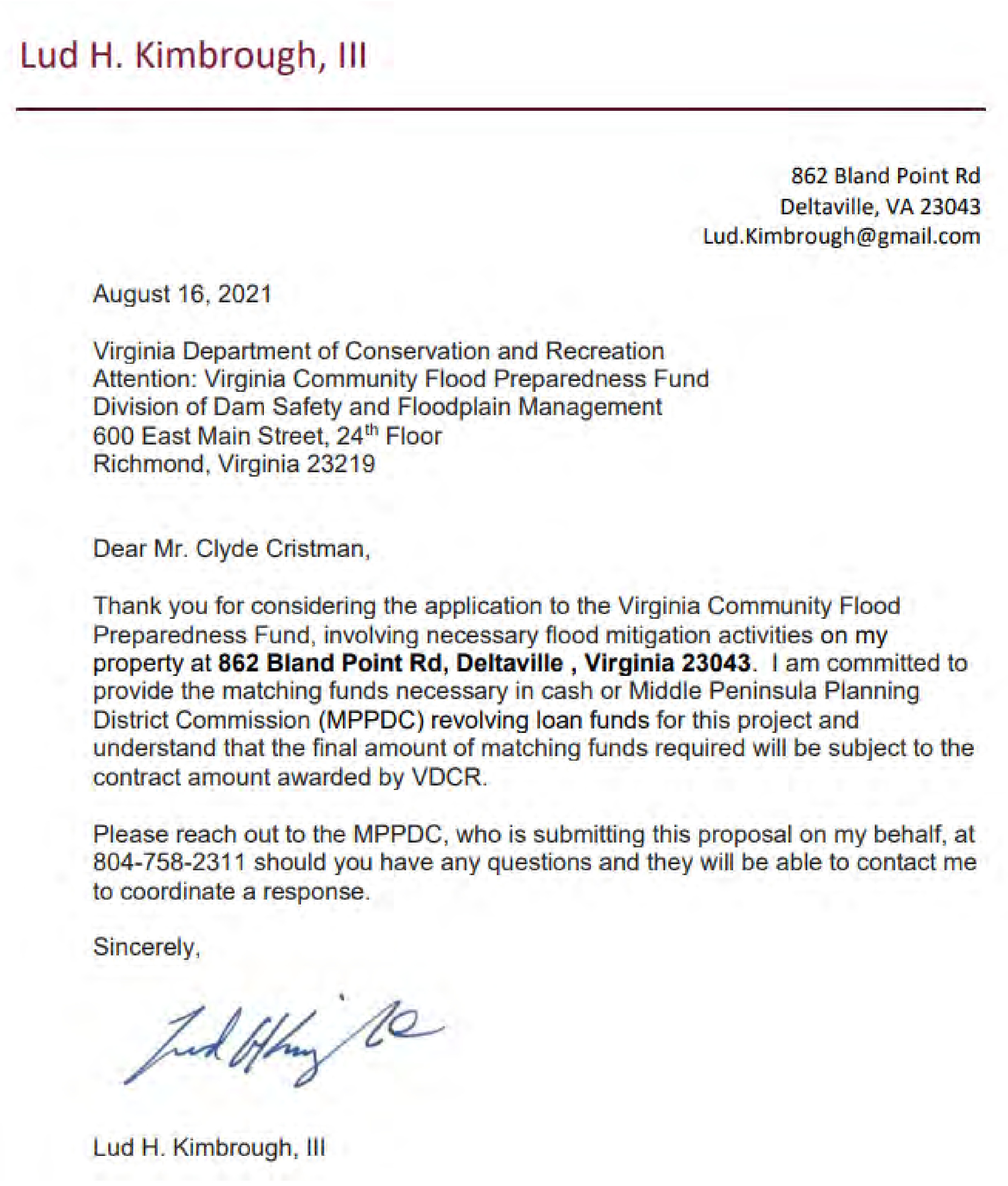
Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)
Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020)

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

APPENDIX 6

Match Commitment Letter



Lud H. Kimbrough, III

862 Bland Point Rd
Deltaville, VA 23043
Lud.Kimbrough@gmail.com

August 16, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at **862 Bland Point Rd, Deltaville , Virginia 23043**. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response.

Sincerely,

Lud H. Kimbrough, III

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

March 28, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Matthew Wells,

Enclosed in this packet is one flood protection and prevention project that involves the implementation of nature-based shoreline solutions.

The application is currently at the construction stage. Construction projects are requesting funds to implement projects which have approved permits or are nearing permit approval prior to construction of a nature-based flood protection solution.

Below is short summary of proposed projects in Middlesex County:

A. **Moore Creek Nature Based Shoreline Management Construction Project** (CID): 510098 Total Cost (from individual project application): $86,652
This project proposes to construct a nature-based solution on a private property located on Moore Creek in Middlesex County. The nature-based solution will involve the installation of 50 linear feet (LF) by 4 feet high of Envirolok Bags planted with marsh grass; a 179 LF perimeter of ReadyReefs to mean low water, backfilled sand and planted with marsh grass to make a living shoreline; and 143 LF by average of 3' high more Envirolok bags will be stacked to prevent erosion higher up the bank.

The total project costs for Middlesex County Round 3 construction applications is **$86,652** and MPPDC staff are requesting **$69,322** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at llawrence@mppdc.com or by phone at 804-758-2311.

Lewis Lawrence
Executive Director

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

PROJECT TITLE: Moore Creek Nature Based Shoreline Management Construction Project

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning X Project _____Study

NFIP/DCR Community Identification Number (CID): Middlesex County (510098)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ________________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ____

Project Grants (Check All that Apply)

- ☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**
- ☑ **Wetland restoration.**

- ☑ **Floodplain restoration.**
- ☐ **Construction of swales and settling ponds.**
- ☑ **Living shorelines and vegetated buffers.**
- ☐ **Structural floodwalls, levees, berms, flood gates, structural conveyances.**
- ☐ **Storm water system upgrades.**
- ☐ **Medium and large-scale Low Impact Development (LID) in urban areas.**
- ☐ **Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.**
- ☐ **Dam restoration or removal.**
- ☑ **Stream bank restoration or stabilization.**
- ☐ **Restoration of floodplains to natural and beneficial function.**
- ☐ **Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.**

Location of Project (Include Maps): Middlesex County
NFIP Community Identification Number (CID#) (See appendix F): 510098

Is Project Located in an NFIP Participating Community? þ Yes □ No
Is Project Located in a Special Flood Hazard Area? þ Yes □ No Flood Zone(s) (If Applicable): AE Zone
Flood Insurance Rate Map Number(s) (If Applicable): 51119C0240

Total Cost of Project: $86,652

Total Amount Requested: $69,322

INTRODUCTION –

This project proposes to construct a nature-based solution on a private property located on Moore Creek in Middlesex County. The nature-based solution will involve the installation of 50 linear feet (LF) by 4 feet high of Envirolok Bags planted with marsh grass; a 179 LF perimeter of ReadyReefs to mean low water, backfilled sand and planted with marsh grass to make a living shoreline; and 143 LF by average of 3' high more Envirolok bags will be stacked to prevent erosion higher up the bank.

FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). This proposal is a Nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions,* June 2021).

This project will be a partnership between the MPPDC and one private property owner and is supported by Middlesex County (See the community support letter in Attachment 1).

- A link or copy to the approved resilience plan: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf within the plan please see Section 4 (page 25). This Section includes historical hazard data within the region.
- Here's a link to the Middlesex County Comprehensive Plan: https://www.co.middlesex.va.us/DocumentCenter/View/1275/Middlesex-County-Comprehensive-Plan-Revised-3-3-20-PDF?bidId=

PROJECT LOCATION INFORMATION –

This project proposes to install living shorelines on one private property on Moore Creek in Middlesex County (**Figure 1 and 2**).

FIGURE 1: COUNTY MAP OF PROJECT LOCATION.

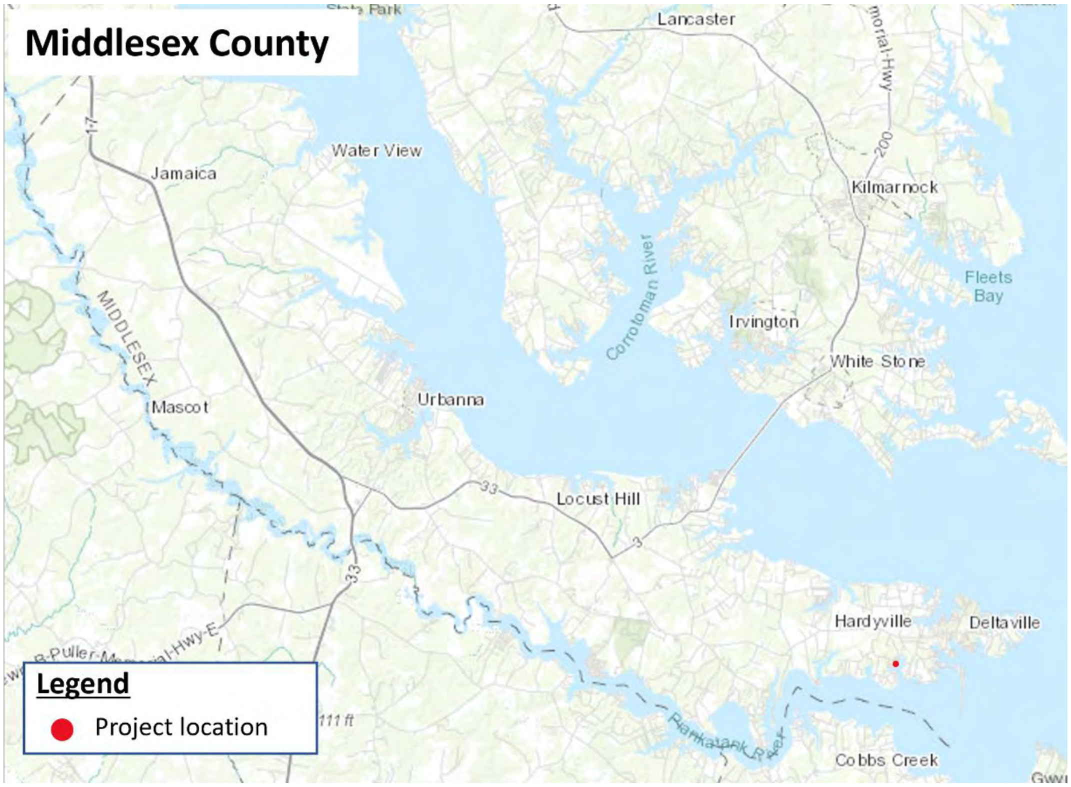
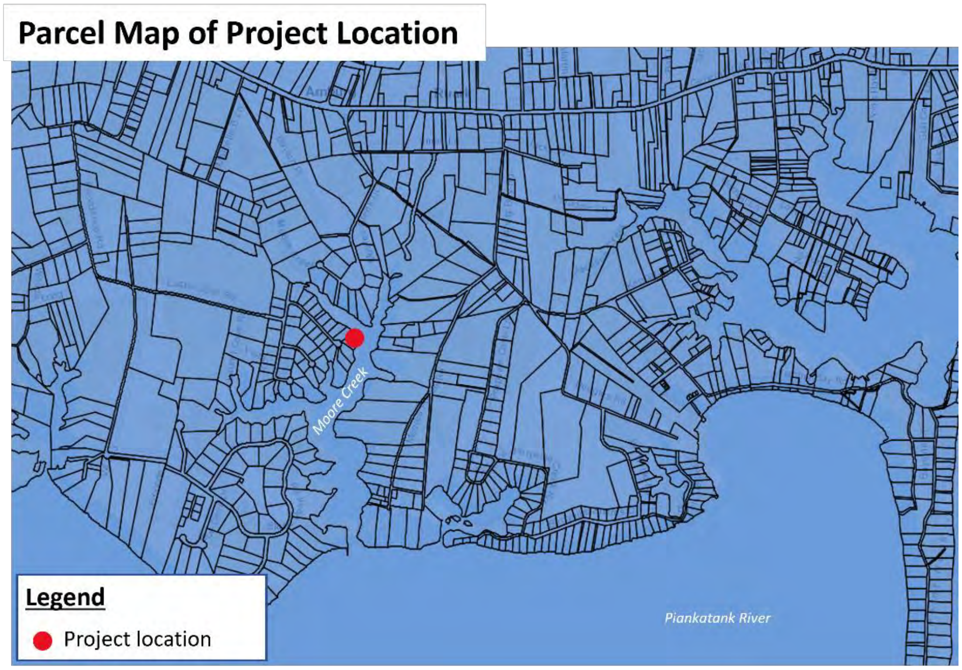
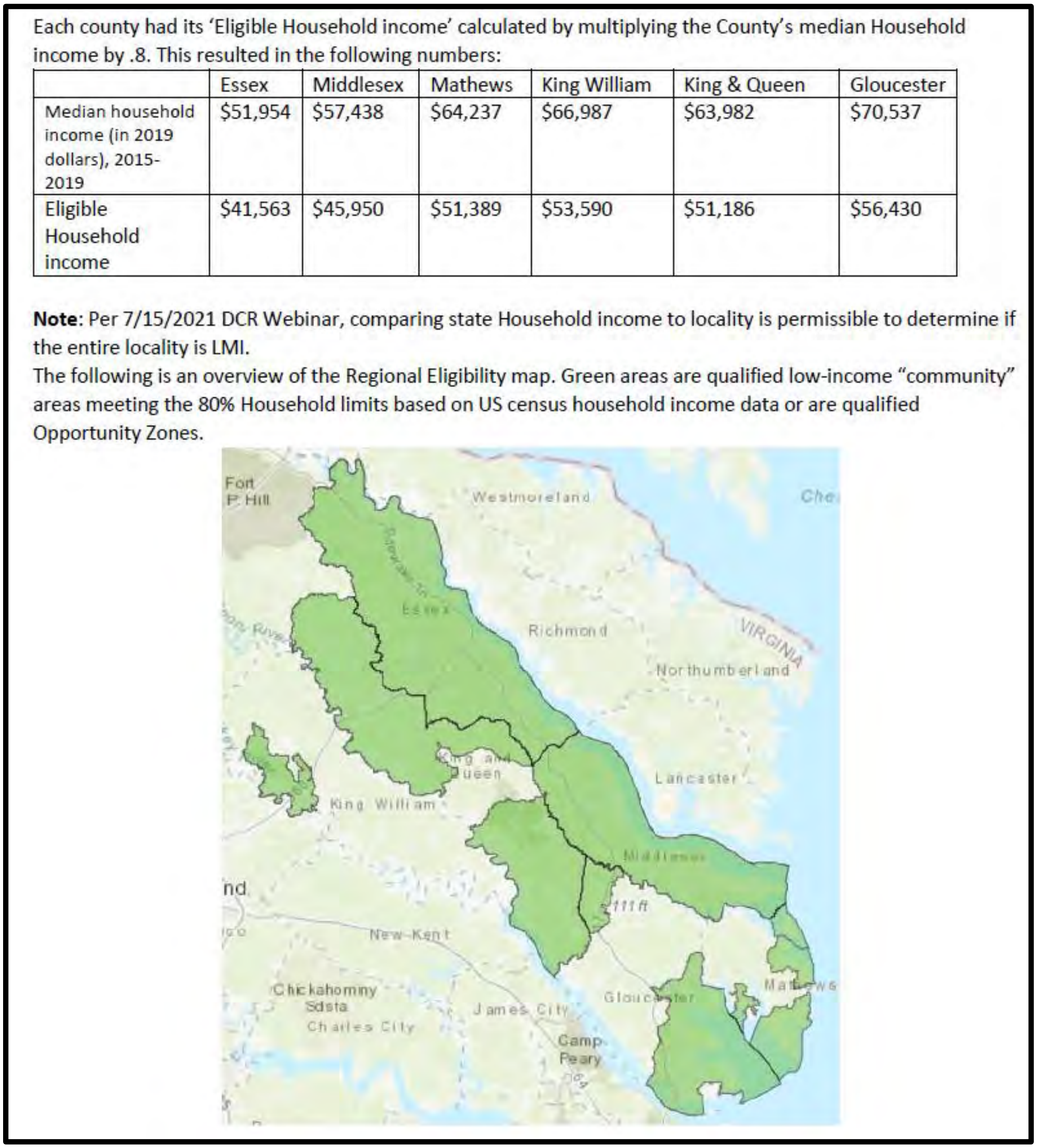


FIGURE 2: PARCEL MAP OF PROJECT LOCATION.



Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 3** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Figure 3: Map of Middle Peninsulas Low Income Geographic Areas qualifying under DCR guidelines.



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

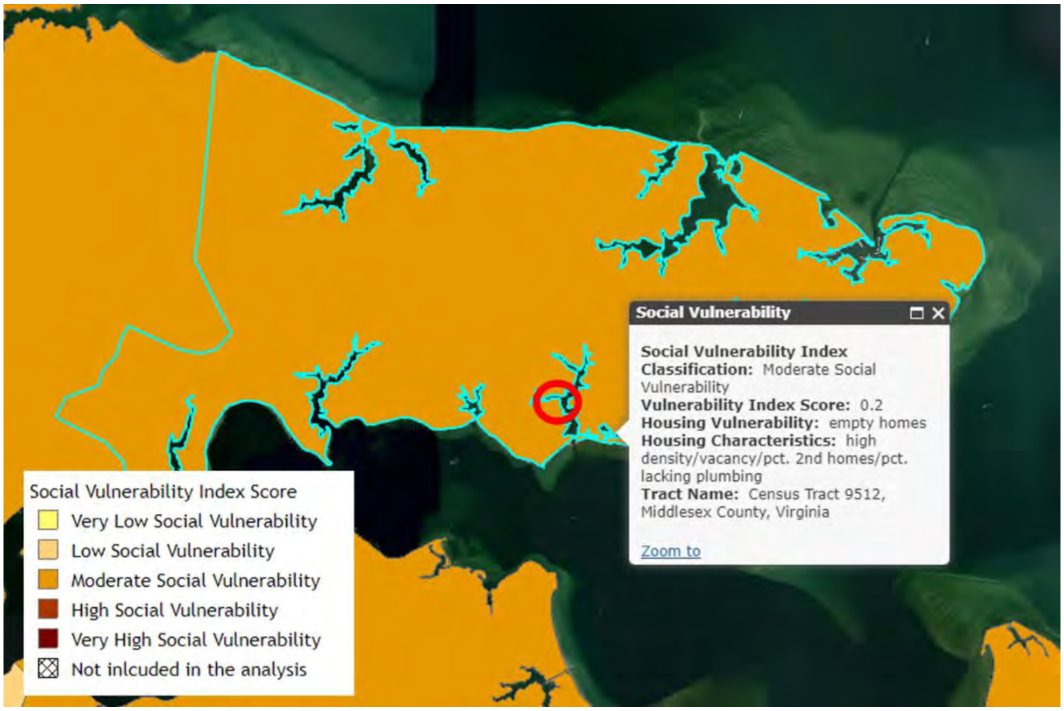
The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 4** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

FIGURE 4: MAP OF THE PROJECT LOCATION WITHIN THE GREEN LOW-INCOME AREA.

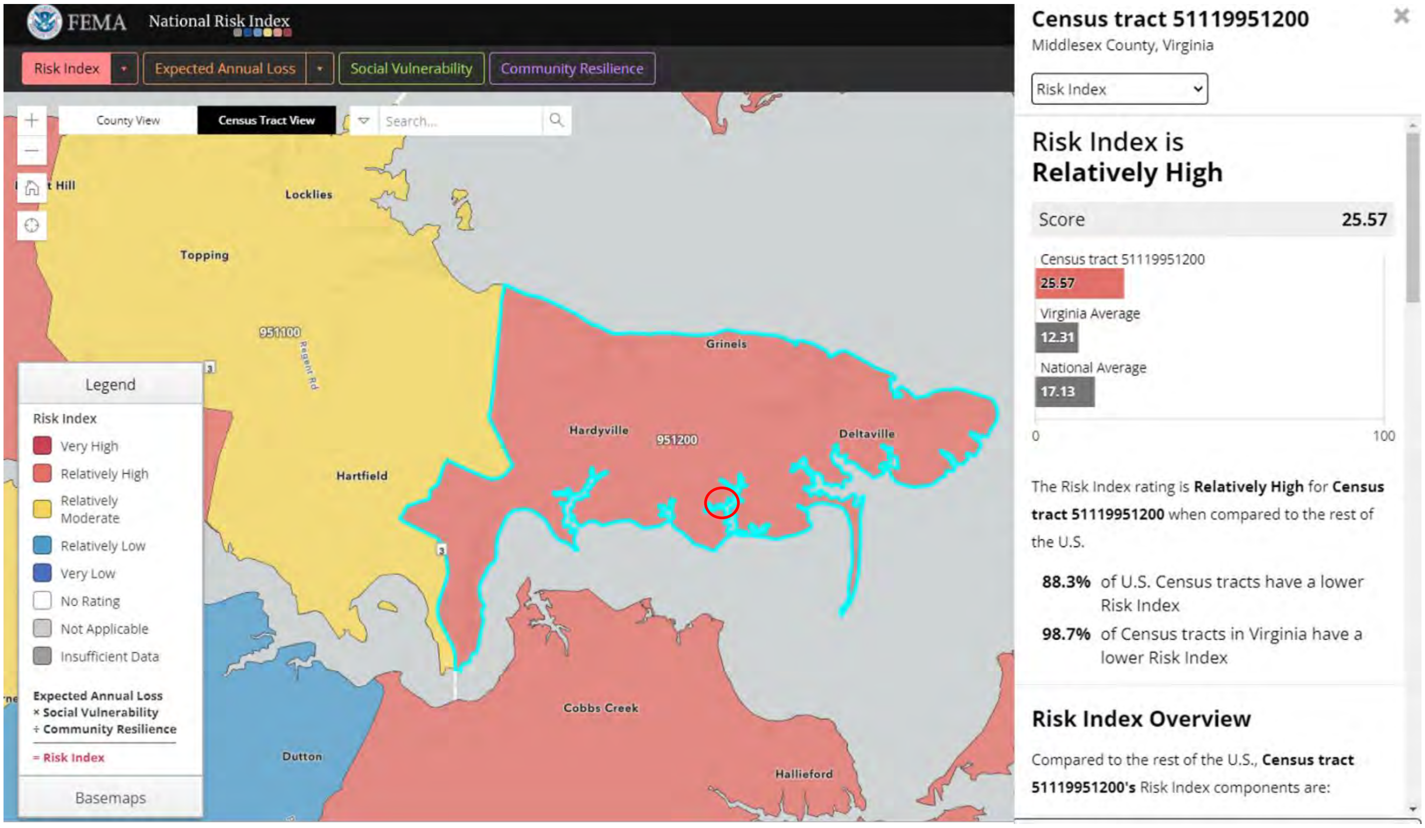
According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score (**Figure 5**). This is also supported by FEMA's National Risk Index which identifies the project area as having a relatively high-risk index **Figure 6**).

FIGURE 5: VIRGINIA'S SOCIAL VULNERABILITY INDEX SCORE MAP FOR THE PROJECT LOCATION.



Social Vulnerability Index
Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.2
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/pct. 2nd homes/pct. lacking plumbing
Tract Name: Census Tract 9512, Middlesex County, Virginia

FIGURE 6: FEMA NATION RISK INDEX OF CENSUS TRACKS WHERE THE PROJECT LOCATION.



Census tract 51119951200
Middlesex County, Virginia

Risk Index

Risk Index is Relatively High

Score	25.57
Census tract 51119951200	25.57
Virginia Average	12.31
National Average	17.13

The Risk Index rating is **Relatively High** for **Census tract 51119951200** when compared to the rest of the U.S.

88.3% of U.S. Census tracts have a lower Risk Index

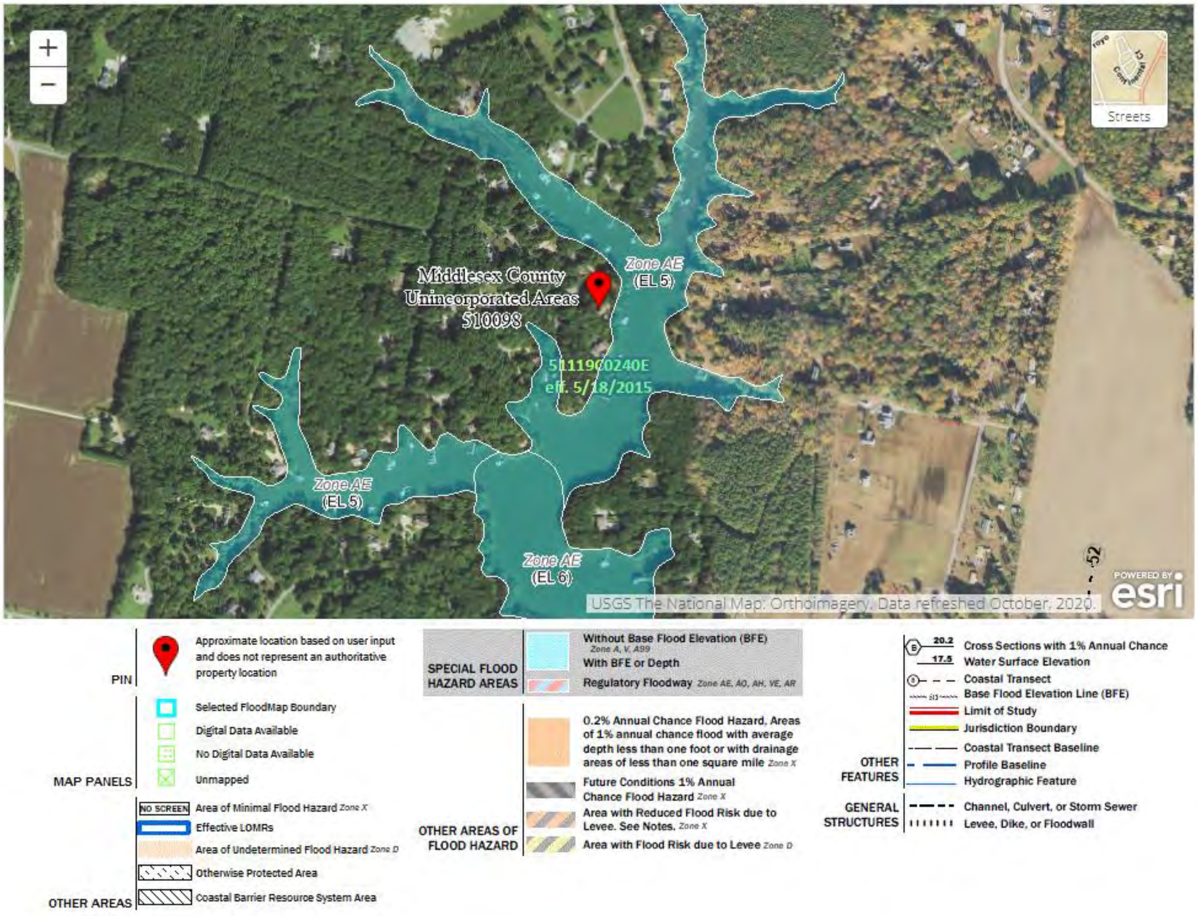
98.7% of Census tracts in Virginia have a lower Risk Index

Risk Index Overview

Compared to the rest of the U.S., **Census tract 51119951200's** Risk Index components are:

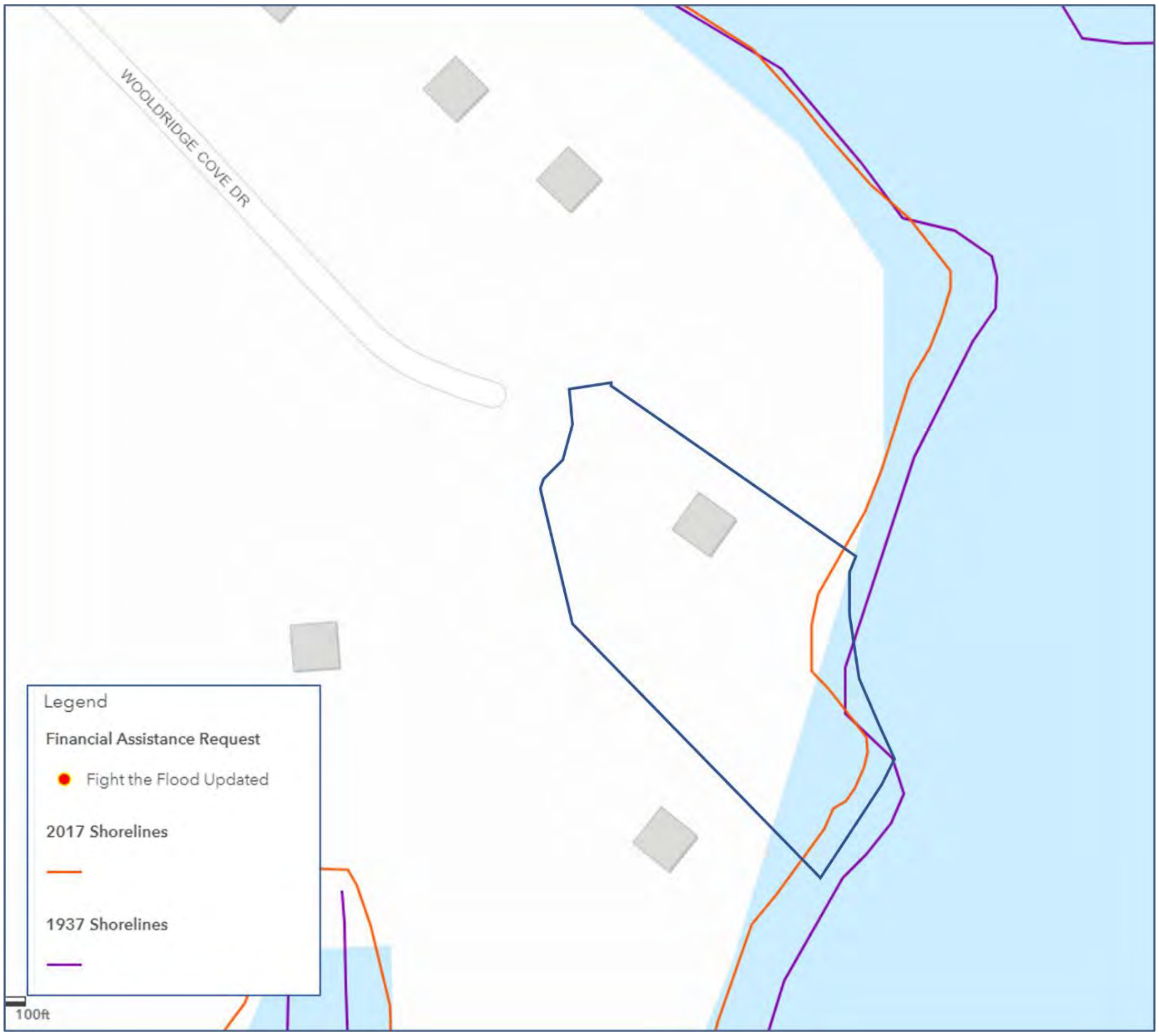
The project is located at 160 Wooldridge Cove Drive Deltaville, VA 23043 (37.54430, -76.35740). A 179-linear foot bioengineered structure, 176 linear feet of living shoreline, and 40 cubic yards of sill fill will be constructed at this project location. Within the project area there is one structure on the property including 1 residential home. The structure is not identified as severe repetitive loss structure or repetitive loss structures. This property is located within the X flood zone; however, since the project location will be on the property's shoreline this falls into the AE Zone (**Figure 7**). Please see **Attachment 2** for the FIRMettes (last mapped 5/18/2015).

FIGURE 7: MAP OF FEMA FLOOD ZONES.



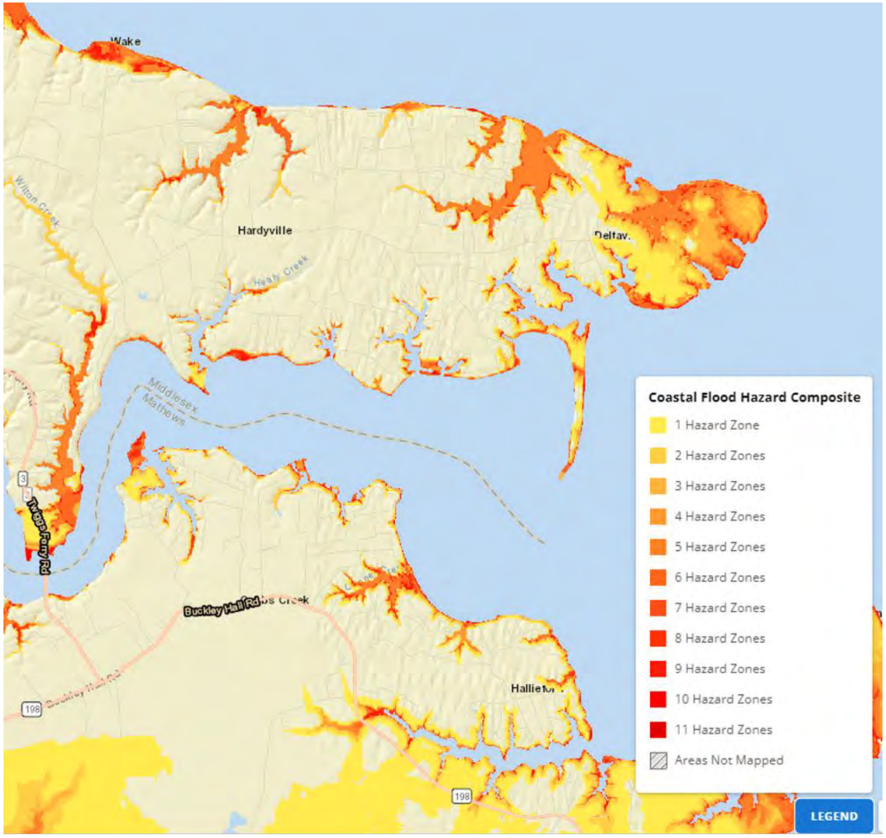
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 8** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 4,363.8 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Attachment 3** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

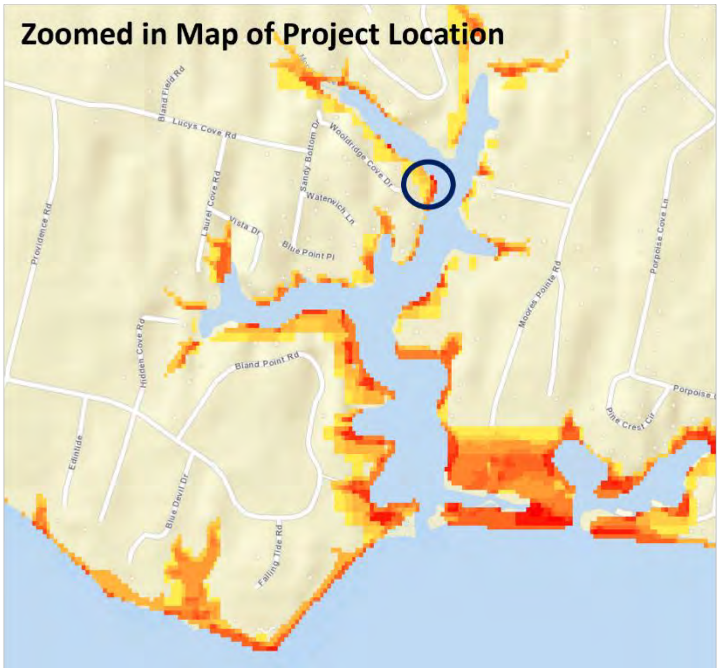
FIGURE 8: PROJECT LOCATION AND MAP OF THE SHORELINE CHANGE BETWEEN 1937 AND 2017. PLEASE NOTE THAT THE PROJECT AREA PARCEL IS OUTLINED IN WHITE.



Finally, according to NOAA’s Coastal Flood Mapper, this project is at the highest risk of coastal flooding (**Figure 9**).

Figure 9: Map of project location and risk of coastal flooding (NOAA, 2021).




Zoomed in Map of Project Location

For more information about this project area please see:

- The Middle Peninsula All Hazards Mitigation Plan identifies all hazards that impact the region -

https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf .

- Middlesex County Building and Engineering Department administers the NFIP. Here is the link to the current floodplain ordinance: https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF

NEED FOR ASSISTANCE –

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of $1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from $750,000 to over $1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The need for assistance is two-fold.

First, as Middlesex County borders the Rappahannock and Piankatank Rivers, the County is influenced by the water and is at high risk of coastal flooding, sea-level rise, and storm surge. Sea levels in Middlesex County have risen over 1 foot since 1950, leading to more frequent and severe coastal flooding, agricultural losses, and property damage. Sea levels are projected to rise between 2-6 feet by 2070, submerging private property and reshaping Middlesex County's coastline. Based on tidal gauge data from VIMS, relative sea- level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Middlesex County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds causing a storm surge. In Middlesex County, strong East and Northeast winds can push water from the Chesapeake Bay into the mouth of the York and Rappahannock Rivers and Mobjack Bay, flooding much of the county's low-lying areas (Middle Peninsula Planning District Commission, 2005). Additionally, when a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide". In Middlesex County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below (FEMA 1987, 6). The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on communities. Therefore, this project will build on other local efforts move toward becoming a more resilient community.

Second, at this project location, the shoreline is experiencing flood-induced erosion and undercutting of the bank. The north end of the property currently has Envirolok bags to prevent erosion and now the homeowner is looking to duplicate this effort on the south side of the property to the property line. Based on the photos in **Figure 10** the bank is eroding, and it is threatening the vegetation and trees along the bank. Without offering this section of shoreline some protection with the installation of a nature-based shoreline protection solution, this bank will continue to erode and the vegetation and trees on the shoreline will most certainly be lost. This will ultimately bring water closer to the structures on the property and increase the overall flood vulnerability of the property. Please see **Figure 10** for project location photos and **Attachment 4** for more photos.

FIGURE 10: PHOTOS OF THE MARRON PROPERTY.

Shoreline. Envirolok Bags are shown of the right and on the left is the eroding shoreline where the Envirolok Bags are planned to be installed to the property line.

Close-up of the bank erosion on the shoreline. This is where the Envirolok Bags are planned to be installed.

ALTERNATIVES –

Alternatives are not applicable to this project. A living shoreline is feasible at this location and therefore required per VMRC regulations. This project employs a nature-based solution, and this project cost is not greater than $3 Million.

GOALS AND OBJECTIVES –

This project proposes to remove the failing bulkhead which has hardened the shoreline for years and will be replaced with a nature-based solution. The nature-based solution is based on the DCR Flood Preparedness Fund definition: *"Nature-based solution" means an approach that reduces the impacts of flood and storm events through the use of environmental processes and natural systems. A nature-based solution may provide additional benefits beyond flood control, including recreational opportunities and improved water quality. This includes a project that reduces these impacts by protecting, restoring, or emulating natural features.* The project stie will use Evirolok bags. The Envirolok bag is a nonwoven geotextile produced by needle-punching together 100% synthetic staple fibers, in a random network, forming a high strength, dimensionally stable fabric. The synthetic fibers are specially formulated to resist ultraviolet light deterioration and are inert to commonly encountered soil chemicals. The fabric will not rot or mildew, is non-biodegradable, and is resistant to damage from insects and rodents. For more information about the Envirolok bags and for the permit package for the project area please see **Attachment 5**.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.
Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.
Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode.

Goal 2: Improve water quality
Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.
Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the living shoreline installed at this project location will:

1. **Stabilize the shoreline and reduce the overall erosion rate at the project location**. According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and reduce the erosion on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

2. **Provide ecosystem services to the community.** Since this project is proposing the installation of living shorelines, this project will have nutrient and sediment reduction

benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb./lf./yr.) and a phosphorus removal rate of 0.00861 lbs./lf./yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb./lf./yr. Therefore, with a proposed project of 176 linear feet of living shoreline this has the ability of removing 2.14368 pounds of nitrogen per year, 1.51536 pounds of phosphorus per year and 7,392 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

3. **Prevent loss of property and life.** As the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Middlesex County, which is local government.

APPROACH, MILESTONES, AND DELIVERABLES –

This project will follow the designs outlined and approved in the Joint Permit Application. Upon issuance of the permits for this project, VMRC has analyzed the upstream and downstream impacts of this project using the best available science, as per state law. Please see **Attachment 5** for the JPA application, Design, and Permit Package. The below table outlines the components of the nature-based solution and what will be installed at the project location, as permitted by Virginia Marine Resource Commission (VMRC).

	Total Project Location
Sill Fill	40 Cubic Yards
Bioengineered Structure	179 Linear Feet
Living Shoreline	176 Linear Feet

The anticipated timeline for this project could be as quick as 1 year, but no more than two years. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a two-year timeline will offer potential windows for planting the living shoreline - one in 2022 and one in 2023. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses for living shorelines should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them develop strong roots and leafy growth.

Below is the project timeline and project milestones for this project.
Receive funding notice - December 2021
Coordinate with property owners and the project contractor ReadyReef Inc to review project timeline and project expectations – January 2022
Initiate site preparation at the project location - January 2022 to July 2022
Construction of the living shoreline – June 2022 to September 2022
Project Close out – December 2022

RELATIONSHIP TO OTHER PROJECTS –
For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 6** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program.** This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN –

The approved VMRC permits does not require a maintenance plan; therefore, the maintenance of this construction project will be in accordance with the permit requirements.

CRITERIA –

Describe how the project meets each of the applicable scoring criteria containedin Appendix B and provide the required documentation where necessary. Documentationcan be incorporated into the Scope of Work Narrative or included as attachments to the application. <u>Appendix B must be completed and submitted with the application.</u>

For local governments that are not towns, cities, or counties, the documentation providedfor the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**

YES.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   YES. Here's the link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   YES. Please see **Attachment 1**
4. **Has the applicant provided evidence of an ability to provide the required match funds?**
   YES. Please see the match commitment letter in **Attachment 8**
5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
   YES.

BUDGET NARRATIVE -

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

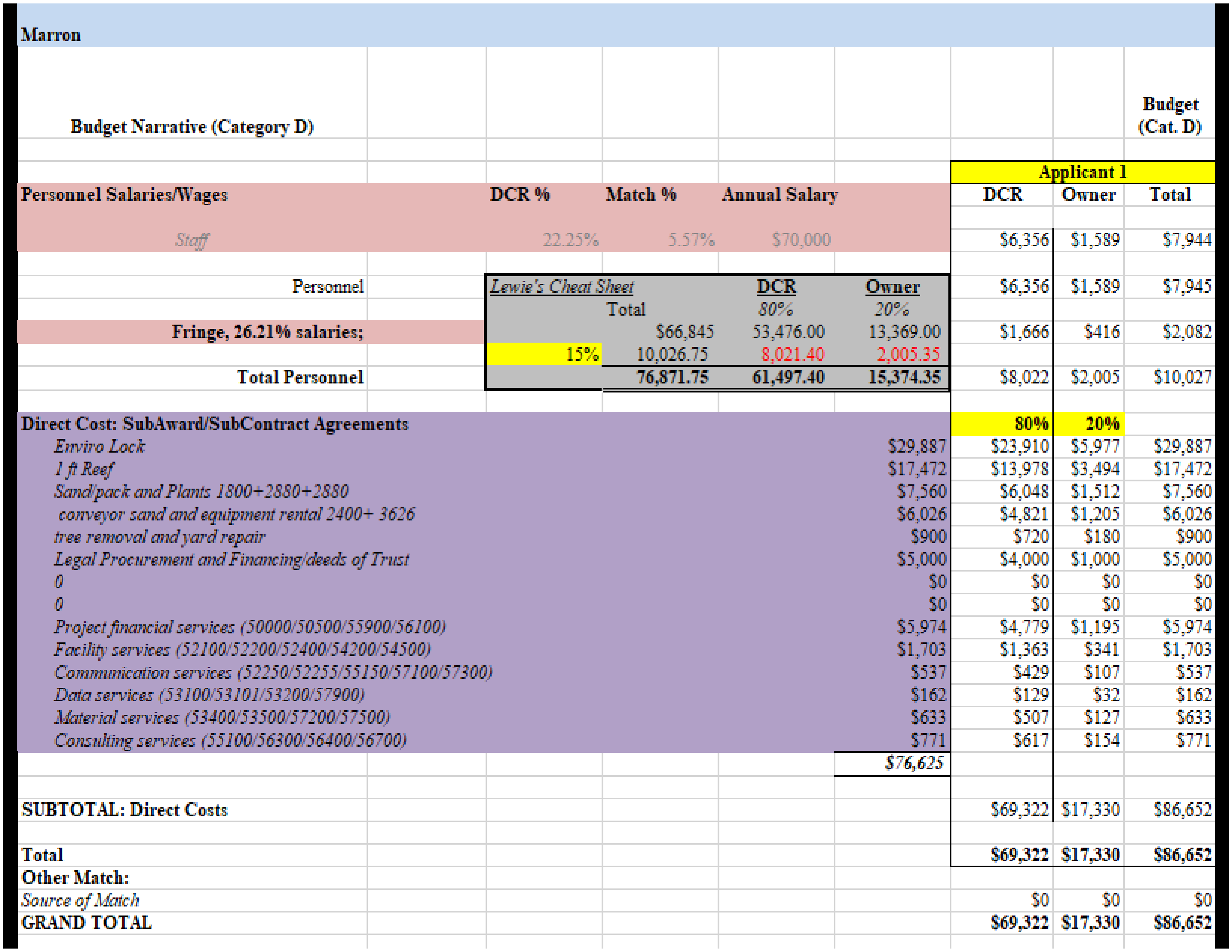
MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Also please note that the cost estimates for the construction of this project were supplied by the contractor, Ready Reef, LLC. Please see **Attachment 7**.

In summary:

***Estimated total project cost*:** $ 86,652

***Amount of funds requested from the Fund (70% project total)*:** $ 69,322



Marron								
Budget Narrative (Category D)								**Budget (Cat. D)**
						Applicant 1		
Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		22.25%	5.57%	$70,000		$6,356	$1,589	$7,944
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$6,356	$1,589	$7,945
			Total	*80%*	*20%*			
Fringe, 26.21% salaries;			$66,845	53,476.00	13,369.00	$1,666	$416	$2,082
		15%	10,026.75	8,021.40	2,005.35			
Total Personnel			**76,871.75**	**61,497.40**	**15,374.35**	$8,022	$2,005	$10,027
Direct Cost: SubAward/SubContract Agreements						**80%**	**20%**	
Enviro Lock					$29,887	$23,910	$5,977	$29,887
1 ft Reef					$17,472	$13,978	$3,494	$17,472
Sand/pack and Plants 1800+2880+2880					$7,560	$6,048	$1,512	$7,560
conveyor sand and equipment rental 2400+ 3626					$6,026	$4,821	$1,205	$6,026
tree removal and yard repair					$900	$720	$180	$900
Legal Procurement and Financing/deeds of Trust					$5,000	$4,000	$1,000	$5,000
0					$0	$0	$0	$0
0					$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)					$5,974	$4,779	$1,195	$5,974
Facility services (52100/52200/52400/54200/54500)					$1,703	$1,363	$341	$1,703
Communication services (52250/52255/55150/57100/57300)					$537	$429	$107	$537
Data services (53100/53101/53200/57900)					$162	$129	$32	$162
Material services (53400/53500/57200/57500)					$633	$507	$127	$633
Consulting services (55100/56300/56400/56700)					$771	$617	$154	$771
					$76,625			
SUBTOTAL: Direct Costs						$69,322	$17,330	$86,652
Total						**$69,322**	**$17,330**	**$86,652**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$69,322**	**$17,330**	**$86,652**

Finally, please see the authorization to request for funding in **Attachment 9.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ Yes ☐ No

Applicant Name:	Middle Peninsula Planning District Commission

Scoring Information		
Criterion	Point Value	Points Awarded
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

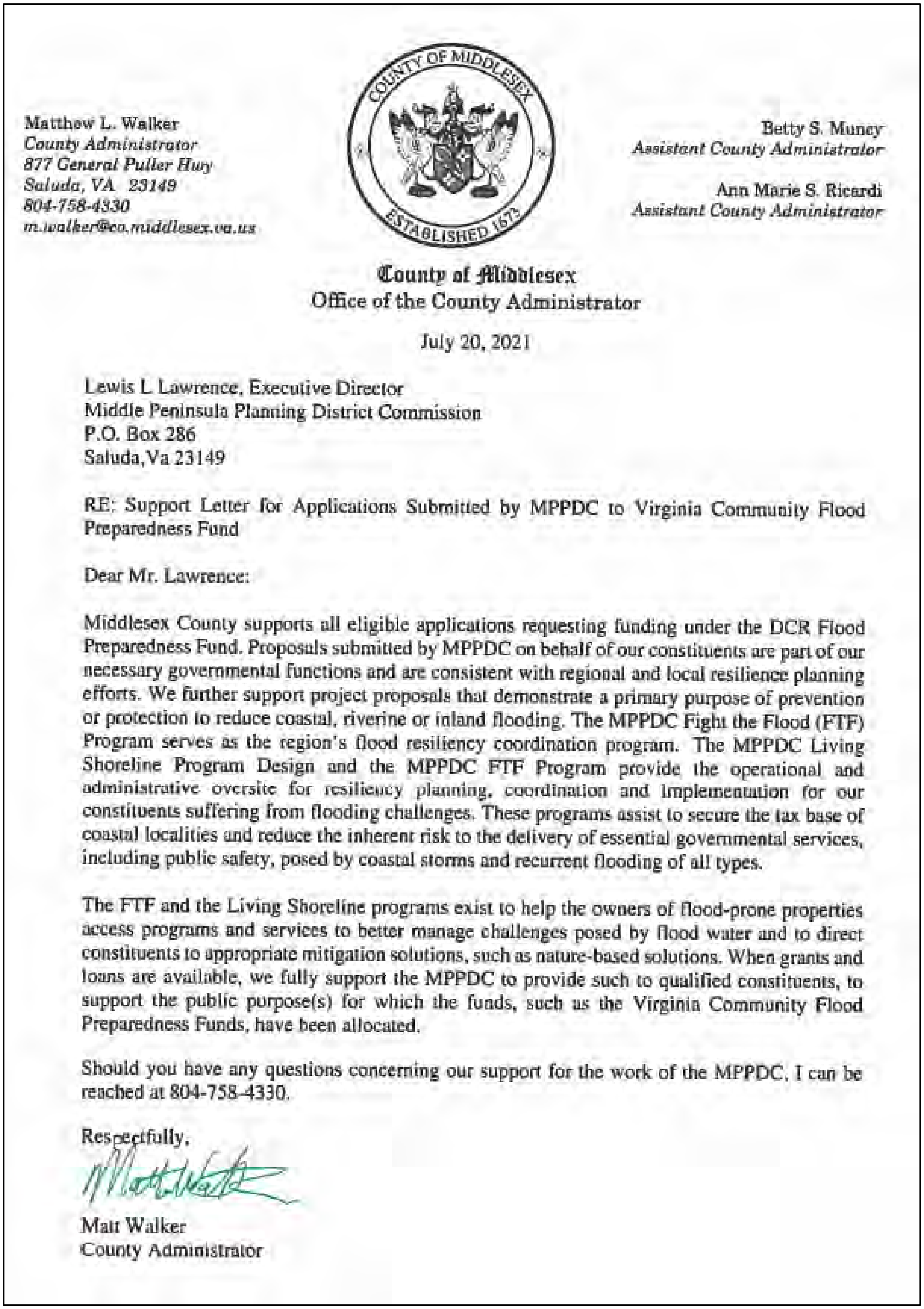
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

Appendix D: Checklist All Categories

Virginia Department of Conservation and RecreationCommunity Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter



Matthew L. Walker
County Administrator
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Saluda, VA 23149
804-758-4330
m.walker@co.middlesex.va.us

Betty S. Muncy
Assistant County Administrator

Ann Marie S. Ricardi
Assistant County Administrator

County of Middlesex
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda,Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

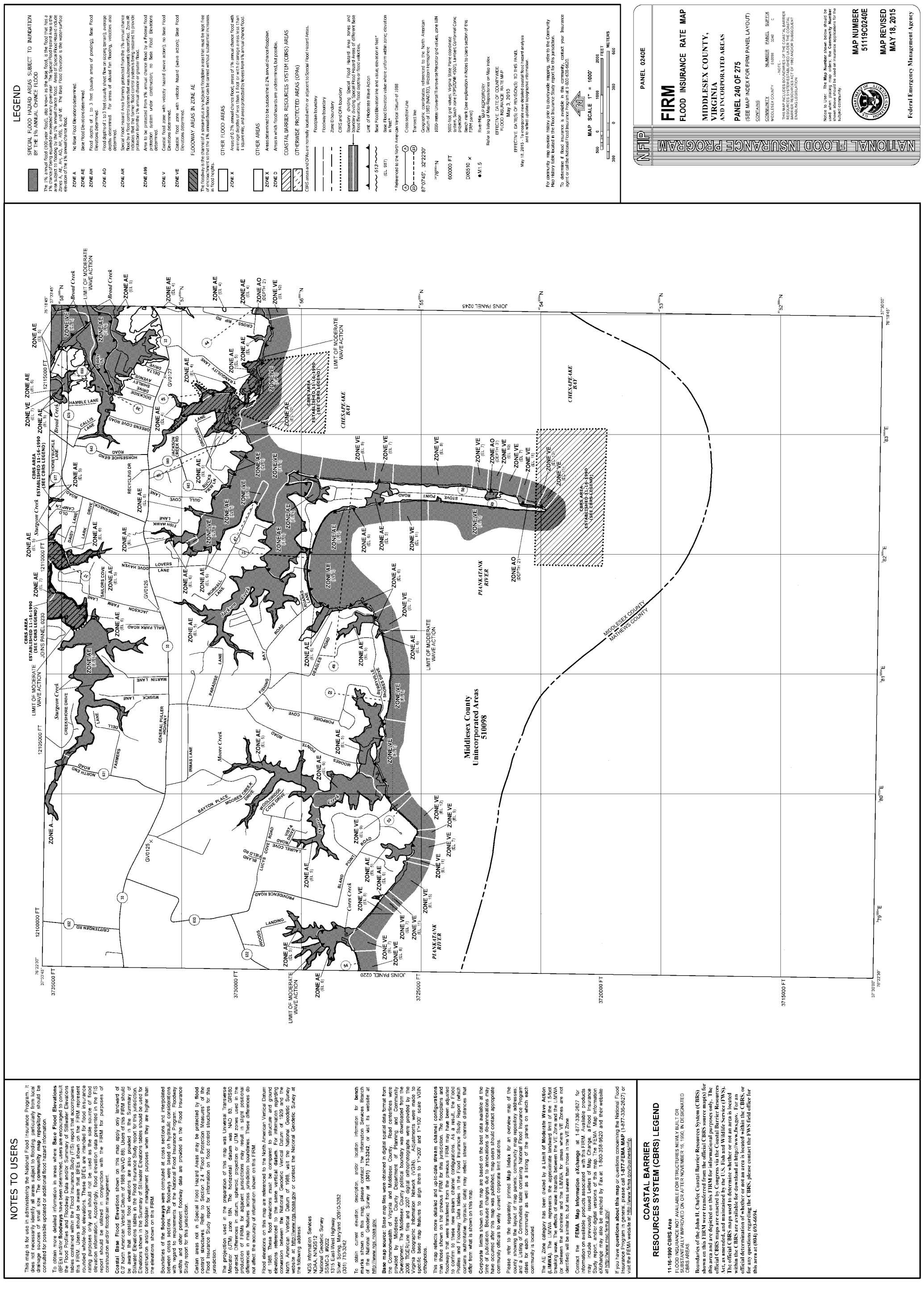
Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker
County Administrator

Attachment 2: Project Location FIRMette

Marron Property (FIRMette #: **51119C0240**)



Attachment 3: List of historic hurricanes impacting the project area.

Hurricane List

Search Filter Criteria

Location: 37.54430, -76.35740

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: Photos of the Parker property shoreline.

Attachment 5: JPA, Design, and Permit Package

From:	Chris Davis
To:	jpa.permits@mrc.virginia.gov
Cc:	Brian Marron; Patti Marron
Subject:	JPA Application attached
Date:	Tuesday, December 8, 2020 9:52:11 AM
Attachments:	Marron JPA 12-6 2020.pdf Marron Local Map Area.pdf Marron Plan View 11-6-20 (4).png Marron Profile 11-12-20 (4).png Envirolok-Bag-Tan-Data-Sheet.pdf Envirolok Standard Unit Detail.pdf Ricci Envirolok Section Layout1 5-20-19.pdf 1" high individual bridge reef for JPA 1-6-20.pdf Marron Area Map.pdf

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- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA # **20-2221**

APPLICANTS
Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply		
Pre-Construction Notification (PCN) ☐ NWP # ____________ (*For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned*)	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: Middlesex County

Waterway at project site: Moore Creek off Piankatank River.

PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)

Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html

Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address: Contact Information:

Brian Marron
6525 Monument Avenue
Richmond, VA
23226

Home (804) 370-3561
Work (____)______________
Fax (____)______________
Cell (800) 370-3561
e-mail brian.marron79@gmail.com

State Corporation Commission Name and ID Number (if applicable) ______________

2. Property owner(s) legal name* and complete address, if different from applicant: Contact Information:

Home (____)______________
Work (____)______________
Fax (____)______________
Cell (____)______________
e-mail ____________________

State Corporation Commission Name and ID Number (if applicable) ______________

3. Authorized agent name* and complete mailing address (if applicable): Contact Information:

Chris Davis
504 Smoketree Ct
North Chesterfield, VA
23236

Home (____)______________
Work (____)______________
Fax (____)______________
Cell (804) 338-3103
e-mail chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) ______________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

The project is to install Envirolok Bags planted with marsh grass for 50 LF x 4' high at the shoreline against the steep bank adjacent to the Client's dock on Moore Creek. To the north and south of these bags, a 179 LF perimeter of ReadyReefs out to MLW will be installed, with backfilled sand and planted with marsh grass to make a living shoreline. Against the bank, 143 LF x average of 3' high more Envirolok bags will be stacked to prevent erosion higher up the bank. All work is above MLW, except where reefs diverge out to create 5' gap. No SAVs are present. Any grasses covered by backfill or bags will be replaced. There will be a net gain of 520 ft^2 of marsh grass. No grading or tree clearing in the RPA is required. Site will be accessed through the yard.

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? x Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

ReadyReef Inc
504 Smoketree Ct.
North Chesterfield, VA
23236

Contact Information:

Home (____)____________
Work (____)____________
Fax (____)____________
Cell (804) 338-3103
email chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) ____________________

*** If multiple contractors, each must be listed and each must sign the applicant signature page.**

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:

Southside Sentinel
276 Virginia Street
PO Box 549
Urbanna, VA
23175

Telephone number

(804) 758-2328

7. Give the following project location information:

Street Address (911 address if available) 160 Wooldridge Cove Rd
Lot/Block/Parcel# 40 82 41
Subdivision Lucys Cove
City / County Deltaville ZIP Code 23043
Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
37.544195°N / -76.357231°W (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

From Saluda, take Rt. 33 East towards Deltaville. Turn Right onto Providence Rd, State Rt 633. Follow Rt. 633, but when it takes a 90°right turn, keep going straight as it turns into Lucy Cove Rd. Turn left at Stop Sign onto Sandy Bottom Drive. Turn right onto Wooldridge Cove Drive. House Number 160 is at the end in the cul-de-sac.

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose may be "to protect property from erosion due to boat wakes" and the secondary purpose may be "to provide safer access to a pier."

The primary purpose is stop erosion at the toe of the bank which is being undercut with soil loss and threat to dock access.
The secondary purpose is to achieve erosion control with the environmental benefit of adding marsh grasses and oysters to the waterfront.

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Part 1 - General Information (continued)

9. Proposed use (check one):
   _x_ Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

    Only 20ft² of thin marsh grass will be covered with backfill delivered from the yard.
    These will be replaced with 540 ft² of new marsh grass plants in the Envirolok bags and on the Living Shoreline.
    No buffer areas will be impacted by traffic over the mulch covered yard.

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes _x_No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $____________________
    Approximate cost of that portion of the project that is channelward of mean low water:
    $130

13. Completion date of the proposed work: June 30 - 2022

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

    40 82 40
    Arthur and Evelynn Wilton Jr
    PO Box 212
    Deltaville, VA
    23043

    40 82 42
    Gordon White
    PO Box 129
    Hardyville, VA
    23070

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Part 2 - Signatures

1. Applicants and property owners (if different from applicant).
NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant’s Legal Name (printed/typed)	(Use if more than one applicant)
Applicant’s Signature	(Use if more than one applicant)
Date	
Property Owner’s Legal Name (printed/typed) (If different from Applicant)	(Use if more than one owner)
Property Owner’s Signature	(Use if more than one owner)
Date	

Part 3 – Appendices (continued)

Appendix B: Projects for Shoreline Stabilization in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS**.**

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

   179 LF of ReadyReefs are arrange in linear double rows that mate together. Oyster veneers face seaward. The bottom is firm, so no filter cloth is required. The 6 ft² encroachment below MLW is only necessary due to the requirement for a 5' gap every 100'.

   The Envirolok bags spec sheets and installation diagrams are attached.
   The foundation layer bags are filled with round river rock to allow for hydraulic relief behind the bags. They can be stacked at any angle to match slope.
   Also the installation diagram shows anchoring specs, using geoweb, rebar and earth anchors for structurally fixing the bags to the embankment.
   Sand will be placed behind the bags and packed with them using soil compactor machine.
   Marsh grass sprigs will be planted 1' on center in the backfilled sand to create a Living Shoreline.

2. What is the maximum encroachment channelward of mean high water? 15 feet.
   Channelward of mean low water? 3 feet.
   Channelward of the back edge of the dune or beach? 15 feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 20 square feet
   - Non-vegetated wetlands 2102 square feet
   - Subaqueous bottom 6 square feet
   - Dune and/or beach 0 square feet

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes____ No.

   If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____Yes ____No.

   If no, please provide an explanation for the purpose and need for the additional encroachment.

Part 3 – Appendices (continued)

5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
NOTE: **Drawings must include construction details, including dimensions, design and all materials, including fittings if used**.

The ReadyReefs are locally sourced crack resistant concrete substrate with an oyster shell veneer cast in. There is 5" of embedded PVC pipe for attachment/lifting purposes.

The Envirolok bags spec sheets are attached. They are filled with a 25% topsoil and 75% clean sand mix. Marsh grass sprigs are laid between bags with Osmocote fertilizer.

Also attached is an installation diagram showing anchoring specs, using geoweb, rebar and earth anchors for structurally fixing the bags to the embankment.
Sand is locally sourced from Middlesex upland pit, meeting grain size and composition requirements of the USACE.

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
Core (inner layer) material__________ pounds per stone Class size ________
Armor (outer layer) material __________ pounds per stone Class size ________

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

- Volume of material

Volume of material	0	cubic yards channelward of mean low water
	40	cubic yards landward of mean low water
	35	cubic yards channelward of mean high water
	5	cubic yards landward of mean high water
Area to be covered	0	square feet channelward of mean low water
	1300	square feet landward of mean low water
	35	cubic yards channelward of mean high water
	5	cubic yards landward of mean high water

- Source of material, composition (e.g. 90% sand, 10% clay): 93% sand, 7% clay
- Method of transportation and placement:
  Truck from Pit to front yard. Skid steer from front yard to shoreline. Chutes from shoreline to installation points.
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:

Marsh grass spigs of Spartina will be placed one foot on center on Living shoreline slope and in Envirolok bag face. The Spartina types are Alterniflora and Patens, each according to its elevation appropriate level. Installation is concurrent with project install and completion. All ReadyReef sites are monitored for marsh grass growth for 2 years according to contract warranty and the time it takes for living shorelines to fully establish themselves.

Part 3 – Appendices (continued)

Appendix D: Aquaculture Related Structures such as cages and floats. Before completing this appendix, please review the aquaculture requirements summary at: http://mrc.virginia.gov/Shellfish_Aquaculture.shtm.

1. Will the activity be for commercial purposes? _____Yes _____ No.

   If Yes and structures will be placed upon an oyster ground lease, you may qualify for the VMRC General Permit #4 for Temporary Protective Enclosures for Shellfish. For more info see: http://www.mrc.virginia.gov/regulations/MRC_Scanned_Regs/Shellfish_Mix/fr1130_12-0107.pdf. If you qualify for the General Permit #4, or if such structures are proposed that are not on an oyster planting ground lease, or for floating structures of any kind, complete this Joint Permit Application and include the necessary information requested below in question 2 through 11.

   If No, you may qualify for the VMRC General Permit #3, for Noncommercial Riparian Shellfish Growing (i.e. "Gardening") For more information see: http://www.mrc.virginia.gov/forms/VGP3_Aquaculture.doc.pdf. If you qualify for this general permit use the Abbreviated Joint Permit Application For Noncommercial Riparian Shellfish Aquaculture Structures available at https://mrc.virginia.gov/forms/2019/VGP3_Aquaculture_form_2019.pdf ***do not use this Joint Permit Application***.

2. Will aquaculture structures be attached to an existing pier or other structure? ____ Yes ____ No.

3. The plat file # if proposed upon oyster planting ground lease(s).____________________________

4. The maximum area where enclosures are proposed. ___________ square feet

5. The maximum number of enclosures being proposed to be deployed. _____________

6. The species of shellfish to be cultured. ____________________________

7. A detailed description of the enclosures to include width, length and height.

8. In addition to the requirements itemized in Part 4 Project Drawings, the following additional information must be included on your project drawings: A general description of the area within 500 feet of deployment area. Provide a drawing that depicts existing marine resources such as SAV, shellfish beds, fixed fishing devices, public grounds, piers, water depths at mean low water, tide range, and the minimum clearance at mean low tide over the enclosures.

9. Provide the date enclosures are proposed to be deployed _______________. How will the structures be secured? ____.

Part 3 – Appendices (continued)

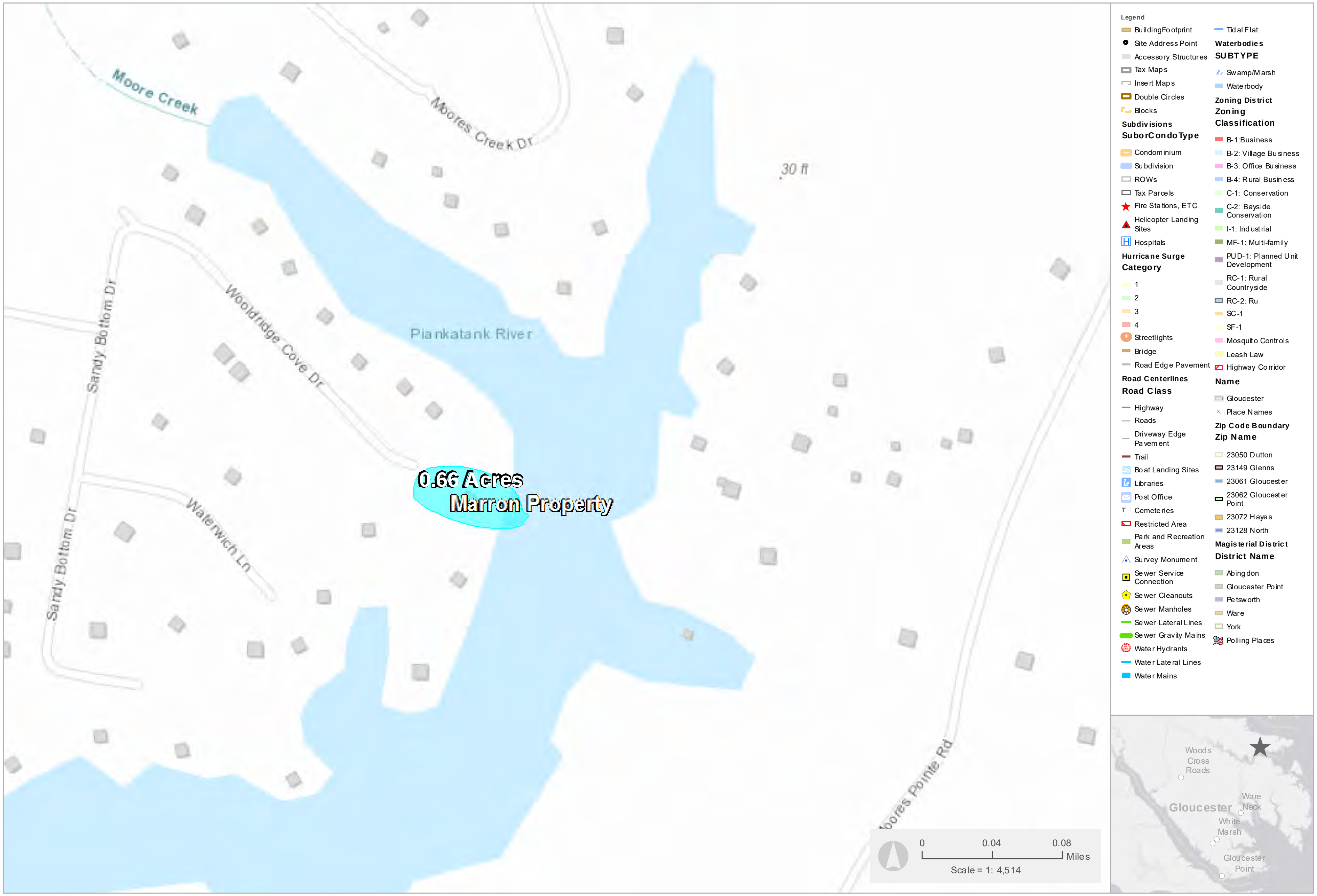
10. List of all riparian land owners within 500 feet of the area where enclosures are proposed along with a map (tax map or other suitable map) depicting the locations of such parcels or riparian property owner acknowledgement forms signed by the riparian land owner with any comments concerning the enclosures deployment request.

11. Proof that the applicant holds a current oyster or clam aquaculture product owners permit, and verification that the applicant is in compliance with Mandatory Harvest Reporting requirements, and verification that the current years oyster ground rent is paid, if structures are proposed on an oyster ground lease.

COUNTY OF GLOUCESTER VIRGINIA

Marron Local Map

Gloucester County, VA
www.gloucesterva.info



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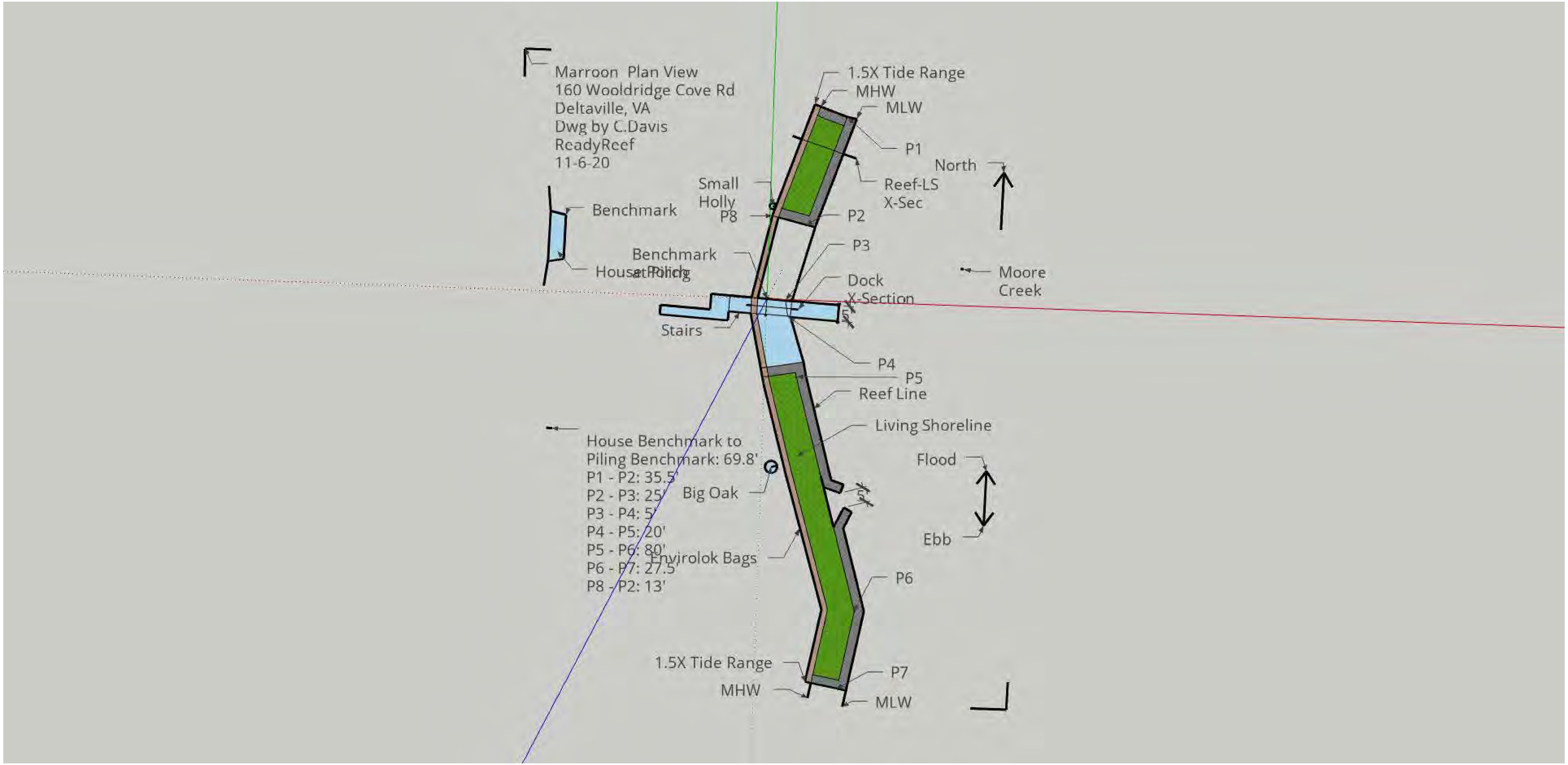

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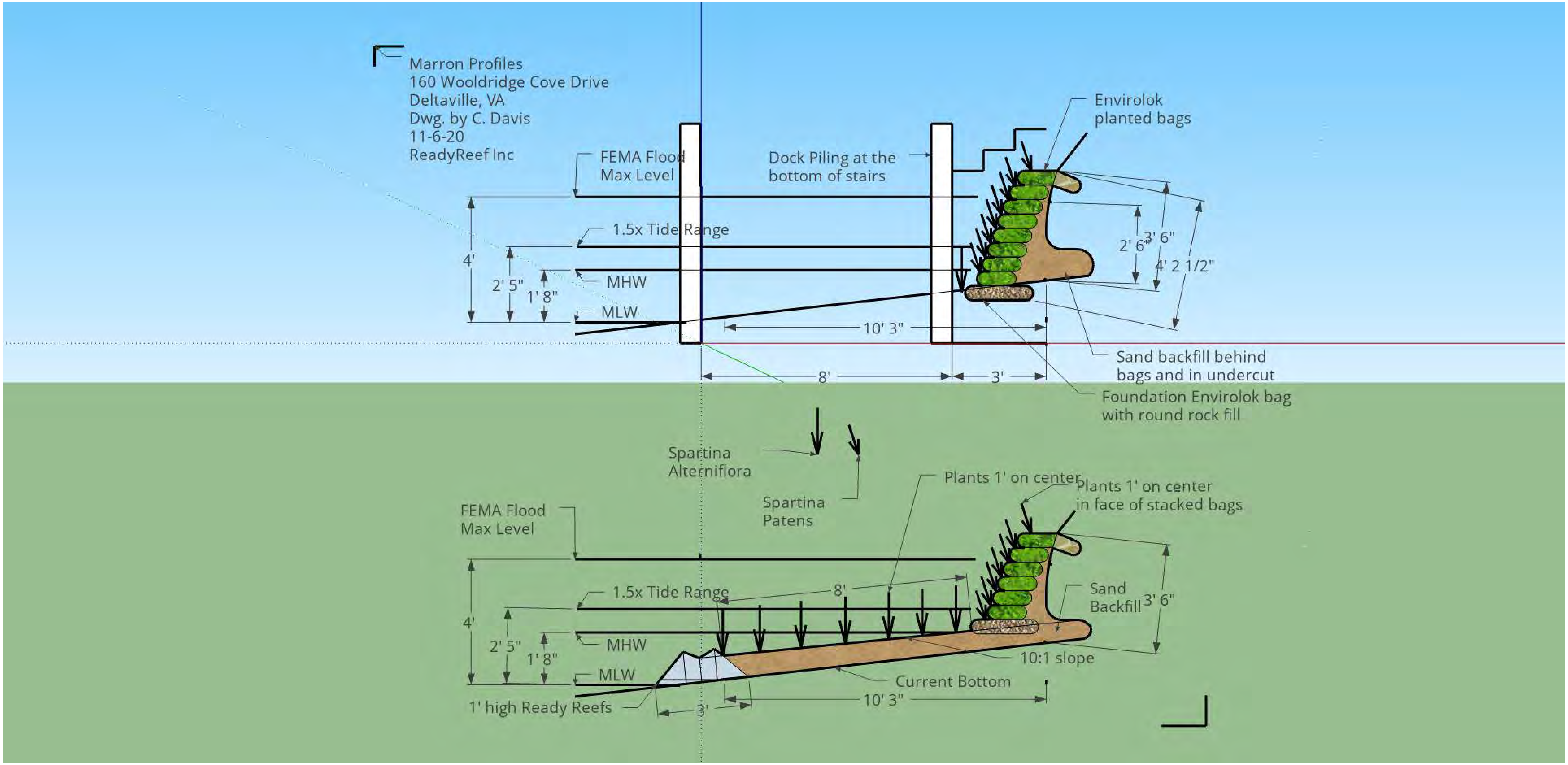
Marron Profiles
160 Wooldridge Cove Drive
Deltaville, VA
Dwg. by C. Davis
11-6-20
ReadyReef Inc
FEMA Flood Max Level
Dock Piling at the bottom of stairs
Envirolok planted bags
1.5x Tide Range
4'
2' 5"
1' 8"
MHW
MLW
2' 6"
3' 6"
4' 2 1/2"
10' 3"
8'
3'
Sand backfill behind bags and in undercut
Foundation Envirolok bag with round rock fill
Spartina Alterniflora
Spartina Patens
Plants 1' on center
Plants 1' on center in face of stacked bags
FEMA Flood Max Level
1.5x Tide Range
8'
Sand Backfill
3' 6"
4'
2' 5"
1' 8"
MHW
MLW
10:1 slope
Current Bottom
1' high Ready Reefs
3'
10' 3"

Envirolok®
Vegetated Environmental Solutions

Envirolok Bag (Tan) Data Sheet

The Envirolok bag is a nonwoven geotextile produced by needle-punching together 100% synthetic staple fibers, in a random network, forming a high strength, dimensionally stable fabric. The synthetic fibers are specially formulated to resist ultraviolet light deterioration, and are inert to commonly encountered soil chemicals. The fabric will not rot or mildew, is non-biodegradable, and is resistant to damage from insects and rodents. The synthetic fiber is stable within a pH range of 2 to 13, making it one of the most stable polymers available for geotextiles today. The Envirolok bag meets the following Minimum Average Roll Values (MARV):

PROPERTIES	TEST METHOD	UNIT	MARV
PHYSICAL			
Weight	ASTM D 5261	oz/yd2	4.0 (Typ) (135.62 g/m2)
Dimensions (unfilled)		35 x 16.5 inches (889 x 419 mm)	
Grab Tensile	ASTM D 4632	lbs.	100 (.450 kN)
Grab Elongation	ASTM D 4632	%	50
Puncture Strength	ASTM D 4833	lbs.	65 (.289 kN)
Mullen Burst	ASTM D 3786	psi	210 (1448 kPa)
Trapezoidal Tear	ASTM D 4533	lbs.	45 (.202 kN)
CBR Puncture Resistance	ASTM D 6241	lbs.	310 (1.379 kN)
UV Resistance After 1,000 Hours	ASTM D 4355	% Strength Retained	70
HYDRAULIC			
Permittivity [1]	ASTM D 4491	sec-1	2
Water Flow Rate [1]	ASTM D 4491	gpm/ft2	140 (5700 l/min/m2)
Apparent Opening Size [2]	ASTM D 4751	U.S. Sieve	70 (.212mm)

1. Handling at the time of manufacturing may change these properties.
2. Apparent Opening Size, (AOS), reported as Maximum Average Roll Value.

To the best of our knowledge, the information contained herein is accurate. However, it is not a warranty or a guarantee and is provided for reference only. We accept no responsibility for results obtained by the application of this information or the safety or suitability of our products either alone or in combination with other products. Final determination of the suitability of any information or material for the use contemplated, of its manner of use, and whether the suggested use infringes on any patents is the sole responsibility of the user.

Revised Date: 01/01/2017

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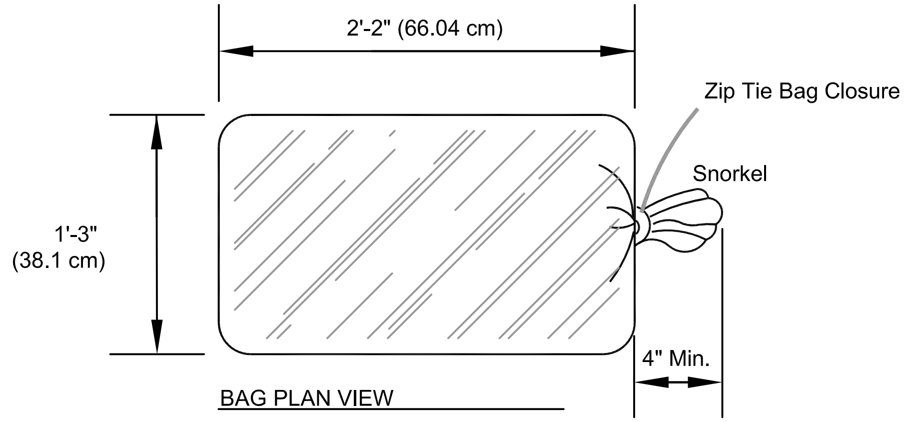
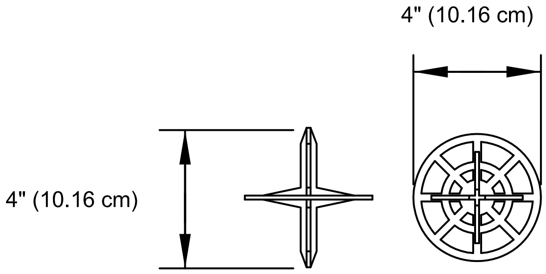


BAG PLAN VIEW

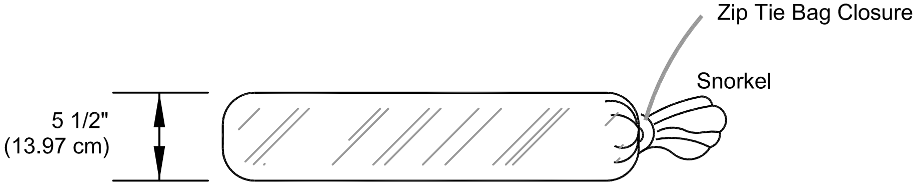


ENVIROLOK CONNECTOR PIN (SPIKES)

SCALE: 1/2" = 1' - 0"

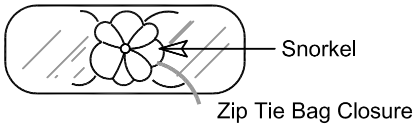
NOTE:

- Two Connector Pins shall be installed per bag, interconnecting the bags vertically
- Connector Pins shall be used to connect the first row of bags to the base setting course.
- Connector Pins shall penetrate each bag and/ or base course minimum of 2".
- Pin locations will vary with the slope of the structure and should be placed in the center of the bag contact area between courses.



BAG ELEVATION

Face Area: 1 sq ft (.093 m^2)



BAG END VIEW

ENVIROLOK BAG SPECIFICATION:

Calculated Unit Fill: 1.25 cu ft (.0354 m^3)/unit

Face Area: 1 sq ft (.093 m^2)

Mattress Face Area: 2.7 sq ft (.25 m^2)/unit

NOTE:

- Quantities required vary based on unit filling and design layout

- One Envirolok Unit consists of:
  - One (1) Envirolok Bag
  - Two (2) Connector Pins
  - One (1) Zip Tie Bag Closure

TITLE
STANDARD UNIT DETAIL

DATE	SCALE
APRIL 2017	1" = 1' - 0"

SHEET
SHEET 1

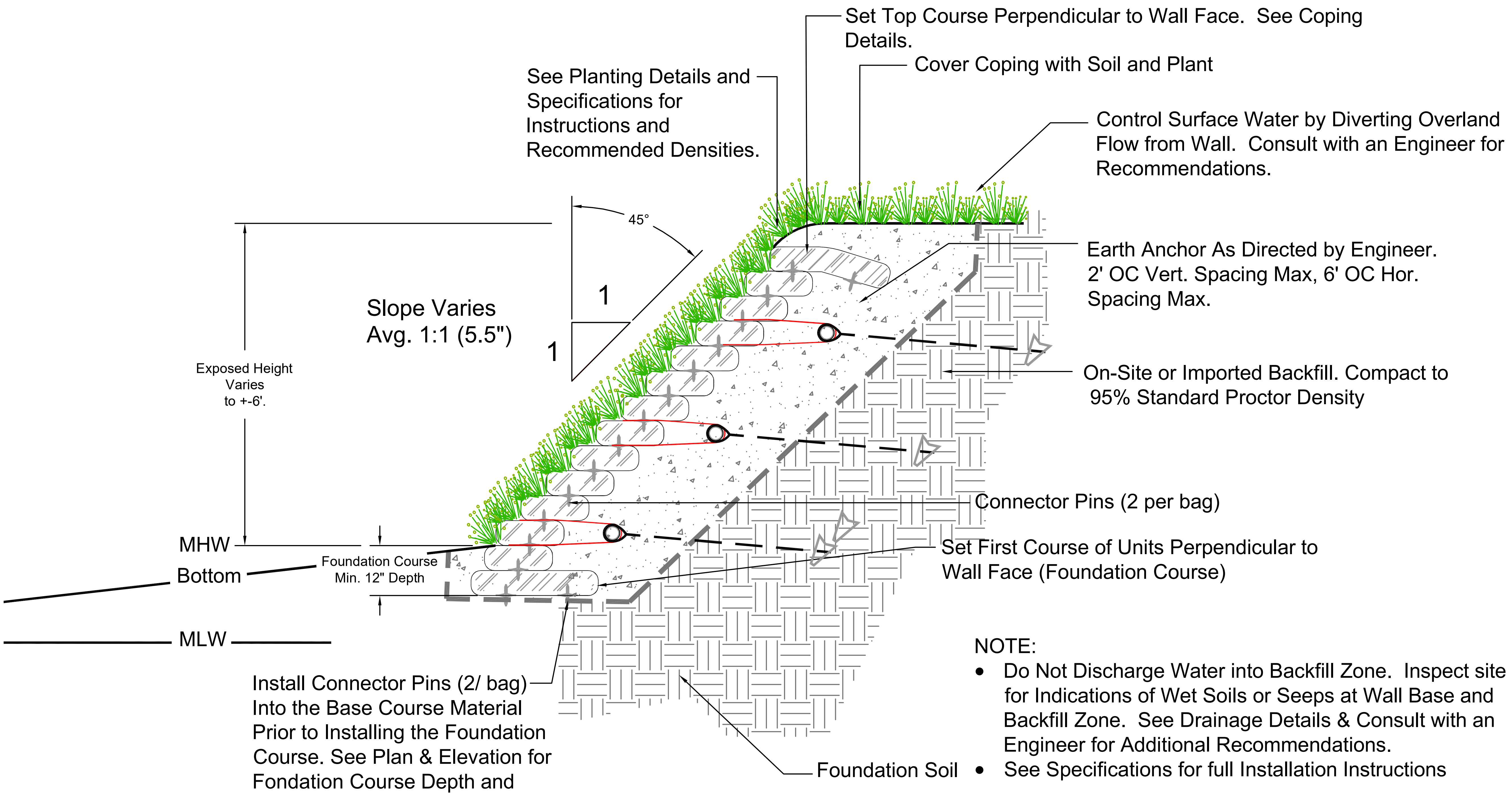
Envirolok™
Vegetated Environmental Solutions

10101 N. Casey Road
Evansville, WI 53536
(P) 608.226.2565

www.envirolock.com
ecosolutions@envirolok.com
(F) 608.884.4640

REVISIONS

Received by VMRC December 8, 2020 /blh



NOTE:

- Do Not Discharge Water into Backfill Zone. Inspect site for Indications of Wet Soils or Seeps at Wall Base and Backfill Zone. See Drainage Details & Consult with an Engineer for Additional Recommendations.
- See Specifications for full Installation Instructions

TITLE
RICCI RESIDENCE
STABILIZATION DETAIL

DATE
MAY 2019

SCALE
1/2"=1'-0"

SHEET
SHEET 1 OF 1

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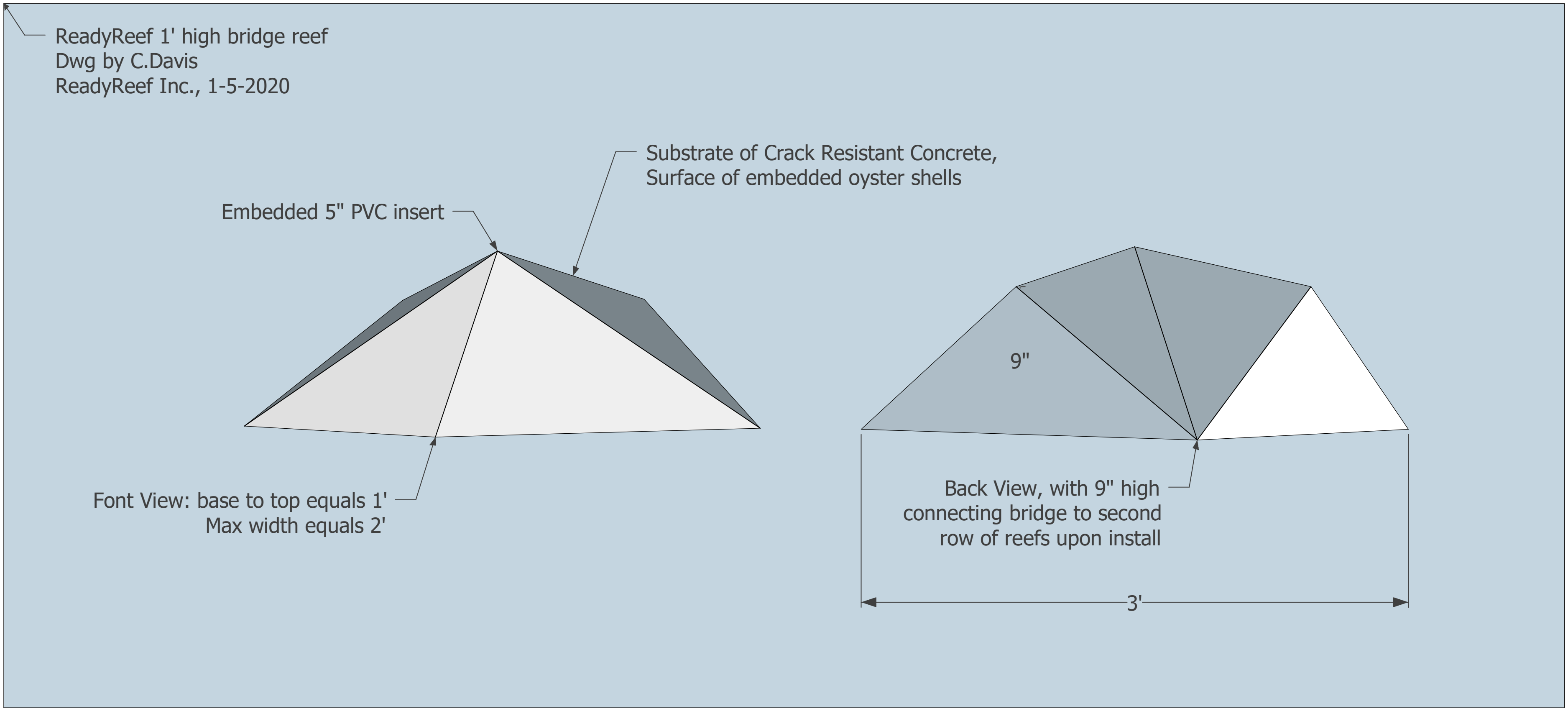
REVISIONS



ReadyReef 1' high bridge reef
Dwg by C.Davis
ReadyReef Inc., 1-5-2020

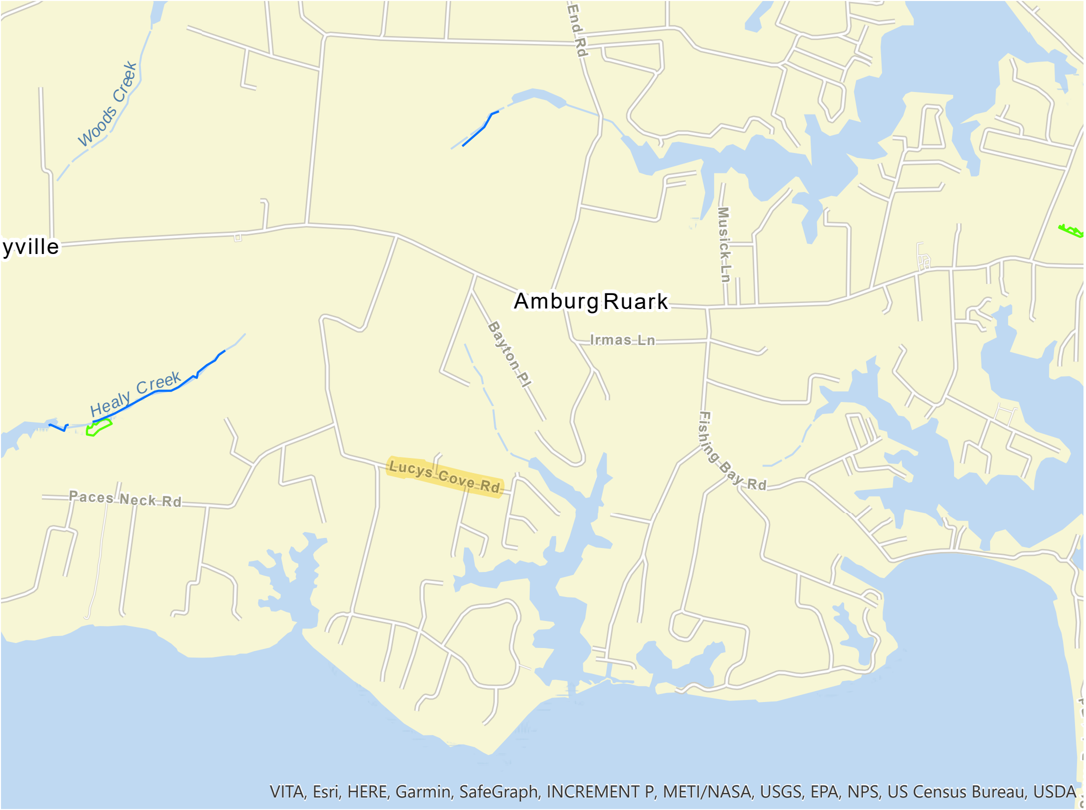
Substrate of Crack Resistant Concrete,
Surface of embedded oyster shells

Embedded 5" PVC insert

Font View: base to top equals 1'
Max width equals 2'

Back View, with 9" high
connecting bridge to second
row of reefs upon install

Received by VMRC December 8, 2020 /blh



Received by VMRC December 8, 2020 /blh

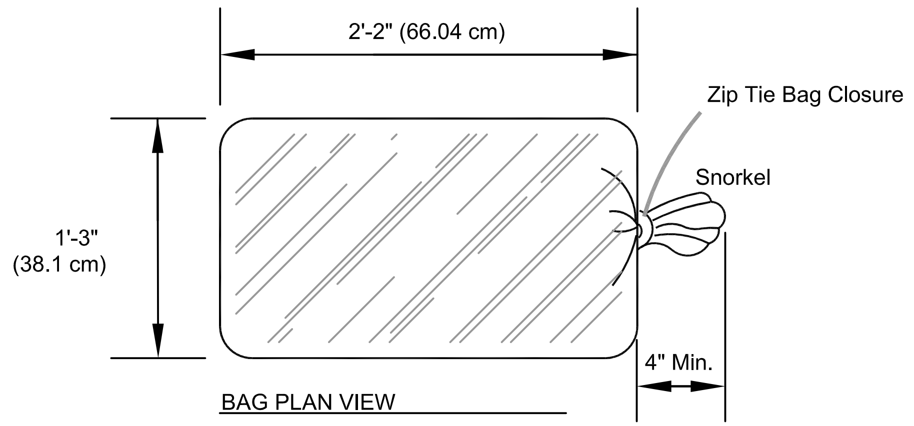
Envirolok Bag (Tan) Data Sheet

The Envirolok bag is a nonwoven geotextile produced by needle-punching together 100% synthetic staple fibers, in a random network, forming a high strength, dimensionally stable fabric. The synthetic fibers are specially formulated to resist ultraviolet light deterioration, and are inert to commonly encountered soil chemicals. The fabric will not rot or mildew, is non-biodegradable, and is resistant to damage from insects and rodents. The synthetic fiber is stable within a pH range of 2 to 13, making it one of the most stable polymers available for geotextiles today. The Envirolok bag meets the following Minimum Average Roll Values (MARV):

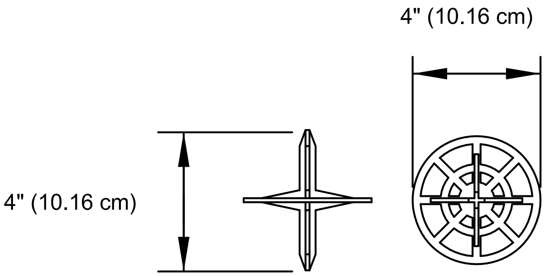
PROPERTIES	TEST METHOD	UNIT	MARV
PHYSICAL			
Weight	ASTM D 5261	o□yd2	4.0 □Ty□□ □135.62 □□m2□
Dimensions (unfilled)		35 □16.5 inches □889 □419 mm□	
Grab Tensile	ASTM D 4632	□bs.	100 □450 kN□
Grab Elongation	ASTM D 4632	□	50
Puncture Strength	ASTM D 4833	□bs.	65 □289 kN□
Mullen Burst	ASTM D 3786	□si	210 □1448 k□a□
Trapezoidal Tear	ASTM D 4533	□bs.	45 □202 kN□
CBR Puncture Resistance	ASTM D 6241	□bs.	310 □1.379 kN□
UV Resistance After 1,000 Hours	ASTM D 4355	□ Stren□th Retained	70
HYDRAULIC			
Permittivity [1]	ASTM D 4491	sec-1	2
Water Flow Rate [1]	ASTM D 4491	□□m□ft2	140 □5700 □min□m2□
Apparent Opening Size [2]	ASTM D 4751	□.S. Sieve	70 □212mm□

1. Handling at the time of manufacturing may change these properties.
2. Apparent Opening Size, (AOS), reported as Maximum Average Roll Value.

Revised Date: 01/01/2017



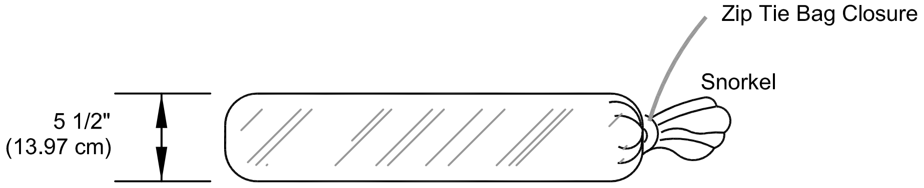
BAG PLAN VIEW



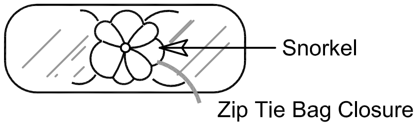
ENVIROLOK CONNECTOR PIN (SPIKES)
SCALE: 1/2" = 1' - 0"

NOTE:

- Two Connector Pins shall be installed per bag, interconnecting the bags vertically
- Connector Pins shall be used to connect the first row of bags to the base setting course.
- Connector Pins shall penetrate each bag and/ or base course minimum of 2".
- Pin locations will vary with the slope of the structure and should be placed in the center of the bag contact area between courses.



BAG ELEVATION
Face Area: 1 sq ft (.093 m^2)



BAG END VIEW

NOTE:

- Quantities required vary based on unit filling and design layout
- One Envirolok Unit consists of:
  One (1) Envirolok Bag
  Two (2) Connector Pins
  One (1) Zip Tie Bag Closure

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DATE
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SHEET 1

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REVISIONS

Virginia Marine Resources Commission
Permit Application 20202221
Printed: Thursday October 21, 2021 11:48 AM

Applicant: Brian Marron
6525 Monument Avenue
Richmond, VA 23226

Application Number: 20202221
Application Date: December 8, 2020
Permit Type: VMRC Subaqueous
Permit Status: Sent Application Fees
Wetlands Board Action: Approved as Proposed

Engineer: Jay Woodward
Locality: Middlesex
Waterway: Moore Creek
Expiration Date:
Public Hearing Date: April 13, 2021

Project Description: Living Shoreline

Project Dimensions:

Sill Fill: 40 Cubic Yards
Bioengineered Structure: 179 Linear Feet
Living Shoreline: 176 Linear Feet

Virginia Marine Resources Commission
Photos for Permit Application 20202221
Printed: Thursday October 21, 2021 11:48 AM

Date Photo Uploaded: 2021:04:22

Date Photo Uploaded: 2021:04:22

Virginia Marine Resources Commission
Photos for Permit Application 20202221
Printed: Thursday October 21, 2021 11:48 AM

Date Photo Uploaded: 2021:04:22

Date Photo Uploaded: 2021:04:22

3

WETLANDS PERMIT

Date of Permit: *April 13, 2021*

Date of Permit's Expiration: *October 13, 2022*

Pursuant to provisions of the Middlesex County Wetlands Zoning Ordinance, the Wetlands Board of Middlesex County, Virginia, hereinafter referred to as the BOARD, hereby grants unto:

Brian Marron
6525 Monument Avenue
Richmond, VA 23226

Hereinafter referred to as the PERMITTEE, permission to undertake the following described project:

to install Envirolok Bags planted with marsh grass for 50 LF x 4' high at the shoreline against the steep bank adjacent to the Client's dock on Moore Creek. To the north and south of these bags, a 179 LF perimeter of ReadyReefs out to MLW will be installed, with backfilled sand and planted with marsh grass to make a living shoreline. Against the bank, 143 LF x average of 3' high more Envirolok bags will be stacked to prevent erosion higher up the bank. All work is above MLW, except where reefs diverge out to create 5' gap.

For a more complete description of said project, reference is hereby made to PERMITTEE'S Application for the Wetlands Permit (Joint Permit Application Number 2020-2221 which is made a part of this permit).

This Permit is granted subject to the following terms and conditions:

1. Except as hereinafter provided, all phases of the project shall conform in all respects to PERMITTEE'S application for Wetlands Permit. The duly authorized agents of the BOARD shall have the right to enter upon the premises at any time for the purpose of inspecting work authorized by this permit.

2. PERMITTEE shall comply with all applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the PERMITTEE of the responsibility of obtaining any and all permits of authority required for the project. **Contact the Virginia Marine Resources Commission, the U.S. Army Corps of Engineers, and the Middlesex County Planning, Zoning and Building Departments for further permit requirements.**

3. PERMITTEE shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the County.

4. PERMITTEE is responsible for display of the yellow placard accompanying this permit. Placard must be conspicuously displayed at the work site prior to and throughout the construction phase of the authorized activity.

5. PERMITTEE agrees to notify the Wetlands Board a minimum of 48 hours to the start of the construction activities authorized by this permit.

6. PERMITTEE shall be responsible for all denuded areas disturbed during and after alteration. These areas shall be returned to its previous condition by re-vegetation or re-stabilization.

7. PERMITTEE is responsible that once work is begun on a project, the work shall be completed in a timely and efficient manner. Temporary and permanent erosion and sediment control measures, as approved by Minimum State Standards, must be applied throughout construction.

8. Other terms and conditions peculiar to this project:

9. This permit shall not be transferred without written approval of the BOARD.

10. The project shall be completed within eighteen months of the date of this permit, after which time this permit shall be null and void. Upon proper written application to the BOARD, however, the deadline for completion of the project may be extended by the BOARD, at its discretion. Any such request for extension of time shall be made prior to the expiration date of this permit and shall specify the reasons for such extension and the expected date of completion of the project. Extensions shall not be granted for more than three years from the date of this permit.

11. This permit may be revoked at any time by the BOARD upon failure of PERMITTEE to comply with any of the terms and conditions of this permit.

IN WITNESS WHEREOF, the Wetlands Board of Middlesex County, Virginia has caused this permit to be executed in its behalf by Fred W. Dolezal, Chairman of the BOARD. The signature of **Brian Marron** is affixed hereto as evidence of acceptance of the terms and conditions of the permit by PERMITTEE.

COUNTY OF MIDDLESEX, VIRGINIA

WETLANDS BOARD

BY:______________________________

(WETLANDS BOARD CHAIRMAN'S SIGNATURE)

COMMONWEALTH OF VIRGINIA, COUNTY OF MIDDLESEX, to wit:
The foregoing instrument was acknowledged before me this 17 day of May, 2021 by Fred W. Dolezal, Chairman of the Wetlands Board of Middlesex County, Virginia. My commission expires 3/31/22.

JODY SIGMON COLLIER
Notary Public
Commonwealth of Virginia
Registration # 7589606
My Commission Expires 3/31/2022

Jody Sigmon Collier
Notary Public

PERMITTEE: **Brian Marron**

BY: Christopher M. Davis (AGENT)

(PERMITTEE'S SIGNATURE)

The foregoing instrument was acknowledged before me this 24th day of April, 2021
by Christopher M. Davis.
My commission expires 2/28/2023

Tracey Nicole Bowser
Notary Public

TRACEY NICOLE BOWSER
Notary Public
Commonwealth of Virginia
7112139
My Commission Expires 02/28/2023

Attachment 6: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)

The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and

community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in
which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

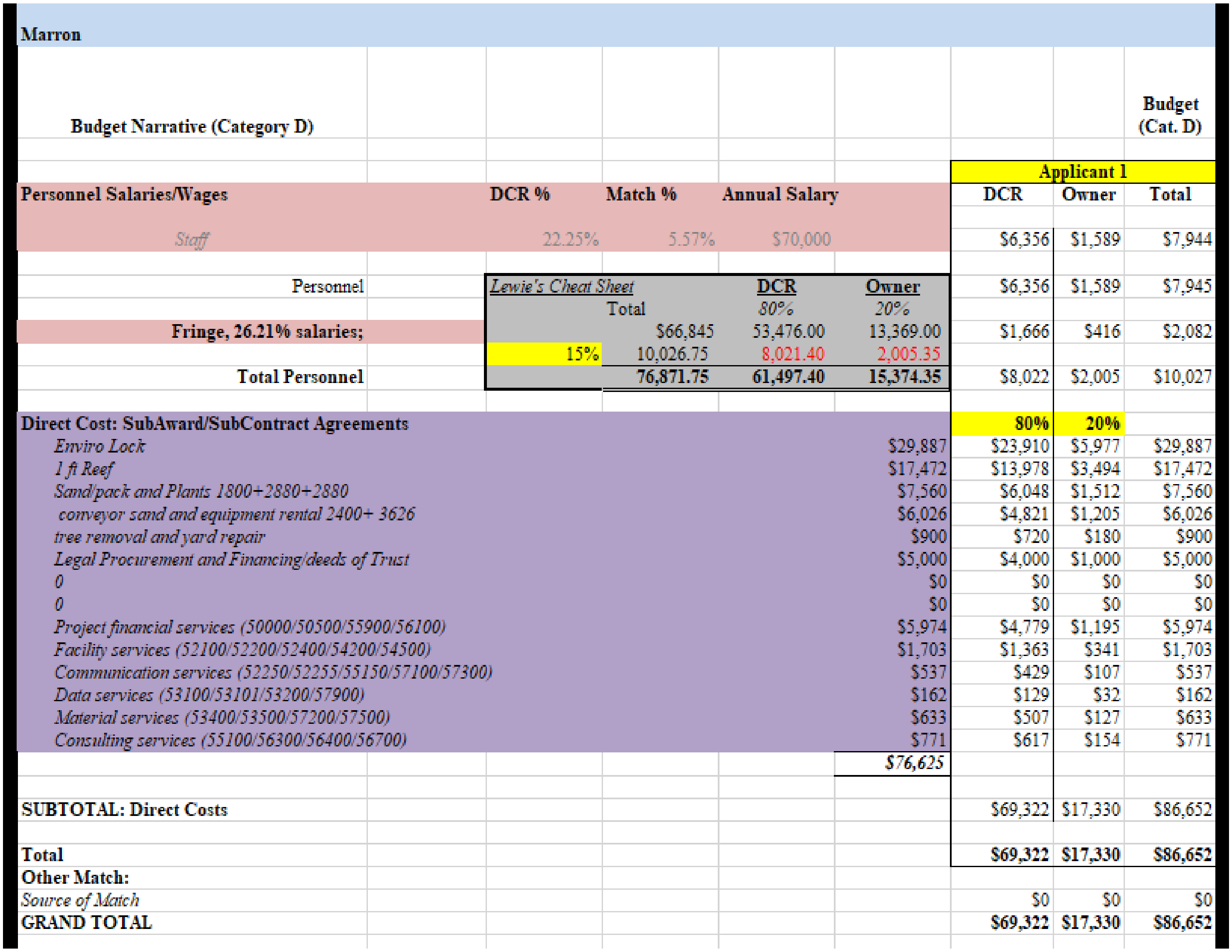
Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

Attachment 7: Project cost estimates



Marron							
Budget Narrative (Category D)							**Budget (Cat. D)**
					Applicant 1		
Personnel Salaries/Wages	**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	22.25%	5.57%	$70,000		$6,356	$1,589	$7,944
Personnel	*Lewie's Cheat Sheet*		**DCR**	**Owner**	$6,356	$1,589	$7,945
		Total	*80%*	*20%*			
Fringe, 26.21% salaries;		$66,845	53,476.00	13,369.00	$1,666	$416	$2,082
	15%	10,026.75	8,021.40	2,005.35			
Total Personnel		**76,871.75**	**61,497.40**	**15,374.35**	$8,022	$2,005	$10,027
Direct Cost: SubAward/SubContract Agreements					**80%**	**20%**	
Enviro Lock				$29,887	$23,910	$5,977	$29,887
1 ft Reef				$17,472	$13,978	$3,494	$17,472
Sand/pack and Plants 1800+2880+2880				$7,560	$6,048	$1,512	$7,560
conveyor sand and equipment rental 2400+ 3626				$6,026	$4,821	$1,205	$6,026
tree removal and yard repair				$900	$720	$180	$900
Legal Procurement and Financing/deeds of Trust				$5,000	$4,000	$1,000	$5,000
0				$0	$0	$0	$0
0				$0	$0	$0	$0
Project financial services (50000/50500/55900/56100)				$5,974	$4,779	$1,195	$5,974
Facility services (52100/52200/52400/54200/54500)				$1,703	$1,363	$341	$1,703
Communication services (52250/52255/55150/57100/57300)				$537	$429	$107	$537
Data services (53100/53101/53200/57900)				$162	$129	$32	$162
Material services (53400/53500/57200/57500)				$633	$507	$127	$633
Consulting services (55100/56300/56400/56700)				$771	$617	$154	$771
				$76,625			
SUBTOTAL: Direct Costs					$69,322	$17,330	$86,652
Total					**$69,322**	**$17,330**	**$86,652**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$69,322**	**$17,330**	**$86,652**

From: Chris Davis <chris.readyreef@gmail.com>
Date: October 25, 2021 at 7:16:50 PM EDT
To: Brian Marron <brian.marron79@gmail.com>
Subject: Re: Fight the Flood

Envirolok Bags (504 Ft^2 of surface face)	$29,887
(includes plants, foundation layer, one row of earth anchors mid-height)	
1' high reefs (192 LF)	$17,472
50 cuyds of clean sand	$1800
Move/install/pack sand	$2880
Living shoreline plants (1152 Ft^2)	$2880
Rental Conveyor for bags/sand	$2400
Equipment fees Total:	$3626
(includes)	
Haul Trucks with trailers	
Haul truck drivers	
Barge with zip line	
Goose Fencing	
Clean bank/remove trees	$500
Repair yard post work	$400

Total: $60,405

Prices reflect recent price increases in fuel, business insurance, Envirolok bags, labor

Attachment 8: Match Commitment Letters

BRIAN R. MARRON

P.O. Box 1145

Deltaville, VA 23043

October 10, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

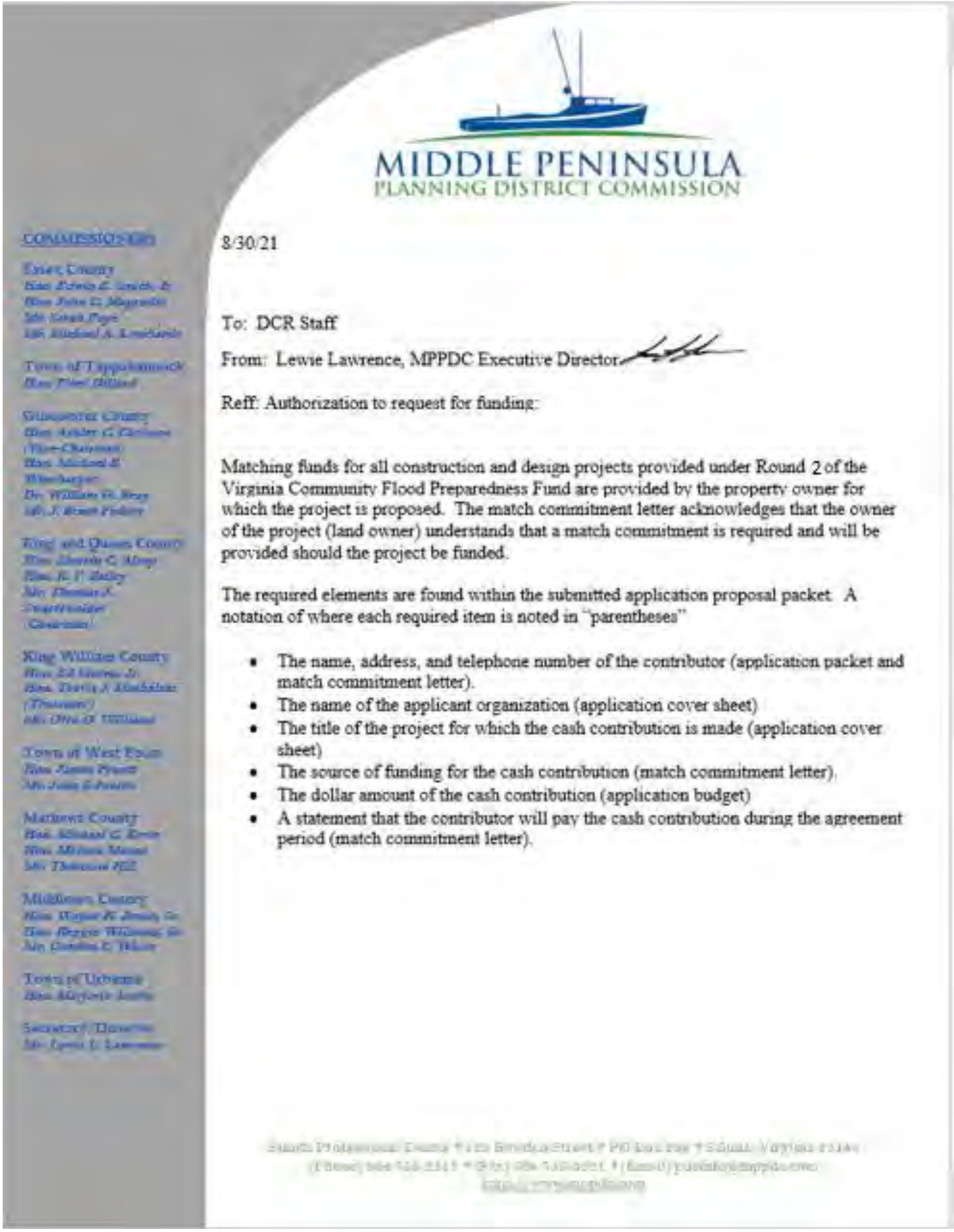
Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 160 Wooldridge Cove Drive, Deltaville, VA 23043. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (804) 370-3561 or by email at brian.marron79@gmail.com.

Sincerely,

BRIAN R. MARRON

Attachment 9: Authorization to request for funding



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 2 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

March 28, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Matthew Wells,

Enclosed in this packet is one application for flood protection and prevention project that involves implementation of nature-based shoreline solution.

This application is currently at the construction stage. Construction projects are requesting funds to implement projects which have approved permits or are nearing permit approval prior to construction of a nature-based flood protection solution.

Below is short summary of proposed projects in King & Queen County:

A. **York River – F. Hodge and M.K. Hodge's Nature-based Flood Protection Construction Project**
   (CID): 510082 Total Cost (from individual project application): $156,264
   This project proposes to construct a nature-based solution spanning two private properties located on the York River in King & Queen County. The nature-based solution will involve the installation of 3,552 square feet of Flexamat and 2,851 square feet of marsh grass plantings). This project will be a partnership between the MPPDC and two private property owners and is supported by King & Queen County.

The total project costs for King & Queen County Round 3 application is **$180,993** and MPPDC staff are requesting **$109,384** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at llawrence@mppdc.com or by phone at 804-758-2311.

Lewis Lawrence
Executive Director

MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

October 22, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

We are pleased to respond to DCR's October 20, 2021 request to amend Round 1 application based on the two concerns noted in the letter from Darryl Glover, Deputy Director. Our response follows for the **Hodges multi-parcel Plains Shoreline Const** application. As we have offered multiple times, if DCR would provide guidance as to what you desire for applications related to issue areas, we will gladly incorporate into future proposals. We consider helping both public and private entities manage flooding a critical and essential function of government.

Issue #1

DCR questions how properties valued with a stated range can be qualified as low income.

Response: As previously provided by MPPDC legal counsel to DCR, ***"The statute and guidance are clear that the criteria deals with areas, not people. To ignore its plain language or utilize unreliable measures such as property value for grants would be arbitrary and certainly inconsistent with the law.***

Nevertheless, the applicant has voluntarily elected to be reclassified as residing in a non-low-income area designation even though they reside in a low-income area. As such, the applicant has voluntarily elected to change the budget request from 80% to 70% in grant funding, which means the applicant will need to cover 10% more of the project costs than what was originally budgeted for. The applicant has authorized this modification which is included in this letter as well as a new proposed project budget.

Issue #2

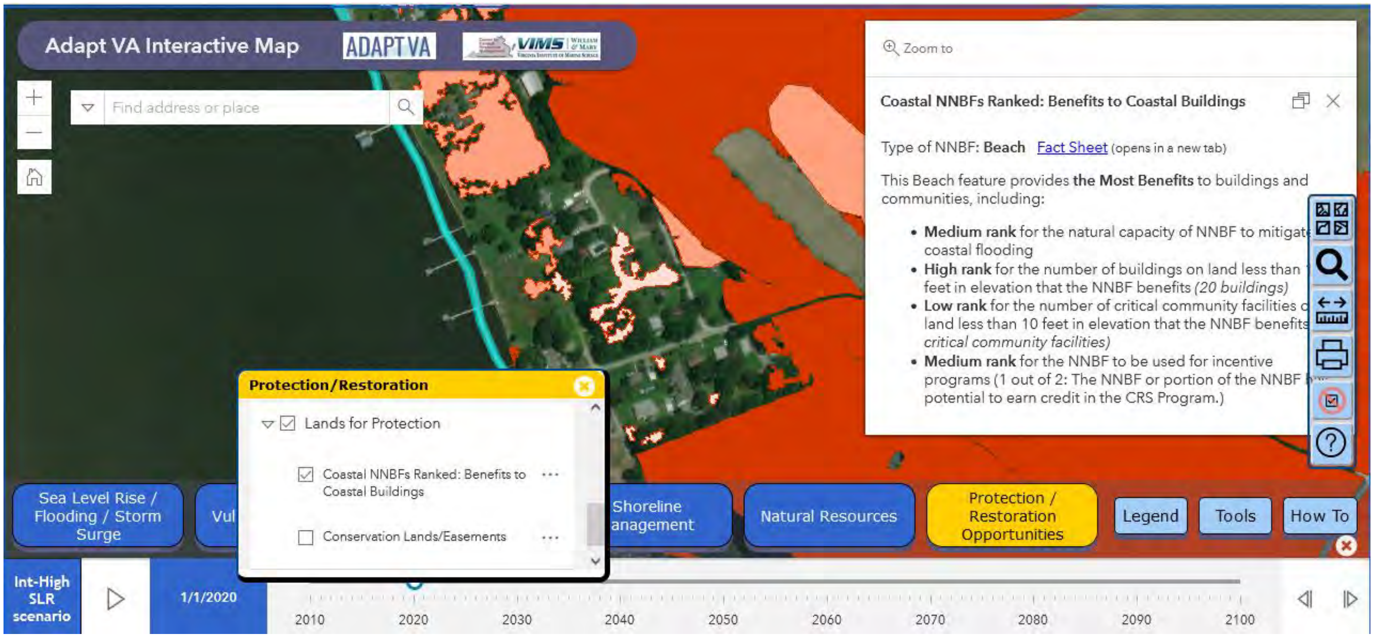
DCR questions how the submitted project relates to priority being given to community scale activities; benefit to the greater community; and adverse impact to other neighboring properties.

Saluda Professional Center ♦ 125 Bowden Street ♦ PO Box 286 ♦ Saluda, Virginia 23149
(Phone) 804 758-2311 ♦ (Fax) 804 758-3221 ♦ (Email) pdcinfo@mppdc.com
http://www.mppdc.com

Response: The state may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. Va. Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for *rejecting* applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the US census block level or greater. A census block is the smallest US Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one acre in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

MPPDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to VMRC that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of NNBF to coastal buildings, habitat, and community protection. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit



Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Beach** Fact Sheet (opens in a new tab)

This Beach feature provides **the Most Benefits** to buildings and communities, including:

- **Medium rank** for the natural capacity of NNBF to mitigat coastal flooding
- **High rank** for the number of buildings on land less than feet in elevation that the NNBF benefits *(20 buildings)*
- **Low rank** for the number of critical community facilities c land less than 10 feet in elevation that the NNBF benefits *critical community facilities)*
- **Medium rank** for the NNBF to be used for incentive programs (1 out of 2: The NNBF or portion of the NNBF potential to earn credit in the CRS Program.)

Protection/Restoration

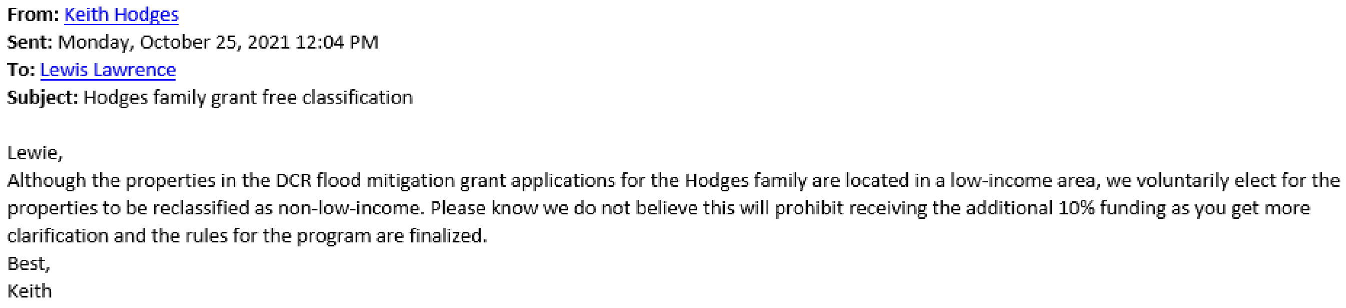
☑ Lands for Protection

☑ Coastal NNBFs Ranked: Benefits to Coastal Buildings

☐ Conservation Lands/Easements

Concerning adverse impacts. MPPDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, MPPDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, MPPDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require DCR SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

Applicant Voluntarily Selection:



From: Keith Hodges
Sent: Monday, October 25, 2021 12:04 PM
To: Lewis Lawrence
Subject: Hodges family grant free classification

Lewie,
Although the properties in the DCR flood mitigation grant applications for the Hodges family are located in a low-income area, we voluntarily elect for the properties to be reclassified as non-low-income. Please know we do not believe this will prohibit receiving the additional 10% funding as you get more clarification and the rules for the program are finalized.
Best,
Keith

Amended Budget Request

DCR Funding:	$ 109,384
Owner:	$ 46,880
Total	$ 156,264

Title: Hodges & Hodges									
									Budget (Cat. D)
							Hodges		
Personnel Salaries/Wages			**PDC %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff			16.75%	4.19%	$70,000		$10,420	$4,466	$14,886
Personnel			*Lewie's Cheat Sheet*		**DCR**	**Owner**	$10,420	$4,466	$14,886
				Total	*70%*	*30%*			
26.21% salaries;				**125,250**	87,674.76	37,574.90	$2,731	$1,171	$3,902
			15%	18,787.45	13,151.21	5,636.23			
Total Personnel				**144,037.11**	**100,825.98**	**43,211.13**	$13,151	$5,637	$18,788
	SubAward/SubContract Agreements						**70%**	**30%**	
Hodges F	*Demolition*	*Bulkhead removal/haul away*				$5,097	$3,568	$1,529	$5,097
Hodges F	*Site Prep*	*Eequipment Rental and Labor*				$12,678	$8,875	$3,804	$12,678
Hodges F	*Shoreline Install*	*Flexamat,Plants,Sand,Returns, Rock Labor*				$58,654	$41,058	$17,596	$58,654
Hodges F	*Post Job Yard*	*Grading, Seeding, Plantings*				$4,102	$2,872	$1,231	$4,102
Hodges F						$0	$0	$0	$0
Hodges F						$0	$0	$0	$0
Hodges F						$0	$0	$0	$0
Hodges F						$0	$0	$0	$0
Hodges K	*Demolition*	*Bulkhead removal/haul away*				$2,615	$1,831	$785	$2,615
Hodges K	*Site Prep*	*Equipment Rental and Labor*				$6,334	$4,434	$1,900	$6,334
Hodges K	*Shoreline Install*	*Flexamat,Plants,Sand,Returns, Rock Labor*				$32,159	$22,511	$9,648	$32,159
Hodges K	*Post Job Yard*	*Grading, Seeding, Plantings*				$2,110	$1,477	$633	$2,110
Hodges K	*Procurement*					$1,500	$1,050	$450	$1,500
Hodges K						$0	$0	$0	$0
Hodges K						$0	$0	$0	$0
Hodges K						$0	$0	$0	$0
									$0
						$125,250			
SUBTOTAL: Direct Costs							$100,826	$43,212	$144,038
Indirect/IDC/Facilities & Administrative Costs					**27.92%**	$12,226	$8,558	$3,668	$12,226
Total							**$109,384**	**$46,880**	**$156,264**
Other Match:									
Source of Match							$0	$0	$0
GRAND TOTAL							**$109,384**	**$46,880**	**$156,264**

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund
Flood Prevention and Protection Project

PROJECT TITLE: York River – F. Hodge and M.K. Hodge's Nature-based Flood Protection Construction Project

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning X Project _____Study

NFIP/DCR Community Identification Number (CID): King & Queen County (510082)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ____________________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) _________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ **No** ____

Project Grants (Check All that Apply)

☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**

☑ Wetland restoration.

☑Floodplain restoration.

☐ Construction of swales and settling ponds.

☑Living shorelines and vegetated buffers.

☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.

☐ Storm water system upgrades.

☐ Medium and large-scale Low Impact Development (LID) in urban areas.

☐ Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

☐ Dam restoration or removal.

☑ Stream bank restoration or stabilization.

☐ Restoration of floodplains to natural and beneficial function.

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): King & Queen County
NFIP Community Identification Number (CID#) (See appendix F): 510082

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No
Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No Flood Zone(s) (If Applicable): VE Zone
Flood Insurance Rate Map Number(s) (If Applicable): 51097C0326C

Total Cost of Project: **$154,210**

Total Amount Requested: **$123,368**

INTRODUCTION –

FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). This proposal is a Nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions,* June 2021).

Specifically, this project proposes to construct a nature-based solution spanning two private properties located on the York River in King & Queen County. The nature-based solution will involve the installation of 3,552 square feet of Flexamat[1] and 2,851 square feet of marsh grass plantings). This project will be a partnership between the MPPDC and two private property owners and is supported by King & Queen County (See the community support letter in **Attachment 1**).

- A link or copy to the approved resilience plan: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf within the plan please see Section 4 (page 25). This Section includes historical hazard data within the region.
- Here's a link to the King & Queen County Comprehensive Plan: http://kingandqueenco.net/html/Govt/bzondocs/Full%20KQ%20Comp%20Plan%202030%20Adopted%2003.11.2019.pdf

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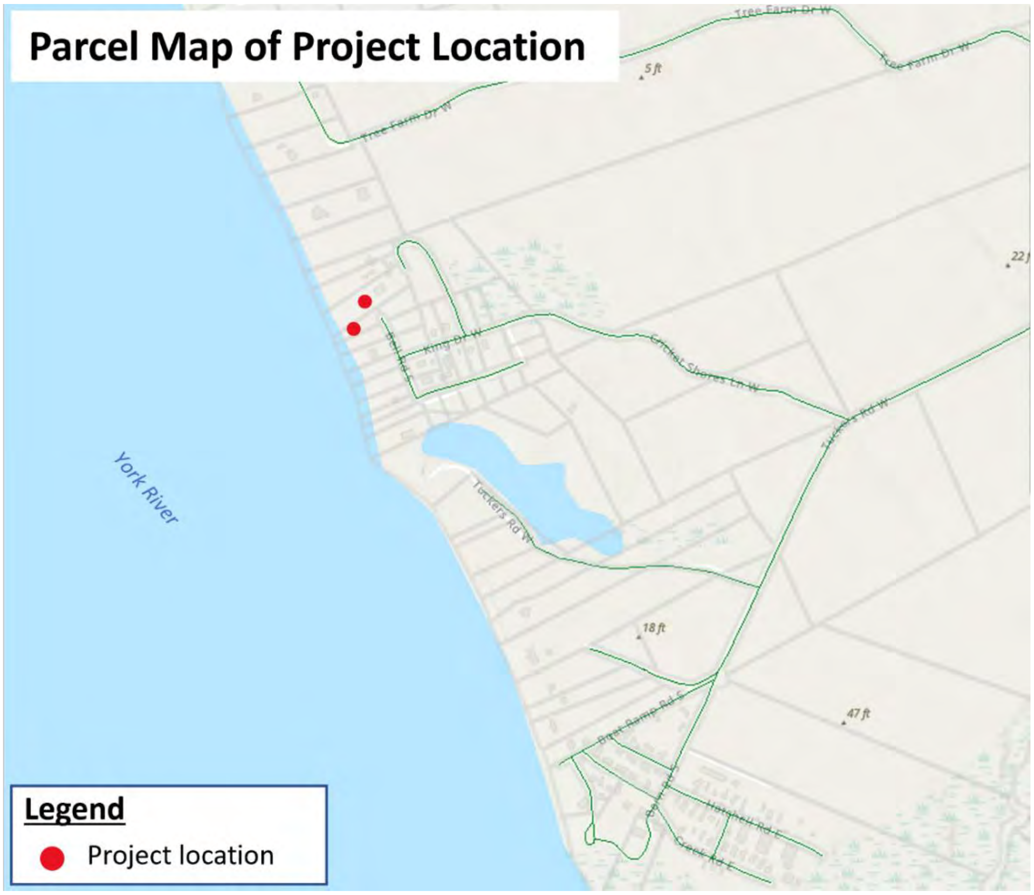
[1] *Flexamat® is tied concrete block mats designed to control erosion as well as provide stable driving/walking surfaces. Flexamat meets the state definition (28.2-104.1) of a Living Shoreline (as required by SB776 passed in 2020) as "a shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials." Flexamat enhances "coastal resilience and attenuation of wave energy and storm surge." For more information about the project please visit -* https://www.flexamat.com/

PROJECT LOCATION INFORMATION –

This project proposes to install a nature-based solution spanning two private properties on the York River in King & Queen County (**Figure 1 and 2**).

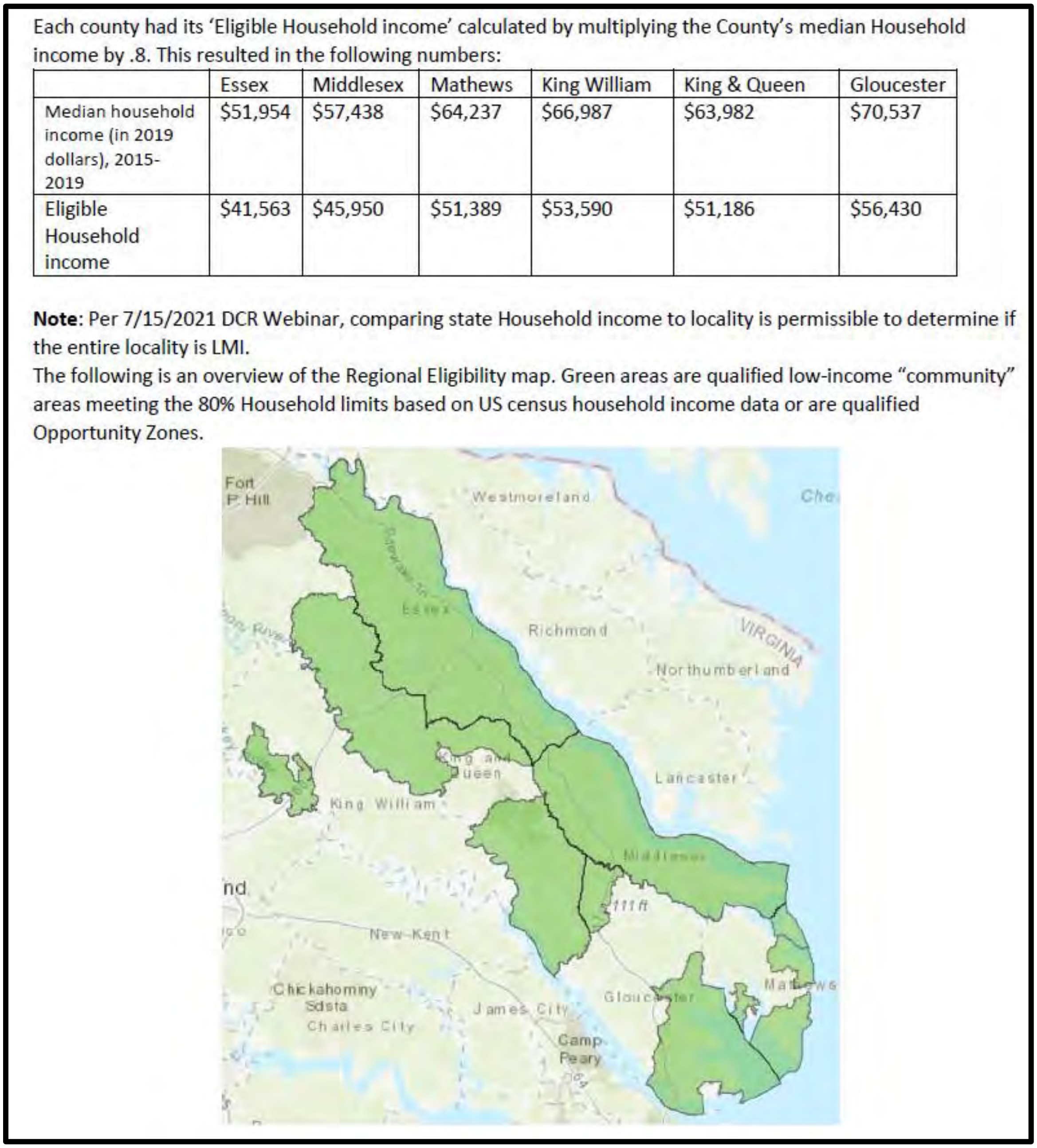
FIGURE 1: COUNTY MAP OF PROJECT LOCATION.

FIGURE 2: PARCEL MAP OF PROJECT LOCATION.



King & Queen County is part of the Middle Peninsula of Virginia's Coastal Plain and bounded on the southwest by the York and Mattaponi Rivers which separate King and Queen from King William and New Kent Counties. The County comprises 318.1 square miles of land area and 8.9 square miles of water area. Based on 2020 Census Data, King & Queen County’s population totals 6,608 which makes it the least populous Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 3** the green areas qualified as low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

FIGURE 3: MAP OF MIDDLE PENINSULAS LOW INCOME GEOGRAPHIC AREAS QUALIFYING UNDER DCR GUIDELINES.



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

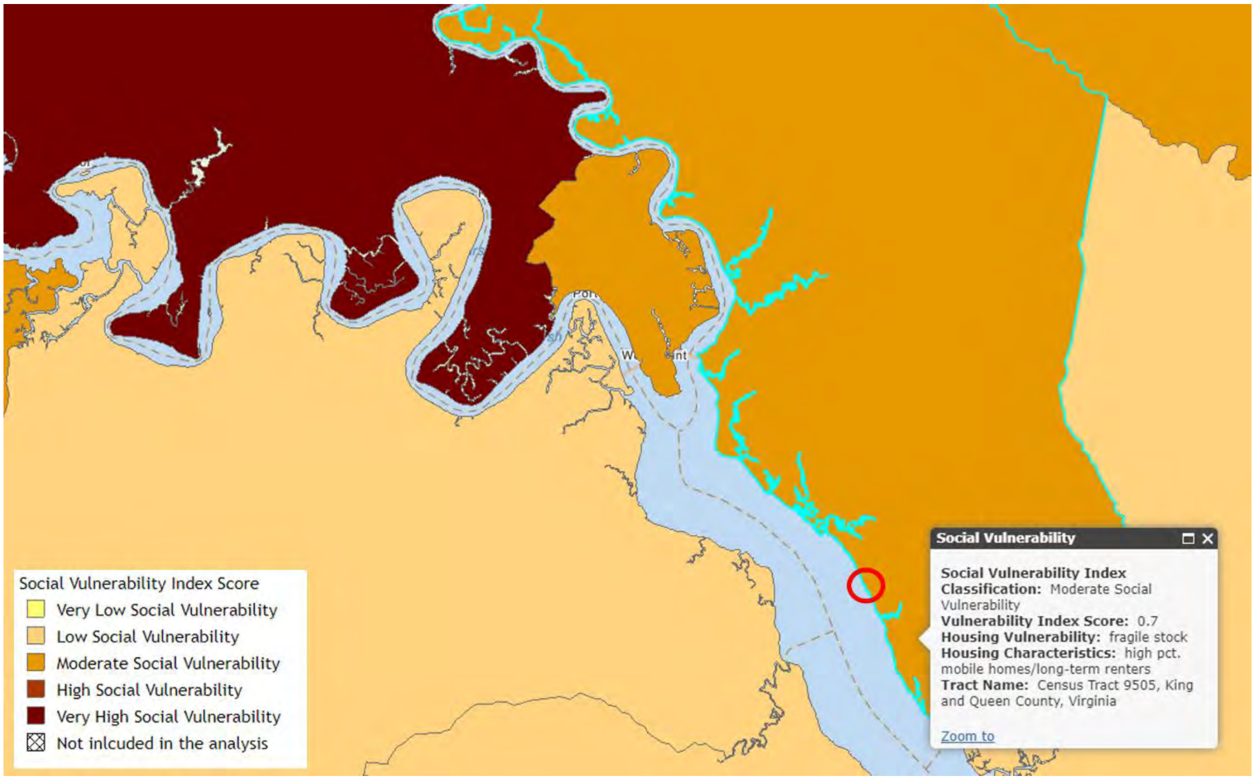
The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 4** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

FIGURE 4: MAP OF THE PROJECT LOCATION WITHIN THE GREEN LOW-INCOME AREA.

According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score (**Figure 5**).

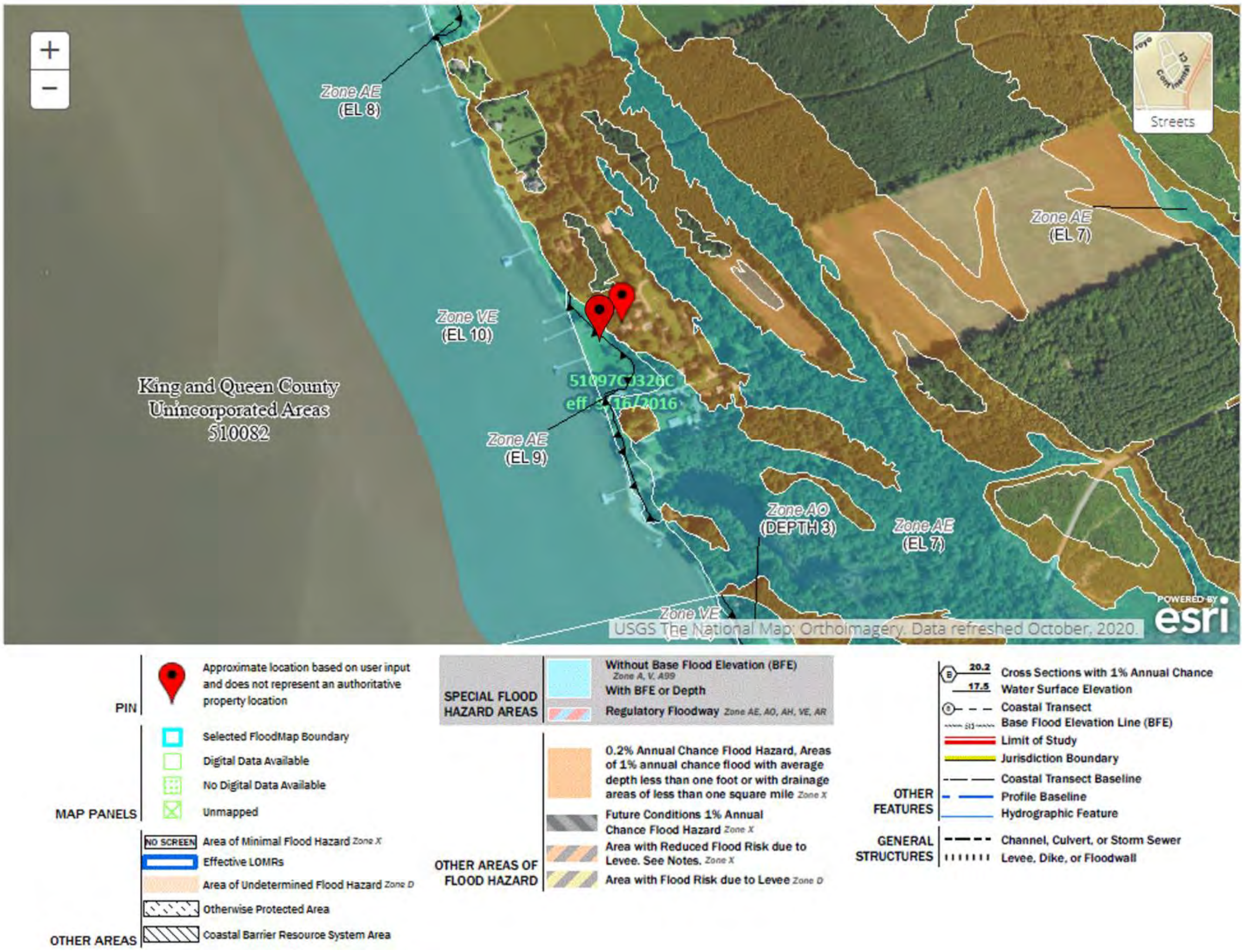
FIGURE 5: VIRGINIA'S SOCIAL VULNERABILITY INDEX SCORE MAP FOR THE PROJECT LOCATION.



Social Vulnerability Index
Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.7
Housing Vulnerability: fragile stock
Housing Characteristics: high pct. mobile homes/long-term renters
Tract Name: Census Tract 9505, King and Queen County, Virginia

The project will be located at 242 Old Farm Drive Shackleford, VA 23156 (37.479281, -76.732522) and on an adjacent land that is southeast of 242 Old Farm Drive (37.479031, -76.732418). The nature-based solution will involve the installation of 3,552 square feet of Flexamat and 2,851 square feet of marsh grass plantings. Please note that there are no structures on the adjacent piece of land; however, at the 242 Farm Drive location there is one residential structure and one detached garage. The structures are not severe repetitive loss structure or repetitive loss structures. This project location is located within the VE flood zone (**Figure 6**). Please see **Attachment 2** for the FIRMettes (last mapped 05/16/2016).

FIGURE 6: MAP OF FEMA FLOOD ZONES.

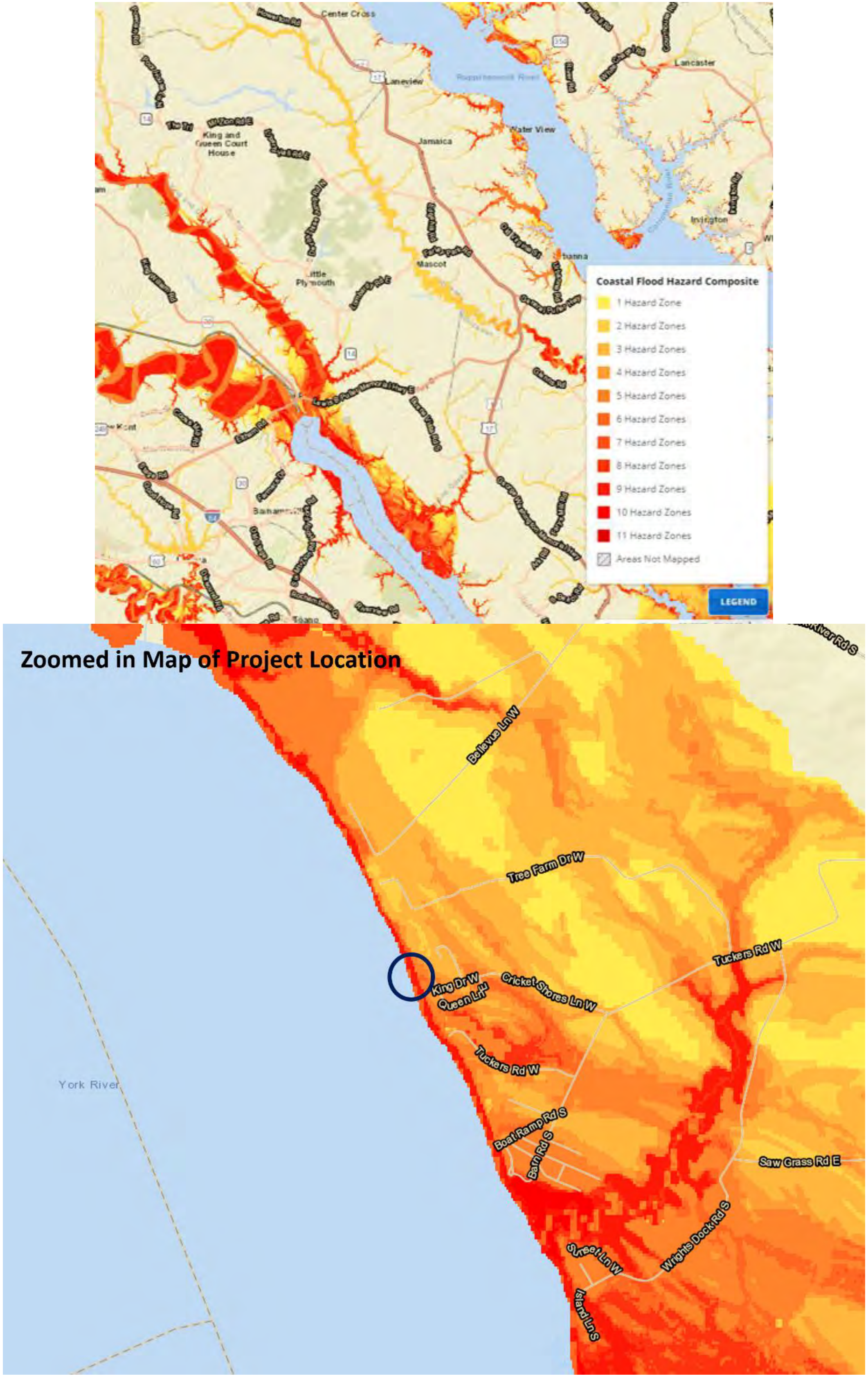


Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 7** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 6,345.5 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Attachment 3** lists 75 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

FIGURE 7: PROJECT LOCATION AND MAP OF THE SHORELINE CHANGE BETWEEN 1937 AND 2017. PLEASE NOTE THAT THE PROJECT AREA PARCEL IS OUTLINED IN WHITE.

Finally, according to NOAA’s Coastal Flood Mapper, this project is at the highest risk of coastal flooding (**Figure 8**).

FIGURE 8: MAP OF PROJECT LOCATION AND RISK OF COASTAL FLOODING (NOAA, 2021).



For more information about this project area please see:

- The Middle Peninsula All Hazards Mitigation Plan identifies all hazards that impact the region - https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf .
- King & Queen County Building and Zoning Department administers the NFIP. Here is the link to the current floodplain ordinance: http://kingandqueencounty.elaws.us/code/coor_ptii_ch3_art10

NEED FOR ASSISTANCE –
The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of $1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from $750,000 to over $1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The need for assistance is two-fold.

First, as King & Queen County boarders the Mattaponi River and the York River, the County is influenced by the water and is at high risk of coastal flooding, sea-level rise, and storm surge. Sea levels in King and Queen have risen over 1 foot since 1950, leading to more frequent and severe coastal flooding, agricultural losses, and property damage. Sea levels are projected to rise between 2-6 feet by 2070, submerging private property and reshaping King and Queen's coastline. Based on tidal gauge data from VIMS, relative sea- level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). Also, high tide flooding (also known as sunny day flooding) will become more frequent, putting low-lying homes and infrastructure at risk. Rising sea levels will amplify the impacts of storm surge, allowing waves and severe flooding to reach further inland, damaging homes and property. The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on communities. Therefore, this project is intended to build upon ongoing local and regional efforts to enhance community resiliency.

Second, at this project location, the bulkhead is damaged and underperforming which has exposed the shoreline to extensive winds and wind energy coming off the York River. The increasing shoreline erosion in threatening the residential structures, pier, and land at the project location. The residential structure at 242 Old Farm Dr has a history dating back to 1790. The house sits approximately 200 feet from the York River and one of the two septic drain fields is located between the water and the house. Therefore, if no protection is offered to this shoreline, then there are greater chances of the drain field becoming inundated and causing local water quality impairment. Finally, the adjacent land to 242 Old Farm Dr. (M.K. Hodges Property) currently has no structures on the land; however, protection of this shoreline provides a more effective and comprehensive approach to both properties considering the shorelines are hydrodynamically connected. Please see **Figure 9** for project location photos and **Attachment 4** for more photos.

FIGURE 9: PHOTOS OF THE HODGES PROPERTY.

Failing bulkhead caused high rates of shoreline erosion.

Failing bulkhead and exposed shoreline.

Failing bulkhead.

ALTERNATIVES –

Alternatives are not applicable to this project. A living shoreline is feasible at this location and therefore required per VMRC regulations. This project employs a nature-based solution, and this project cost is not greater than $3 Million.

GOALS AND OBJECTIVES –

This project proposes to remove the failing bulkhead which has hardened the shoreline for years and will be replaced with a nature-based solution. The nature-based solution is based on the DCR Flood Preparedness Fund definition: *"Nature-based solution" means an approach that reduces the impacts of flood and storm events through the use of environmental processes and natural systems. A nature-based solution may provide additional benefits beyond flood control, including recreational opportunities and improved water quality. This includes a project that reduces these impacts by protecting, restoring, or emulating natural features.* Project site requires the use of Flexamat®, a solution comprised of sand, gravel, or crushed stone meeting ASTM C150 and ASTM C33 standards to form 6.5" x 6.5" x 2.25" blocks with 1.5" spacing between the blocks allowing riparian vegetation to thrive and restoring natural features on site while simultaneously stabilizing the shoreline against flooding and erosion all while maintaining the natural environment and improving water quality. Federal agencies, including FEMA and the USACE, have incorporated Flexamat into multiple scale flood management projects. Flexamat prevents erosion protection in areas exposed to high flow and waves energy. Each block is tapered, beveled, and interlocked and includes connections that prevent lateral displacement of the blocks ensuring protection against erosion, storm surge, and wave attenuation. Flexamat as a product is less invasive when compared to the use of granite, which is not native to the coastal zone. The Flexamat company website and technical reports for shoreline erosion mitigation use allows the riparian vegetation to thrive and become one with the shoreline mitigation practice. Additional study of Flexamat shows that vegetated soil side slopes would improve water quality by offering phytoremediation including the reduction of thermal impact consistent with the DCR required definition for water quality improvement for nature-based solution. Flexamat offer additional co-benefits as recognized by the DCR definition such as using the shoreline as an entry point for recreational opportunity for uses such as canoes or kayaks and enhancing wildlife safely along the shoreline. Flexamat has high performance capabilities of 30 ft./sec. and 24 pounds per square foot. Flexamat has better performance than compared to 24" rock rip rap (all product information, description, benefits, specifications are sourced to the Flexamat website: https://www.flexamat.com/).

This project will reduce erosion and stabilize the shoreline. The nature-based solution will be installed as designed and permitted through the JPA process. Please see the permit package for each site within the project area in **Attachment 5**.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.
Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.

Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode.

Goal 2: Improve water quality
Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.
Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the living shoreline installed at this project location will:

1. **Stabilize the shoreline and reduce the overall erosion rate at the project location**. According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

2. **Provide ecosystem services to the community.** Since this project is proposing the installation of living shorelines, this project will have nutrient and sediment reduction benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb./lf./yr.) and a phosphorus removal rate of 0.00861 lbs./lf./yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb./lf./yr. Therefore, with a proposed project of 147 linear feet of living shoreline this has the ability of removing 1.79046 pounds of nitrogen per year, 1.26567 pounds of phosphorus per year and 6,174 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

   In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer, lower energy habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

3. **Prevent loss of property and life.** As the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax base at this project location which directly protects the largest employer in King & Queen County, which is local government.

APPROACH, MILESTONES, AND DELIVERABLES –

This project has submitted all information needed to complete the Joint Permit Application (JPA) process and is currently waiting permit approval. This project will follow the designs outlined with the JPA. Please see **Attachment 5** for the JPA application and Design. The below table outlines the components of the nature-based solution and what will be installed at the project location, as proposed in the JPA:

	Fred Hodges (242 Old Farm Rd)	**M.K. Hodges (adjacent land)**	**Total Project Location**
Fleximat	2,352 square feet	1,200 square feet	3,552 square feet
Marsh Grass Planting	1,888 square feet	963 square feet	2851 square feet

The anticipated timeline for this project could be as quick as 1 year, but no more than two years. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a two-year timeline will offer potential windows for planting the living shoreline - one in 2022 and one in 2023. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses for living shorelines should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them develop strong roots and leafy growth.

Below is the project timeline and project milestones for this project.

Receive funding notice - October 2021
Coordinate with property owners and the project contractor Energy Reef to review project timeline and project expectations – October 2021
Initiate site preparation at the project location - November 2021 to May 2022
Construction of the living shoreline – June 2022 to September 2022
Project Close out – November 2022

RELATIONSHIP TO OTHER PROJECTS –

For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e. hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 6** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program.** This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN –

Maintenance of this construction project will be in accordance with the requirements included in the final approved permit.

CRITERIA –

Describe how the project meets each of the applicable scoring criteria containedin Appendix B and provide the required documentation where necessary. Documentationcan be incorporated into the Scope of Work Narrative or included as attachments to the application. Appendix B must be completed and submitted with the application.

For local governments that are not towns, cities, or counties, the documentation providedfor the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**
   YES.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
   YES. Here's the link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf

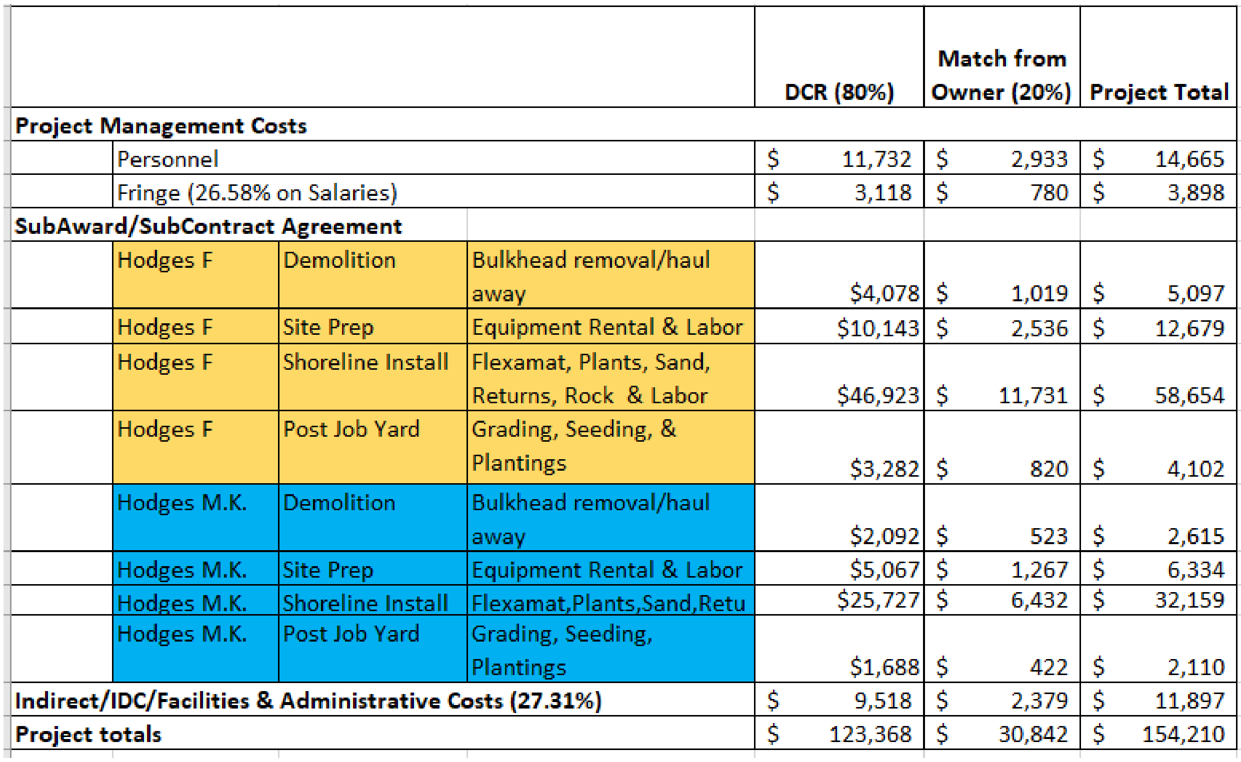
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
   YES. Please see **Attachment 1**

4. **Has the applicant provided evidence of an ability to provide the required match funds?**
   YES. Please see the match commitment letter in **Attachment 9.**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
   YES.

BUDGET NARRATIVE –

Below is the estimated budget for the proposed flood prevention and protection construction project that will result in a nature-based solution located in a low-income geographic area. Therefore, MPPDC staff is requesting 80% funding from DCR and will provide 20% match. Please see match commitment letters from the property owners in **Attachment 9**.



				DCR (80%)	Match from Owner (20%)	Project Total
Project Management Costs						
	Personnel			$ 11,732	$ 2,933	$ 14,665
	Fringe (26.58% on Salaries)			$ 3,118	$ 780	$ 3,898
SubAward/SubContract Agreement						
	Hodges F	Demolition	Bulkhead removal/haul away	$4,078	$ 1,019	$ 5,097
	Hodges F	Site Prep	Equipment Rental & Labor	$10,143	$ 2,536	$ 12,679
	Hodges F	Shoreline Install	Flexamat, Plants, Sand, Returns, Rock & Labor	$46,923	$ 11,731	$ 58,654
	Hodges F	Post Job Yard	Grading, Seeding, & Plantings	$3,282	$ 820	$ 4,102
	Hodges M.K.	Demolition	Bulkhead removal/haul away	$2,092	$ 523	$ 2,615
	Hodges M.K.	Site Prep	Equipment Rental & Labor	$5,067	$ 1,267	$ 6,334
	Hodges M.K.	Shoreline Install	Flexamat,Plants,Sand,Retu	$25,727	$ 6,432	$ 32,159
	Hodges M.K.	Post Job Yard	Grading, Seeding, Plantings	$1,688	$ 422	$ 2,110
Indirect/IDC/Facilities & Administrative Costs (27.31%)				$ 9,518	$ 2,379	$ 11,897
Project totals				$ 123,368	$ 30,842	$ 154,210

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.31%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)- Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.

Also please note that the cost estimates for the construction of this project were supplied by the contractor, Ready Reef. Please see **Attachment 8**.

In summary:

***Estimated total project cost*:**	$154,210
***Amount of funds requested from the Fund (80% project total)*:**	$123,368
***Amount of cash funds available (20% project total)*:**	$30,842

Finally, please see the authorization to request for funding in **Attachment 10.**

Appendix B: Scoring Criteria for Flood Prevention andProtection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	Middle Peninsula Planning District Commission

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and theChesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices witha nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		128

Appendix D: Checklist All Categories

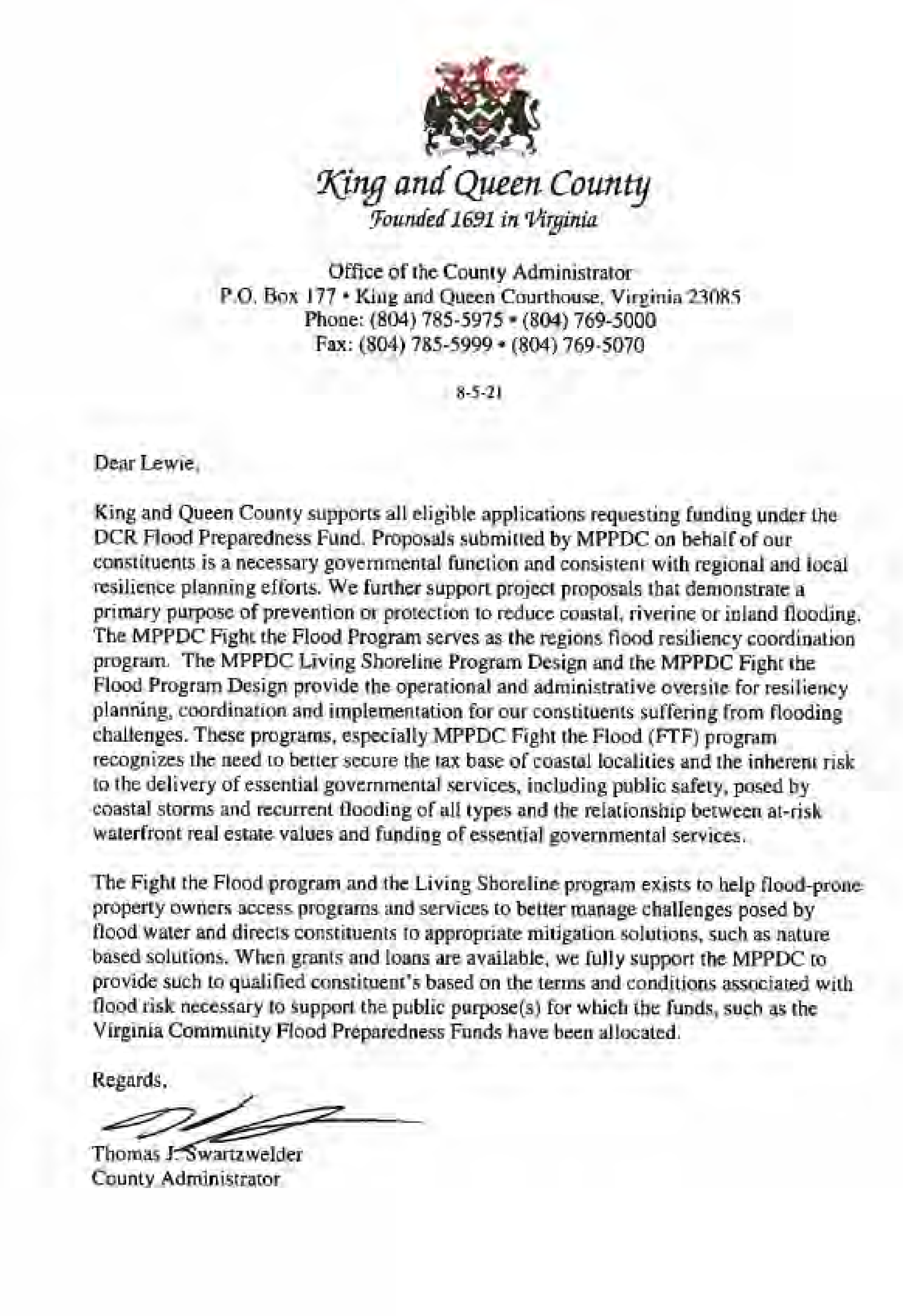
Virginia Department of Conservation

and RecreationCommunity Flood

Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

Attachment 1: Community Support Letter



King and Queen County
Founded 1691 in Virginia

Office of the County Administrator
P.O. Box 177 • King and Queen Courthouse, Virginia 23085
Phone: (804) 785-5975 • (804) 769-5000
Fax: (804) 785-5999 • (804) 769-5070

8-5-21

Dear Lewie,

King and Queen County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents is a necessary governmental function and consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood Program serves as the regions flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC Fight the Flood Program Design provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs, especially MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities and the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

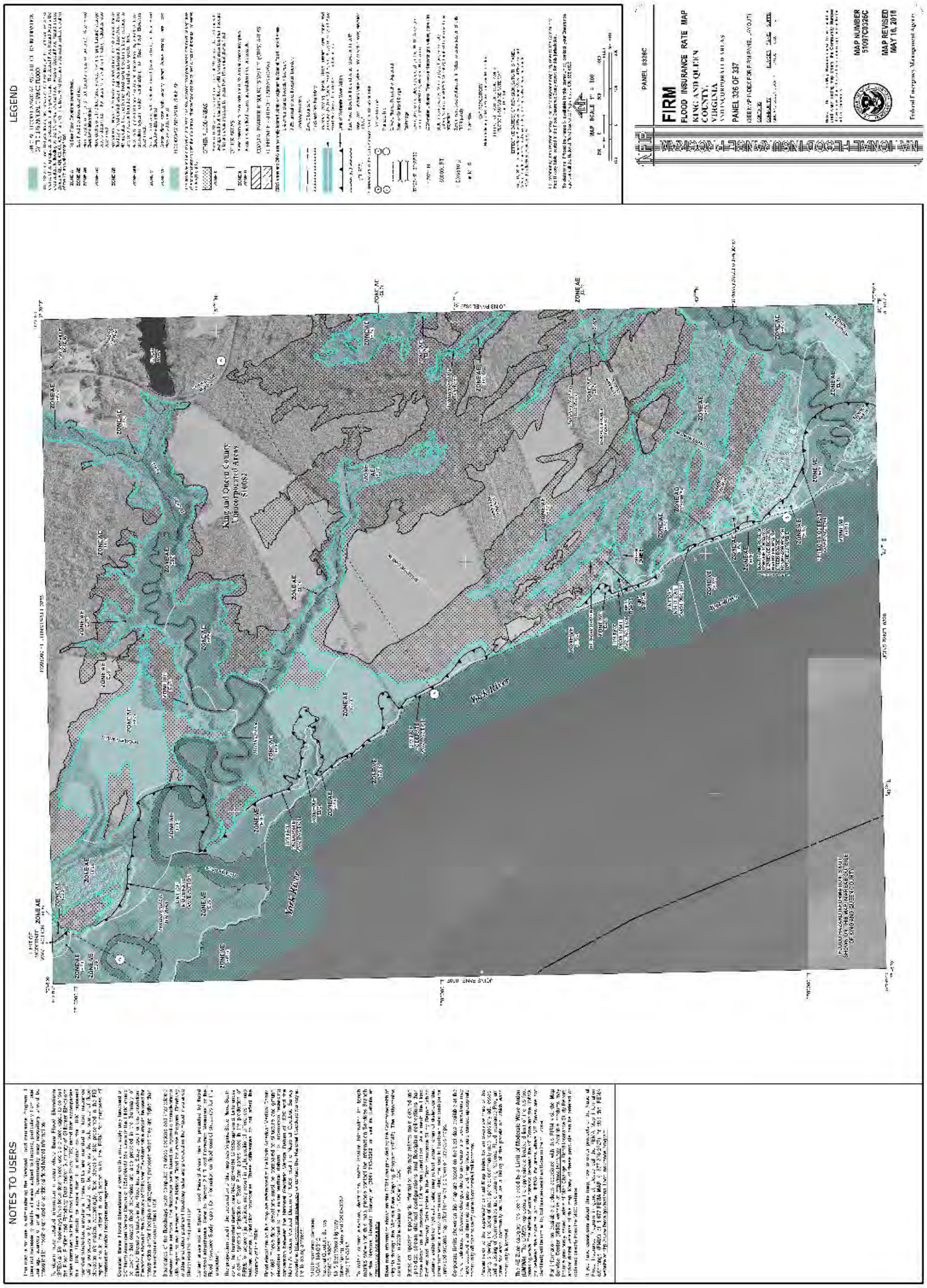
The Fight the Flood program and the Living Shoreline program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water and directs constituents to appropriate mitigation solutions, such as nature based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituent's based on the terms and conditions associated with flood risk necessary to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds have been allocated.

Regards,

Thomas J. Swartzwelder
County Administrator

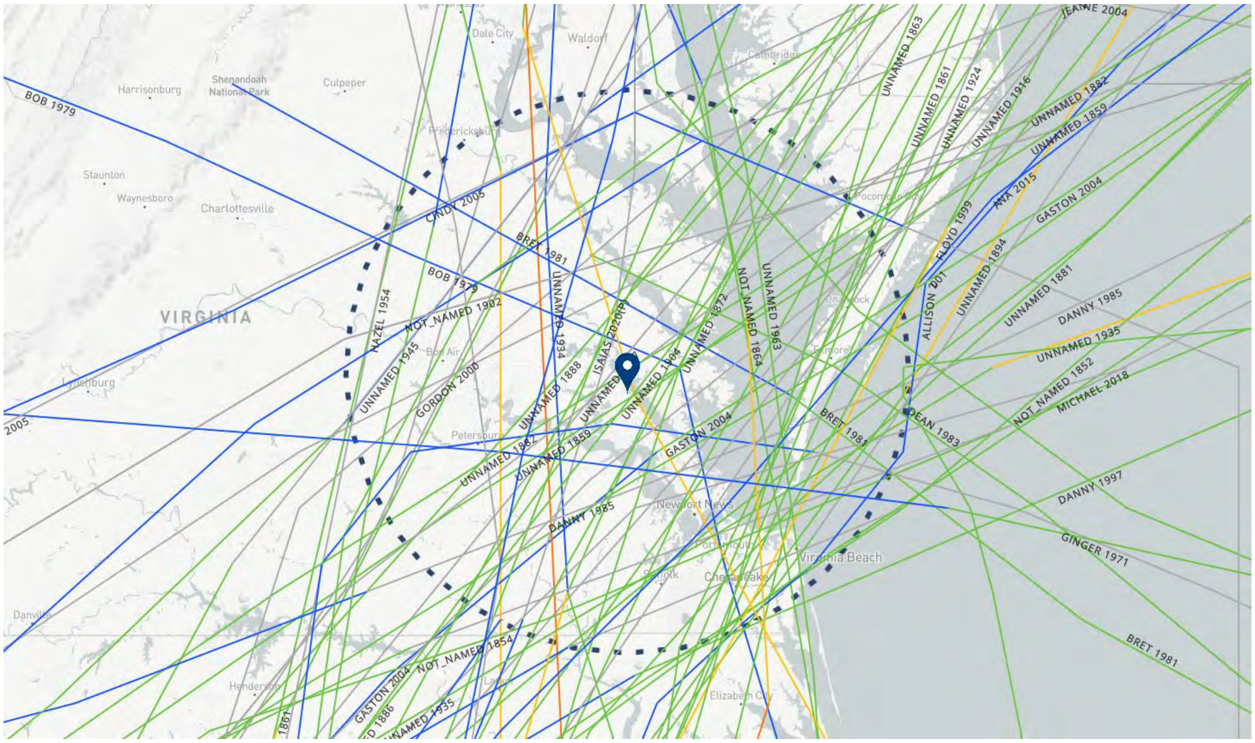
Attachment 2: Project Location FIRMette

Hodges Property (FIRMette #: **51097C0326C**)



Attachment 3: List of historic hurricanes impacting the project area.

Hurricane List



Search Filter Criteria

Location: 37.479284, -76.732522

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5

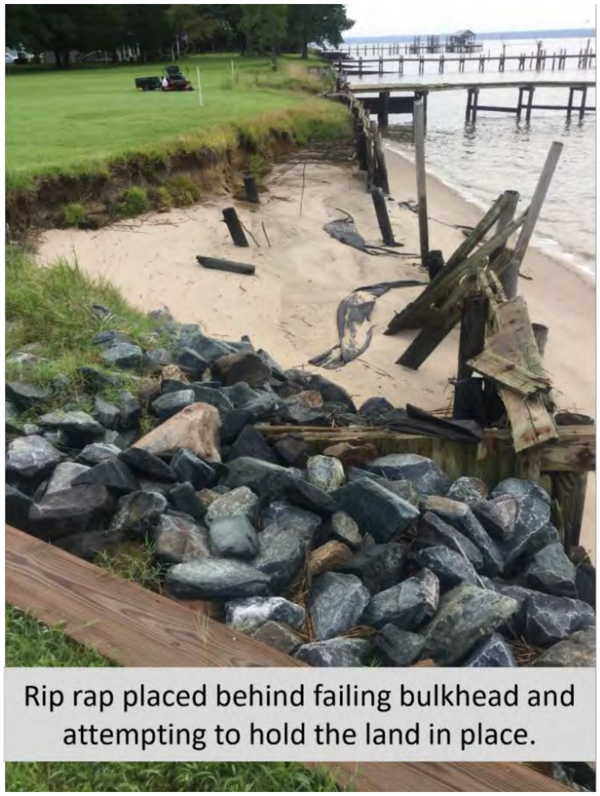
STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
HAZEL 1954	Oct 05, 1954 to Oct 18, 1954	115	938	H4
UNNAMED 1949	Sep 11, 1949 to Sep 14, 1949	45	-1	TS
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
NOT_NAMED 1861	Sep 22, 1861 to Sep 29, 1861	70	989	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: Photos of the Hodges property shoreline.

As the bulkhead failed the shoreline eroded the land away from the pier causing it to collapse.



Rip rap placed behind failing bulkhead and attempting to hold the land in place.

Photo failing bulkhead, rip rap, and eroding land.

Attachment 5: F. Hodges JPA and Design (242 Old Farm Dr.)

From:	Chris Davis
To:	Joshua Rellick; jpa.permits@mrc.virginia.gov; Birge, Tiffany
Cc:	Keith Hodges
Subject:	Fred Hodges Revised JPA 21-0819
Date:	Sunday, August 1, 2021 4:40:32 PM
Attachments:	Fred Hodges Revised JPA 8-1-2021.pdf Hodges Local Map.pdf Hodges Area Map.pdf FLEXAMAT - SHORELINE ARMORING UNDER RIPRAP _ WAVE ACTION INSTALLATION D... (1).pdf Fred Hodges AFTER Plan View 8-1-21 (1).png Fred Hodges Revised BEFORE Plan View 8-1-21 (3).png Fred Hodges Profile View of Bulkhead-Flexamat interface 8-1-21.png Flexamat-Specification.pdf Hodges Fred page 9.pdf Hodges Fred Signature page 10.pdf

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Permit attached

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Regulatory Agency Contact Information

Virginia Marine Resources Commission (VMRC)
Habitat Management Division
380 Fenwick Road, Building 96
Fort Monroe, VA 23651
Phone: (757) 247-2200, Fax: (757) 247-8062
Website: http://www.mrc.virginia.gov/hmac/hmoverview.shtm

United States Army Corps of Engineers (USACE)
Norfolk District
803 Front Street, ATTN: CENAO-WR-R
Norfolk, Virginia 23510-1011
Phone: (757) 201-7652, Fax: (757) 201-7678
Website: http://www.nao.usace.army.mil/Missions/Regulatory.aspx

Virginia Department of Environmental Quality (DEQ)
Virginia Water Protection Permit Program
Post Office Box 1105
Richmond, Virginia 23218
Phone: (804) 698-4000
Website: http://www.deq.virginia.gov/

LOCAL WETLANDS BOARD (LWB) CONTACT INFORMATION:

Links to LWB information on the Web can be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html
In addition, the phone numbers listed below can be used to contact the LWB. Please be advised that these phone numbers are subject to change at any time.

Accomack County (757) 787-5721, Cape Charles (757) 331-3259, Charles City County (804) 829-9296, Chesapeake (757) 382-6248, Colonial Heights (804) 520-9275, Essex County (804) 443-4951, Fairfax County (703) 324-1364, Fredericksburg (540) 372-1179, Gloucester County (804) 693-2744, Hampton (757) 727-6140, Hopewell (804) 541-2267, Isle of Wight County (757) 365-6211, James City County (757) 253-6673, King and Queen County (804) 769-4978, King George County (540) 775-7111, King William County (804) 769-4927, Lancaster County (804) 462-5220, Mathews County (804) 725-5025, Middlesex County (804) 758-0500, New Kent County (804) 966-9690, Newport News (757) 247-8437, Norfolk (757) 664-4368, Northampton County (757) 678-0442, Northumberland County (804) 580-8910, Poquoson (757) 868-3040, Portsmouth (757) 393-8836, Prince William County (703) 792-6984, Richmond County (804) 333-3415, Stafford County (540) 658-8668, Suffolk (757) 923-3650, Virginia Beach (757) 427-8246, Westmoreland County (804) 493-0120, West Point (804) 843-3330, Williamsburg (757) 220-6130, York County (757) 890-3538

Tidewater Joint Permit Application (JPA) For Projects Involving Tidal Waters, Tidal Wetlands and/or Dunes and Beaches in Virginia

This application may be used for most commercial and noncommercial projects involving **tidal waters, tidal wetlands and/or dunes and beaches in Virginia** which require review and/or authorization by Local Wetlands Boards (LWB), the Virginia Marine Resources Commission (VMRC), the Department of Environmental Quality (DEQ), and/or the U. S. Army Corps of Engineers (USACE). This application can be used for:

- **Access-related activities**, including piers, boathouses, boat ramps (without associated dredging or excavation*), moorings, marinas.
- **Shoreline stabilization projects** including living shorelines, riprap revetments, marsh toe stabilization, bulkheads, breakwaters, beach nourishment, groins, and jetties. It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1).
- **Crossings** over or under tidal waters and wetlands including bridges and utility lines (water, sewer, electric).
- **Aquaculture structures**, including cages and floats except “oyster gardening”**

***Note:** for all dredging, excavation, or surface water withdrawal projects you **MUST** use the Standard JPA form; for noncommercial, riparian shellfish aquaculture projects (i.e., “oyster gardening”) you must use the abbreviated JPA found at https://mrc.virginia.gov/forms/2019/VGP3_Aquaculture_form_2019.pdf or call VMRC for a form.

The DEQ and the USACE use this form to determine whether projects qualify for certain General, Regional, and/or Nationwide permits. If your project does not qualify for these permits and you need a DEQ Virginia Water Protection permit or an individual USACE permit, you must submit the Standard Joint Permit application form. You can find this application at http://www.nao.usace.army.mil/Missions/Regulatory/JPA.aspx. Please note that some health departments and local agencies, such as local building officials and erosion and sediment control authorities, do not use the Joint Permit Application process or forms and may have different informational requirements. The applicant is responsible for contacting these agencies for information regarding those permitting requirements.

HOW TO APPLY

Submit one (1) completed copy of the Tidewater JPA to VMRC:

1. If by mail or courier, use the VMRC address provided on page 1.
2. If by electronic mail, address the package to: **JPA.permits@mrc.virginia.gov.** The application must be provided in the .pdf format and should not exceed 10 MB. If larger than 10 MB you may provide a file transfer protocol (ftp) site for download purposes.

The Tidewater JPA should include the following:

1. **Part 1** – General Information
2. **Part 2** – Signatures
3. **Part 3** - Appendices (A, B, C, and/or D as applicable to your project)
4. **Part 4** – Project Drawings.
   The drawings shall include the following for **ALL** projects:
   - Vicinity Map (USGS topographic map, road map or similar showing project location)
   - Plan View Drawing (overhead, to scale or with dimensions clearly marked)
   - Section View Drawing (side-view, to scale or with dimensions clearly marked)

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Sample drawings are included at the end of Part 4 of this application to show examples of the information needed to consider your application complete and allow for the timely processing.

When completing this form, use the legal name of the applicant, agent, and/or property owner. For DEQ application purposes, *legal name* means the full legal name of an individual, business, or other organization. For an individual, the legal name is the first name, middle initial, last name, and suffix. For an entity authorized to do business in Virginia, the legal name is the exact name set forth in the entity's articles of incorporation, organization or trust, or formation agreement, as applicable. Also provide the name registered with the State Corporation Commission, if required to register. DEQ issues a permit or grants coverage to the so-named individual or business, who becomes the 'permittee'. Correspondence from some agencies, including permits, authorizations, and/or coverage, may be provided via electronic mail. If the applicant and/or agent wishes to receive their permit via electronic mail, please remember to include an e-mail address at the requested place in the application.

In order for projects requiring LWB authorization to be considered complete (Virginia Code § 28.2-1302); "The permit application shall include the following: the name and address of the applicant; a detailed description of the proposed activities; a map, drawn to an appropriate and uniform scale, showing the area of wetlands directly affected, the location of the proposed work thereon, the area of existing and proposed fill and excavation, the location, width, depth and length of any proposed channel and disposal area, and the location of all existing and proposed structures, sewage collection and treatment facilities, utility installations, roadways, and other related appurtenances of facilities, including those on the adjacent uplands; a description of the type of equipment to be used and the means of access to the activity site; the names and addresses of record of adjacent land and known claimants of water rights in or adjacent to the wetland of whom the applicant has notice; an estimate of cost; the primary purpose of the project; and secondary purpose of the proposed project; a complete description of measures to be taken during and after alteration to reduce detrimental offsite effects; the completion date of the proposed work, project, or structure; and such additional materials and documentation as the wetlands board may require."

You may include signed Adjacent Property Owner (APO) Acknowledgement Forms found at the end of this Short Form. You must provide these addresses in Part 1 whether or not you use the APO forms. VMRC will request comments from APOs for projects that require permits for encroachment over state-owned submerged lands. VMRC or your local wetlands board must notify all APO's of public hearings required for all proposals involving tidal wetlands and dunes/beaches that are not authorized by statute. This information will not be used by DEQ to meet the requirements of notifying riparian land owners.

Regional Permit 17 (RP-17), authorizes the installation and/or construction of open-pile piers, mooring structures/devices, fender piles, covered boathouses/boatslips, boatlifts, osprey pilings/platforms, accessory pier structures, and certain devices associated with shellfish gardening, for private use, subject to strict compliance with all conditions and limitations further set out in the RP-17 enclosure located at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/. In addition to the information required in this JPA, prospective permittees seeking authorization under RP-17 must complete and submit the 'Regional Permit 17 Checklist' with their JPA. A copy of the 'Regional Permit 17 Checklist' is found on pages 13 and 14 of this application package. If the prospective permittee answers "yes" (or "N/A", where applicable) to all of the questions on the 'Regional Permit 17 Checklist', the permittee is in compliance with RP-17 and will not receive any other written authorization from the Corps but may not proceed with construction until they have obtained all necessary state and local permits. ***Note: If the prospective permittee answers "no" to any of the questions on the 'Regional Permit 17 Checklist' then their proposed structure(s) does not meet the terms and conditions of RP-17 and written authorization from the Corps is required before commencement of any work.***

Note: Land disturbance (grading, filling, etc.) or removal of vegetation associated with projects located in Chesapeake Bay Preservation Areas will require approval from local governments. Certain localities utilize this application during their Bay Act review. Part 5 of this application is included to provide assistance for the applicant to comply with Bay Act /or Erosion and Sediment Control requirements concurrent with this application.

WHAT HAPPENS NEXT

Upon receipt of an application, VMRC will assign a permit application number to the JPA and will then distribute a copy of the application and any original plan copies submitted to the other regulatory agencies that are involved in the JPA process. All agencies will conduct separate but concurrent reviews of your project. Please be aware that each agency must issue a separate permit (or a notification that no permit is required). Note that in some cases, DEQ may be taking an action on behalf of the USACE, such as when the State Program General Permit (SPGP) applies. Make sure that you have received all necessary authorizations, or documentation that no permit is required, from each agency prior to beginning the proposed work.

During the JPA review process, site inspections may be necessary to evaluate a proposed project. Failure to allow an authorized representative of a regulatory agency to enter the property, or to take photographs of conditions at the project site, may result in either the withdrawal or denial of your permit application.

For certain federal and state permit applications, a public notice is published in a newspaper having circulation in the project area, is mailed to adjacent and/or riparian property owners, and/or is posted on the agency's web page. The public may comment on the project during a designated comment period, if applicable, which varies depending upon the type of permit being applied for and the issuing agency. In certain circumstances, the project may be heard by a governing board, such as a Local Wetlands Board, the State Water Control Board, or VMRC in cases where a locality does not have a wetlands board and with certain subaqueous cases. You may be responsible for bearing the costs for advertisement of public notices.

Public hearings that are held by VMRC occur at their regularly scheduled monthly commission meetings under the following situations: Protested applications for VMRC permits which cannot be resolved; projects costing over $500,000 involving encroachment over state-owned subaqueous land; and all projects affecting tidal wetlands and dunes/beaches in localities without a LWB. All interested parties will be officially notified regarding the date and time of the hearing and Commission meeting procedures. The Commission will usually make a decision on the project at the meeting unless a decision for continuance is made. If a proposed project is approved, a permit or similar agency correspondence is sent to the applicant. In some cases, notarized signatures, as well as processing fees and royalties, are required before the permit is validated. If the project is denied, the applicant will be notified in writing.

PERMIT APPLICATION OR OTHER FEES

Do not send any fees with the JPA. VMRC is not responsible for accounting for fees required by other agencies. Please consult agency websites or contact agencies directly for current fee information and submittal instructions.

- ❖ USACE: Permit application fees are required for USACE Individual (Standard) permits. A USACE project manager will contact you regarding the proper fee and submittal requirements.

- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA # 21-0819

APPLICANTS
Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply

Pre-Construction Notification (PCN) ☐ NWP # ____________ (*For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned*)	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: King and Queen

Waterway at project site: York River

PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)

Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html

Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial
	NA			

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address: Contact Information:

Fred W. Hodges, 242 Old Farm Drive,
Shacklefords, VA 23156 (Lot# 12A)

Home (804) 785-2047
Work (804) 370-4024
Fax (____)_____________
Cell (____)_____________
e-mail ___________________

State Corporation Commission Name and ID Number (if applicable) ______________

2. Property owner(s) legal name* and complete address, if different from applicant: Contact Information:

Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (____)_____________
e-mail ___________________

State Corporation Commission Name and ID Number (if applicable) ______________

3. Authorized agent name* and complete mailing address (if applicable): Contact Information:

Chris Davis (ReadyReef Inc.)
504 Smoketree Court
North Chesterfield, VA 23236

Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (804) 338-3103
e-mail chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) ______________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

The project is to install a Living Shoreline using Flexamat installed behind a decaying bulkhead on the York River to protect the eroding bank. Mat sections totaling 16' wide x 147' (2352 ft^2) will be laid on a 3:1 slope and planted with marsh grasses. Flexamat meets the state definition (28.2-104.1) of a Living Shoreline (as required by SB776 passed in 2020) as "a shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials." Flexamat enhances "coastal resilience and attenuation of wave energy and storm surge."
The Flexamat will be installed from the adjacent yard. Grading the slope will be followed with some sand overlay to create a solid, smooth foundation. No tree clearing is required. The mat under-layment will include biodegradable soft wood shavings to prevent soil under-scouring.
The mat will be anchored mechanically and with marsh grass plants growing through it over time. The remnants of the existing bulkhead will be cut down and/or removed after the mat is installed.
The mat ends at neighboring bulkhead returns will be overlain with filter cloth and riprap to prevent scouring from wave action against the bulkhead sections.
There will be a gain of 1888 ft^2 of Spartina marsh grasses.
The existing dock will be extended 16' back over the graded area to intersect with the yard.
Equipment to be used: skid steer, Excavator, dump truck, flatbed truck and trailer, sand compactor, earth anchors driven with hammer drill powered by gas generator.

Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? X Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

ReadyReef Inc
504 Smoketree Court
North Chesterfield, VA 23236

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (804) 338-3103
email chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) ____________________

<u>* If multiple contractors, each must be listed and each must sign the applicant signature page.</u>

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:

Tidewater Review
www.tidewaterreview.com

Telephone number
(757) 446-2291

7. Give the following project location information:

Street Address (911 address if available) 242 Old Farm Drive
Lot/Block/Parcel# 23 131L 396A12A (Fred Hodges)
Subdivision ____________________
City / County Shacklefords ZIP Code 23156
Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
37.479281 / -76.732522 (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

From Rt. 17 going north from Gloucester Courthouse, turn left at Adner onto Rt 14 West (Buena Vista Rd). At Plainview, turn left onto Rt. 605 (Plain View Lane).
Shortly after, Rt. 605 takes a sharp right and continues.
Turn left onto Rt 666 (Tuckers Road) before Gressitt.
Turn right onto Cricket Shores Lane.
Near York River, it will end, then turn right onto Bells RD. Road ends at House #242 dead ahead.

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose <u>may</u> be "to protect property from erosion due to boat wakes" and the secondary purpose <u>may</u> be "to provide safer access to a pier."

The primary purpose is to prevent erosion at the shoreline where an old bulkhead is failing.
The secondary purpose is to install a SB 776 compliant solution to meet the environmental goals of the Chesapeake Bay WIP.

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 1 - General Information (continued)

9. Proposed use (check one):
   _x_ Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

    Bulkhead replacement and riprap revetment were eliminated as being non-compliant with the State's new Living Shoreline law (SB 776). Installing Flexamat will allow for marsh grass planting in its grid, and for a migratory path upwards in elevation should Relative Sea Level Rise continue as forecasted. No impacts to Wetlands, SAVs or buffer areas. Marsh grasses will be installed where none exist now.

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes _x_No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $ $35,000
    Approximate cost of that portion of the project that is channelward of mean low water:
    $ 0

13. Completion date of the proposed work: July 31 - 2022

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

    M.Keith Hodges, PO Box 154, Urbanna, VA

    John Gove
    330 Cypress Ave
    West Point, VA\23181

    Hartwell and Christian Cook
    207 Trout Dr.
    Middleton, RI
    02842

Part 2 - Signatures

1. Applicants and property owners (if different from applicant).
NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant's Legal Name (printed/typed)	(Use if more than one applicant)
Applicant's Signature	(Use if more than one applicant)
Date	
Property Owner's Legal Name (printed/typed) (If different from Applicant)	(Use if more than one owner)
Property Owner's Signature	(Use if more than one owner)
Date	

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we),____________________, hereby certify that I (we) have authorized ___________________________
(Applicant's legal name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

____________________________________ _________________________________
(Agent's Signature) (Use if more than one agent)

____
(Date)

____________________________________ _________________________________
(Applicant's Signature) (Use if more than one applicant)

____
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), ______________________, have contracted____
(Applicant's legal name(s)) (Contractor's name(s))
to perform the work described in this Joint Permit Application, signed and dated_________________________.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

____
Contractor's name or name of firm

____
Contractor's or firms address

________________________________ _____________________________________
Contractor's signature and title Contractor's License Number

________________________________ _____________________________________
Applicant's signature (use if more than one applicant)

____
Date

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we), ___________________________________, own land next to (across the water
(Print adjacent/nearby property owner's name)

from/on the same cove as) the land of____________________________________.
(Print applicant's name(s))

I have reviewed the applicant's project drawings dated ________________________
(Date)

to be submitted for all necessary federal, state and local permits.

I HAVE NO COMMENT_______ ABOUT THE PROJECT.

I DO NOT OBJECT ______ TO THE PROJECT.

I OBJECT ______ TO THE PROJECT.

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form be sure you have checked the appropriate option above).

____
Adjacent/nearby property owner's signature(s)

____
Date

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we), ___________________________________, own land next to (across the water
(Print adjacent/nearby property owner's name)

from/on the same cove as) the land of______________________________________.
(Print applicant's name(s))

I have reviewed the applicant's project drawings dated _________________________
(Date)

to be submitted for all necessary federal, state and local permits.

I HAVE NO COMMENT_______ ABOUT THE PROJECT.

I DO NOT OBJECT ______ TO THE PROJECT.

I OBJECT ______ TO THE PROJECT.

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form, be sure you have checked the appropriate option above).

____
Adjacent/nearby property owner's signature(s)

____
Date

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

APPENDIX B

U.S. Army Corps
Of Engineers
Norfolk District

REGIONAL PERMIT 17 CHECKLIST

Expires: September 5, 2023

Please review the 18-RP-17 enclosure before completing this form and note 18-RP-17 can only be used for proposed PRIVATE USE structure(s) that comply with the terms and conditions of 18-RP-17. Copies can be obtained online at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/.

YES☐ NO☐ **(1)** Has the permittee reviewed the 18-RP-17 enclosure and verified that the proposed structure(s) is in compliance with all the terms, conditions, and limitations of 18-RP-17?

YES☐ NO☐ **(2)** Does the proposed structure(s) extend no more than one-fourth of the distance across the waterway measured from either mean high water (MHW) to MHW (including all channelward wetlands) or ordinary high water (OHW) to OHW (including all channelward wetlands)?

YES☐ NO☐ **(3)** Does the proposed structure(s) extend no more than 300 feet from MHW or OHW (including all channelward wetlands)?

YES☐ NO☐ N/A☐ **(4)** Does the proposed structure(s) attach to the upland at a point landward of MHW or OHW (including all channelward wetlands)?

YES☐ NO☐ N/A☐ **(5)** If the proposed structure(s) crosses wetland vegetation, is it an open-pile design that has a maximum width of five (5) feet and a minimum height of four (4) feet between the decking and the wetland substrate?

YES☐ NO☐ N/A☐ **(6)** Does the proposed structure(s) include no more than two (2) boatlifts and no more than two (2) boat slips?

YES☐ NO☐ N/A☐ **(7)** Is the open-sided roof structure designed to shelter a boat ≤ 700 square feet and/or is the open sided roof structure or gazebo structure designed to shelter a pier ≤ 400 square feet?

YES☐ NO☐ N/A☐ **(8)** Are all piles associated with the proposed structure(s) non-steel, less than or equal to 12” in diameter, and will less than or equal to 25 piles be installed channelward of MHW?

YES☐ NO☐ N/A☐ **(9)** Is all work occurring behind cofferdams, turbidity curtains, or other methods to control turbidity being utilized when operationally feasible and federally listed threatened or endangered species may be present?

YES☐ NO☐ N/A☐ **(10)** If the proposed structure(s) is to be located within an anadromous fish use area, the prospective permittee will adhere to the anadromous fish use area time of year restriction (TOYR) prohibiting in-water work from occurring between February 15 through June 30 of any given year if (1) piles are to be installed with a cushioned impact hammer and there is less than 492 feet between the most channelward pile and mean low water (MLW) on the opposite shoreline or (2) piles are to be installed with a vibratory hammer and there is less than 384 feet between the most channelward pile and MLW on the opposite shoreline.

YES☐ NO☐ **(11)** Is all work occurring outside of submerged aquatic vegetation (SAV) mapped by the Virginia Institute of Marine Sciences’ (VIMS) most recent survey year and 5 year composite?

YES☐ NO☐ **(12)** Has the permittee ensured the construction and/or installation of the proposed structure(s) will not affect federally listed threatened or endangered species or designated critical habitat?

YES☐ NO☐ **(13)** Will the proposed structure be located outside of Broad Creek in Middlesex County, Fisherman’s Cove in Norfolk, or the Salt Ponds in Hampton?

YES☐ NO☐ **(14)** Will the proposed structure(s) be located outside of the waterways containing a Federal Navigation Project listed in Permit Specific Condition 12 of 18-RP-17 and/or will all portions of the proposed structure(s) be located more than 85 feet from the Federal Navigation Project?

YES☐ NO☐	**(15)** Will the proposed structure(s) be located outside a USACE Navigation and Flood Risk Management project area?
YES☐ NO☐	**(16)** Will the proposed structure(s) be located outside of any Designated Trout Waters?
YES☐ NO☐ N/A☐	**(17)** If the proposed structure(s) includes flotation units, will the units be made of materials that will not become waterlogged or sink if punctured?
YES☐ NO☐ N/A☐	**(18)** If the proposed structure(s) includes flotation units, will the floating sections be braced so they will not rest on the bottom during periods of low water?
YES☐ NO☐	**(19)** Is the proposed structure(s) made of suitable materials and practical design so as to reasonably ensure a safe and sound structure?
YES☐ NO☐	**(20)** Will the proposed structure(s) be located on the property in accordance with the local zoning requirements?
YES☐ NO☐ N/A☐	**(21)** If the proposed structure(s) includes a device used for shellfish gardening, will the device be attached directly to a pier and limited to a total of 160 square feet?
YES☐ NO☐ N/A☐	**(22)** If the proposed structure(s) includes a device used for shellfish gardening, does the permittee recognize this RP does not negate their responsibility to obtain an oyster gardening permit (General Permit #3) from Virginia Marina Resources Commission's Habitat Management Division?
YES ☐NO ☐	**(23)** Does the permittee recognize this RP does not authorize any dredging or filling of waters of the United States (including wetlands) and does not imply that future dredging proposals will be approved by the Corps?
YES☐ NO☐	**(24)** Does the permittee understand that by accepting 18-RP-17, the permittee accepts all of the terms and conditions of the permit, including the limits of Federal liability contained in the 18-RP-17 enclosure? Does the permittee acknowledge that the structures permitted under 18-RP-17 may be exposed to waves caused by passing vessels and that the permittee is solely responsible for the integrity of the structures permitted under 18-RP-17 and the exposure of such structures and vessels moored to such structures to damage from waves? Does the permittee accept that the United States is not liable in any way for such damage and that it shall not seek to involve the United States in any actions or claims regarding such damage?

IF YOU HAVE ANSWERED "NO" TO ANY OF THE QUESTIONS ABOVE, REGIONAL PERMIT 17 (18-RP-17) DOES NOT APPLY AND YOU ARE REQUIRED TO OBTAIN WRITTEN AUTHORIZATION FROM THE CORPS PRIOR TO PERFORMING THE WORK.

IF YOU HAVE ANSWERED "YES" (OR "N/A", WHERE APPLICABLE) TO ALL OF THE QUESTIONS ABOVE, YOU ARE IN COMPLIANCE WITH REGIONAL PERMIT 17 (18-RP-17). PLEASE SIGN BELOW, ATTACH, AND SUBMIT THIS CHECKLIST WITH YOUR COMPLETED JOINT PERMIT APPLICATION (JPA). THIS SIGNED CERTIFICATE SERVES AS YOUR LETTER OF AUTHORIZATION FROM THE CORPS. YOU WILL NOT RECEIVE ANY OTHER WRITTEN AUTHORIZATION FROM THE CORPS; HOWEVER, YOU MAY NOT PROCEED WITH CONSTRUCTION UNTIL YOU HAVE OBTAINED ALL OTHER NECESSARY STATE AND LOCAL PERMITS.

I CERTIFY THAT I HAVE READ AND UNDERSTAND ALL CONDITIONS OF THE REGIONAL PERMIT 17 (18-RP-17), DATED SEPTEMBER 2018, ISSUED BY THE US ARMY CORPS OF ENGINEERS, NORFOLK DISTRICT REGULATORY BRANCH (CENAO-WRR), NORFOLK, VIRGINIA.

Proposed work to be located at:

____

Signature of Property Owner(s) or Agent

____

____

Date____________________________

VMRC Number: ____________________

Part 3 – Appendices

Please complete and submit the appendix questions applicable to your project, and attach the required vicinity map(s) and drawings to your application. If an item does not apply to your project, please write "N/A" in the space provided.

Appendix A: (TWO PAGES) Projects for Access to the water such as private and community piers, boathouses, marinas, moorings, and boat ramps. Answer all questions that apply.

1. **Briefly describe your proposed project**.

2. **For private, noncommercial piers:**
   Do you have an existing pier on your property? ____Yes____ No
   If yes, will it be removed? ____Yes ____No
   Is your lot platted to the mean low water shoreline? ____Yes ____No
   What is the overall length of the proposed structure? ________feet.
   Channelward of Mean High Water? ________feet.
   Channelward of Mean Low Water? ________feet.
   What is the area of the piers and platforms that will be constructed over
   Tidal non-vegetated wetlands __________ square feet.
   Tidal vegetated wetlands _________ square feet.
   Submerged lands __________square feet.
   What is the total size of any and all L- or T-head platforms?_______sq. ft.
   For boathouses, what is the overall size of the roof structure? ________sq. ft.
   Will your boathouse have sides?_____Yes____ No.

   NOTE: All proposals for piers, boathouses and shelter roofs must be reviewed by the Virginia Marine Resources Commission (Commission or VMRC), however, pursuant to § 28.2-1203 A 5 of the Code of Virginia a VMRC permit may not be required for such structures (except as required by subsection D of § 28.2-1205 for piers greater than 100 feet in length involving commercially productive leased oyster or clam grounds), provided that (i) the piers do not extend beyond the navigation line or private pier lines established by the Commission or the United States Army Corps of Engineers (USACE), (ii) the piers do not exceed six feet in width and finger piers do not exceed five feet in width, (iii) any L or T head platforms and appurtenant floating docking platforms do not exceed, in the aggregate, 400 square feet, (iv) if prohibited by local ordinance open-sided shelter roofs or gazebo-type structures shall not be placed on platforms as described in clause (iii), but may be placed on such platforms if not prohibited by local ordinance, and (v) the piers are determined not to be a navigational hazard by the Commission. Subject to any applicable local ordinances, such piers may include an attached boat lift and an open-sided roof designed to shelter a single boat slip or boat lift. In cases in which open-sided roofs designed to shelter a single boat, boat slip or boat lift will exceed 700 square feet in coverage or the open-sided shelter roofs or gazebo structures exceed 400 square feet, and in cases in which an adjoining property owner objects to a proposed roof structure, permits shall be required as provided in § 28.2-1204.

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 3 – Appendices (continued)

3. **For USACE permits**, in cases where the proposed pier will encroach beyond one fourth the waterway width (as determined by measuring mean high water to mean high water or ordinary high water mark to ordinary high water mark), the following information must be included before the application will be considered complete. For an application to be considered complete:

   a. The USACE MAY require depth soundings across the waterway at increments designated by the USACE project manager. Typically 10-foot increments for waterways less than 200 feet wide and 20-foot increments for waterways greater than 200 feet wide with the date and time the measurements were taken and how they were taken (e.g., tape, range finder, etc.).
   b. The applicant MUST provide a justification as to purpose if the proposed work would extend a pier greater than one-fourth of the distance across the open water measured from mean high water or the channelward edge of the wetlands.
   c. The applicant MUST provide justification if the proposed work would involve the construction of a pier greater than five feet wide or less than four feet above any wetland substrate.

4. Provide the type, size, and registration number of the vessel(s) to be moored at the pier or mooring buoy.

   Type Length Width Draft Registration #

   ____
   ____
   ____

5. For **Marinas, Commercial Piers, Governmental Piers, Community Piers and other non-private piers**, provide the following information:
   A) Have you obtained approval for sanitary facilities from the Virginia Department of Health?___________ (required pursuant to Section 28.2-1205 C of the Code of Virginia).
   B) Will petroleum products or other hazardous materials be stored or handled at your facility?_______________.
   C) Will the facility be equipped to off-load sewage from boats?__________.
   D) How many wet slips are proposed?_______. How many are existing?______.
   E) What is the area of the piers and platforms that will be constructed over
      Tidal non-vegetated wetlands __________ square feet
      Tidal vegetated wetlands _________ square feet
      Submerged lands __________square feet

6. For **boat ramps**, what is the overall length of the structure?________feet.
   From Mean High Water?________feet.
   From Mean Low Water?________feet.

   Note: drawings must include the construction materials, method of installation, and all dimensions. If tending piers are proposed, complete the pier portion.

   Note: If dredging or excavation is required, you must complete the Standard Joint Point Permit application.

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 3 – Appendices (continued)

Appendix B: Projects for Shoreline Stabilization in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS**.**

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

   2352 ft² of Flexamat (147' x 16') will be installed in a cut and fill grading behind the decaying bulkhead. An additional 9 cuyds of clean sand will be overlain and compacted prior to mat installation in the space behind MLW and up to 1.5X the tide range, approximately 14' behind the remnants of the existing bulkhead.

2. What is the maximum encroachment channelward of mean high water? 14' feet.
   Channelward of mean low water? 0 feet.
   Channelward of the back edge of the dune or beach? 16' feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 0 square feet
   - Non-vegetated wetlands 865 square feet
   - Subaqueous bottom 0 square feet
   - Dune and/or beach 0 square feet

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes____ No.

   If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____Yes ____No.

   If no, please provide an explanation for the purpose and need for the additional encroachment.

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Part 3 – Appendices (continued)

5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
NOTE: **Drawings must include construction details, including dimensions, design and all materials, including fittings if used**.

See attachments for Flexamat Specs and Materials
Clean sand source: upland pit in Middlesex County

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
Core (inner layer) material __________ pounds per stone Class size ________
Armor (outer layer) material 75 pounds per stone Class size 1

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

- Volume of material
  0 cubic yards channelward of mean low water
  9 cubic yards landward of mean low water
  9 cubic yards channelward of mean high water
  0 cubic yards landward of mean high water

- Area to be covered
  0 square feet channelward of mean low water
  2352 square feet landward of mean low water
  9 cubic yards channelward of mean high water
  0 cubic yards landward of mean high water

- Source of material, composition (e.g. 90% sand, 10% clay): 93% sand, 7% clay
- Method of transportation and placement:
  Truck from pit to yard dump. Tracked Skid steer from dump to shoreline.
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:

Flexamat will be planted 1' on center in the grid between revetment blocks.
It will take up to 2 years to achieve saturation as the marsh grass sends out rhizomes in its second year after planting.

Part 3 – Appendices (continued)

Appendix C: Crossings in, on, over, or under, waters, submerged lands, tidal wetlands and/or dunes and beaches, including but not limited to, bridges, walkways, pipelines and utility lines.

1. What is the purpose and method of installation of the crossing?

2. What is the width of the waterway and/or wetlands to be crossed
   from mean high water to mean high water (tidal waters)? _______ feet.
   from mean low water to mean low water (tidal waters)? _______ feet.
   from ordinary high water to ordinary high water (non-tidal waters)? _______ feet.

3. For bridges (footbridges, golf cart bridges, roadway bridges, etc.), what is the width of the structure over the tidal wetlands, dunes/beaches and/or submerged lands? ____________square feet.

4. For overhead crossings:
   a. What will be the height above mean high water? _______feet.
   b. If there are other overhead crossings in the area, what is the minimum height? _____feet.
   c. If the proposed crossing is an electrical line, please confirm the total number of electrical circuits: _________

5. For buried crossings, what will be the depth below the substrate? __________feet. Will the proposed utility provide empty conduits for any additional utilities that may propose to co-locate at a later date? _____Yes _____No.

6. Will there be any excavation or fill required for placement of abutments, piers, towers, or other permanent structures on State-owned submerged lands, tidal wetlands, and dunes/beaches? ____Yes ____ No.

   If yes, please provide the following:

   a. Amount of excavation in wetlands _________ cubic yards
      _________ square feet

   b. Amount of excavation in submerged land _________ cubic yards
      _________ square feet

   c. Amount of excavation in dune/beach _________ cubic yards
      _________ square feet

   d. Amount of fill in wetlands _________ cubic yards
      _________ square feet

   e. Amount of fill in submerged lands _________ cubic yards
      _________ square feet

   f. Amount of fill in dune/beach ________ cubic yards
      ________ square feet

Part 3 – Appendices (continued)

Appendix D: Aquaculture Related Structures such as cages and floats. Before completing this appendix, please review the aquaculture requirements summary at: http://mrc.virginia.gov/Shellfish_Aquaculture.shtm.

1. Will the activity be for commercial purposes? _____Yes _____ No.

   If Yes and structures will be placed upon an oyster ground lease, you may qualify for the VMRC General Permit #4 for Temporary Protective Enclosures for Shellfish. For more info see: http://www.mrc.virginia.gov/regulations/MRC_Scanned_Regs/Shellfish_Mix/fr1130_12-0107.pdf. If you qualify for the General Permit #4, or if such structures are proposed that are not on an oyster planting ground lease, or for floating structures of any kind, complete this Joint Permit Application and include the necessary information requested below in question 2 through 11.

   If No, you may qualify for the VMRC General Permit #3, for Noncommercial Riparian Shellfish Growing (i.e. "Gardening") For more information see: http://www.mrc.virginia.gov/forms/VGP3_Aquaculture.doc.pdf. If you qualify for this general permit use the Abbreviated Joint Permit Application For Noncommercial Riparian Shellfish Aquaculture Structures available at https://mrc.virginia.gov/forms/2019/VGP3_Aquaculture_form_2019.pdf ***do not use this Joint Permit Application***.

2. Will aquaculture structures be attached to an existing pier or other structure? ____ Yes ____ No.

3. The plat file # if proposed upon oyster planting ground lease(s).___________________________

4. The maximum area where enclosures are proposed. ___________ square feet

5. The maximum number of enclosures being proposed to be deployed. _____________

6. The species of shellfish to be cultured. ____________________________

7. A detailed description of the enclosures to include width, length and height.

8. In addition to the requirements itemized in Part 4 Project Drawings, the following additional information must be included on your project drawings: A general description of the area within 500 feet of deployment area. Provide a drawing that depicts existing marine resources such as SAV, shellfish beds, fixed fishing devices, public grounds, piers, water depths at mean low water, tide range, and the minimum clearance at mean low tide over the enclosures.

9. Provide the date enclosures are proposed to be deployed _______________. How will the structures be secured? ____.

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 3 – Appendices (continued)

10. List of all riparian land owners within 500 feet of the area where enclosures are proposed along with a map (tax map or other suitable map) depicting the locations of such parcels or riparian property owner acknowledgement forms signed by the riparian land owner with any comments concerning the enclosures deployment request.

11. Proof that the applicant holds a current oyster or clam aquaculture product owners permit, and verification that the applicant is in compliance with Mandatory Harvest Reporting requirements, and verification that the current years oyster ground rent is paid, if structures are proposed on an oyster ground lease.

Part 4 - Project Drawings

Plan view and cross-sectional view drawings are required for all projects. Application drawings do not need to be prepared by a professional draftsman, but they must be clear, accurate, and should be to an appropriate scale. If a scale is not used, all dimensions must be clearly depicted in the drawings. If available, a plat of the property should be included, with the existing and proposed structures clearly indicated. Distances from the proposed structure(s) to fixed points of reference (benchmarks) and to the adjacent property lines must be shown. A vicinity map (County road map, USGS Topographic map, etc.) must also be provided to show the location of the property. **NOTE:** The sample drawings have been included at the end of this section to provide guidance on the information required for different types of projects. Clear and accurate drawings are essential for project review and compliance determination. Incomplete or unclear drawings may cause delays in the processing of your application.

The following items must be included on ALL project drawings: (plan and cross-sectional, as appropriate)

- **name of project**
- **north arrow**
- **scale**
- **waterway name**
- **existing and proposed structures, labeled as such**
- **dimensions of proposed structures**
- **mean high water and mean low water lines**
- **all delineated wetlands and all surface waters on the site, including the Cowardin classification (i.e., emergent, scrub-shrub, or forested) for those surface waters (if applicable)**
- **limits of proposed impacts to surface waters, such as fill areas, riprap scour protection placement, and dredged areas, and the amount of such impacts in square feet and acres**
- **ebb/flood direction**
- **adjacent property lines and owner's name**
- **distances from proposed structures to fixed points of reference (benchmarks) and adjacent property lines**

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 5 - Chesapeake Bay Preservation Act Information

All proposed development, redevelopment, land disturbance, clearing or grading related to this Tidewater JPA must comply with the Chesapeake Bay Preservation Area Designation and Management Regulations, which are enforced through locally adopted Chesapeake Bay Preservation Area (CBPA) ordinances. Compliance with state and local CBPA requirements mandates the submission of a ***Water Quality Impact Assessment (WQIA)*** for the review and approval of the local government. Contact the appropriate local government office to determine if a WQIA is required for the proposed activity(ies).

Because the 84 local governments within Tidewater Virginia are responsible for enforcing the CBPA Regulations, the completion of the JPA process does not constitute compliance with the Bay Act Regulations nor does it guarantee that the local government will approve encroachments into the RPA that may result from this project. Applicants should contact their local government as early in the design process as possible to ensure that the final design and construction of the proposed project meets all applicable CBPA requirements. Early cooperation with local government staff can help applicants avoid unnecessary and costly delays to construction. Applicants should provide local government staff with information regarding existing vegetation within the Resource Protection Area (RPA) as well as a description and site drawings of any proposed land disturbance, construction, or vegetation clearing. As part of their review and approval processes, local government staff will evaluate the proposed project and determine whether or not approval can be granted. Once the locality has made a decision on the project, they will advise the Local Wetlands Boards and other appropriate parties of applicable CBPA concerns or issues.

Resource Protection Areas (RPAs) are composed of the following features:

1. **Tidal wetlands;**
2. **Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;**
3. **Tidal shores;**
4. **Other lands considered by the local government to meet the provisions of subsection A of 9VAC25-830-80 and to be necessary to protect the quality of state waters; and**
5. **A buffer area not less than 100 feet in width located adjacent to and landward of the components listed in subdivisions 1 through 4 above, and along both sides of any water body with perennial flow.**

Notes for all projects in RPAs

Development, redevelopment, construction, land disturbance, or placement of fill within the RPA features listed above requires the approval of the locality and may require an exception or variance from the local Bay Act ordinance. Please contact the appropriate local government to determine the types of development or land uses that are permitted within RPAs.

Pursuant to 9VAC25-830-110, on-site delineation of the RPA is required for all projects in CBPAs. Because USGS maps are not always indicative of actual "in-field" conditions, they may not be used to determine the site-specific boundaries of the RPA.

Notes for shoreline erosion control projects in RPAs

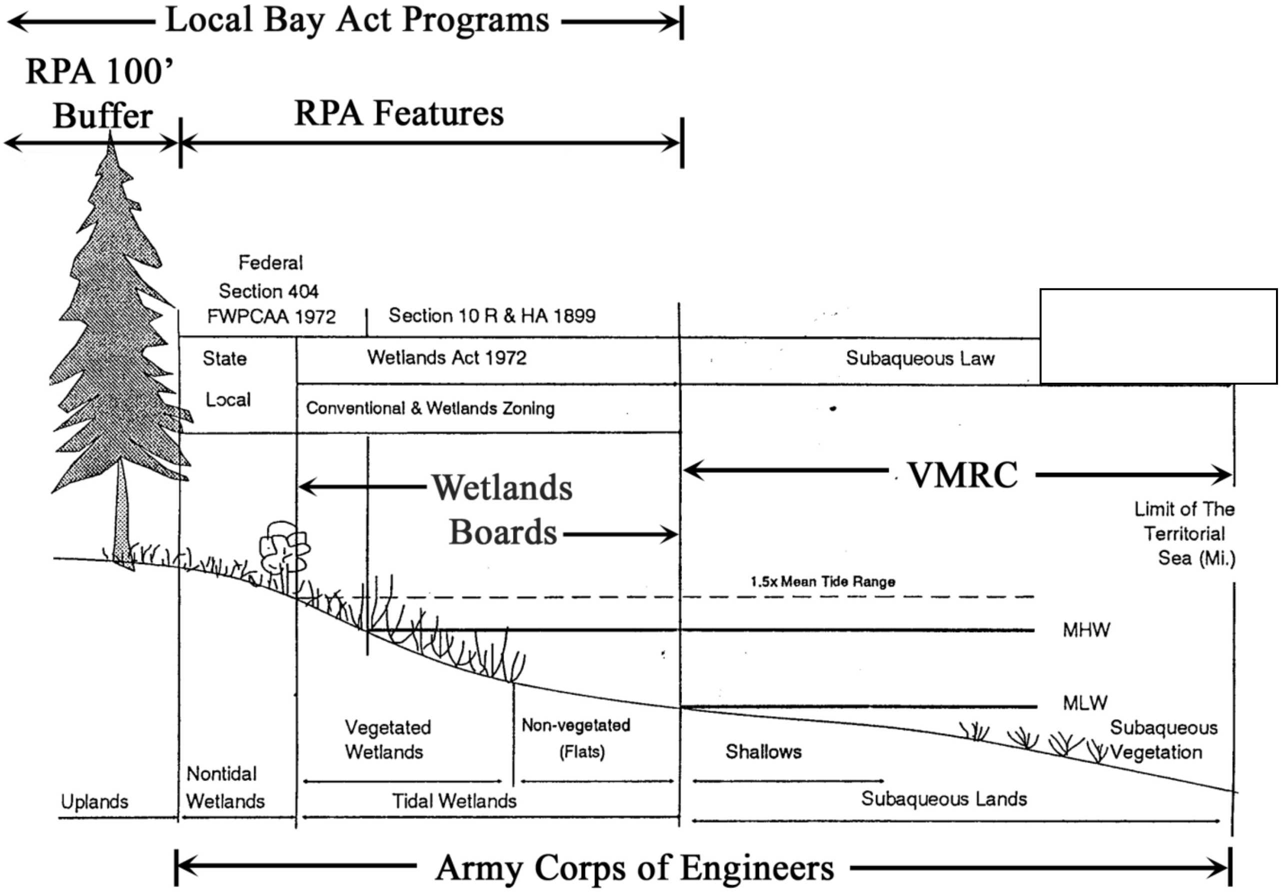
Re-establishment of woody vegetation in the buffer will be required by the locality to mitigate for the removal or disturbance of buffer vegetation associated with your proposed project. Please contact the local government to determine the mitigation requirements for impacts to the 100-foot RPA buffer.

Part 5 - Chesapeake Bay Preservation Act Information (continued)

Pursuant to 9VAC25-830-140 5 a (4) of the Virginia Administrative Code, shoreline erosion projects are a permitted modification to RPAs provided that the project is based on the "best technical advice" and complies with applicable permit conditions. In accordance with 9VAC25-830-140 1 of the Virginia Administrative Code, the locality will use the information provided in this Part V, in the project drawings, in this permit application, and as required by the locality, to make a determination that:

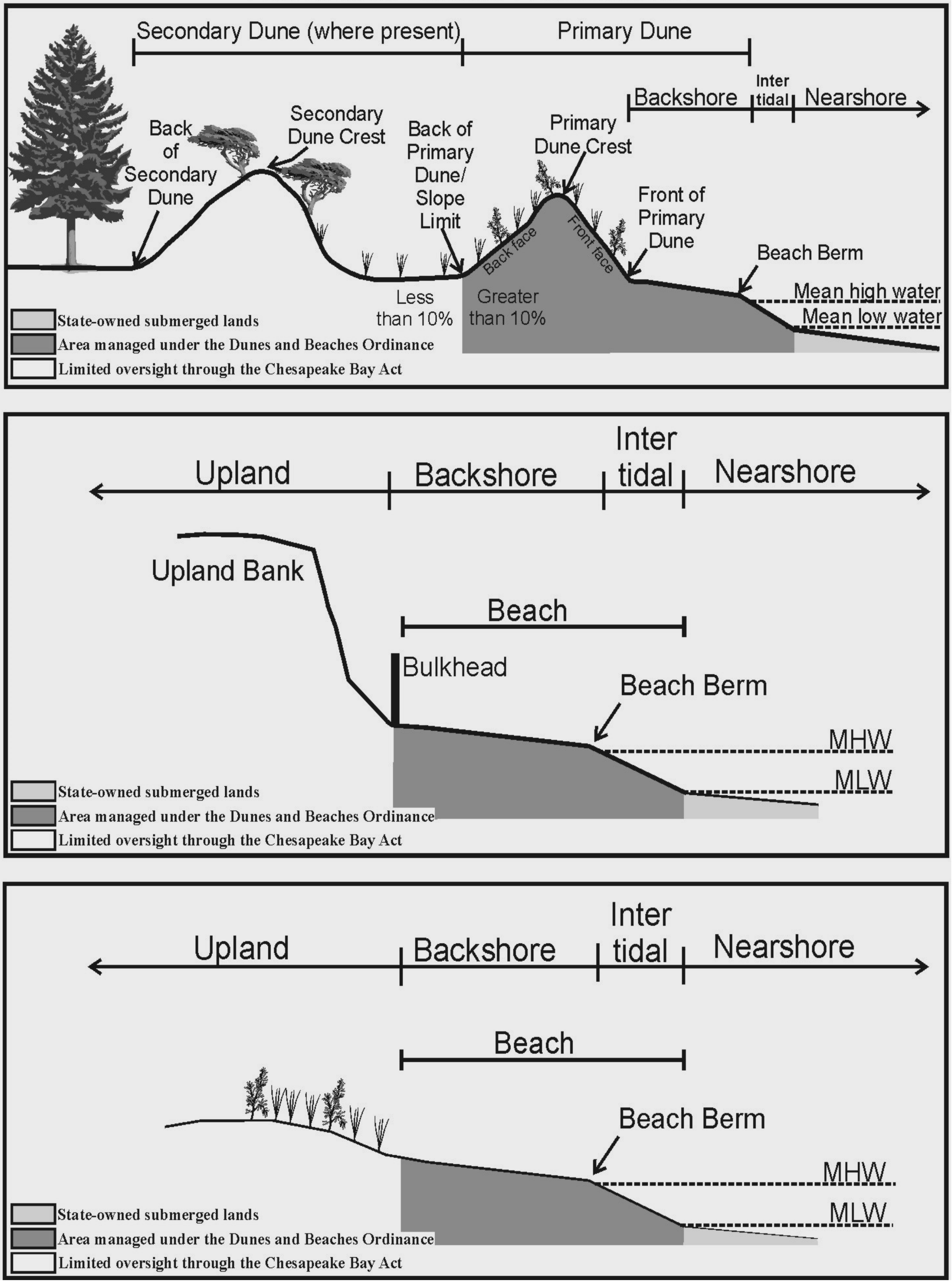
1. Any proposed shoreline erosion control measure is necessary and consistent with the nature of the erosion occurring on the site, and the measures have employed the "best available technical advice"
2. Indigenous vegetation will be preserved to the maximum extent practicable
3. Proposed land disturbance has been minimized
4. Appropriate mitigation plantings will provide the required water quality functions of the buffer (9VAC25-830-140 3)
5. The project is consistent with the locality's comprehensive plan
6. Access to the project will be provided with the minimum disturbance necessary.

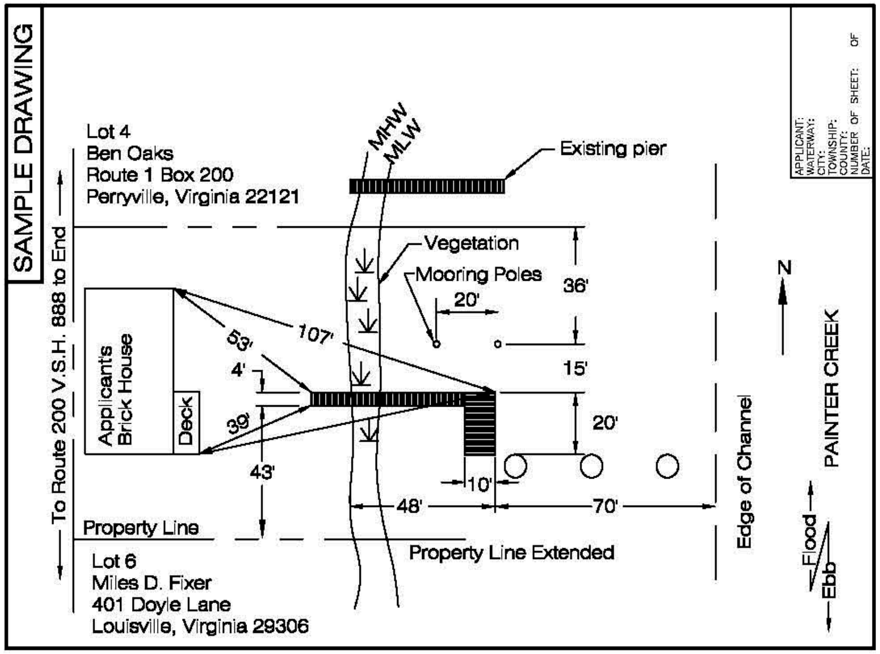
JURISDICTIONAL BOUNDARIES

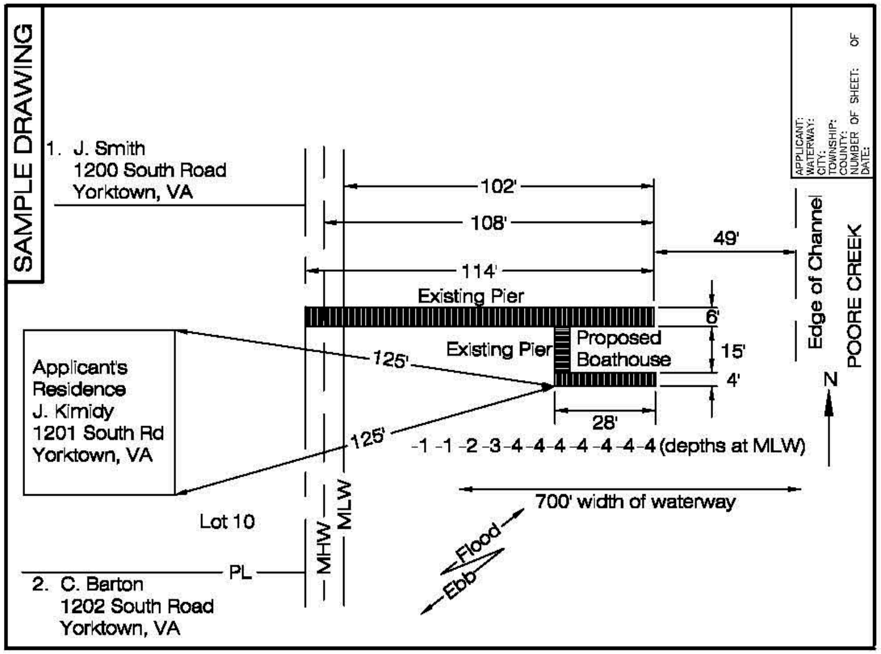


and DEQ (including isolated wetlands)

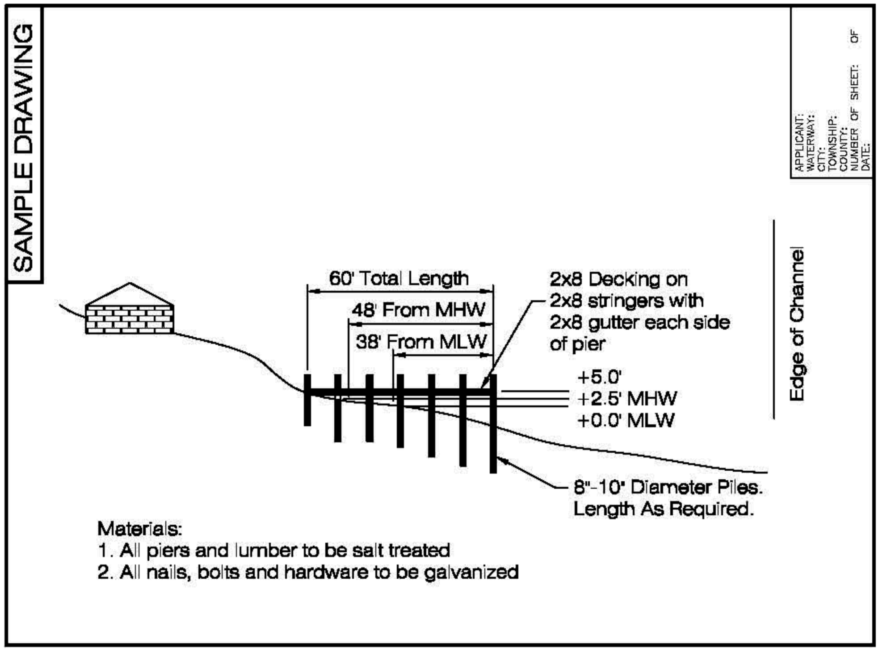
Dune and Beach Boundaries



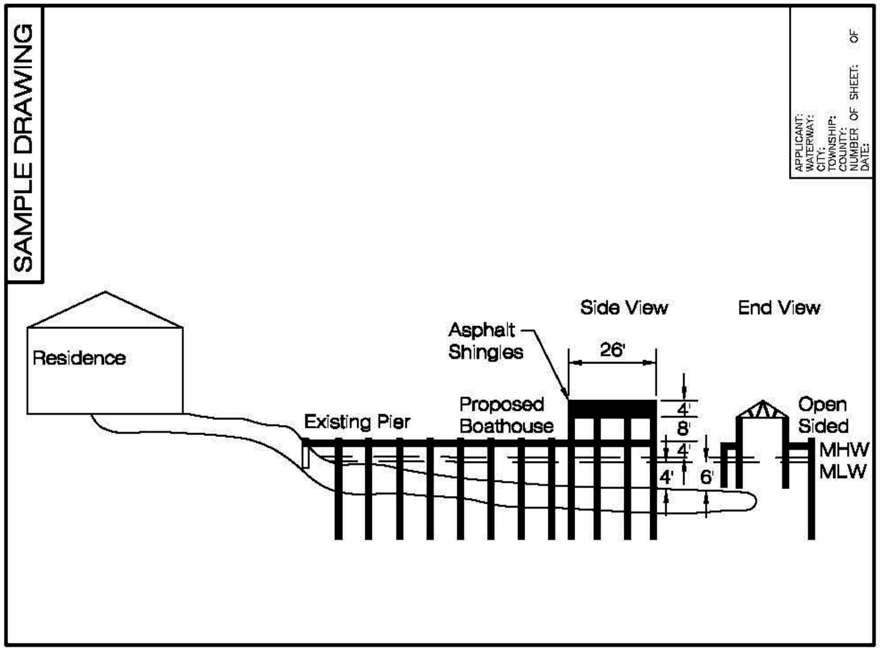




Private Piers & Marginal Wharves



Materials:
1. All piers and lumber to be salt treated
2. All nails, bolts and hardware to be galvanized



Boathouses

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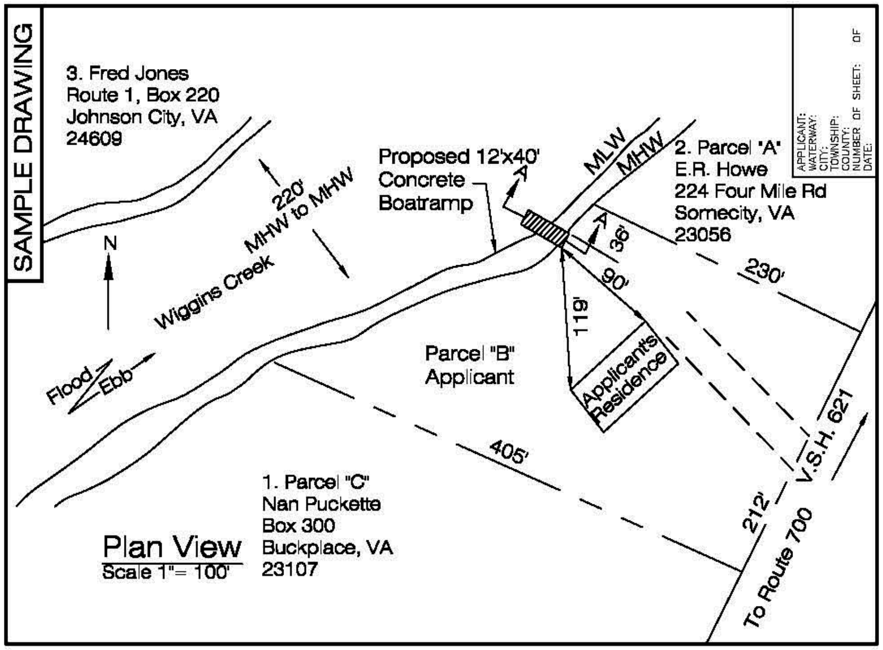
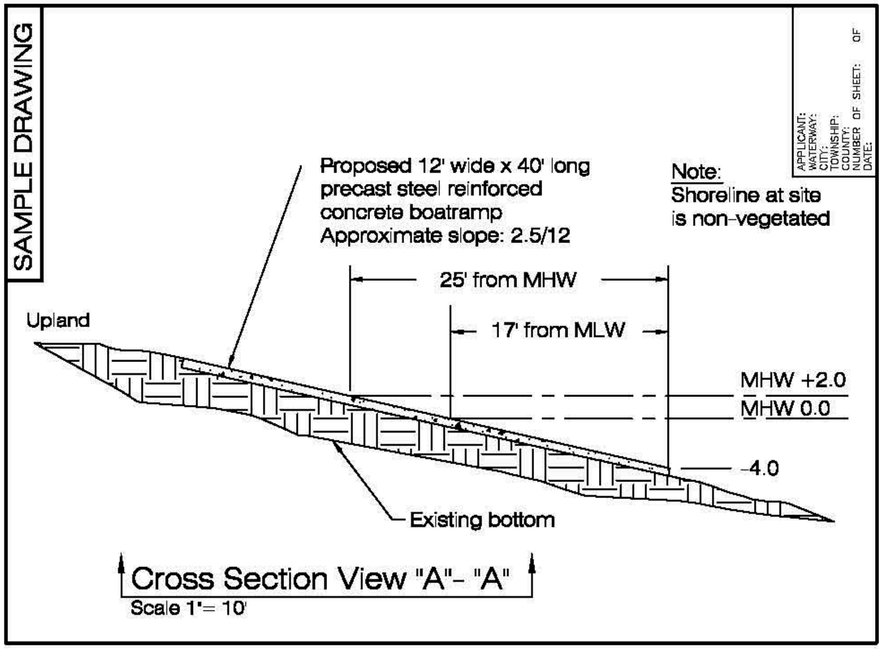
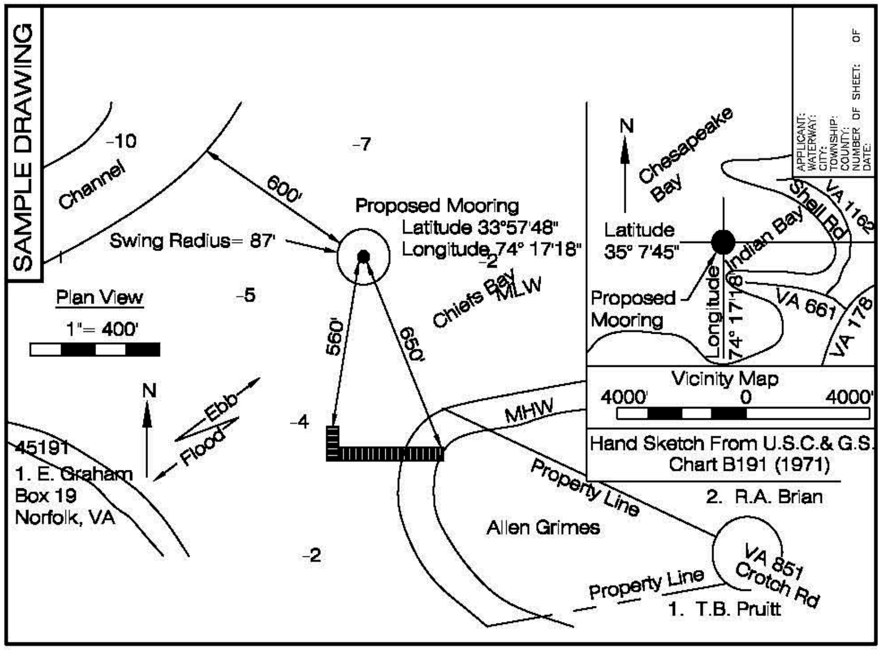
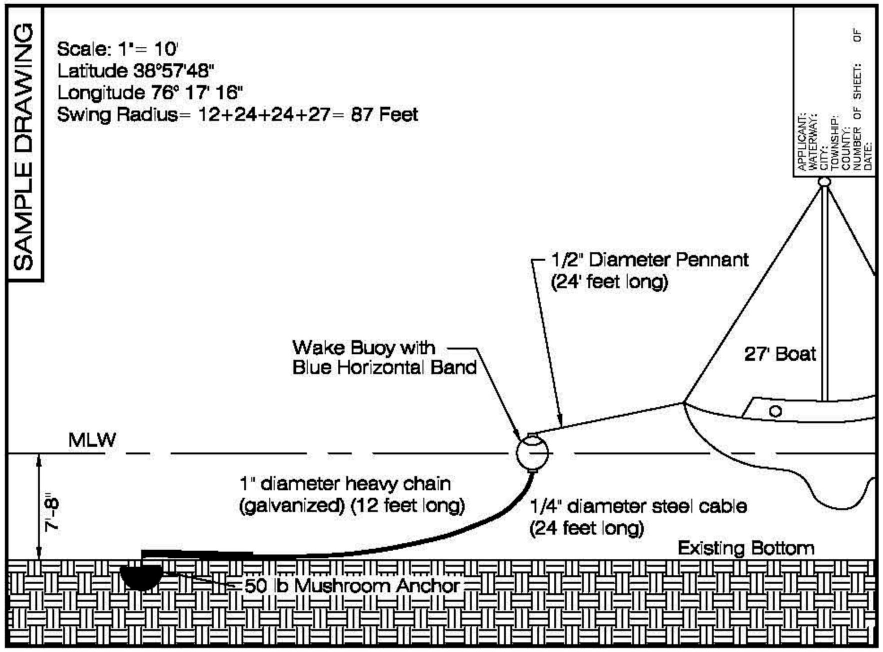
Boat Ramps





Dolphins or Moorings





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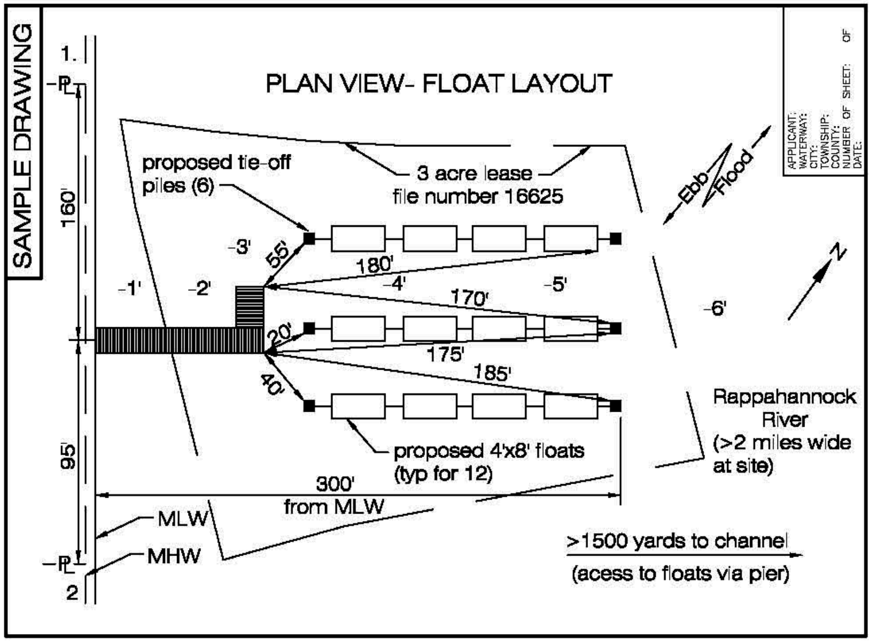
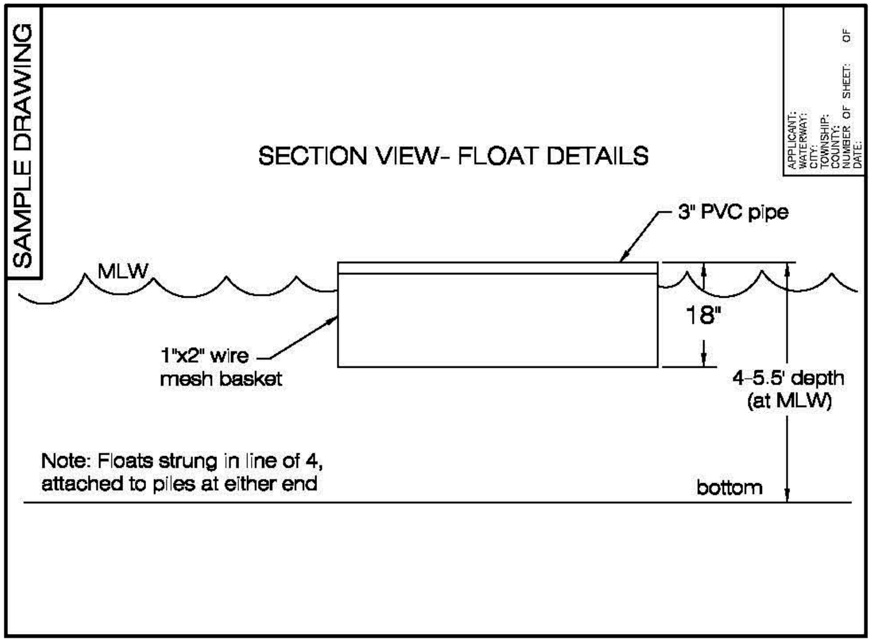
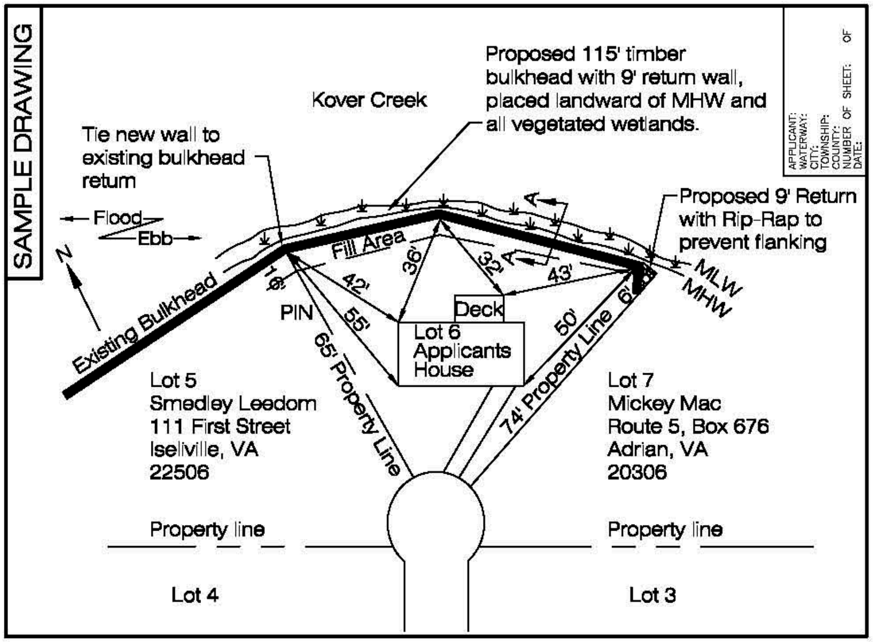
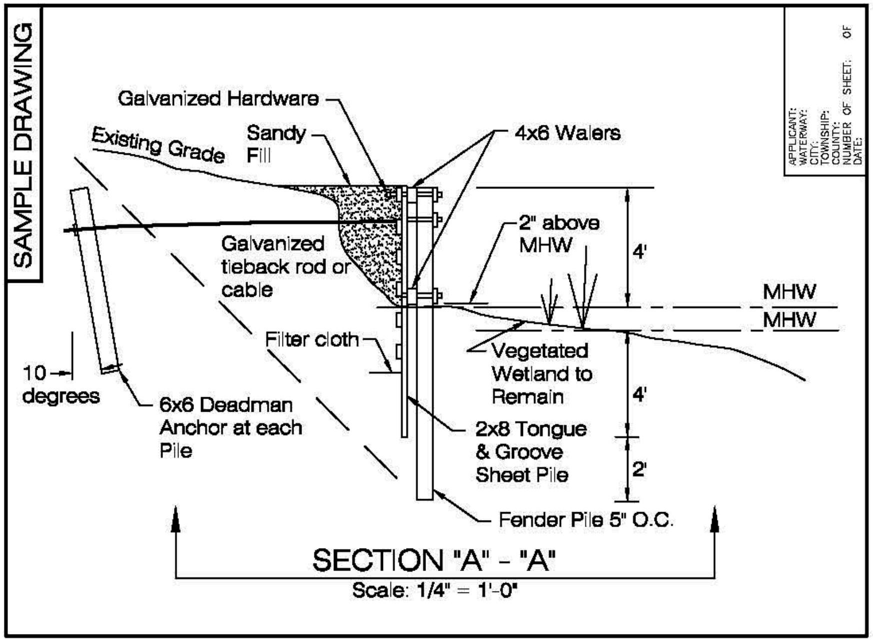




Private & Commercial Aquaculture Activities





Bulkheads and Associated Backfill

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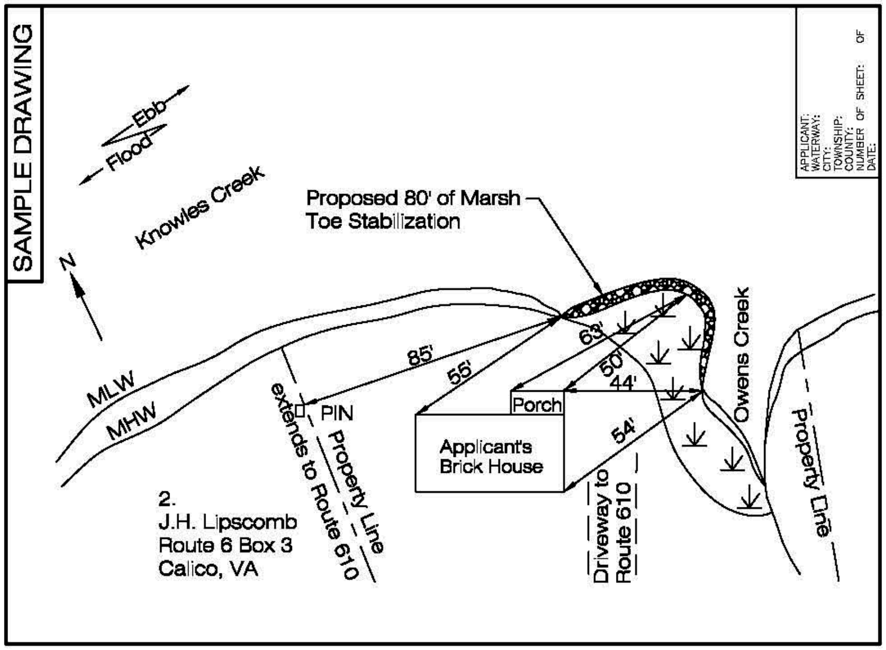
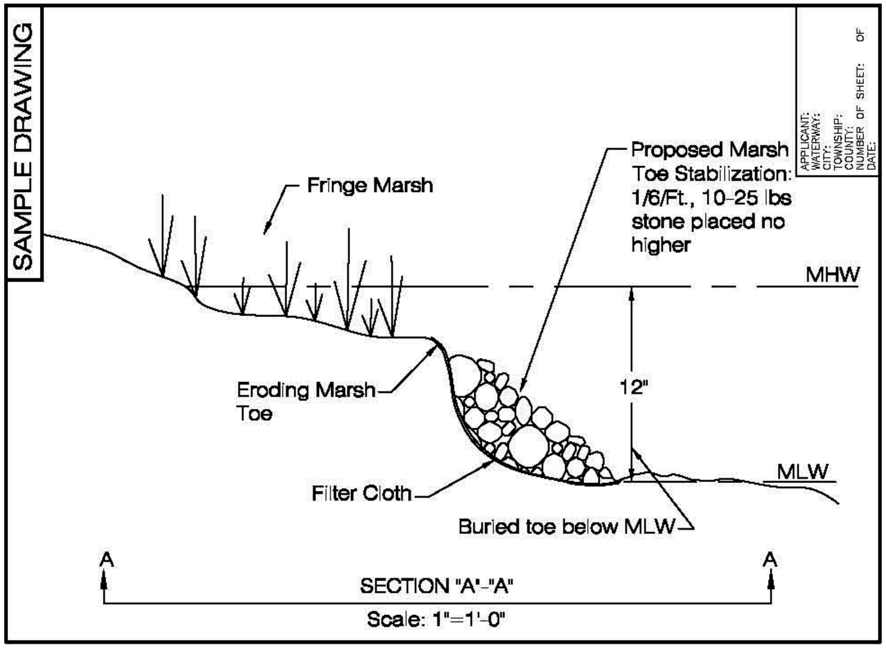
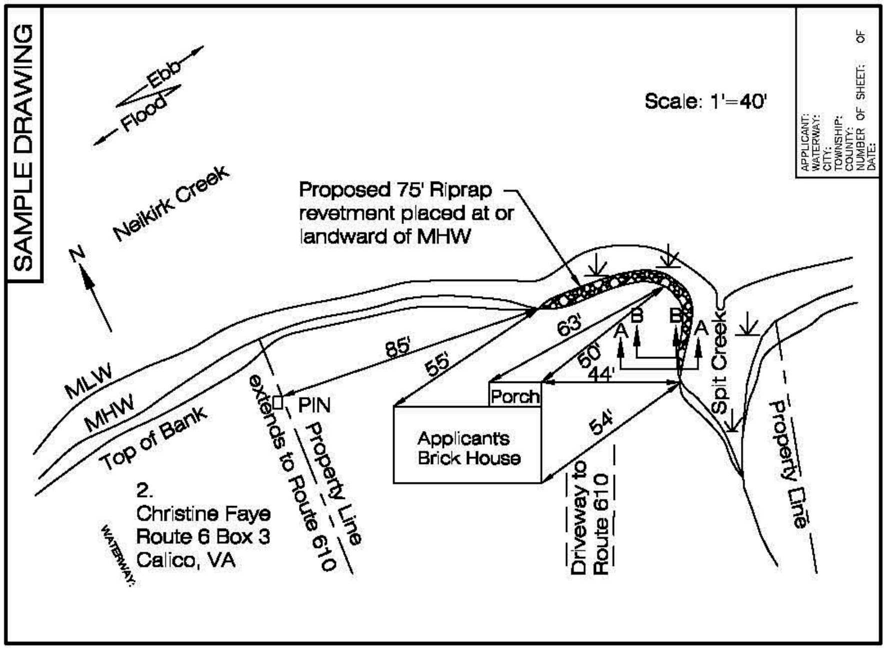
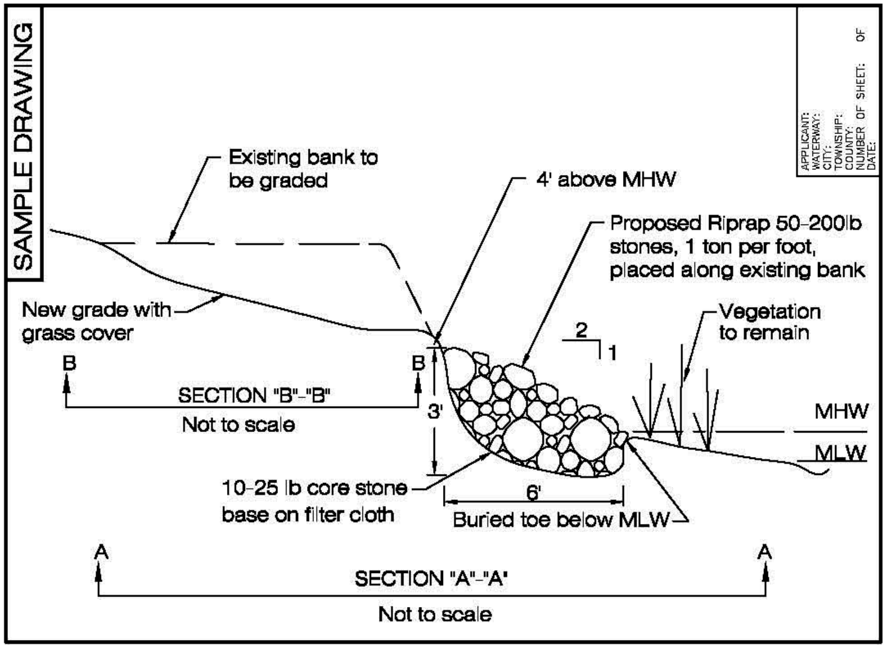




Marsh Toe Stabilization





Riprap Revetment & Associated Backfill

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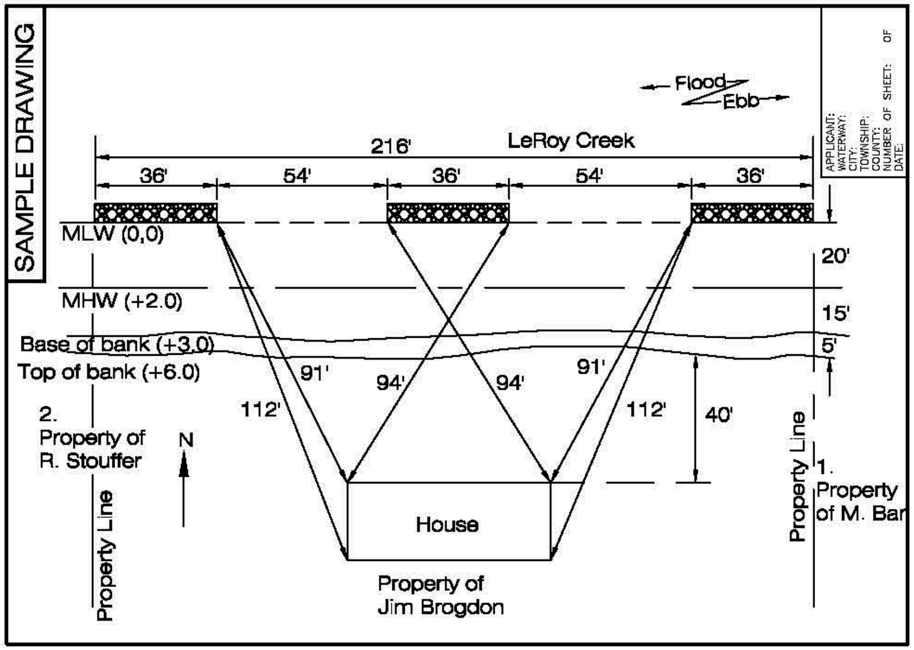
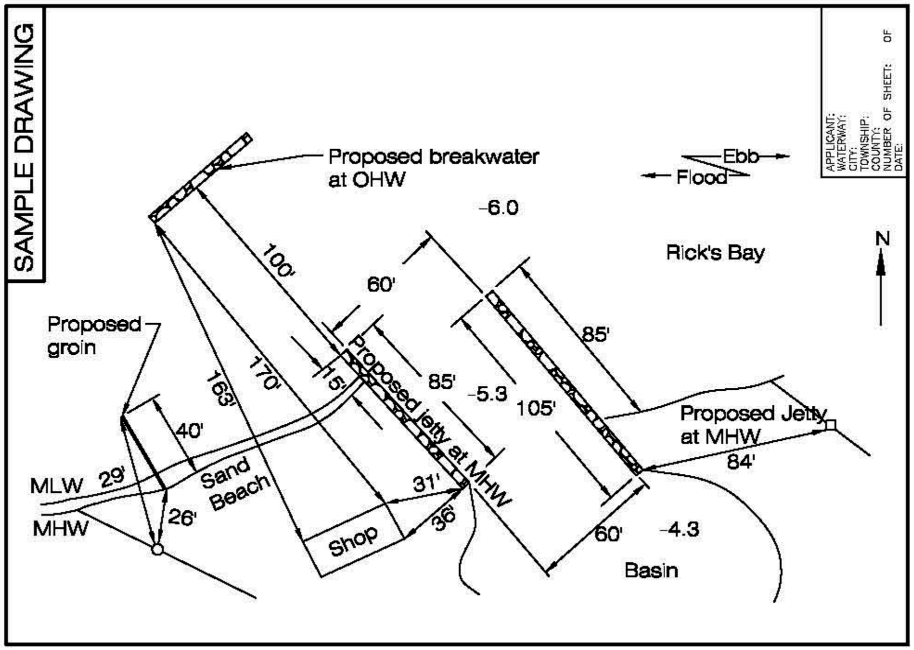
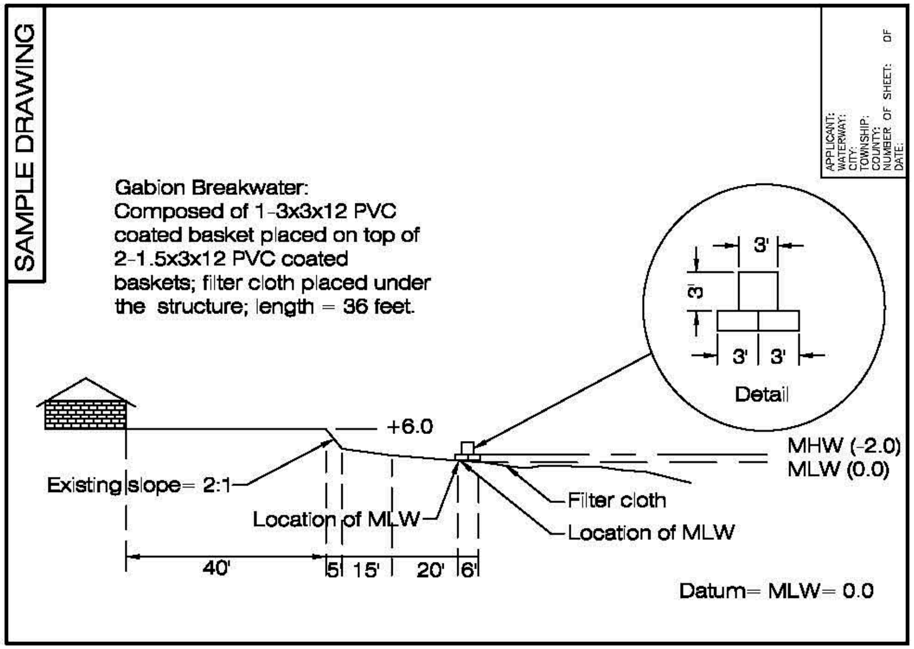
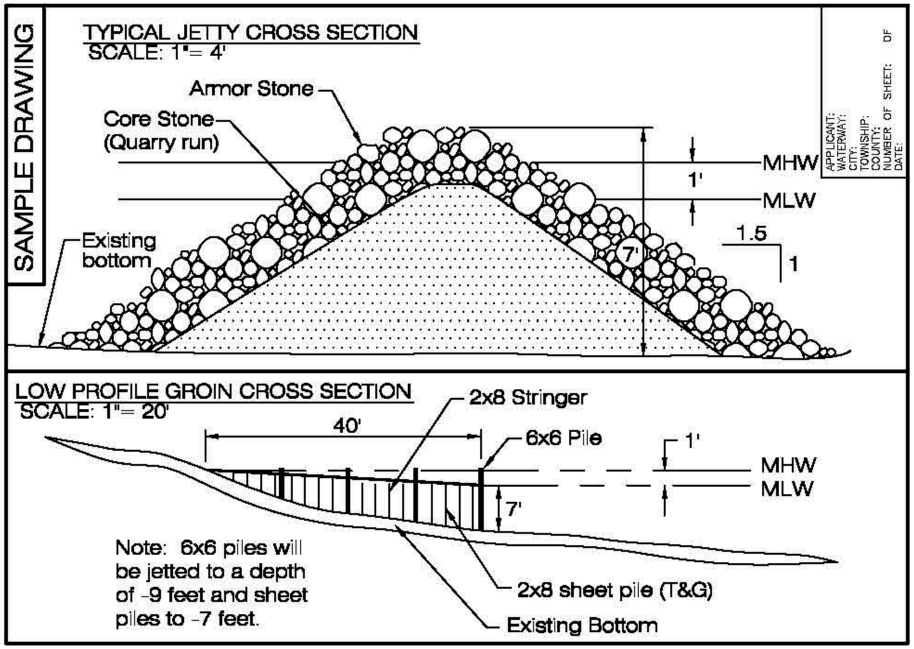
Breakwaters







Gabion Breakwater:
Composed of 1-3x3x12 PVC coated basket placed on top of 2-1.5x3x12 PVC coated baskets; filter cloth placed under the structure; length = 36 feet.



Note: 6x6 piles will be jetted to a depth of -9 feet and sheet piles to -7 feet.

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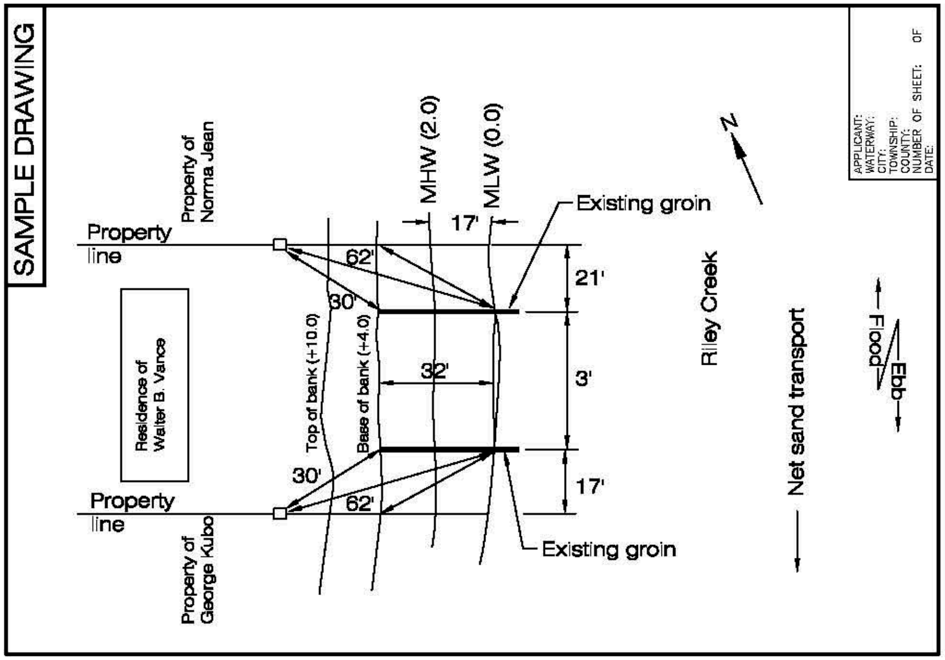

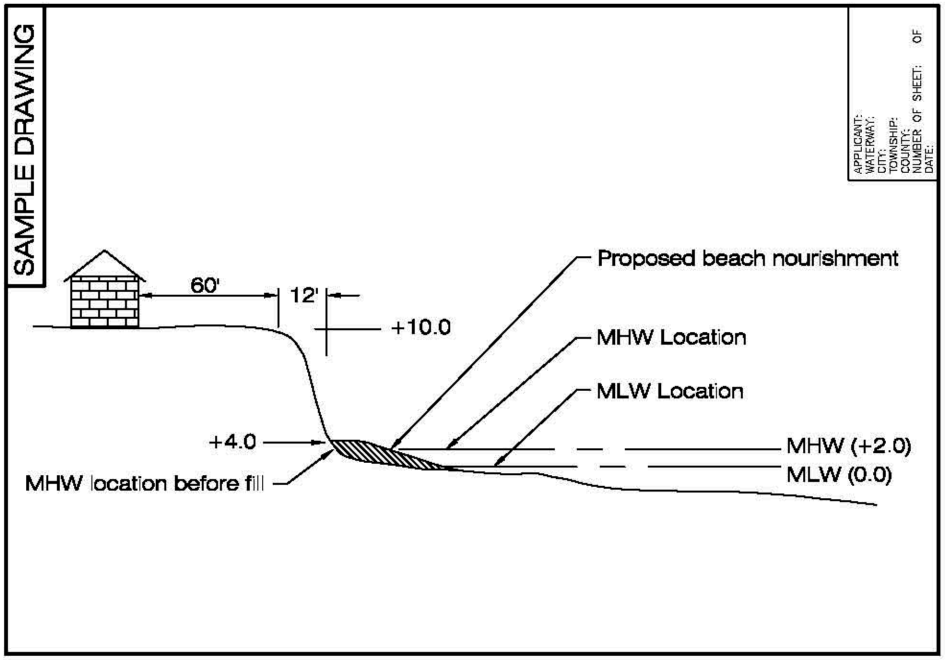

Beach Nourishment

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(http://www.kingandqueenco.net/)

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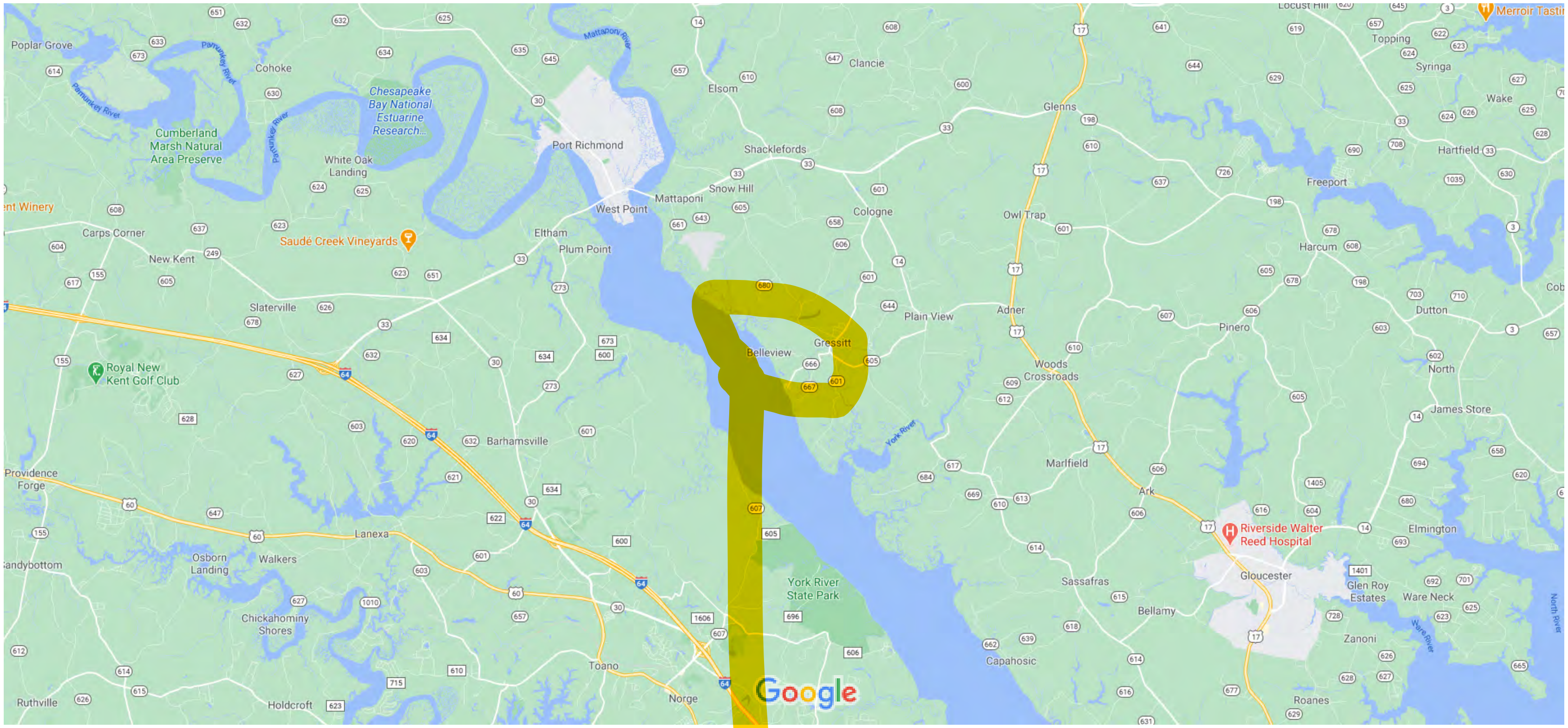
Google Maps



Map data ©2020 2 mi

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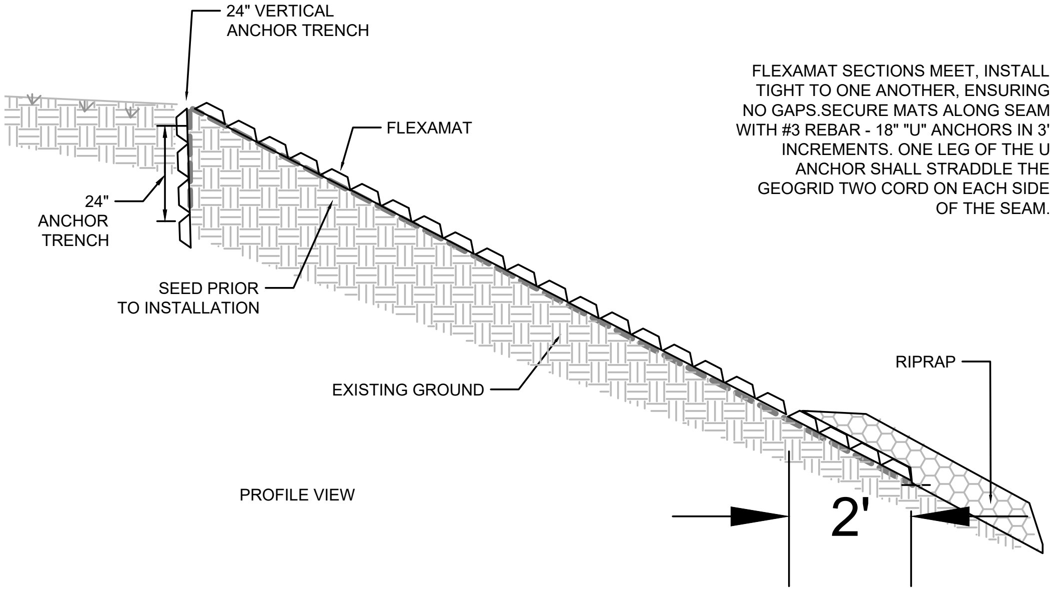
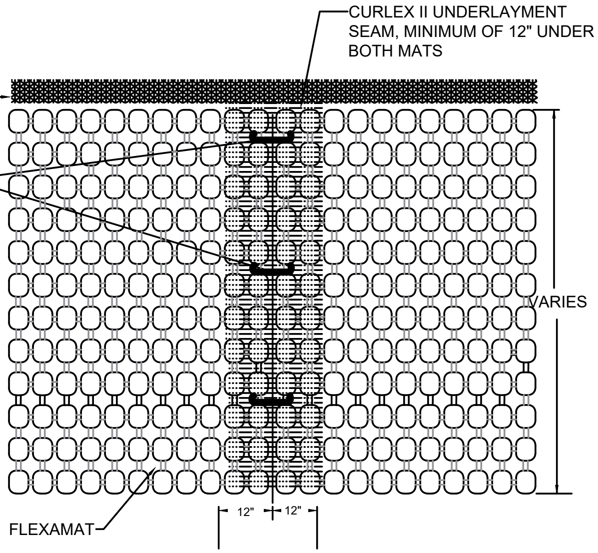


PROFILE VIEW



PROFILE VIEW - LONGITUDINAL SEAM

CONSTRUCTION NOTES:

1. GRADE A UNIFORM SUBGRADE. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND. THE PREPARED SURFACE SHALL PROVIDE A FIRM UNYIELDING FOUNDATION FOR THE MATS.
2. APPLY SEED DIRECTLY TO THE PREPARED SOIL PRIOR TO INSTALLATION OF MATS. USE SEED AND /OR TOPSOIL PER PROJECT SPECIFICATIONS.
3. FLEXAMAT SHALL EXTEND A MINIMUM OF 2' BEYOND THE RIPRAP ALONG TOE OF MAT.
4. AT ANY SEAMS IN THE MAT, THE FLEXAMAT SHALL BE MANUALLY FLIPPED BACK 3' THE LENGTH OF THE SEAM ON BOTH ADJACENT MATS. RECYCLEX TRM UNDERLAYMENT SHALL BE INSTALLED UNDER THE SEAM, WITH A MINIMUM OF 12" OF THE UNDERLAYMENT UNDER EITHER MAT. MAT SHALL THEN BE MANUALLY FLIPPED BACK INTO PLACE SO THAT THE FLEXAMAT SECTIONS FIT TIGHTLY. A CONCRETE SAW MAY BE NECESSARY TO CUT MAT TO FIT TIGHTLY TO ADJACENT SECTION OF MAT.
5. SECURE SEAMS WITH #3 REBAR - 18" "U' ANCHORS IN 3' INCREMENTS. ONE LEG OF THE "U" ANCHORS SHALL EXTEND OVER GEOGRID CORDS ON EITHER SIDE OF THE SEAM. .
6. SECURE INITIAL LEADING EDGE OF THE TOP OF MAT IN 24" DEEP ANCHOR TRENCH.

FLEXAMAT® INFORMATION

Manufacturer:	Motz Enterprises, Inc.
Product Name:	Flexamat
Address:	3153 Madison Road Cincinnati, Ohio 45209
Telephone:	513-772-6689
Email:	Info@Flexamat.com
Website:	www.Flexamat.com

FLEXAMAT ®
SHORELINE ARMORING UNDER RIPRAP - WAVE ACTION
INSTALLATION DETAIL

Flexamat

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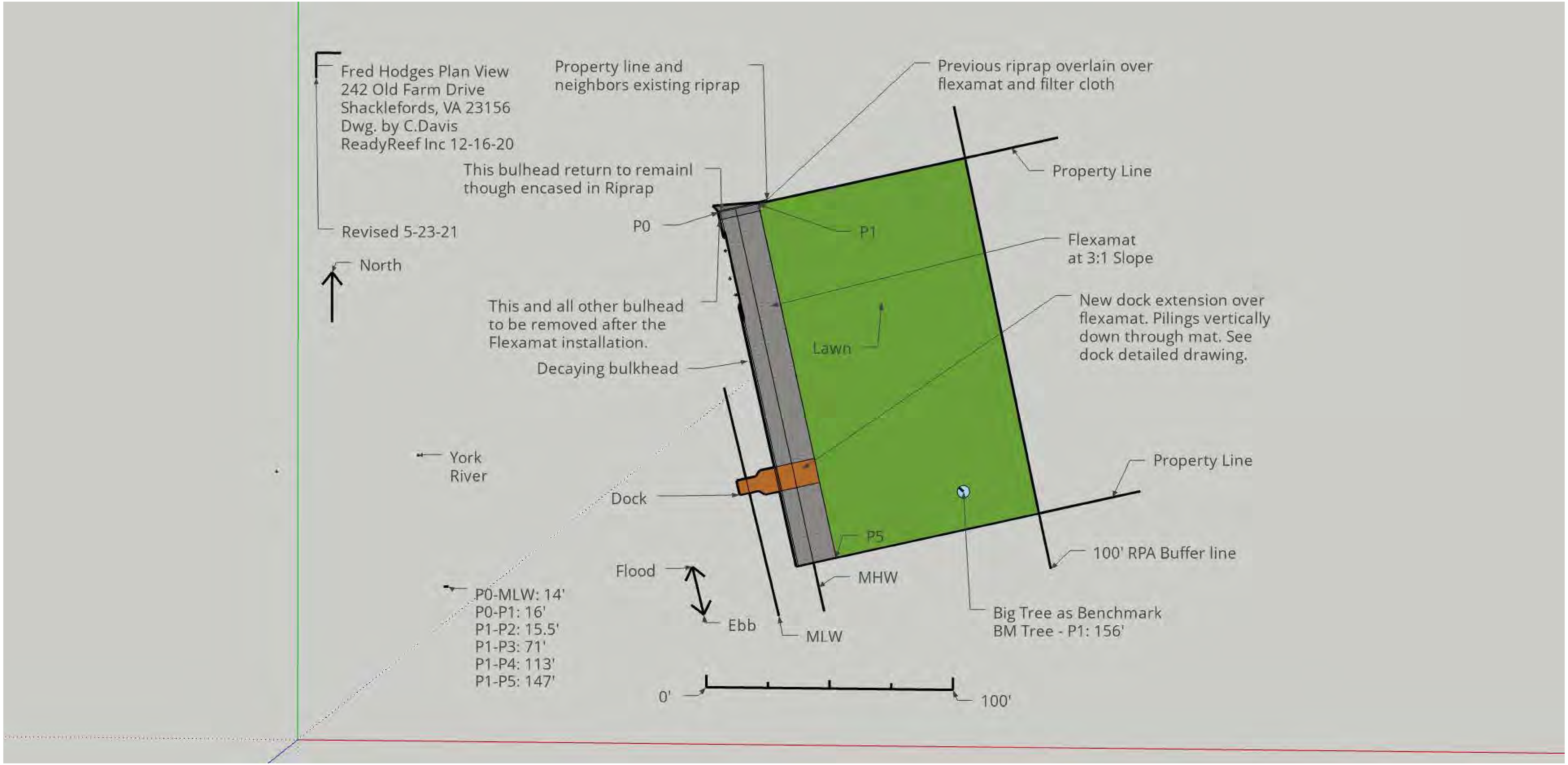

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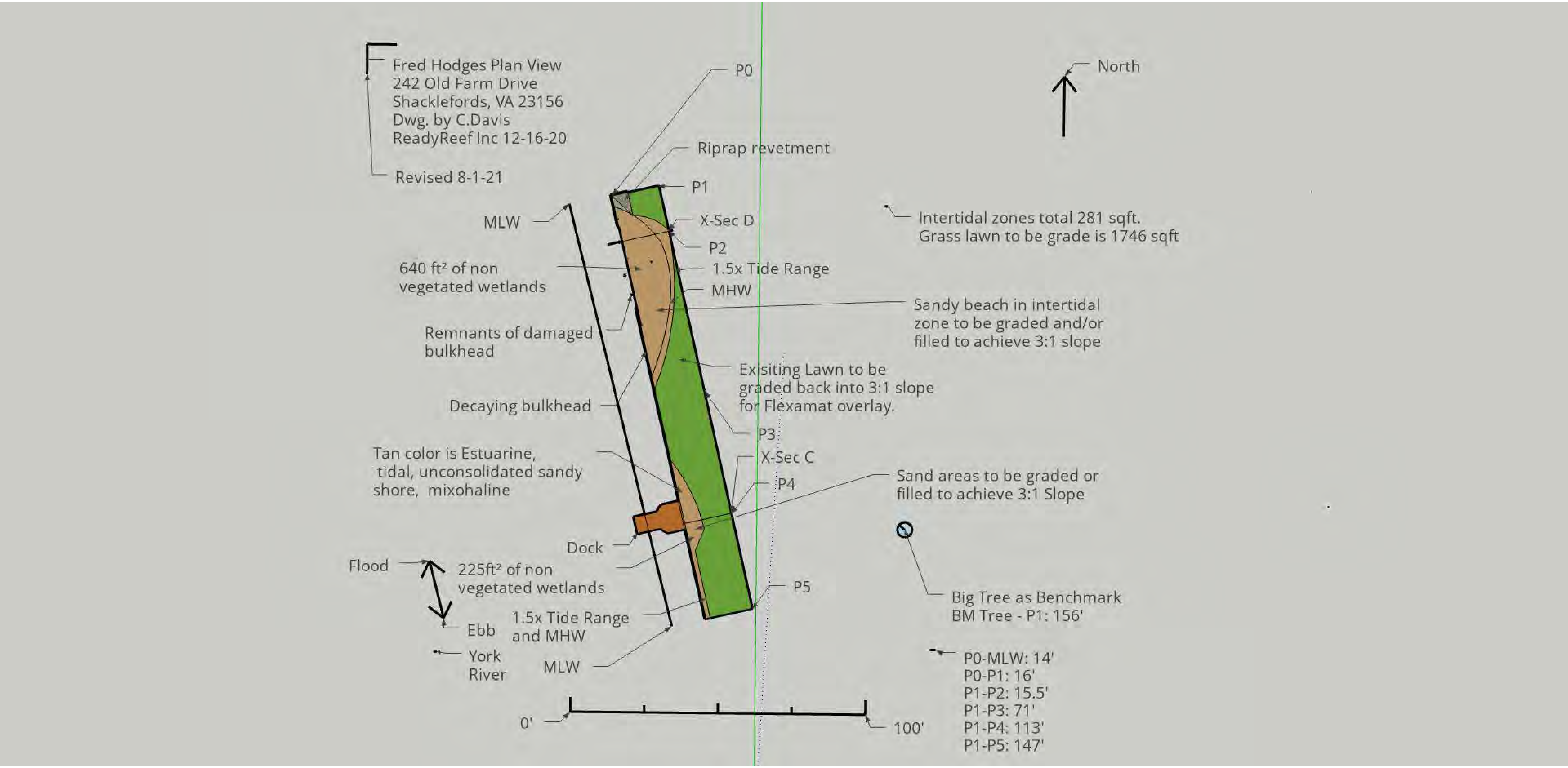

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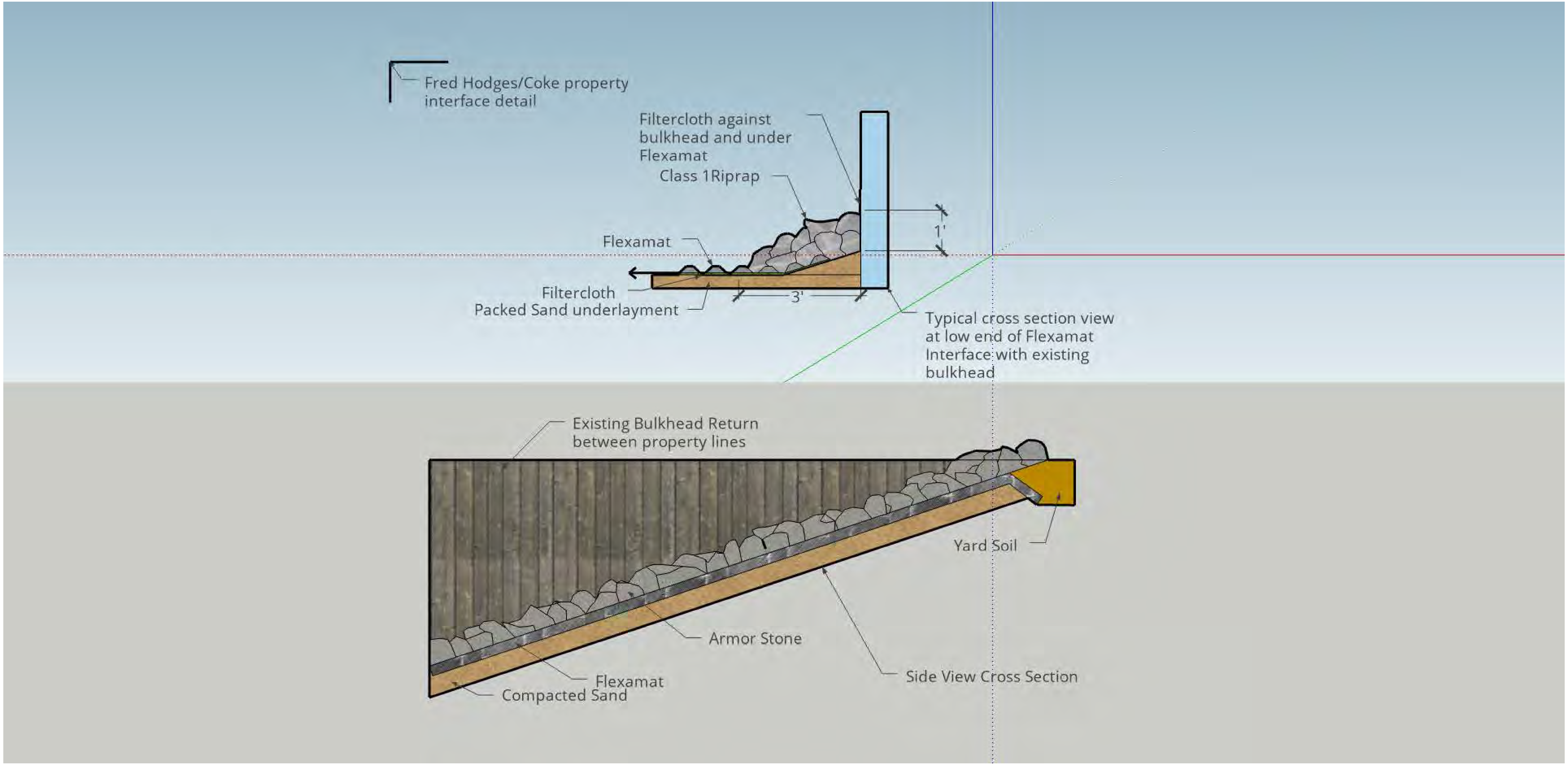
Fred Hodges/Coke property interface detail
Filtercloth against bulkhead and under Flexamat
Class 1Riprap
Flexamat
1'
Filtercloth
Packed Sand underlayment
3'
Typical cross section view at low end of Flexamat Interface with existing bulkhead
Existing Bulkhead Return between property lines
Yard Soil
Armor Stone
Side View Cross Section
Flexamat
Compacted Sand

Flexamat – Tied Concrete Block Mats

1. DESCRIPTION

Flexamat – Tied Concrete Block Erosion Control Mats

This work shall consist of furnishing and placing the Flexamat system in accordance with this specification and conforming with the lines, grades, design, and dimensions shown on the plans.

2. MATERIALS

Flexamat is manufactured from individual concrete blocks tied together with high strength polypropylene bi-axial geogrid. Each block is tapered, beveled and interlocked and includes connections that prevent lateral displacement of the blocks within the mats when they are lifted for placement.

Tied Concrete Block Mats shall be Flexamat, manufactured by Motz Enterprises, Inc. or approved equal (See Section 3, Alternative Products).

2.1. **Blocks.** Furnish blocks manufactured with concrete conforming to the cement requirements of ASTM C150 and to the aggregate requirements of ASTM C33. Meet a minimum compressive strength of 5,000 psi at 28 days. Furnish blocks that have a minimum weight of 3 lb. per block. Blocks shall be placed no further than 2 in. apart.

2.2. **Polypropylene Bi-Axial Geogrid.** Provide revetment mat that is constructed of a high tenacity, low elongating, and continuous filament polypropylene fibers that is securely cast into and embedded within the base of the concrete blocks and obtains connection strength greater than that of the geogrid. Ensure the geogrid meets the requirements of Table 1:

Table1
Polypropylene Bi-Axial Geogrid

Description	Requirement
UV Stabilization	2% Carbon Black
Ultimate Tensile Strength	2055 lb./lf

2.3. **Underlayment Materials** – Three backing options:

- Standard Flexamat – Includes Curlex® II backing
- Flexamat Plus – Includes both Curlex® II and Recyclex TRM-V
- Flexamat with Filter Fabric – Includes non-woven filter fabric backing.

The backing material shall be packaged within roll of Flexamat.

Curlex® II:

Curlex II erosion control blanket (ECB) consists of a specific cut of naturally seed free Great Lakes Aspen curled wood excelsior with 80% six-inch fibers or greater fiber length. It is of consistent thickness with fibers evenly distributed throughout the entire area of the blanket. The top and bottom of each blanket is covered with degradable polypropylene netting.

Index Property	**Test Method**	**Value**
Thickness	ASTM D 6525	0.418 in (10.62 mm)
Light Penetration	ASTM D 6567	34.6%
Resiliency	ASTM D 6524	64%
Mass per Unit Area	ASTM D 6475	0.57 lb/yd^2 (309 g/m^2)
MD-Tensile Strength Max.	ASTM D 6818	127.0 lb/ft (1.9 kN/m)
TD-Tensile Strength Max.	ASTM D 6818	50.9 lb/ft (0.7 kN/m)
MD-Elongation	ASTM D 6818	28.64%
TD-Elongation	ASTM D 6818	29.84%
Swell	ECTC Procedure	89%
Water Absorption	ASTM D 1117/ECTC	199%
Bench-Scale Rain Splash	ECTC Method 2	SLR = 6.84 @ 2 in/hr [2,3]
Bench-Scale Rain Splash	ECTC Method 2	SLR = 7.19 @ 4 in/hr [2,3]
Bench-Scale Rain Splash	ECTC Method 2	SLR = 7.56 @ 6 in/hr [2,3]
Bench-Scale Shear	ECTC Method 3	2.6 lb/ft^2 @ 0.5 in soil loss [3]
Germination Improvement	ECTC Method 4	645%

[1] Weight is based on a dry fiber weight basis at time of manufacture. Baseline moisture content of Great Lakes Aspen excelsior is 22%.

[2] SLR is the Soil Loss Ratio, as reported by NTPEP/AASHTO. [3] Bench-scale index values should not be used for design purposes.

Recyclex® TRM:

Recyclex TRM – V is a permanent non-degradable Turf Reinforcement Mat (TRM), consists of 100% post-consumer recycled polyester (green or brown bottles) with 80% five-inch fibers or greater fiber length. It is of consistent thickness with fibers evenly distributed throughout the entire area of the TRM. The top and bottom of each TRM is covered with heavy duty polypropylene net. Fibers are tightly crimped and curled to allow fiber interlock, and to retain 95% memory of the original shape after loading by hydraulic events. Fibers have a specific gravity greater than 1.0; therefore, the blanket will not float during hydraulic events. Recyclex TRM – V meets Federal Government Executive Order initiatives for use of products made from, or incorporating, recycled materials. Recyclex TRM – V shall be manufactured in the U.S.A. and the fibers shall be made from 100a% recycled post-consumer goods.

Index Property	**Test Method**	**Value**
Thickness	ASTM D 6525	0.294 in (7.47 mm)
Light Penetration	ASTM D 6567	57%
Resiliency	ASTM D 6524	86%
Mass per Unit Area	ASTM D 6566	0.50 lb/yd^2 (271 g/m^2)
MD-Tensile Strength Max.	ASTM D 6818	295.2 lb/ft (4.32 kN/m)
TD-Tensile Strength Max.	ASTM D 6818	194.4 lb/ft (2.85 kN/m)
MD-Elongation	ASTM D 6818	32.2%
TD-Elongation	ASTM D 6818	40.8%
Swell	ECTC Procedure	8%
Water Absorption	ASTM D 1117/ECTC	33.8%
Specific Gravity	ASTM D 792	1.21
UV Stability	ASTM D 4355 (1,000 hr)	80% minimum
Porosity	Calculated	97.5%
Bench-Scale Rain Splash	ECTC Method 2	SLR = 4.13 @ 2 in/hr [1,2]
Bench-Scale Rain Splash	ECTC Method 2	SLR = 4.97 @ 4 in/hr [1,2]
Bench-Scale Rain Splash	ECTC Method 2	SLR = 5.99 @ 6 in/hr [1,2]
Bench-Scale Shear	ECTC Method 3	2.40 lb/ft^2 @ 0.5 in soil loss [2]
Germination Improvement	ECTC Method 4	353%

[1] SLR is the Soil Loss Ratio, as reported by NTPEP/AASHTO. [2] Bench-scale index values should not be used for design purposes

10oz non-woven filter fabric:

The underlayment material shall be packaged in roll of Flexamat and shall meet the following characteristics:

Property	Test Method	English	Metric
Weight - Typical	ASTM D-5261	10 oz/sy	339 g/sm
Tensile Strength	ASTM D-4632	250 lbs	1,112 N
Elongation @ Break	ASTM D-4632	50%	50%
Mullen Burst*	ASTM D-3786*	500 psi	3,447 kPa
Puncture Strength*	ASTM D-4833*	155 lbs	690 N
CBR Puncture	ASTM D-6241	700 lbs	3,115 N
Trapezoidal Tear	ASTM D-4533	100 lbs	444 N
Apparent Opening Size	ASTM D-4751	100 US Sieve	0.150 mm
Permittivity	ASTM D-4491	1.20 Sec-1	1.20 Sec-1
Water Flow Rate	ASTM D-4491	80 g/min/sf	3,251 l/min/sm
UV Resistance @ 500 Hours	ASTM D-4355	70%	70%

2.4. Cover the mat or otherwise protect it during long periods of storage to protect against degradation of the backing material as recommended by the manufacturer.

2.5. Mats will be rolled for shipment and are packaged with handling straps. These handling straps shall only be used for lifting below 2 ft. to place heavy duty lifting straps under rolls. Upon delivery, rolls may be left exposed for up to 30 days. If exposure will exceed 30 days, cover or tarp the rolls to minimize UV exposure.

All mats to be inspected upon delivery. Assure that all units are sound and free of defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction.

Chipping or missing concrete resulting in a weight loss exceeding 15% of the average weight of a concrete unit is grounds for rejection by the engineer. Replace, repair or patch the damaged areas per the manufacturer’s recommendations.

3. ALTERNATIVE PRODUCTS

Alternative products may be considered if composition matches the materials detailed in Section 2. Such products must be pre-approved in writing by the Engineer prior to bid date. Alternative product packages must be submitted to the Engineer a minimum of fifteen (15) days prior to bid date. Submittal packages for alternate products must include, as a minimum, the following:

a. Product Properties – Composition of materials, stating product is comprised of the following components:

   i. Concrete Blocks - minimum compressive strength of 5,000 psi at 28 days. Furnish blocks that have a minimum weight of 3 lb. per block. Blocks shall be placed no further than 2 in. apart.

   ii. Polypropylene Bi-Axial Geogrid – minimum tensile strength of 2055lbs

   iii. Underlayment - Minimum of a double-net excelsior (wood fiber) blanket, plus additional turf reinforcement or filter fabric as specified by design engineer. Underlayment must be packaged within the Tied Concrete Block Mat rolls.

b. Full-Scale laboratory testing performed by an independent 3rd party testing facility with associated engineered calculations certifying the hydraulic capacity of the proposed Tied-Concrete Block Erosion Control Mat meets the performance requirements listed in Section 4 of this specification.

c. A list of 15 comparable projects in terms of project size, application and material dimensions in the United States, where the results of the specific alternative material's use can be verified and reviewed for system integrity and sustained after a minimum of 5 years of service life.

4. PERFORMANCE

Full-Scale laboratory testing performed by an independent 3rd party testing facility with associated engineered calculations certifying the hydraulic capacity of the proposed Tied-Concrete Block Erosion Control Mat meets the following requirements:

Test	Tested Value	Bed Slope	Soil Classification	Limiting Value
ASTM 6460	Shear Stress	30%	Sandy Loam (USDA)	24lb./ft^2
ASTM 6460	Velocity	20%	Loam (USDA)	30 ft./sec

5. EQUIPMENT

Provide the proper equipment to place the mat that will not damage the mat material or disturb the top soil subgrade and seed bed.

6. CONSTRUCTION

Prior to installing Flexamat, prepare the subgrade as detailed in the plans. All subgrade surfaces to be smooth and free of all rocks, stones, sticks, roots, and other protrusions or debris of any kind that would result in an individual block being raised more than 3/4 in. above the adjoining blocks. When seeding is shown on the plans, provide subgrade material that can sustain growth.

Ensure the prepared subgrade provides a smooth, firm, and unyielding foundation for the mats. The subgrade shall be graded into a parabolic or trapezoidal shape to concentrate flow to middle of mat or mats.

When vegetation is required, distribute seed on the prepared topsoil subgrade before installation of the concrete mats in accordance with the specifications.

Install mats to the line and grade shown on the plans and per the manufacturer's guidelines. The manufacturer or authorized representative will provide technical assistance during the slope preparation and installation of the concrete block mats as needed.

Provide a minimum 18 in. deep concrete mat embedment toe trench at all edges exposed to concentrated flows. Recess exterior edges subject to sheet flow a minimum of 3 in.

When needed, provide fastening or anchoring as recommended by the manufacturer or engineer for the site conditions.

For seams parallel to the flow line in ditch or channel applications, center a minimum 3 ft. wide strip of soil retention blanket under the seam. Fasten along the seam at 5 ft. maximum spacing. Parallel seams in the center of the ditch shall be avoided when possible.

Shingle seams perpendicular to the flow line with the downstream mat recessed a minimum of 2 blocks under the upstream mat and fastened together along the seam at 2 ft. maximum spacing if required by manufacturer or engineer.

7. MEASUREMENT

This Item will be measured by the square foot as shown on the plans, complete in place.

8. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Flexamat". This price is full compensation for loading and transporting, placing concrete block mats; excavation and disposal; furnishing topsoil and bedding; and equipment, labor, materials, tools, and incidentals.

Part 2 - Signatures

1. Applicants and property owners (if different from applicant).
NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT. The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, U.S. Army Corps of Engineers, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Fred W Hodges
Applicant's Name (printed/typed)   (Use if more than one applicant)

✓ Fred W. Hodges
Applicant's Signature   (Use if more than one applicant)

04.02.21
Date

Fred W Hodges
Property Owner's Name (printed/typed)   (Use if more than one owner)
(If different from Applicant)

✓ Fred W. Hodges
Property Owner's Signature   (Use if more than one owner)

04.02.21
Date

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we), Fred W. Hodges, hereby certify that I (we) have authorized Chris Davis of ReadyReef Inc
(Applicant's name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.
We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

Chris Davis
(Agent's Signature) (Use if more than one agent)

4/2/21
(Date)

✓
(Applicant's Signature) (Use if more than one applicant)

04.02.21
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), Fred W. Hodges, have contracted ReadyReef Inc
(Applicant's Name(s)) (Contractor's Name(s))
to perform the work described in this Joint Permit Application, signed and dated

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

Chris Davis
Contractor's name or name of firm

504 Smokelree Ct
North Chesterfield, VA
23236
Contractor's or firm's address

READYREEF INC.
Chris Davis President
Contractor's signature and title

Contractor's License Number

✓
Applicant's signature

(use if more than one applicant)

04.02.21
Date

REVISED March 2014

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Attachment 6: M.K. Hodges JPA and Design (adjacent property)

From:	Chris Davis
To:	Joshua Rellick; jpa.permits@mrc.virginia.gov; Birge, Tiffany
Cc:	Keith Hodges
Subject:	Revised Keith Hodges JPA #21-0820
Date:	Sunday, August 1, 2021 3:37:35 PM
Attachments:	Keith Hodges Revised JPA 8-1-2021.pdf Keith Hodges Revised Plan View 8-1-21 (4).png Keith Hodges Profile Dwgs 12-16-20.png Hodges Area Map.pdf Hodges Local Map.pdf Hodges Keith Signature page 9.pdf Hodges Keith Signature Pg 10.pdf

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Find attached documents with the revisions requested per Joshua Rellick on July 30th

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Regulatory Agency Contact Information

Virginia Marine Resources Commission (VMRC)
Habitat Management Division
380 Fenwick Road, Building 96
Fort Monroe, VA 23651
Phone: (757) 247-2200, Fax: (757) 247-8062
Website: http://www.mrc.virginia.gov/hmac/hmoverview.shtm

United States Army Corps of Engineers (USACE)
Norfolk District
803 Front Street, ATTN: CENAO-WR-R
Norfolk, Virginia 23510-1011
Phone: (757) 201-7652, Fax: (757) 201-7678
Website: http://www.nao.usace.army.mil/Missions/Regulatory.aspx

Virginia Department of Environmental Quality (DEQ)
Virginia Water Protection Permit Program
Post Office Box 1105
Richmond, Virginia 23218
Phone: (804) 698-4000
Website: http://www.deq.virginia.gov/

LOCAL WETLANDS BOARD (LWB) CONTACT INFORMATION:

Links to LWB information on the Web can be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html
In addition, the phone numbers listed below can be used to contact the LWB. Please be advised that these phone numbers are subject to change at any time.

Accomack County (757) 787-5721, Cape Charles (757) 331-3259, Charles City County (804) 829-9296, Chesapeake (757) 382-6248, Colonial Heights (804) 520-9275, Essex County (804) 443-4951, Fairfax County (703) 324-1364, Fredericksburg (540) 372-1179, Gloucester County (804) 693-2744, Hampton (757) 727-6140, Hopewell (804) 541-2267, Isle of Wight County (757) 365-6211, James City County (757) 253-6673, King and Queen County (804) 769-4978, King George County (540) 775-7111, King William County (804) 769-4927, Lancaster County (804) 462-5220, Mathews County (804) 725-5025, Middlesex County (804) 758-0500, New Kent County (804) 966-9690, Newport News (757) 247-8437, Norfolk (757) 664-4368, Northampton County (757) 678-0442, Northumberland County (804) 580-8910, Poquoson (757) 868-3040, Portsmouth (757) 393-8836, Prince William County (703) 792-6984, Richmond County (804) 333-3415, Stafford County (540) 658-8668, Suffolk (757) 923-3650, Virginia Beach (757) 427-8246, Westmoreland County (804) 493-0120, West Point (804) 843-3330, Williamsburg (757) 220-6130, York County (757) 890-3538

Tidewater Joint Permit Application (JPA)
For Projects Involving Tidal Waters, Tidal Wetlands and/or Dunes and Beaches in Virginia

This application may be used for most commercial and noncommercial projects involving **tidal waters, tidal wetlands and/or dunes and beaches in Virginia** which require review and/or authorization by Local Wetlands Boards (LWB), the Virginia Marine Resources Commission (VMRC), the Department of Environmental Quality (DEQ), and/or the U. S. Army Corps of Engineers (USACE). This application can be used for:

- **Access-related activities**, including piers, boathouses, boat ramps (without associated dredging or excavation*), moorings, marinas.
- **Shoreline stabilization projects** including living shorelines, riprap revetments, marsh toe stabilization, bulkheads, breakwaters, beach nourishment, groins, and jetties. It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1).
- **Crossings** over or under tidal waters and wetlands including bridges and utility lines (water, sewer, electric).
- **Aquaculture structures**, including cages and floats except "oyster gardening"**

***Note:** for all dredging, excavation, or surface water withdrawal projects you **MUST** use the Standard JPA form; for noncommercial, riparian shellfish aquaculture projects (i.e., "oyster gardening") you must use the abbreviated JPA found at https://mrc.virginia.gov/forms/2019/VGP3_Aquaculture_form_2019.pdf or call VMRC for a form.

The DEQ and the USACE use this form to determine whether projects qualify for certain General, Regional, and/or Nationwide permits. If your project does not qualify for these permits and you need a DEQ Virginia Water Protection permit or an individual USACE permit, you must submit the Standard Joint Permit application form. You can find this application at http://www.nao.usace.army.mil/Missions/Regulatory/JPA.aspx. Please note that some health departments and local agencies, such as local building officials and erosion and sediment control authorities, do not use the Joint Permit Application process or forms and may have different informational requirements. The applicant is responsible for contacting these agencies for information regarding those permitting requirements.

HOW TO APPLY

Submit one (1) completed copy of the Tidewater JPA to VMRC:

1. If by mail or courier, use the VMRC address provided on page 1.
2. If by electronic mail, address the package to: **JPA.permits@mrc.virginia.gov**. The application must be provided in the .pdf format and should not exceed 10 MB. If larger than 10 MB you may provide a file transfer protocol (ftp) site for download purposes.

The Tidewater JPA should include the following:

1. **Part 1** – General Information
2. **Part 2** – Signatures
3. **Part 3** - Appendices (A, B, C, and/or D as applicable to your project)
4. **Part 4** – Project Drawings.
   The drawings shall include the following for **ALL** projects:
   - Vicinity Map (USGS topographic map, road map or similar showing project location)
   - Plan View Drawing (overhead, to scale or with dimensions clearly marked)
   - Section View Drawing (side-view, to scale or with dimensions clearly marked)

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Sample drawings are included at the end of Part 4 of this application to show examples of the information needed to consider your application complete and allow for the timely processing.

When completing this form, use the legal name of the applicant, agent, and/or property owner. For DEQ application purposes, *legal name* means the full legal name of an individual, business, or other organization. For an individual, the legal name is the first name, middle initial, last name, and suffix. For an entity authorized to do business in Virginia, the legal name is the exact name set forth in the entity's articles of incorporation, organization or trust, or formation agreement, as applicable. Also provide the name registered with the State Corporation Commission, if required to register. DEQ issues a permit or grants coverage to the so-named individual or business, who becomes the 'permittee'. Correspondence from some agencies, including permits, authorizations, and/or coverage, may be provided via electronic mail. If the applicant and/or agent wishes to receive their permit via electronic mail, please remember to include an e-mail address at the requested place in the application.

In order for projects requiring LWB authorization to be considered complete (Virginia Code § 28.2-1302); "The permit application shall include the following: the name and address of the applicant; a detailed description of the proposed activities; a map, drawn to an appropriate and uniform scale, showing the area of wetlands directly affected, the location of the proposed work thereon, the area of existing and proposed fill and excavation, the location, width, depth and length of any proposed channel and disposal area, and the location of all existing and proposed structures, sewage collection and treatment facilities, utility installations, roadways, and other related appurtenances of facilities, including those on the adjacent uplands; a description of the type of equipment to be used and the means of access to the activity site; the names and addresses of record of adjacent land and known claimants of water rights in or adjacent to the wetland of whom the applicant has notice; an estimate of cost; the primary purpose of the project; and secondary purpose of the proposed project; a complete description of measures to be taken during and after alteration to reduce detrimental offsite effects; the completion date of the proposed work, project, or structure; and such additional materials and documentation as the wetlands board may require."

You may include signed Adjacent Property Owner (APO) Acknowledgement Forms found at the end of this Short Form. You must provide these addresses in Part 1 whether or not you use the APO forms. VMRC will request comments from APOs for projects that require permits for encroachment over state-owned submerged lands. VMRC or your local wetlands board must notify all APO's of public hearings required for all proposals involving tidal wetlands and dunes/beaches that are not authorized by statute. This information will not be used by DEQ to meet the requirements of notifying riparian land owners.

Regional Permit 17 (RP-17), authorizes the installation and/or construction of open-pile piers, mooring structures/devices, fender piles, covered boathouses/boatslips, boatlifts, osprey pilings/platforms, accessory pier structures, and certain devices associated with shellfish gardening, for private use, subject to strict compliance with all conditions and limitations further set out in the RP-17 enclosure located at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/. In addition to the information required in this JPA, prospective permittees seeking authorization under RP-17 must complete and submit the 'Regional Permit 17 Checklist' with their JPA. A copy of the 'Regional Permit 17 Checklist' is found on pages 13 and 14 of this application package. If the prospective permittee answers "yes" (or "N/A", where applicable) to all of the questions on the 'Regional Permit 17 Checklist', the permittee is in compliance with RP-17 and will not receive any other written authorization from the Corps but may not proceed with construction until they have obtained all necessary state and local permits. ***Note: If the prospective permittee answers "no" to any of the questions on the 'Regional Permit 17 Checklist' then their proposed structure(s) does not meet the terms and conditions of RP-17 and written authorization from the Corps is required before commencement of any work.***

Note: Land disturbance (grading, filling, etc.) or removal of vegetation associated with projects located in Chesapeake Bay Preservation Areas will require approval from local governments. Certain localities utilize this application during their Bay Act review. Part 5 of this application is included to provide assistance for the applicant to comply with Bay Act /or Erosion and Sediment Control requirements concurrent with this application.

WHAT HAPPENS NEXT

Upon receipt of an application, VMRC will assign a permit application number to the JPA and will then distribute a copy of the application and any original plan copies submitted to the other regulatory agencies that are involved in the JPA process. All agencies will conduct separate but concurrent reviews of your project. Please be aware that each agency must issue a separate permit (or a notification that no permit is required). Note that in some cases, DEQ may be taking an action on behalf of the USACE, such as when the State Program General Permit (SPGP) applies. Make sure that you have received all necessary authorizations, or documentation that no permit is required, from each agency prior to beginning the proposed work.

During the JPA review process, site inspections may be necessary to evaluate a proposed project. Failure to allow an authorized representative of a regulatory agency to enter the property, or to take photographs of conditions at the project site, may result in either the withdrawal or denial of your permit application.

For certain federal and state permit applications, a public notice is published in a newspaper having circulation in the project area, is mailed to adjacent and/or riparian property owners, and/or is posted on the agency's web page. The public may comment on the project during a designated comment period, if applicable, which varies depending upon the type of permit being applied for and the issuing agency. In certain circumstances, the project may be heard by a governing board, such as a Local Wetlands Board, the State Water Control Board, or VMRC in cases where a locality does not have a wetlands board and with certain subaqueous cases. You may be responsible for bearing the costs for advertisement of public notices.

Public hearings that are held by VMRC occur at their regularly scheduled monthly commission meetings under the following situations: Protested applications for VMRC permits which cannot be resolved; projects costing over $500,000 involving encroachment over state-owned subaqueous land; and all projects affecting tidal wetlands and dunes/beaches in localities without a LWB. All interested parties will be officially notified regarding the date and time of the hearing and Commission meeting procedures. The Commission will usually make a decision on the project at the meeting unless a decision for continuance is made. If a proposed project is approved, a permit or similar agency correspondence is sent to the applicant. In some cases, notarized signatures, as well as processing fees and royalties, are required before the permit is validated. If the project is denied, the applicant will be notified in writing.

PERMIT APPLICATION OR OTHER FEES

Do not send any fees with the JPA. VMRC is not responsible for accounting for fees required by other agencies. Please consult agency websites or contact agencies directly for current fee information and submittal instructions.

- USACE: Permit application fees are required for USACE Individual (Standard) permits. A USACE project manager will contact you regarding the proper fee and submittal requirements.

- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

FOR AGENCY USE ONLY	
	Notes:
	JPA # 21-0820

APPLICANTS
Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Check all that apply		
Pre-Construction Notification (PCN) ☐ NWP # ____________________ (*For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned*)	Regional Permit 17 (RP-17) ☐	

County or City in which the project is located: King and Queen

Waterway at project site: York River

PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)

Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html

Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial
	NA			

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 1 - General Information (continued)

1. Applicant's legal name* and complete mailing address:

M.Keith Hodges, PO Box 154, Urbanna, VA
23175 (Lot#A13)

Contact Information:
Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (804) 824-4023
e-mail khodges@gloucesterpharmacy.com

State Corporation Commission Name and ID Number (if applicable) _____________

2. Property owner(s) legal name* and complete address, if different from applicant: Contact Information:

Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (____)_____________
e-mail ___________________

State Corporation Commission Name and ID Number (if applicable) _____________

3. Authorized agent name* and complete mailing address (if applicable):

Chris Davis (ReadyReef Inc.)
504 Smoketree Court
North Chesterfield, VA 23236

Contact Information:
Home (____)_____________
Work (____)_____________
Fax (____)_____________
Cell (804) 338-3103
e-mail chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) _____________

*** If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

The project is to install a Living Shoreline using Flexamat installed behind a decaying bulkhead on the York River to protect the eroding bank. Mat sections totaling 16' wide x 75' (1200 ft^2) will be laid on a 3:1 slope and planted with marsh grasses. Flexamat meets the state definition (28.2-104.1) of a Living Shoreline (as required by SB776 passed in 2020) as "a shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials." Flexamat enhances "coastal resilience and attenuation of wave energy and storm surge."

The Flexamat will be installed from the adjacent yard. Grading the slope will be followed with some sand overlay to create a solid, smooth foundation. No tree clearing is required. The mat is has underlayment to hold the sand on the slope while the concrete serves as revetment.

The mat will be anchored mechanically and with marsh grass plants growing through it over time. The remnants of the existing bulkhead will be cut down and/or removed after the mat is installed.

The mat ends at neighboring bulkhead returns will be overlain with filter cloth and riprap to prevent scouring from wave action against the bulkhead sections.

There will be a gain of 963 ft^2 of Spartina marsh grasses in the mat and a buffer of Spartina Patens will be established at the top of the Flexamat and lawn interface.

Equipment to be used: skid steer, Excavator, dump truck, flatbed truck and trailer, sand compactor, earth anchors driven by hammer drill run off generator.

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Part 1 - General Information (continued)

5. Have you obtained a contractor for the project? X Yes* ___ No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name* and complete mailing address:

ReadyReef Inc
504 Smoketree Court
North Chesterfield, VA 23236

Contact Information:
Home (____)____________
Work (____)____________
Fax (____)____________
Cell (804) 338-3103
email chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) ____________________

<u>* If multiple contractors, each must be listed and each must sign the applicant signature page.</u>

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:
Tidewater Review
www.tidewaterreview.com

Telephone number
(757) 446-2291

7. Give the following project location information:

Street Address (911 address if available) just South East of 242 Old Farm Drive
Lot/Block/Parcel# 23 131L 396A13 (Keith Hodges)
Subdivision____________________
City / County Shacklefords ZIP Code 23156
Latitude and Longitude at Center Point of Project Site (Decimal Degrees):
37.479031 / -76.732418 (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. *Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.*

From Rt. 17 going north from Gloucester Courthouse, turn left at Adner onto Rt 14 West (Buena Vista Rd). At Plainview, turn left onto Rt. 605 (Plain View Lane).
Shortly after, Rt. 605 takes a sharp right and continues.
Turn left onto Rt 666 (Tuckers Road) before Gressitt.
Turn right onto Cricket Shores Lane.
Near York River, turn right onto Bells Rd. Road ends on undeveloped lot.

8. What are the *primary and secondary purposes of and the need for* the project? For example, the primary purpose <u>may</u> be "to protect property from erosion due to boat wakes" and the secondary purpose <u>may</u> be "to provide safer access to a pier."

The primary purpose is to prevent erosion at the shoreline where an old bulkhead is failing.
The secondary purpose is to install a SB 776 compliant solution to meet the environmental goals of the Chesapeake Bay WIP.

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 1 - General Information (continued)

9. Proposed use (check one):
   _X_ Single user (private, non-commercial, residential)
   ___ Multi-user (community, commercial, industrial, government)

10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*

    Bulkhead replacement and riprap revetment were eliminated as being non-compliant with the State's new Living Shoreline law (SB 776). Installing Flexamat will allow for marsh grass planting in its grid, and for a migratory path upwards in elevation should Relative Sea Level Rise continue as forecasted. No impacts to Wetlands, SAVs or buffer areas. Marsh grasses will be installed where none exist now.

11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed? ___Yes _X_No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.

12. Approximate cost of the entire project (materials, labor, etc.): $ $25,000
    Approximate cost of that portion of the project that is channelward of mean low water:
    $ 0

13. Completion date of the proposed work: July 31 - 2022

14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

    John Gove
    330 Cypress Ave.
    West Point, VA
    2318

    Fred Hodges
    242 Old Farm Drive
    Shacklefords, VA
    23156

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 2 - Signatures

1. Applicants and property owners (if different from applicant).
NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.
CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit. **In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

Applicant's Legal Name (printed/typed)	(Use if more than one applicant)
Applicant's Signature	(Use if more than one applicant)
Date	
Property Owner's Legal Name (printed/typed) (If different from Applicant)	(Use if more than one owner)
Property Owner's Signature	(Use if more than one owner)
Date	

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we),____________________, hereby certify that I (we) have authorized ___________________________
(Applicant's legal name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.

We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

____
(Agent's Signature)

____
(Use if more than one agent)

____
(Date)

____
(Applicant's Signature)

____
(Use if more than one applicant)

____
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), ______________________, have contracted____
(Applicant's legal name(s)) (Contractor's name(s))
to perform the work described in this Joint Permit Application, signed and dated________________________.

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

____
Contractor's name or name of firm

____
Contractor's or firms address

____
Contractor's signature and title

____
Contractor's License Number

____
Applicant's signature

____
(use if more than one applicant)

____
Date

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we), ____________________________________, own land next to (across the water
(Print adjacent/nearby property owner's name)

from/on the same cove as) the land of______________________________________.
(Print applicant's name(s))

I have reviewed the applicant's project drawings dated _________________________
(Date)

to be submitted for all necessary federal, state and local permits.

I HAVE NO COMMENT_______ ABOUT THE PROJECT.

I DO NOT OBJECT ______ TO THE PROJECT.

I OBJECT ______ TO THE PROJECT.

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form be sure you have checked the appropriate option above).

____
Adjacent/nearby property owner's signature(s)

____
Date

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we), ____________________________________, own land next to (across the water
(Print adjacent/nearby property owner's name)

from/on the same cove as) the land of_______________________________________.
(Print applicant's name(s))

I have reviewed the applicant's project drawings dated __________________________
(Date)

to be submitted for all necessary federal, state and local permits.

I HAVE NO COMMENT_______ ABOUT THE PROJECT.

I DO NOT OBJECT ______ TO THE PROJECT.

I OBJECT ______ TO THE PROJECT.

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form, be sure you have checked the appropriate option above).

____
Adjacent/nearby property owner's signature(s)

____
Date

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

APPENDIX B

U.S. Army Corps
Of Engineers
Norfolk District

REGIONAL PERMIT 17 CHECKLIST

Expires: September 5, 2023

Please review the 18-RP-17 enclosure before completing this form and note 18-RP-17 can only be used for proposed PRIVATE USE structure(s) that comply with the terms and conditions of 18-RP-17. Copies can be obtained online at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/.

YES☐ NO☐	**(1)** Has the permittee reviewed the 18-RP-17 enclosure and verified that the proposed structure(s) is in compliance with all the terms, conditions, and limitations of 18-RP-17?
YES☐ NO☐	**(2)** Does the proposed structure(s) extend no more than one-fourth of the distance across the waterway measured from either mean high water (MHW) to MHW (including all channelward wetlands) or ordinary high water (OHW) to OHW (including all channelward wetlands)?
YES☐ NO☐	**(3)** Does the proposed structure(s) extend no more than 300 feet from MHW or OHW (including all channelward wetlands)?
YES☐ NO☐ N/A☐	**(4)** Does the proposed structure(s) attach to the upland at a point landward of MHW or OHW (including all channelward wetlands)?
YES☐ NO☐ N/A☐	**(5)** If the proposed structure(s) crosses wetland vegetation, is it an open-pile design that has a maximum width of five (5) feet and a minimum height of four (4) feet between the decking and the wetland substrate?
YES☐ NO☐ N/A☐	**(6)** Does the proposed structure(s) include no more than two (2) boatlifts and no more than two (2) boat slips?
YES☐ NO☐ N/A☐	**(7)** Is the open-sided roof structure designed to shelter a boat ≤ 700 square feet and/or is the open sided roof structure or gazebo structure designed to shelter a pier ≤ 400 square feet?
YES☐ NO☐ N/A☐	**(8)** Are all piles associated with the proposed structure(s) non-steel, less than or equal to 12” in diameter, and will less than or equal to 25 piles be installed channelward of MHW?
YES☐ NO☐ N/A☐	**(9)** Is all work occurring behind cofferdams, turbidity curtains, or other methods to control turbidity being utilized when operationally feasible and federally listed threatened or endangered species may be present?
YES☐ NO☐ N/A☐	**(10)** If the proposed structure(s) is to be located within an anadromous fish use area, the prospective permittee will adhere to the anadromous fish use area time of year restriction (TOYR) prohibiting in-water work from occurring between February 15 through June 30 of any given year if (1) piles are to be installed with a cushioned impact hammer and there is less than 492 feet between the most channelward pile and mean low water (MLW) on the opposite shoreline or (2) piles are to be installed with a vibratory hammer and there is less than 384 feet between the most channelward pile and MLW on the opposite shoreline.
YES☐ NO☐	**(11)** Is all work occurring outside of submerged aquatic vegetation (SAV) mapped by the Virginia Institute of Marine Sciences’ (VIMS) most recent survey year and 5 year composite?
YES☐ NO☐	**(12)** Has the permittee ensured the construction and/or installation of the proposed structure(s) will not affect federally listed threatened or endangered species or designated critical habitat?
YES☐ NO☐	**(13)** Will the proposed structure be located outside of Broad Creek in Middlesex County, Fisherman’s Cove in Norfolk, or the Salt Ponds in Hampton?
YES☐ NO☐	**(14)** Will the proposed structure(s) be located outside of the waterways containing a Federal Navigation Project listed in Permit Specific Condition 12 of 18-RP-17 and/or will all portions of the proposed structure(s) be located more than 85 feet from the Federal Navigation Project?

YES☐ NO☐ **(15)** Will the proposed structure(s) be located outside a USACE Navigation and Flood Risk Management project area?

YES☐ NO☐ **(16)** Will the proposed structure(s) be located outside of any Designated Trout Waters?

YES☐ NO☐ N/A☐ **(17)** If the proposed structure(s) includes flotation units, will the units be made of materials that will not become waterlogged or sink if punctured?

YES☐ NO☐ N/A☐ **(18)** If the proposed structure(s) includes flotation units, will the floating sections be braced so they will not rest on the bottom during periods of low water?

YES☐ NO☐ **(19)** Is the proposed structure(s) made of suitable materials and practical design so as to reasonably ensure a safe and sound structure?

YES☐ NO☐ **(20)** Will the proposed structure(s) be located on the property in accordance with the local zoning requirements?

YES☐ NO☐ N/A☐ **(21)** If the proposed structure(s) includes a device used for shellfish gardening, will the device be attached directly to a pier and limited to a total of 160 square feet?

YES☐ NO☐ N/A☐ **(22)** If the proposed structure(s) includes a device used for shellfish gardening, does the permittee recognize this RP does not negate their responsibility to obtain an oyster gardening permit (General Permit #3) from Virginia Marina Resources Commission's Habitat Management Division?

YES ☐NO ☐ **(23)** Does the permittee recognize this RP does not authorize any dredging or filling of waters of the United States (including wetlands) and does not imply that future dredging proposals will be approved by the Corps?

YES☐ NO☐ **(24)** Does the permittee understand that by accepting 18-RP-17, the permittee accepts all of the terms and conditions of the permit, including the limits of Federal liability contained in the 18-RP-17 enclosure? Does the permittee acknowledge that the structures permitted under 18-RP-17 may be exposed to waves caused by passing vessels and that the permittee is solely responsible for the integrity of the structures permitted under 18-RP-17 and the exposure of such structures and vessels moored to such structures to damage from waves? Does the permittee accept that the United States is not liable in any way for such damage and that it shall not seek to involve the United States in any actions or claims regarding such damage?

IF YOU HAVE ANSWERED "NO" TO ANY OF THE QUESTIONS ABOVE, REGIONAL PERMIT 17 (18-RP-17) DOES NOT APPLY AND YOU ARE REQUIRED TO OBTAIN WRITTEN AUTHORIZATION FROM THE CORPS PRIOR TO PERFORMING THE WORK.

IF YOU HAVE ANSWERED "YES" (OR "N/A", WHERE APPLICABLE) TO ALL OF THE QUESTIONS ABOVE, YOU ARE IN COMPLIANCE WITH REGIONAL PERMIT 17 (18-RP-17). PLEASE SIGN BELOW, ATTACH, AND SUBMIT THIS CHECKLIST WITH YOUR COMPLETED JOINT PERMIT APPLICATION (JPA). THIS SIGNED CERTIFICATE SERVES AS YOUR LETTER OF AUTHORIZATION FROM THE CORPS. YOU WILL NOT RECEIVE ANY OTHER WRITTEN AUTHORIZATION FROM THE CORPS; HOWEVER, YOU MAY NOT PROCEED WITH CONSTRUCTION UNTIL YOU HAVE OBTAINED ALL OTHER NECESSARY STATE AND LOCAL PERMITS.

I CERTIFY THAT I HAVE READ AND UNDERSTAND ALL CONDITIONS OF THE REGIONAL PERMIT 17 (18-RP-17), DATED SEPTEMBER 2018, ISSUED BY THE US ARMY CORPS OF ENGINEERS, NORFOLK DISTRICT REGULATORY BRANCH (CENAO-WRR), NORFOLK, VIRGINIA.

Proposed work to be located at:

____

Signature of Property Owner(s) or Agent

____

____

Date________________________

VMRC Number: ____________________

Part 3 – Appendices

Please complete and submit the appendix questions applicable to your project, and attach the required vicinity map(s) and drawings to your application. If an item does not apply to your project, please write "N/A" in the space provided.

Appendix A: (TWO PAGES) Projects for Access to the water such as private and community piers, boathouses, marinas, moorings, and boat ramps. Answer all questions that apply.

1. **Briefly describe your proposed project**.

2. **For private, noncommercial piers:**

Do you have an existing pier on your property? ____Yes____ No
If yes, will it be removed? ____Yes ____No
Is your lot platted to the mean low water shoreline? ____Yes ____No
What is the overall length of the proposed structure? ________feet.
Channelward of Mean High Water? ________feet.
Channelward of Mean Low Water? ________feet.
What is the area of the piers and platforms that will be constructed over
Tidal non-vegetated wetlands __________ square feet.
Tidal vegetated wetlands _________ square feet.
Submerged lands __________square feet.
What is the total size of any and all L- or T-head platforms?_______sq. ft.
For boathouses, what is the overall size of the roof structure? ________sq. ft.
Will your boathouse have sides?_____Yes____ No.

NOTE: All proposals for piers, boathouses and shelter roofs must be reviewed by the Virginia Marine Resources Commission (Commission or VMRC), however, pursuant to § 28.2-1203 A 5 of the Code of Virginia a VMRC permit may not be required for such structures (except as required by subsection D of § 28.2-1205 for piers greater than 100 feet in length involving commercially productive leased oyster or clam grounds), provided that (i) the piers do not extend beyond the navigation line or private pier lines established by the Commission or the United States Army Corps of Engineers (USACE), (ii) the piers do not exceed six feet in width and finger piers do not exceed five feet in width, (iii) any L or T head platforms and appurtenant floating docking platforms do not exceed, in the aggregate, 400 square feet, (iv) if prohibited by local ordinance open-sided shelter roofs or gazebo-type structures shall not be placed on platforms as described in clause (iii), but may be placed on such platforms if not prohibited by local ordinance, and (v) the piers are determined not to be a navigational hazard by the Commission. Subject to any applicable local ordinances, such piers may include an attached boat lift and an open-sided roof designed to shelter a single boat slip or boat lift. In cases in which open-sided roofs designed to shelter a single boat, boat slip or boat lift will exceed 700 square feet in coverage or the open-sided shelter roofs or gazebo structures exceed 400 square feet, and in cases in which an adjoining property owner objects to a proposed roof structure, permits shall be required as provided in § 28.2-1204.

Part 3 – Appendices (continued)

3. **For USACE permits**, in cases where the proposed pier will encroach beyond one fourth the waterway width (as determined by measuring mean high water to mean high water or ordinary high water mark to ordinary high water mark), the following information must be included before the application will be considered complete. For an application to be considered complete:

   a. The USACE MAY require depth soundings across the waterway at increments designated by the USACE project manager. Typically 10-foot increments for waterways less than 200 feet wide and 20-foot increments for waterways greater than 200 feet wide with the date and time the measurements were taken and how they were taken (e.g., tape, range finder, etc.).
   b. The applicant MUST provide a justification as to purpose if the proposed work would extend a pier greater than one-fourth of the distance across the open water measured from mean high water or the channelward edge of the wetlands.
   c. The applicant MUST provide justification if the proposed work would involve the construction of a pier greater than five feet wide or less than four feet above any wetland substrate.

4. Provide the type, size, and registration number of the vessel(s) to be moored at the pier or mooring buoy.

Type	Length	Width	Draft	Registration #

5. For **Marinas, Commercial Piers, Governmental Piers, Community Piers and other non-private piers**, provide the following information:
   A) Have you obtained approval for sanitary facilities from the Virginia Department of Health?___________ (required pursuant to Section 28.2-1205 C of the Code of Virginia).
   B) Will petroleum products or other hazardous materials be stored or handled at your facility?_______________.
   C) Will the facility be equipped to off-load sewage from boats?__________.
   D) How many wet slips are proposed?_______. How many are existing?______.
   E) What is the area of the piers and platforms that will be constructed over
      Tidal non-vegetated wetlands __________ square feet
      Tidal vegetated wetlands _________ square feet
      Submerged lands __________square feet

6. For **boat ramps**, what is the overall length of the structure?________feet.
   From Mean High Water?________feet.
   From Mean Low Water?________feet.

Note: drawings must include the construction materials, method of installation, and all dimensions. If tending piers are proposed, complete the pier portion.

Note: If dredging or excavation is required, you must complete the Standard Joint Point Permit application.

Part 3 – Appendices (continued)

Appendix B: **Projects for Shoreline Stabilization** in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS**.**

NOTE: It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.**

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

   1200 ft² of Flexamat (75' x 16') will be installed in a cut and fill grading behind the decaying bulkhead. An additional 5 cuyds of clean sand will be overlain and compacted prior to mat installation in the space behind MLW and up to 1.5X the tide range, approximately 14' behind the remnants of the existing bulkhead.

2. What is the maximum encroachment channelward of mean high water? 14' feet.
   Channelward of mean low water? 0 feet.
   Channelward of the back edge of the dune or beach? 16' feet.

3. Please calculate the square footage of encroachment over:
   - Vegetated wetlands 0 square feet
   - Non-vegetated wetlands 143 square feet
   - Subaqueous bottom 0 square feet
   - Dune and/or beach 0 square feet

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure? ____ Yes____ No.

   If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead? _____Yes ____No.

   If no, please provide an explanation for the purpose and need for the additional encroachment.

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Part 3 – Appendices (continued)

5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).
NOTE: **Drawings must include construction details, including dimensions, design and all materials, including fittings if used**.

See attachments for Flexamat Specs and Materials
Clean sand source: upland pit in Middlesex County

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:
Core (inner layer) material__________ pounds per stone Class size ________
Armor (outer layer) material 75 pounds per stone Class size 1

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

- Volume of material
  0 cubic yards channelward of mean low water
  5 cubic yards landward of mean low water
  5 cubic yards channelward of mean high water
  0 cubic yards landward of mean high water

- Area to be covered
  0 square feet channelward of mean low water
  1200 square feet landward of mean low water
  5 cubic yards channelward of mean high water
  0 cubic yards landward of mean high water

- Source of material, composition (e.g. 90% sand, 10% clay): 93% Sand, 7% clay
- Method of transportation and placement:
  Truck from pit to yard dump. Tracked Skid steer from dump to shoreline.
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at http://www.vims.edu/about/search/index.php?q=planting+guidelines:

Flexamat will be planted 1' on center in the grid between revetment blocks.
It will take up to 2 years to achieve saturation as the marsh grass sends out rhizomes in its second year after planting.

Appendix C: Crossings in, on, over, or under, waters, submerged lands, tidal wetlands and/or dunes and beaches, including but not limited to, bridges, walkways, pipelines and utility lines.

1. What is the purpose and method of installation of the crossing?

2. What is the width of the waterway and/or wetlands to be crossed
    from mean high water to mean high water (tidal waters)? _______ feet.
    from mean low water to mean low water (tidal waters)? _______ feet.
    from ordinary high water to ordinary high water (non-tidal waters)? _______ feet.

3. For bridges (footbridges, golf cart bridges, roadway bridges, etc.), what is the width of the structure over the tidal wetlands, dunes/beaches and/or submerged lands? ____________square feet.

4. For overhead crossings:
    a. What will be the height above mean high water? _______feet.
    b. If there are other overhead crossings in the area, what is the minimum height? _____feet.
    c. If the proposed crossing is an electrical line, please confirm the total number of electrical circuits: _________

5. For buried crossings, what will be the depth below the substrate? __________feet. Will the proposed utility provide empty conduits for any additional utilities that may propose to co-locate at a later date? _____Yes _____No.

6. Will there be any excavation or fill required for placement of abutments, piers, towers, or other permanent structures on State-owned submerged lands, tidal wetlands, and dunes/beaches? ____Yes ____ No.

    If yes, please provide the following:

    a. Amount of excavation in wetlands _________ cubic yards
    _________ square feet

    b. Amount of excavation in submerged land _________ cubic yards
    _________ square feet

    c. Amount of excavation in dune/beach _________ cubic yards
    _________ square feet

    d. Amount of fill in wetlands _________ cubic yards
    _________ square feet

    e. Amount of fill in submerged lands _________ cubic yards
    _________ square feet

    f. Amount of fill in dune/beach ________ cubic yards
    ________ square feet

Appendix D: Aquaculture Related Structures such as cages and floats. Before completing this appendix, please review the aquaculture requirements summary at: http://mrc.virginia.gov/Shellfish_Aquaculture.shtm.

1. Will the activity be for commercial purposes? _____Yes _____ No.

   If Yes and structures will be placed upon an oyster ground lease, you may qualify for the VMRC General Permit #4 for Temporary Protective Enclosures for Shellfish. For more info see: http://www.mrc.virginia.gov/regulations/MRC_Scanned_Regs/Shellfish_Mix/fr1130_12-0107.pdf. If you qualify for the General Permit #4, or if such structures are proposed that are not on an oyster planting ground lease, or for floating structures of any kind, complete this Joint Permit Application and include the necessary information requested below in question 2 through 11.

   If No, you may qualify for the VMRC General Permit #3, for Noncommercial Riparian Shellfish Growing (i.e. "Gardening") For more information see: http://www.mrc.virginia.gov/forms/VGP3_Aquaculture.doc.pdf. If you qualify for this general permit use the Abbreviated Joint Permit Application For Noncommercial Riparian Shellfish Aquaculture Structures available at https://mrc.virginia.gov/forms/2019/VGP3_Aquaculture_form_2019.pdf ***do not use this Joint Permit Application***.

2. Will aquaculture structures be attached to an existing pier or other structure? ____ Yes ____ No.

3. The plat file # if proposed upon oyster planting ground lease(s).___________________________

4. The maximum area where enclosures are proposed. ___________ square feet

5. The maximum number of enclosures being proposed to be deployed. _____________

6. The species of shellfish to be cultured. ____________________________

7. A detailed description of the enclosures to include width, length and height.

8. In addition to the requirements itemized in Part 4 Project Drawings, the following additional information must be included on your project drawings: A general description of the area within 500 feet of deployment area. Provide a drawing that depicts existing marine resources such as SAV, shellfish beds, fixed fishing devices, public grounds, piers, water depths at mean low water, tide range, and the minimum clearance at mean low tide over the enclosures.

9. Provide the date enclosures are proposed to be deployed _______________. How will the structures be secured? ____.

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Part 3 – Appendices (continued)

10. List of all riparian land owners within 500 feet of the area where enclosures are proposed along with a map (tax map or other suitable map) depicting the locations of such parcels or riparian property owner acknowledgement forms signed by the riparian land owner with any comments concerning the enclosures deployment request.

11. Proof that the applicant holds a current oyster or clam aquaculture product owners permit, and verification that the applicant is in compliance with Mandatory Harvest Reporting requirements, and verification that the current years oyster ground rent is paid, if structures are proposed on an oyster ground lease.

Part 4 - Project Drawings

Plan view and cross-sectional view drawings are required for all projects. Application drawings do not need to be prepared by a professional draftsman, but they must be clear, accurate, and should be to an appropriate scale. If a scale is not used, all dimensions must be clearly depicted in the drawings. If available, a plat of the property should be included, with the existing and proposed structures clearly indicated. Distances from the proposed structure(s) to fixed points of reference (benchmarks) and to the adjacent property lines must be shown. A vicinity map (County road map, USGS Topographic map, etc.) must also be provided to show the location of the property. **NOTE:** The sample drawings have been included at the end of this section to provide guidance on the information required for different types of projects. Clear and accurate drawings are essential for project review and compliance determination. Incomplete or unclear drawings may cause delays in the processing of your application.

The following items must be included on ALL project drawings: (plan and cross-sectional, as appropriate)

- **name of project**
- **north arrow**
- **scale**
- **waterway name**
- **existing and proposed structures, labeled as such**
- **dimensions of proposed structures**
- **mean high water and mean low water lines**
- **all delineated wetlands and all surface waters on the site, including the Cowardin classification (i.e., emergent, scrub-shrub, or forested) for those surface waters (if applicable)**
- **limits of proposed impacts to surface waters, such as fill areas, riprap scour protection placement, and dredged areas, and the amount of such impacts in square feet and acres**
- **ebb/flood direction**
- **adjacent property lines and owner's name**
- **distances from proposed structures to fixed points of reference (benchmarks) and adjacent property lines**

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Part 5 - Chesapeake Bay Preservation Act Information

All proposed development, redevelopment, land disturbance, clearing or grading related to this Tidewater JPA must comply with the Chesapeake Bay Preservation Area Designation and Management Regulations, which are enforced through locally adopted Chesapeake Bay Preservation Area (CBPA) ordinances. Compliance with state and local CBPA requirements mandates the submission of a ***Water Quality Impact Assessment (WQIA)*** for the review and approval of the local government. Contact the appropriate local government office to determine if a WQIA is required for the proposed activity(ies).

Because the 84 local governments within Tidewater Virginia are responsible for enforcing the CBPA Regulations, the completion of the JPA process does not constitute compliance with the Bay Act Regulations nor does it guarantee that the local government will approve encroachments into the RPA that may result from this project. Applicants should contact their local government as early in the design process as possible to ensure that the final design and construction of the proposed project meets all applicable CBPA requirements. Early cooperation with local government staff can help applicants avoid unnecessary and costly delays to construction. Applicants should provide local government staff with information regarding existing vegetation within the Resource Protection Area (RPA) as well as a description and site drawings of any proposed land disturbance, construction, or vegetation clearing. As part of their review and approval processes, local government staff will evaluate the proposed project and determine whether or not approval can be granted. Once the locality has made a decision on the project, they will advise the Local Wetlands Boards and other appropriate parties of applicable CBPA concerns or issues.

Resource Protection Areas (RPAs) are composed of the following features:

1. **Tidal wetlands;**
2. **Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;**
3. **Tidal shores;**
4. **Other lands considered by the local government to meet the provisions of subsection A of 9VAC25-830-80 and to be necessary to protect the quality of state waters; and**
5. **A buffer area not less than 100 feet in width located adjacent to and landward of the components listed in subdivisions 1 through 4 above, and along both sides of any water body with perennial flow.**

Notes for all projects in RPAs

Development, redevelopment, construction, land disturbance, or placement of fill within the RPA features listed above requires the approval of the locality and may require an exception or variance from the local Bay Act ordinance. Please contact the appropriate local government to determine the types of development or land uses that are permitted within RPAs.

Pursuant to 9VAC25-830-110, on-site delineation of the RPA is required for all projects in CBPAs. Because USGS maps are not always indicative of actual "in-field" conditions, they may not be used to determine the site-specific boundaries of the RPA.

Notes for shoreline erosion control projects in RPAs

Re-establishment of woody vegetation in the buffer will be required by the locality to mitigate for the removal or disturbance of buffer vegetation associated with your proposed project. Please contact the local government to determine the mitigation requirements for impacts to the 100-foot RPA buffer.

Part 5 - Chesapeake Bay Preservation Act Information (continued)

Pursuant to 9VAC25-830-140 5 a (4) of the Virginia Administrative Code, shoreline erosion projects are a permitted modification to RPAs provided that the project is based on the "best technical advice" and complies with applicable permit conditions. In accordance with 9VAC25-830-140 1 of the Virginia Administrative Code, the locality will use the information provided in this Part V, in the project drawings, in this permit application, and as required by the locality, to make a determination that:

1. Any proposed shoreline erosion control measure is necessary and consistent with the nature of the erosion occurring on the site, and the measures have employed the "best available technical advice"
2. Indigenous vegetation will be preserved to the maximum extent practicable
3. Proposed land disturbance has been minimized
4. Appropriate mitigation plantings will provide the required water quality functions of the buffer (9VAC25-830-140 3)
5. The project is consistent with the locality's comprehensive plan
6. Access to the project will be provided with the minimum disturbance necessary.

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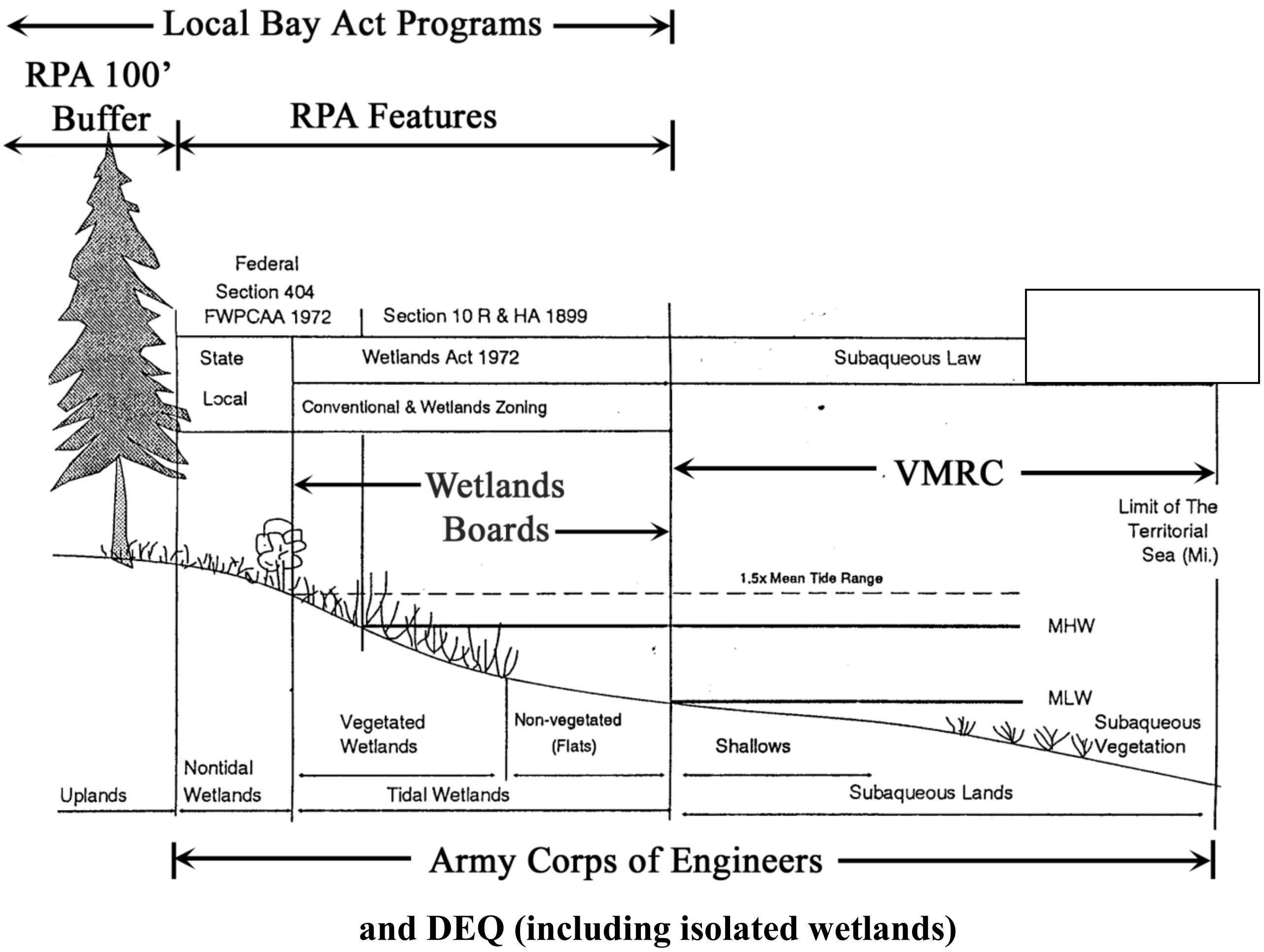
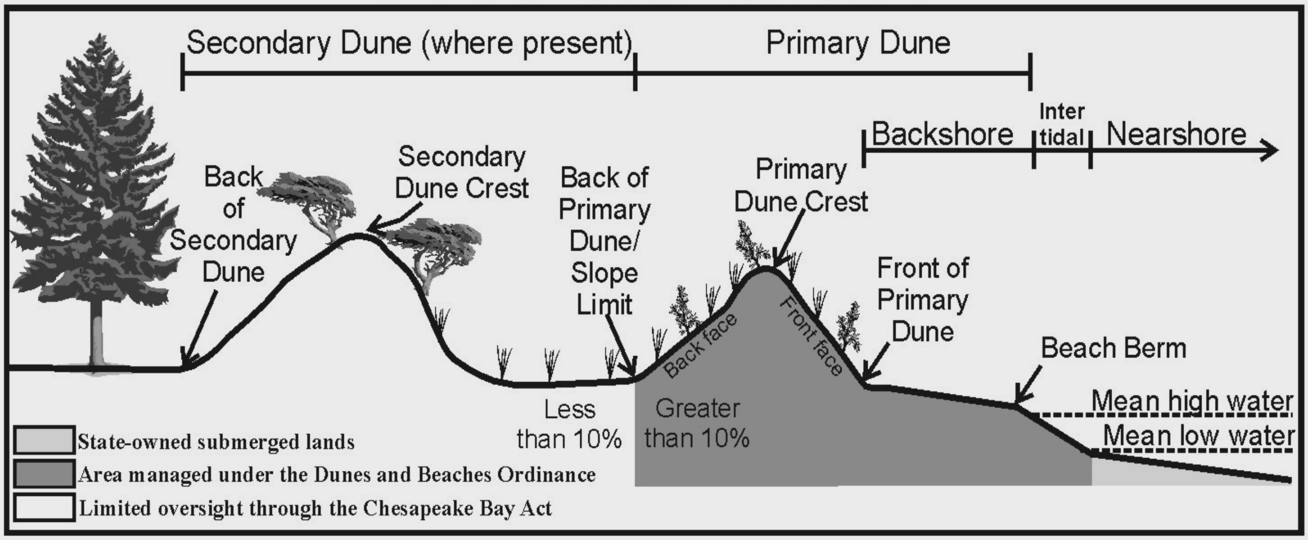
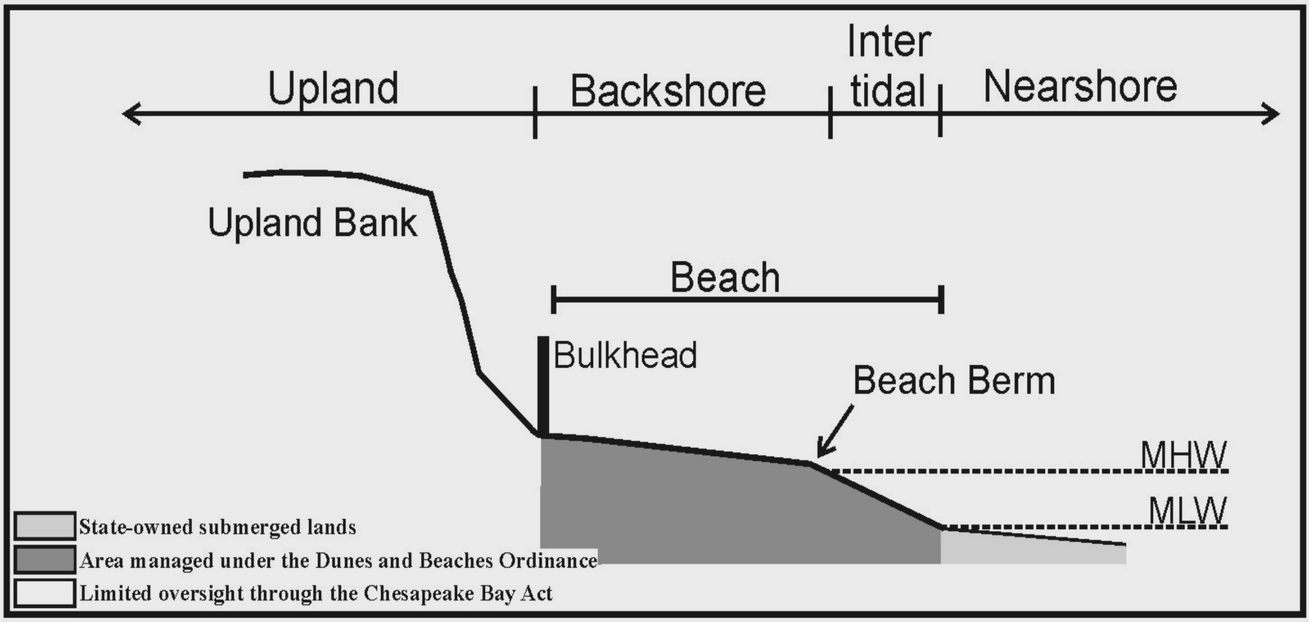
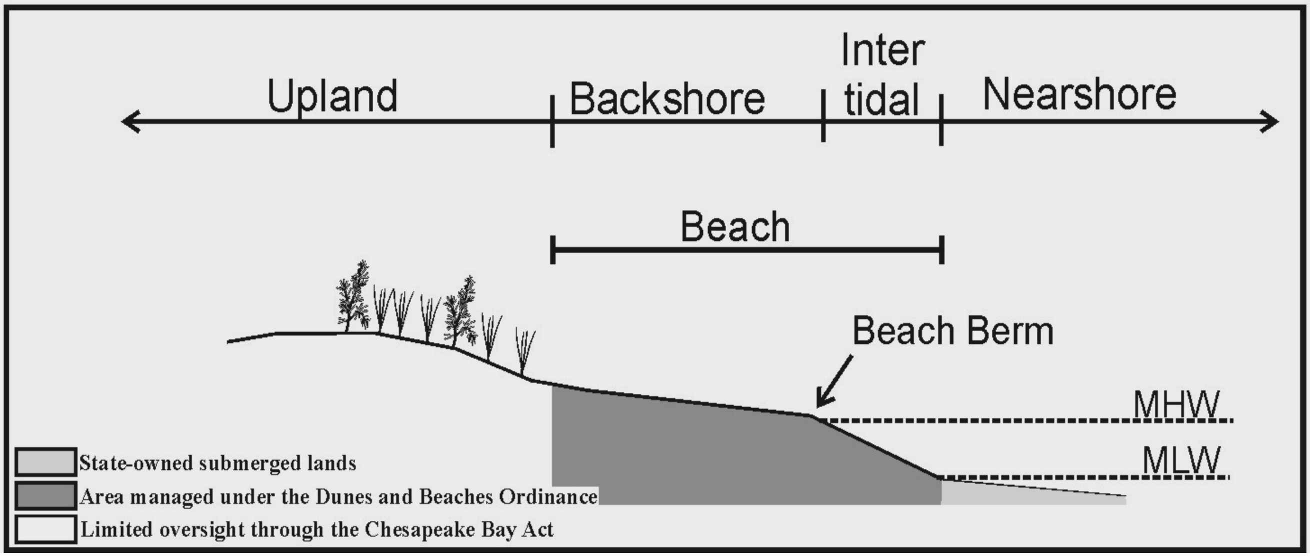
JURISDICTIONAL BOUNDARIES

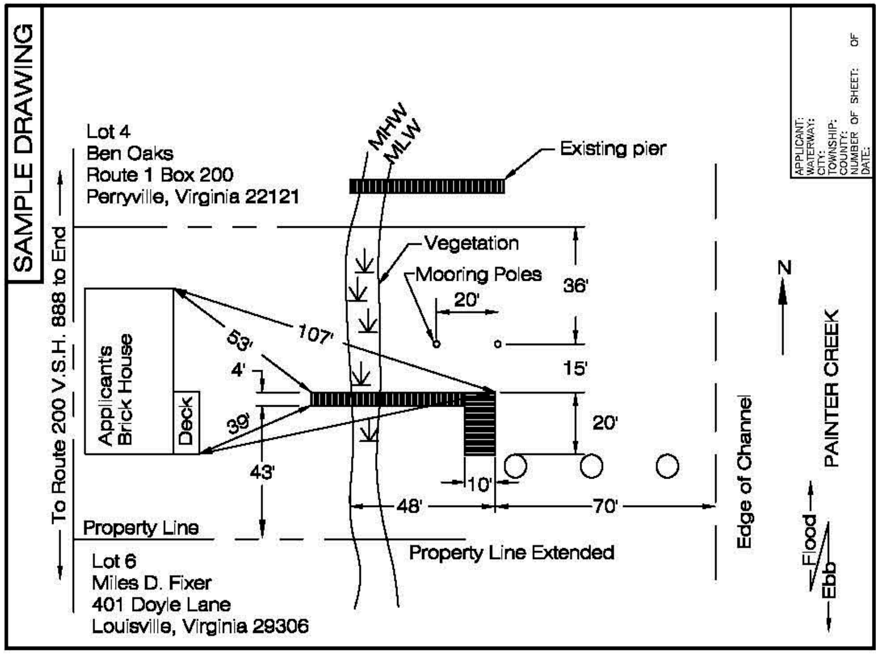


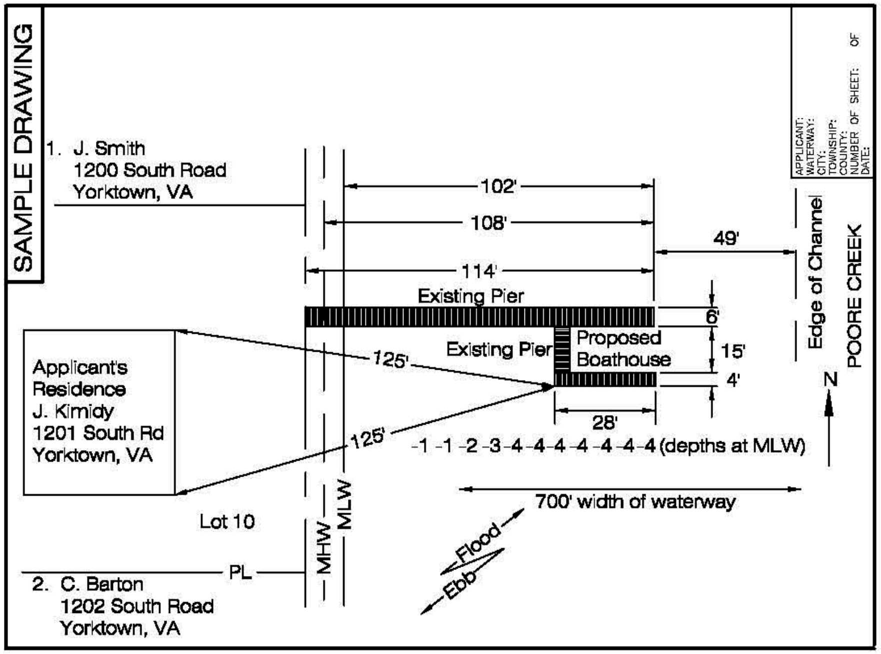
Dune and Beach Boundaries

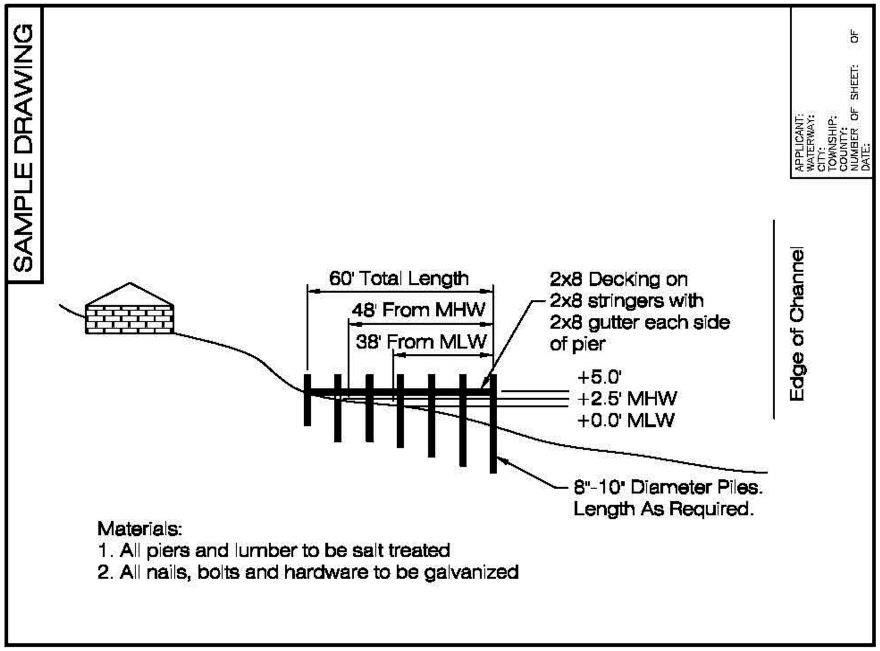




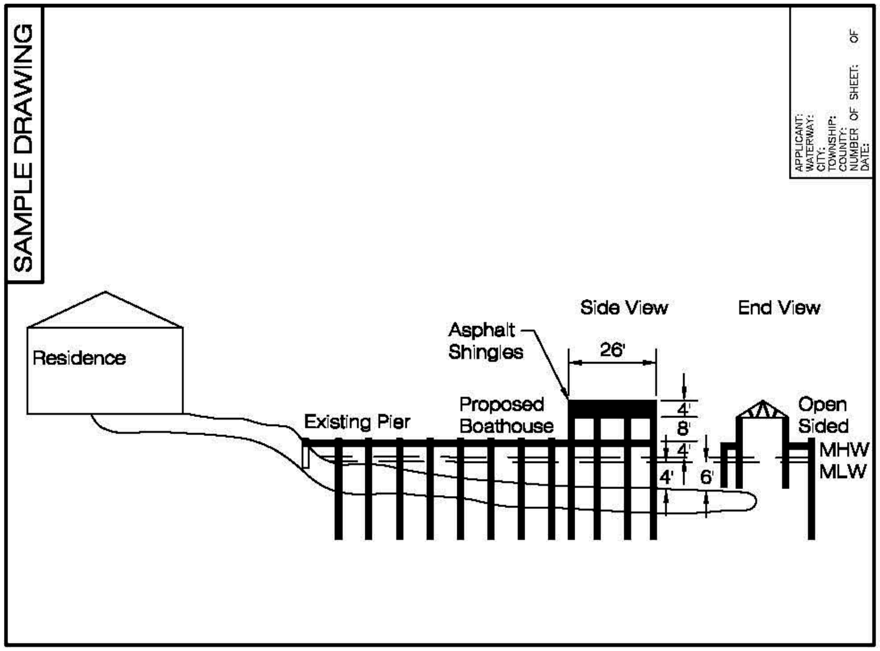








Materials:
1. All piers and lumber to be salt treated
2. All nails, bolts and hardware to be galvanized



Private Piers & Marginal Wharves

Boathouses

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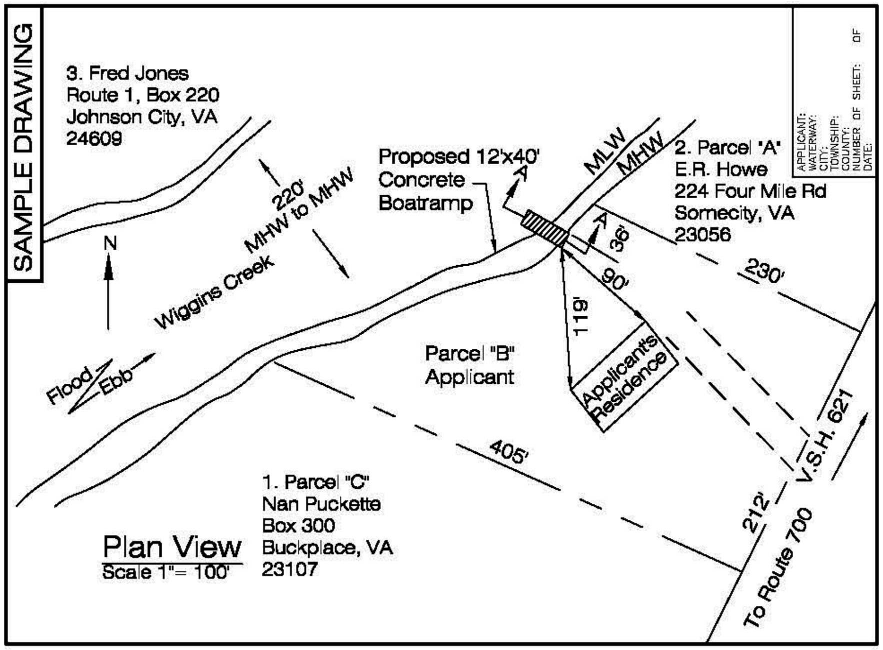
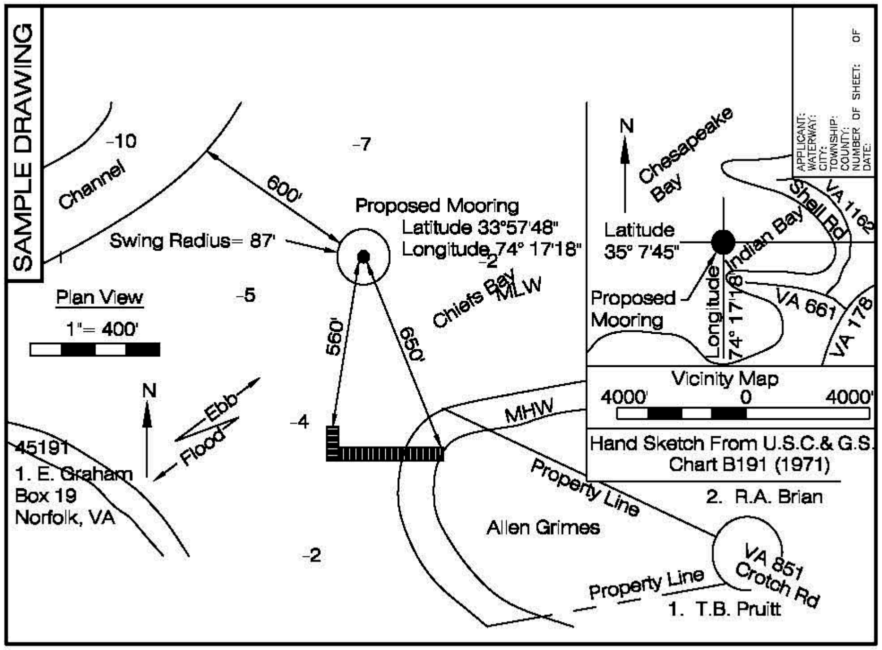
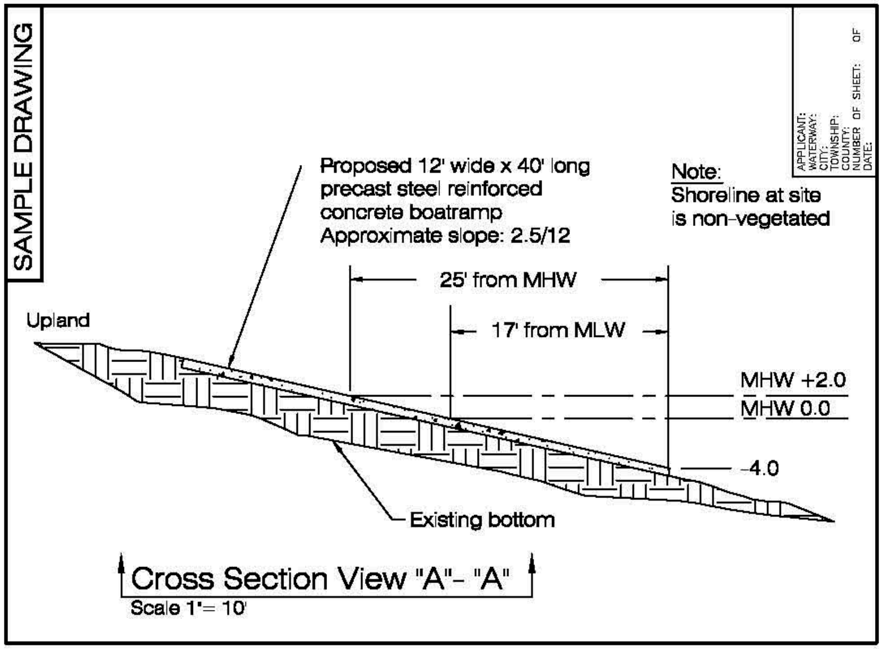
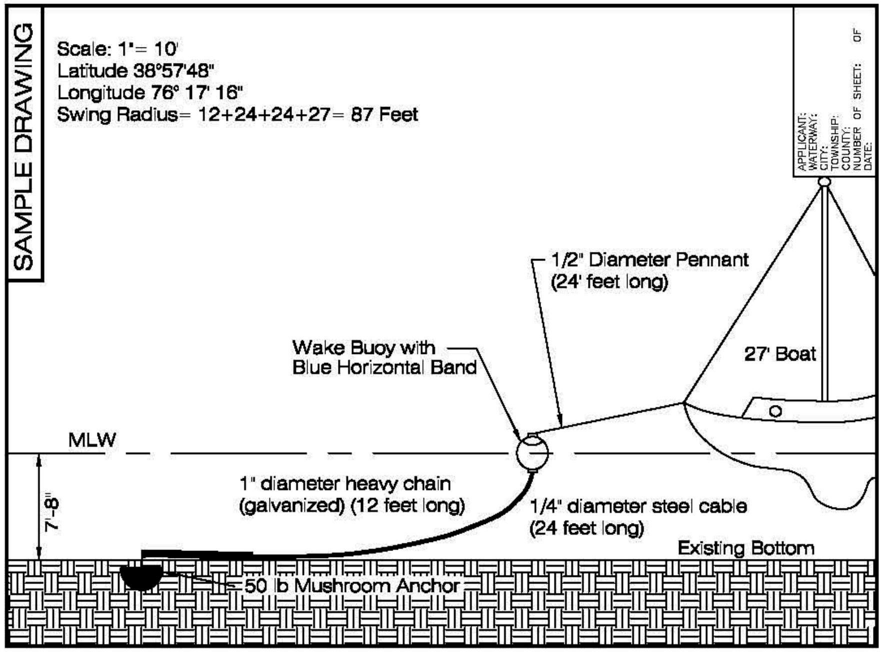


Boat Ramps



Dolphins or Moorings





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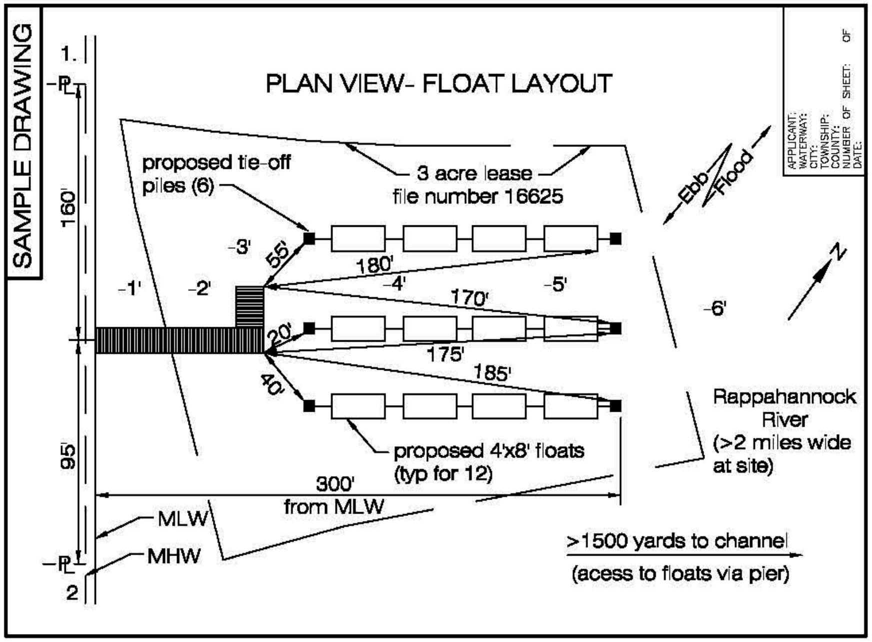

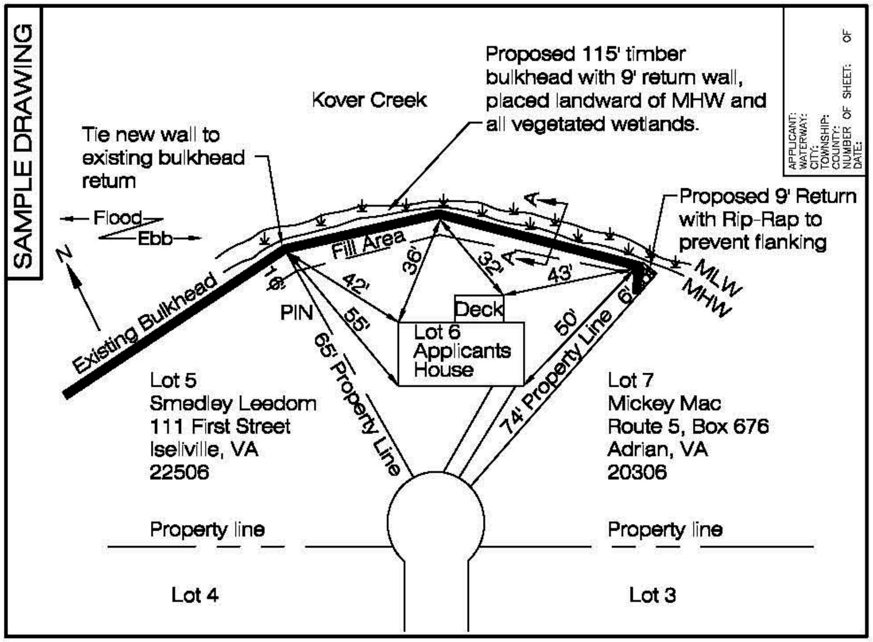

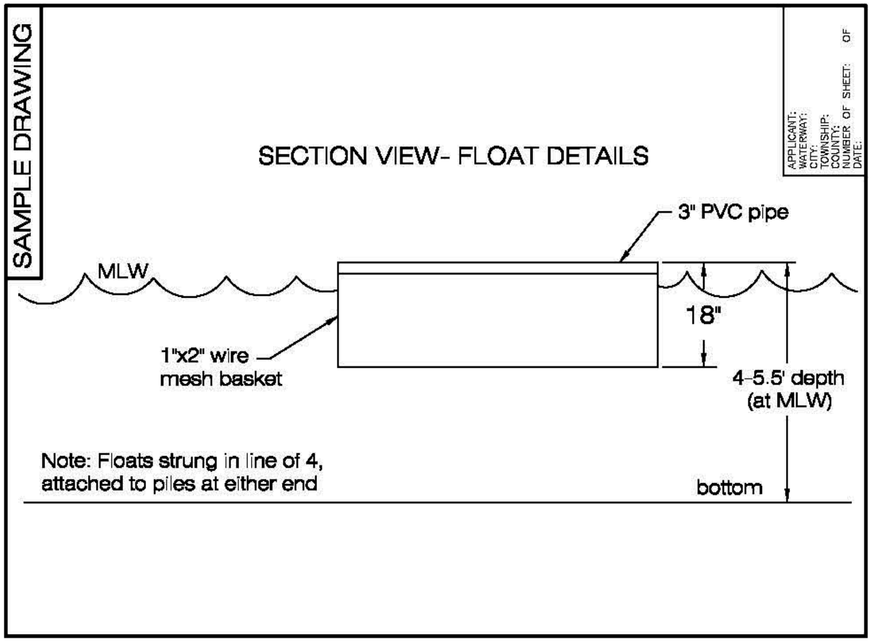

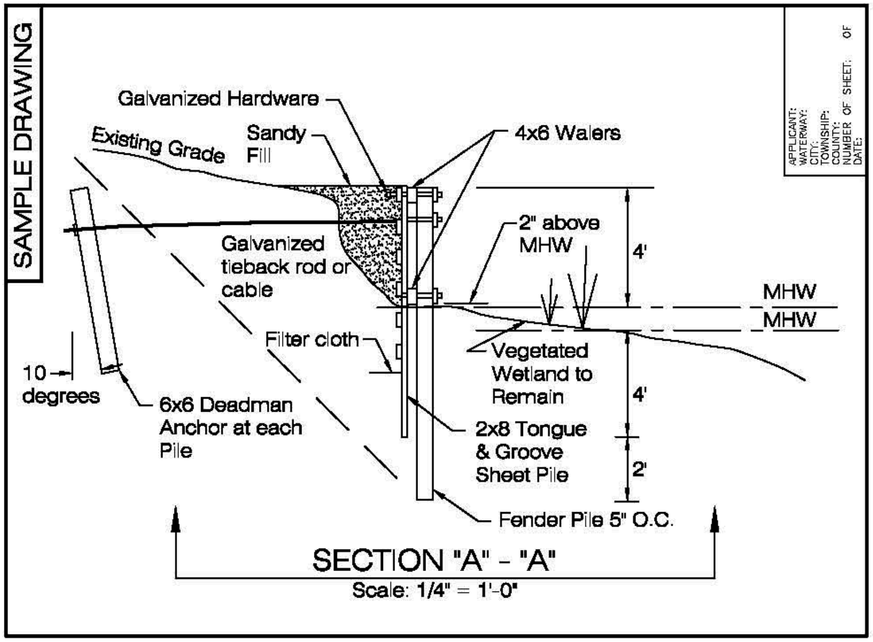

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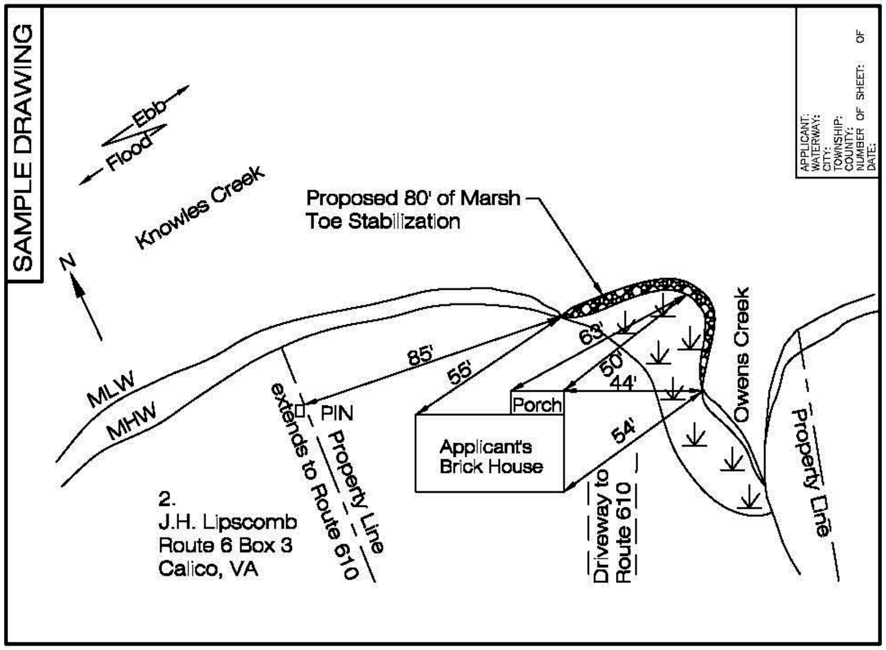
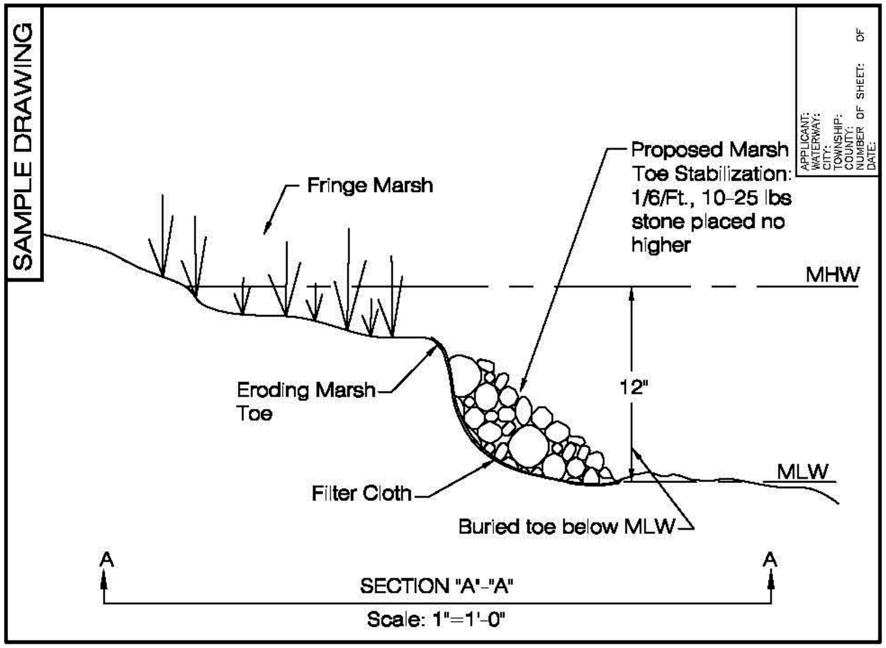
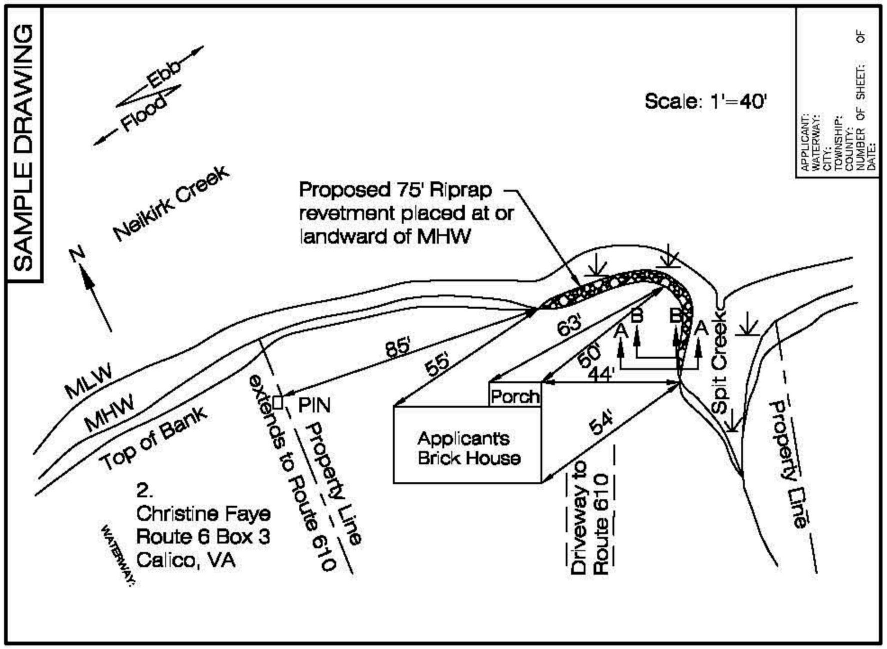
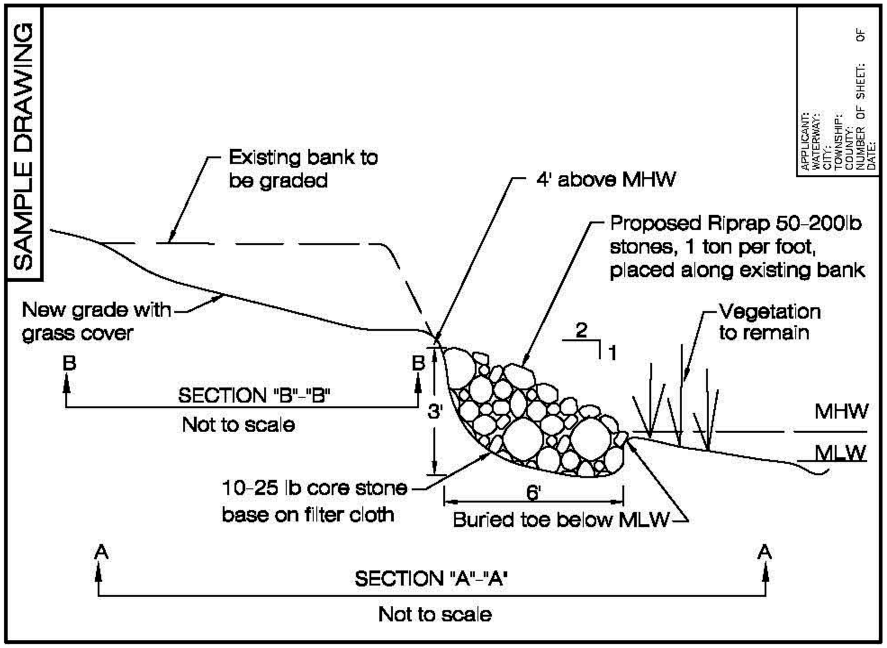
Marsh Toe Stabilization



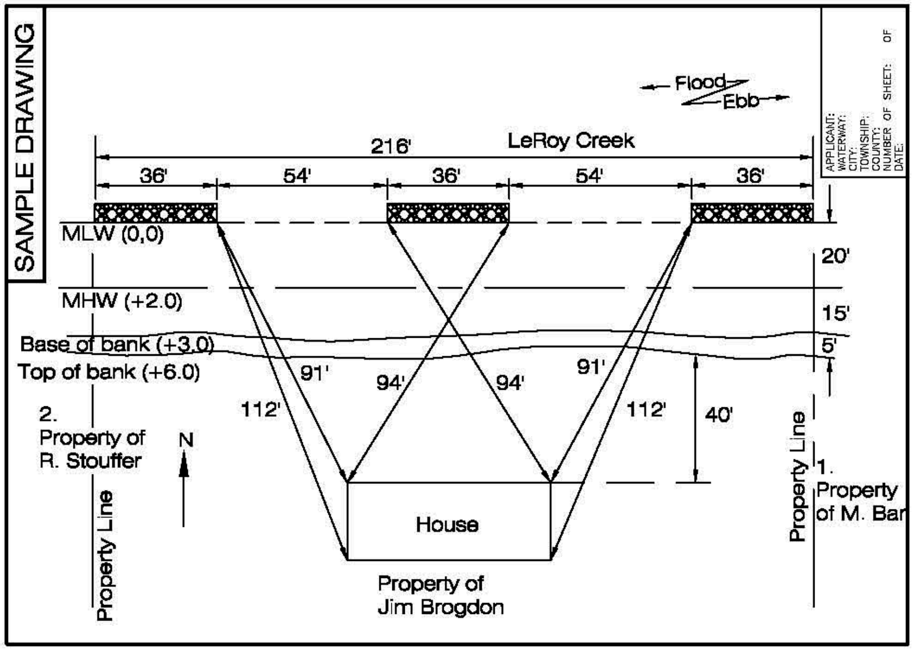


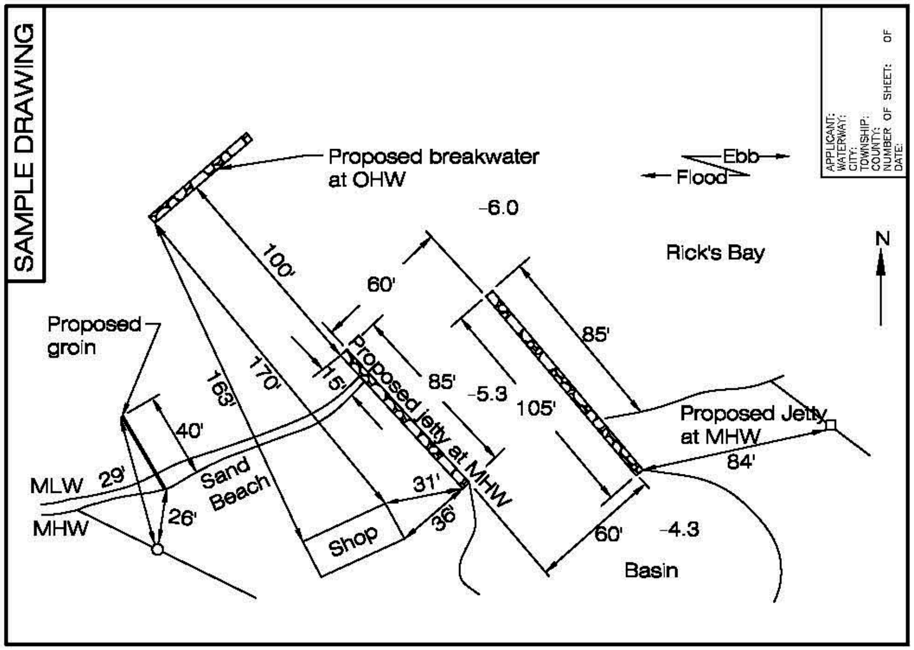
Riprap Revetment & Associated Backfill

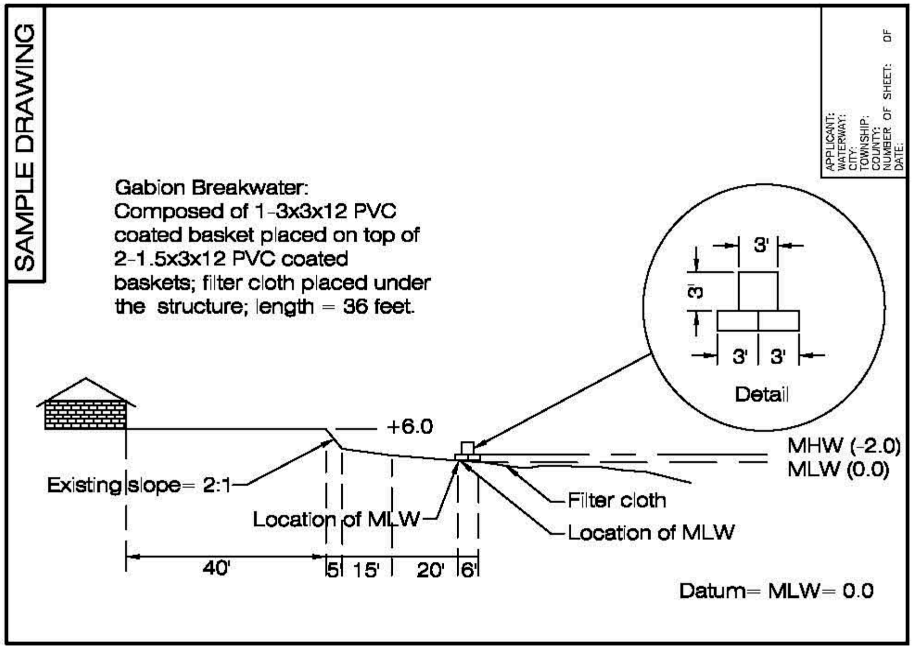


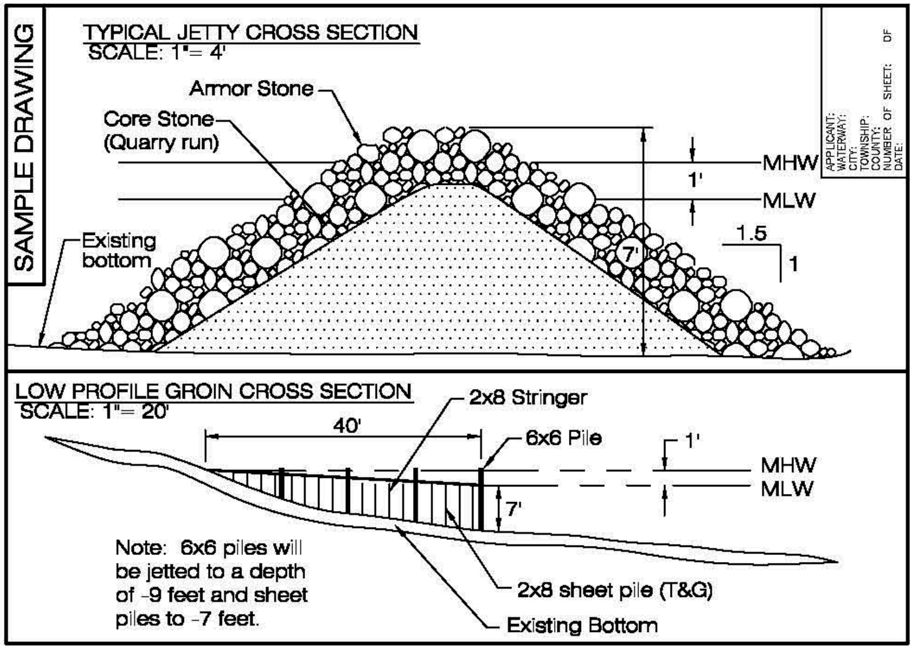


ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh









ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

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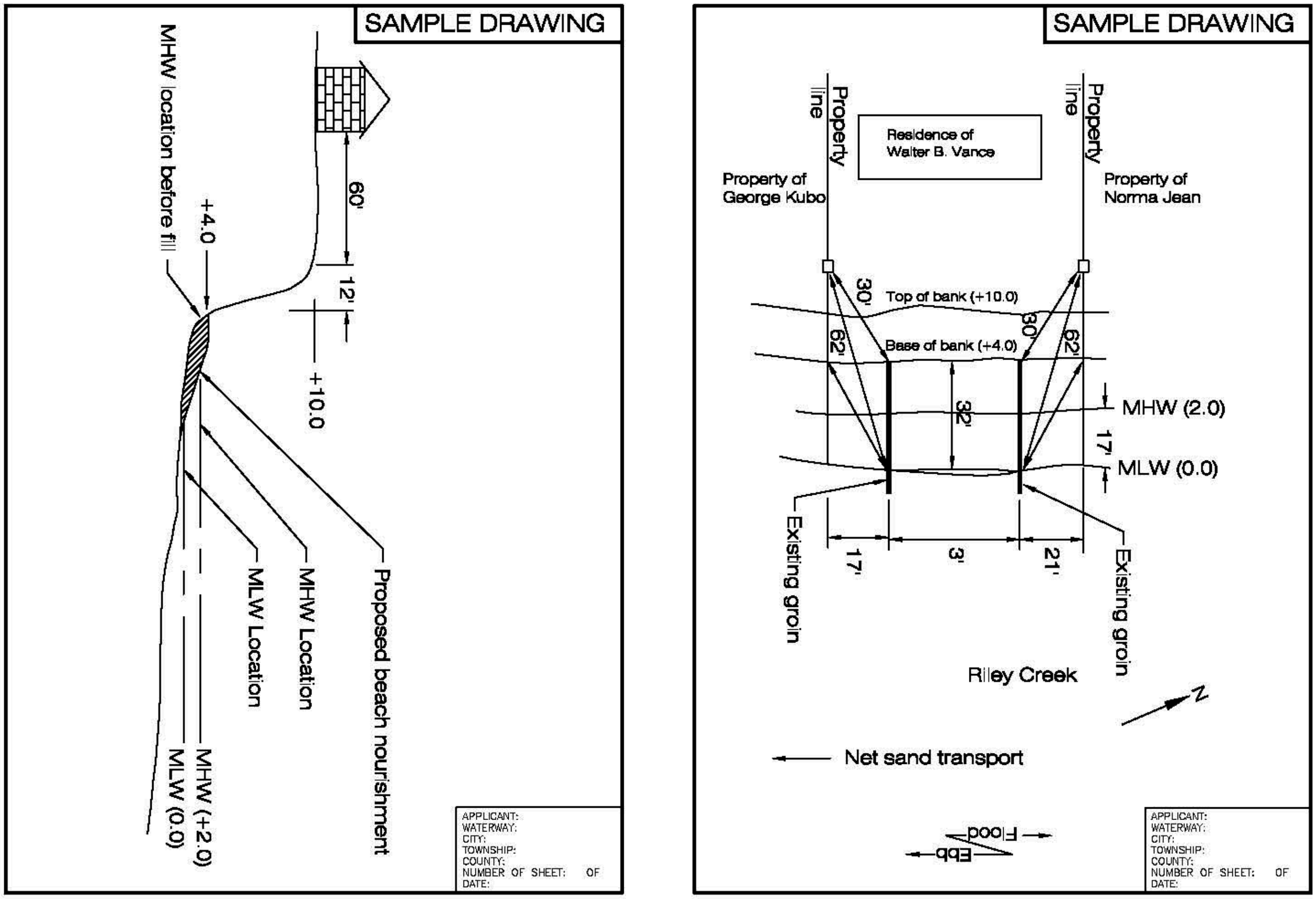
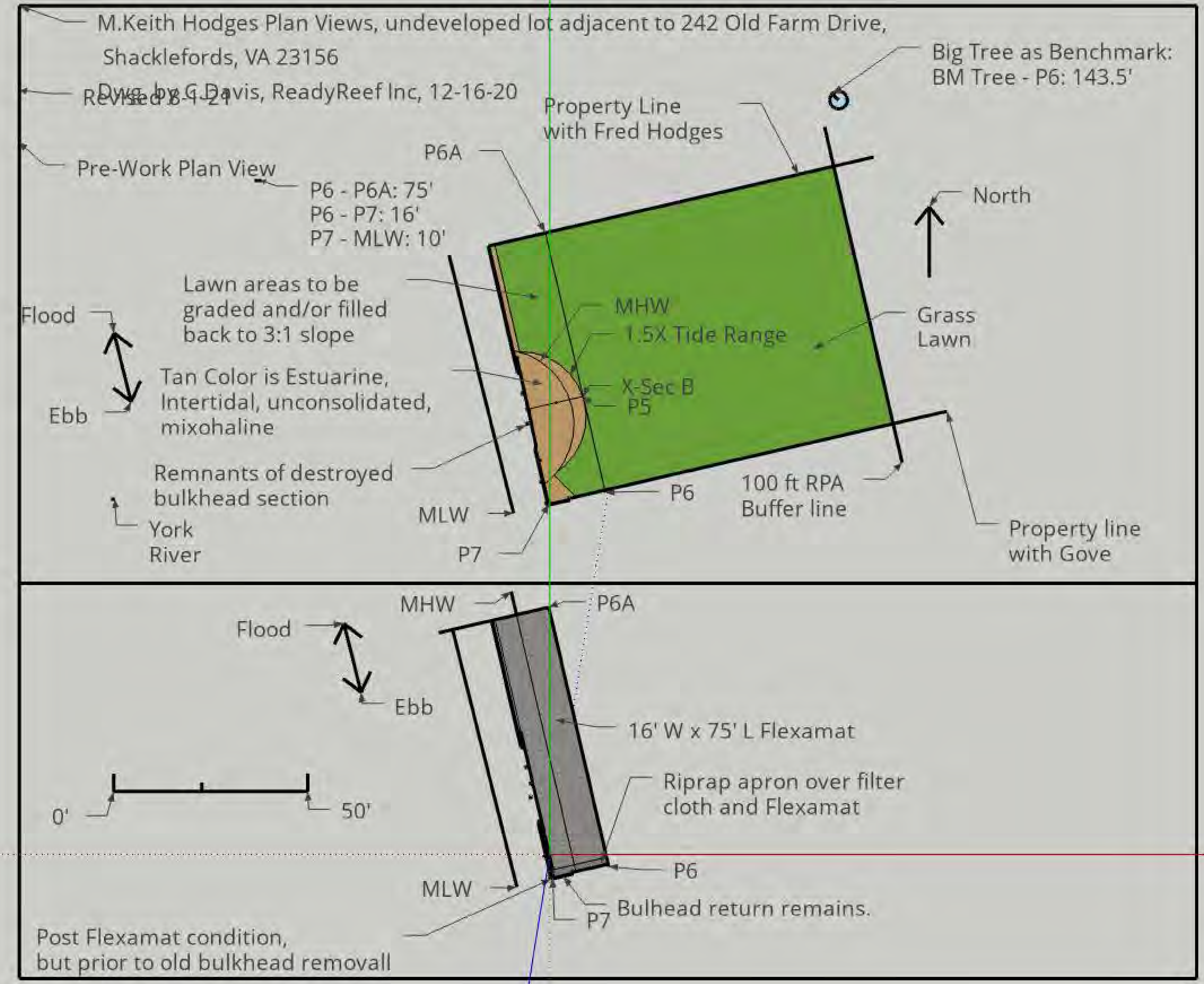


Beach Nourishment



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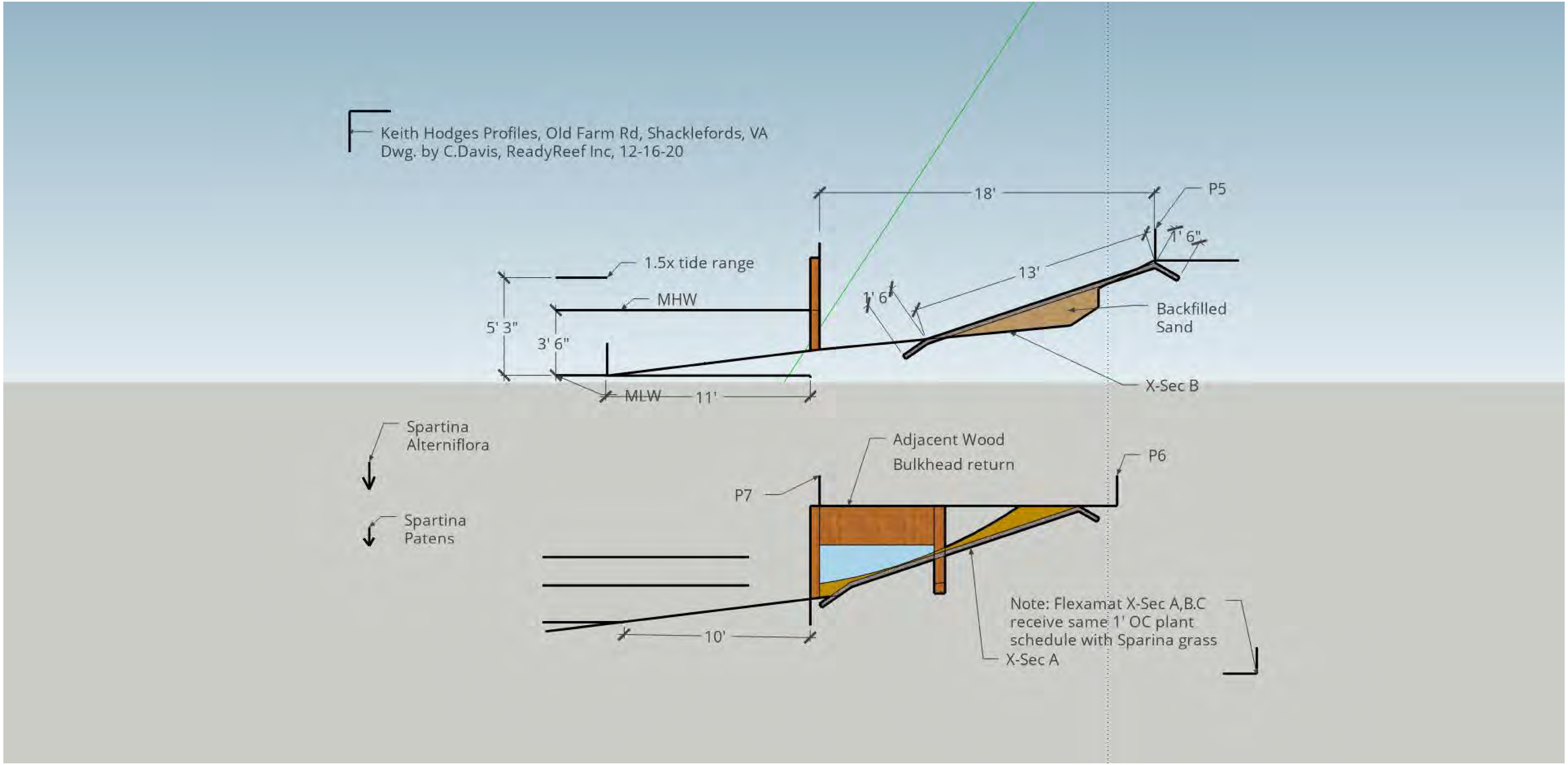
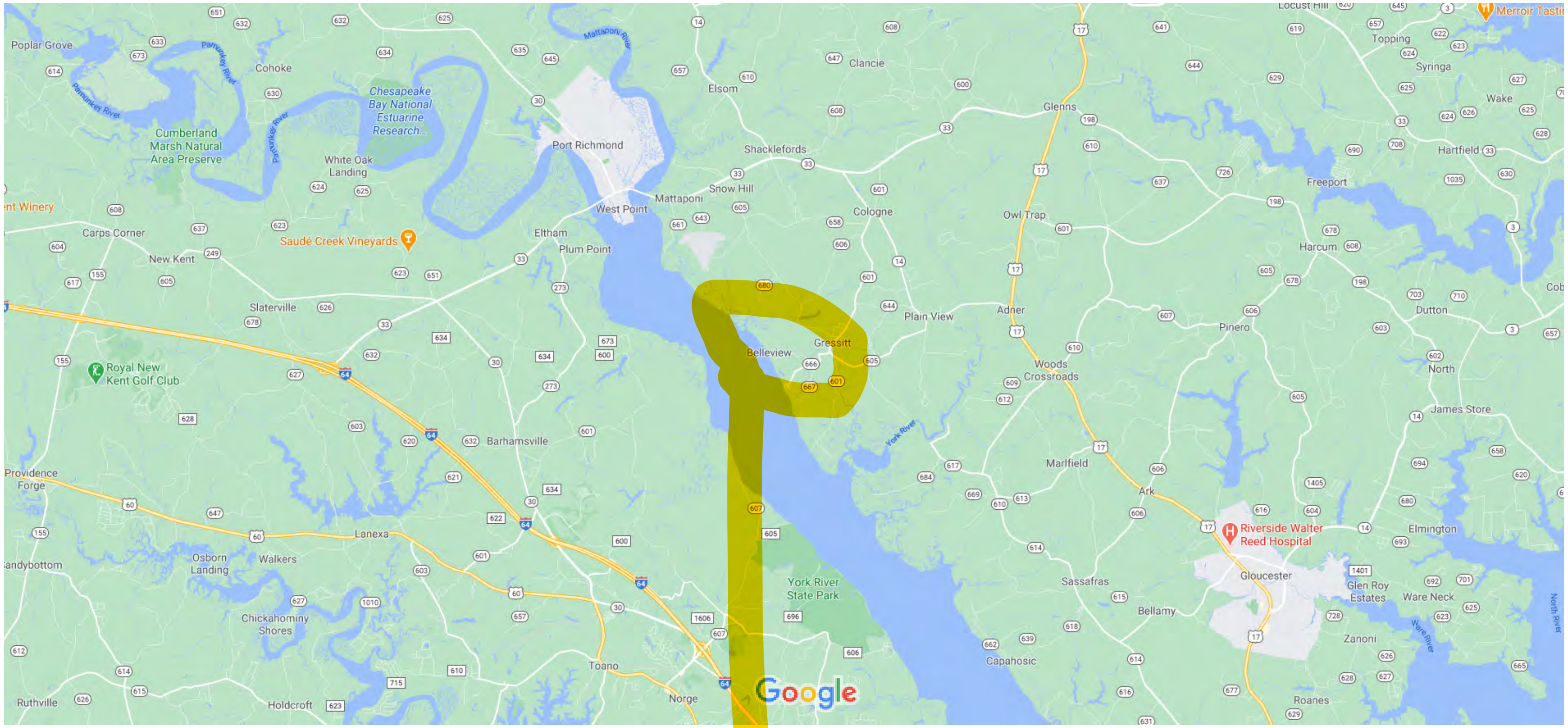


Keith Hodges Profiles, Old Farm Rd, Shacklefords, VA
Dwg. by C.Davis, ReadyReef Inc, 12-16-20

Note: Flexamat X-Sec A,B.C receive same 1' OC plant schedule with Sparina grass

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Google Maps



Map data ©2020 2 mi

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

(http://www.kingandqueenco.net/)

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Part 2 - Signatures

1. Applicants and property owners (if different from applicant).
NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, U.S. Army Corps of Engineers, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. Keith Hodges
Applicant's Name (printed/typed) (Use if more than one applicant)

Applicant's Signature (Use if more than one applicant)

4-1-21
Date

M. Keith Hodges
Property Owner's Name (printed/typed) (Use if more than one owner)
(If different from Applicant)

Property Owner's Signature (Use if more than one owner)

4-1-21
Date

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION

I (we), M. Keith Hodges, hereby certify that I (we) have authorized Chris Davis of ReadyReef Inc
(Applicant's name(s)) (Agent's name(s))
to act on my behalf and take all actions necessary to the processing, issuance and acceptance of this permit and any and all standard and special conditions attached.
We hereby certify that the information submitted in this application is true and accurate to the best of our knowledge.

Chris Davis
(Agent's Signature)

(Use if more than one agent)

4/2/21
(Date)

(Applicant's Signature)

(Use if more than one applicant)

4-1-21
(Date)

3. Applicant's having contractors (if applicable)

CONTRACTOR ACKNOWLEDGEMENT

I (we), M Keith Hodges, have contracted ReadyReef Inc
(Applicant's Name(s)) (Contractor's Name(s))
to perform the work described in this Joint Permit Application, signed and dated

We will read and abide by all conditions set forth in all Federal, State and Local permits as required for this project. We understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, state and local statutes and that we will be liable for any civil and or criminal penalties imposed by these statutes. In addition, we agree to make available a copy of any permit to any regulatory representative visiting the project to ensure permit compliance. If we fail to provide the applicable permit upon request, we understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all terms and conditions.

Chris Davis
Contractor's name or name of firm

514 Smoketree Ct
North Chesterfield, VA
23236
Contractor's or firm's address

READYREEF INC
Chris Davis President
Contractor's signature and title

Contractor's License Number

Applicant's signature

(Use if more than one applicant)

4-1-21
Date

ADDITIONAL INFORMATION/REVISIONS Received by VMRC August 1, 2021 /blh

Virginia Marine Resources Commission
Permit Application 20210820
Printed: Friday August 13, 2021 9:42 PM

Applicant: M. K. Hodges
Post Office Box 154
Urbanna, VA 23175

Application Number:	20210820	**Engineer:**	Tiffany Birge
Application Date:	April 12, 2021	**Locality:**	King and Queen
Permit Type:	No VMRC Permit Nec.	**Waterway:**	York River
Permit Status:	No Permit Nec	**Expiration Date:**	
Wetlands Board Action:		**Public Hearing Date:**	

Project Description: Living Shoreline

Project Dimensions:

BeachNourishment: 5 Cubic Yards

Bioengineered Structure: 1200 Linear Feet

Virginia Marine Resources Commission
Photos for Permit Application 20210820
Printed: Friday August 13, 2021 9:42 PM

Date Photo Uploaded: 2021:06:30

Date Photo Uploaded: 2021:06:30

Virginia Marine Resources Commission
Photos for Permit Application 20210820
Printed: Friday August 13, 2021 9:42 PM

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Virginia Marine Resources Commission
Photos for Permit Application 20210820
Printed: Friday August 13, 2021 9:42 PM

Date Photo Uploaded: 2021:06:30

Date Photo Uploaded: 2021:06:30

Attachment 7: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)

The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise* (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and

community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in
which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

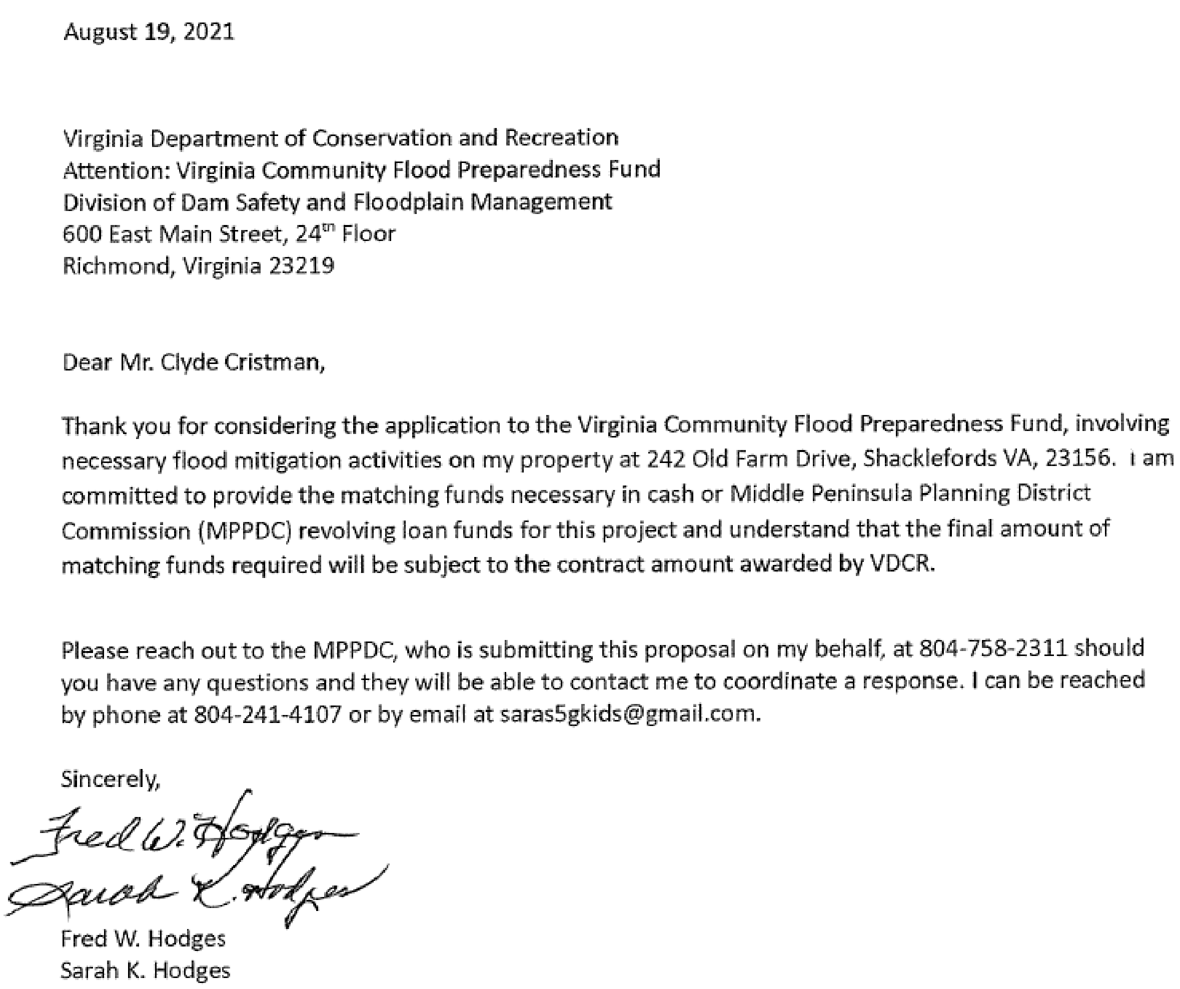
Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

Attachment 8: Project cost estimates

Item					
Demolition	F. Hodge			M.K. Hodge	
Bulkhead removal/haul away	$ 2,000.00			$ 1,000.00	
Overall labor	$ 3,097.38	$ 5,097.38		$ 1,615.13	$ 2,615.13
Prep Work	$ -			$ -	
Excavator rental for 2 wks	$ 5,025.00			$ 2,475.00	
Contracted Excavator Operator	$ 3,216.00			$ 1,584.00	
Skid Steer Rental for 2 wks	$ 1,340.00			$ 660.00	
Overall labor	$ 3,097.38	$ 12,678.38		$ 1,615.13	$ 6,334.13
Installation Work	$ -			$ -	
Flexamat	$ 32,562.00			$ 16,038.00	
Flexamat Anchors	$ 335.00			$ 165.00	
Plants in Flexamat	$ 8,140.50			$ 4,009.50	
Sand	$ 2,412.00			$ 2,412.00	
Labor Install and pack sand to grade	$ 2,412.00			$ 1,188.00	
Returns to limit erosion with riprap support	$ 3,500.00			$ 3,500.00	
Overall labor	$ 9,292.13	$ 58,653.63		$ 4,846.38	$ 32,158.88
Post Work	$ -			$ -	
Grading lawn, with excavated material, remedial planting,and lawn restoration	$ 1,005.00			$ 495.00	
Overall labor	$ 3,097.38	$ 4,102.38		$ 1,615.13	$ 2,110.13
Total	**$ 80,531.77**			**$ 43,218.27**	
		$ 80,531.77			**$ 43,218.27**
			Grant Total Both Hodges		
			$ 123,750.04		

Attachment 9: Match Commitment Letters



August 19, 2021

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 242 Old Farm Drive, Shacklefords VA, 23156. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response. I can be reached by phone at 804-241-4107 or by email at saras5gkids@gmail.com.

Sincerely,

Fred W. Hodges
Sarah K. Hodges

Fred W. Hodges
Sarah K. Hodges

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

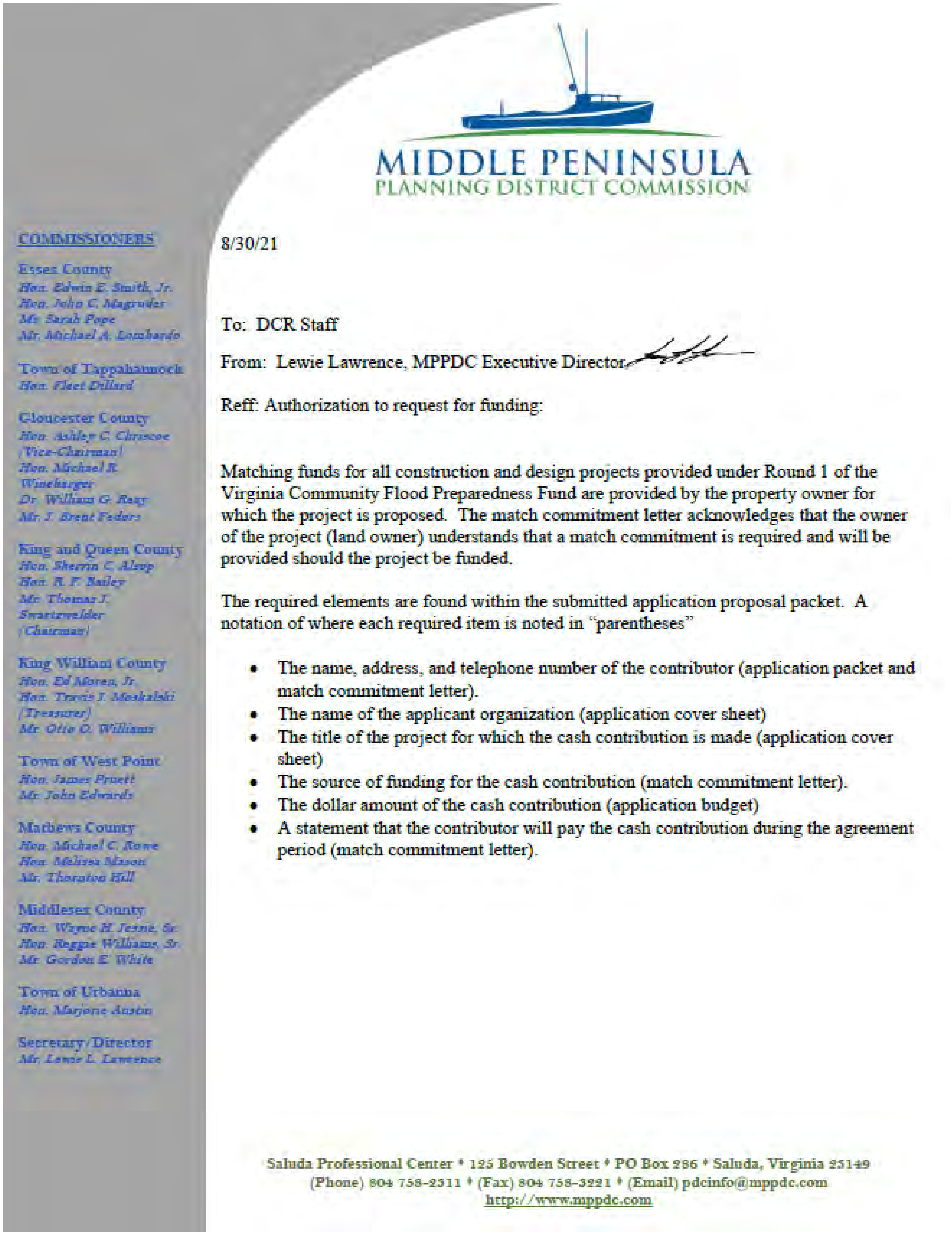
Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at [property address]. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions and they will be able to contact me to coordinate a response

Sincerely,

Keith Hodges

Attachment 10: Authorization to request for funding



MIDDLE PENINSULA
PLANNING DISTRICT COMMISSION

8/30/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 1 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Saluda Professional Center * 125 Bowden Street * PO Box 286 * Saluda, Virginia 23149
(Phone) 804 758-2311 * (Fax) 804 758-3221 * (Email) pdcinfo@mppdc.com
http://www.mppdc.com

CITY OF SUFFOLK

P.O. BOX 1858, SUFFOLK, VIRGINIA 23439-1858 PHONE: (757) 514-4012

CITY MANAGER

April 6, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Sir or Ma'am:

Please accept this written correspondence as signed documentation authorizing the City of Suffolk's request for funding from Round 3 of the 2022 Virginia Community Flood Preparedness Fund (CFPF).

The CFPF funding would enable the City of Suffolk to conduct an updated study to the Kimberly Bridge Feasibility Study. The cost of the proposed study is $298,747.16. Following the 90% Fund/10% Match requirements for this category, the City respectfully requests funding from the CFPF in the amount of $268,872.44. Furthermore, the City will provide the 10% matching contribution from the Public Works Professional Services budget, in the amount of $29,874.72

Thank you for your consideration of this grant proposal. If you have any questions about this proposal please contact Matt Fanghella at 757-514-7675 or mfanghella@suffolkva.us or Heather Baggett at 757-514-7627 or hbaggett@suffolkva.us.

Sincerely,

Albert S Moor II

Albert S. Moor, II P.E.
City Manager

p.c. Robert Lewis, Director of Public Works

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Suffolk

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

__X__**Study**

NFIP/DCR Community Identification Number (CID): 510156

If a state or federally recognized Indian tribe, Name of tribe: n/a

Name of Authorized Official: Albert S. Moor, II P.E.

Signature of Authorized Official: Albert S Moor II

Mailing Address (1): P.O. Box 1858

Mailing Address (2): City Manager's Office

City: Suffolk **State:** VA **Zip:** 23439

Telephone Number: (757) 514-7675 **Cell Phone Number:** (757) 266-7924

Email Address: amoor@suffolkva.us

Contact Person (If different from authorized official): Matt Fanghella, EIT

Mailing Address (1): P.O. Box 1858

Mailing Address (2): Public Works Engineering

City: Suffolk **State:** VA **Zip:** 23439

Telephone Number: (757) 514-7675 **Cell Phone Number:** (757) 266-7924

Email Address: mfanghella@suffolkva.us

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes **X** No

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

X Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

X Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

X Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Suffolk, Virginia

NFIP Community Identification Number (CID#): (See appendix F 510156

Is Project Located in an NFIP Participating Community? **X** Yes ☐ No

Is Project Located in a Special Flood Hazard Area? **X** Yes ☐ No

Flood Zone(s) (If Applicable): Zone AE

Flood Insurance Rate Map Number(s) (If Applicable): 5101560227E

Total Cost of Project: $ 298,747.16

Total Amount Requested: $ 268,872.44

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**City of Suffolk, Virginia**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	**X**
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	**X**
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	**N/A**
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	**X**
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	**X**
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration	**x Yes** **☐ No**
Applicant Name:	**City of Suffolk, Virginia**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	**35**
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	**45**
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	
☐ Regional hydrologic and hydraulic studies of floodplains.	**45**	
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	**40**
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	**35**
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	**12**
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	**0**
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	**10**
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	**0**
Total Points		**177**

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	**X** Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	**X** Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	**X** Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	**X** Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No **X** N/A
A link to or a copy of the current hazard mitigation plan	**X** Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	**X** Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	**X** Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No **X** N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	**X** Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	**X** Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No **X** N/A

City of Suffolk – Department of Public Works
2022 Virginia Community Flood Preparedness Fund Grant Round 3
Update to Kimberly Bridge Feasibility Study

Part IV

A. Scope of Work Narrative – Studies

The City of Suffolk is submitting this grant application to the Virginia Community Flood Preparedness Fund in the Study category. Specifically, the City is requesting funding to partially fund an updated study of the Kimberly Bridge Feasibility Study.

1. Type of Study and Details of the Study

For several decades, there has been a recurring flooding problem on North Main Street (U.S. Route 32/U.S. Route 460 Business) at the Kimberly Bridge that crosses the Nansemond River in the downtown area of Suffolk. This flooding occurs during large rain events, but flooding also occurs during dry weather as a result of wind-driven, high tides in the Nansemond River. Storm drains on the eastern and western sides of North Main St. north of the Kimberly Bridge discharge stormwater from the roadway to the river, via a network of underground drainage pipes. When tides are high enough, river water enters the pipes causing it to overtop the storm drains and flood the roadway on North Main Street. Often the water is high enough to flood the entire roadway, preventing passage of vehicle and pedestrian traffic. This is of great concern to many Suffolk citizens, as this is a major thoroughfare for vehicle traffic from southern Suffolk to the North Main Street area that is home to many integral businesses, such as grocery stores, gas stations, banks, restaurants, doctor's offices, and specifically Walmart and Lowes. Additionally, the Kimberly Bridge serves as a major route for emergency vehicles to Sentara Obici Hospital, which serves both Suffolk residents as well as residents from northeast North Carolina who rely on this critical infrastructure as their closest medical facility. When this part of North Main Street is impassable, the alternate routes along Portsmouth Blvd, Route 58, Pitchkettle Road, and Wilroy Road often see back-ups of several miles, which can be further exacerbated during peak travel times. Occasionally flooding of the Kimberly Bridge area results in flooding of adjacent properties and businesses. These include a gas station and an automotive service center, both of which have the potential to immediately contaminate the Nansemond River when flooded. The most recent large flooding event in this area occurred on January 3rd, 2022, as a result of a combination of heavy rain, high tides, and windy conditions (see attached photos). During this event there was a release of petroleum product from the automotive service center into the Nansemond River. See attached photos of flooding during the January 3, 2022 event, during Hurricane Matthew in October 2016, and during Hurricane Sandy in October 2012, which are just a few examples of severe and recurrent flooding in this area.

The City of Suffolk is seeking CFPF grant funding to develop a new and updated study of the Kimberly Bridge flooding issue and plans to contract with the engineering consultant Moffatt and Nichol to develop this study. In 2013, the City of Suffolk contracted the engineering firm, RK&K, to conduct a study to determine the cause of recurrent flooding in the Kimberly Bridge area and to develop recommendations for alleviating the flooding issues. The new study will focus more on resiliency by incorporating impacts associated with climate change and sea level rise that were not considered in the previous study. It will include conceptual design phase (10% design) engineering for raising the road and bridge along N. Main Street and the Kimberly Bridge for three (3) design alternatives. Field investigations will include planimetric and topographic mapping of the area, a bathymetric survey of the river, and a bridge survey to confirm existing conditions. Also, a drainage analysis of the area will be completed on the existing infrastructure, as well as a hydrologic and hydraulic analysis. The hydrologic and hydraulic analysis will include an analysis of the natural, existing, and proposed conditions of the project site. This will include an analysis of the impacts of each of three design scenarios, all of which will use a minimum finished grade elevation for the 100-year return period flood event with additional elevation to account for sea level rise and additional freeboard. A hydraulic model will be developed to compare the hydraulic effects of each alternative design with the existing conditions of the river. Additionally, the study will provide updates to construction and property acquisition costs and a Phase I Environmental Site Assessment to determine potential sources of contamination.

2. Benefit of the Study to Community Resilience

Several times per year, depending largely on wind-driven tides in the Nansemond River and also during large rain events, North Main Street immediately north of the Kimberly Bridge in Downtown Suffolk is completely inundated with water, to the point that it is impassable by vehicle traffic. This North Main Street route over the Kimberly Bridge is a major thoroughfare utilized by many residents of Suffolk, connecting southern Suffolk to North Main Street which is the location of many businesses and residences. Also, North Main Street serves as a primary route to Sentara Obici Hospital, for both Suffolk residents and residents of North Carolina who live near the North Carolina – Virginia state line. This portion of North Main Street is one of the most heavily traveled arterial roadways in the city, experiencing an Annual Average Daily Traffic Volume (AADT) of 26,000 vehicles per the 2020 Virginia Department of Transportation Daily Traffic Volume Estimates. This is also a popular route for Suffolk's public transportation system, Suffolk Transit, which enables lower income and disabled residents to reach everyday destinations such as jobs, schools, healthcare, and grocery stores.

While a study of this flooding issue was conducted in 2013, it did not incorporate future impacts from sea level rise and climate change. It considered design alternatives for the 25 and 50-year flood elevations, and these design scenarios do not alleviate the current flooding nor do they mitigate the risk from future flooding. The new study will focus more on resiliency by incorporating future impacts from sea level rise and climate change. All three design alternatives will use a minimum finished grade elevation for the 100-year return period flood event with additional elevation to account for sea level rise and additional freeboard. Additionally, all design alternatives in the new study will increase the hydraulic opening beneath the Kimberly Bridge to prevent future flooding of the bridge and allow larger boats to travel beneath the bridge, which is especially important for emergency boat access, as well as recreational boating activity.

The new study will also include a Phase I Environmental Site Assessment to identify any potential environmental contamination in the area. The Nansemond River is immediately adjacent to the project area, and flood waters directly impact the river. In close proximity to the bridge is a gas station and an automotive service center, which both pose an immediate threat to the Nansemond River when this area floods. Preventing flooding of North Main Street could improve the water quality in the Nansemond River by minimizing potential contamination by receding floodwaters and minimizing the inundation of sewer infrastructure, sewer backups, and overflows. Residents of all income classes enjoy the aesthetic beauty of the river as well as the recreational aspects that include fishing, boating, and kayaking. Minimizing flooding in the area will help preserve the fish and wildlife that thrive in the Nansemond River.

The City plans to convert any properties acquired through the Kimberly Bridge project into green space and/or public outdoor recreational areas. Simultaneously, the Suffolk Parks and Recreation department has plans under development to turn the City-owned area immediately northeast of the Kimberly Bridge into a park with a living shoreline along the riverfront portion of the parcel. This is a nature-based solution that will mitigate flooding and provide a recreational area for Suffolk's citizens, increasing access and enjoyment of the Nansemond River.

Furthermore, the median household income in the study area is $63,386, which is less than 80% of the median household income for the City of Suffolk of $79,899, as identified by Census.gov from 2016 – 2020 data. Hence, the study area meets the definition of a "low-income geographic area" as defined by the *2022 Virginia Community Flood*

Preparedness Fund Round 3 Grant Manual. The adaptation and protection efforts identified by this study will work to enhance equity throughout the project area, which is a key Commonwealth Resilience Planning Principle.

3. Qualifications

The Kimberly Bridge Feasibility Study and grant award will be managed by the City of Suffolk Public Works Engineering Division. Public Works Engineering staff members have a strong knowledge of the City's stormwater system, work with flooding and drainage concerns within the city on a daily basis, and lead resiliency initiatives in the City. Furthermore, two staff members are in training to earn their Certified Floodplain Manager (CFM) Certifications. The City's consultant, Moffatt and Nichol, will conduct this study under the direction of the consultant's Project Manager who is a licensed Professional Engineer (P.E.) with over fourteen years of experience in municipal and state bridge inspection and engineering services. Moffatt and Nichol is a leading engineering-firm in bridge design and resiliency in the region.

4. Objectives of the Study and Regional Resilience

The objectives of the Kimberly Bridge study include:

- Identifying the cause of flooding in this area
- Identifying potential flood protection and flood reduction projects within this area with the following goals:
    - Reduce flooding of the North Main Street and Kimberly Bridge area so that vehicle traffic will be inhibited less frequently, which also allows passage of critical emergency traffic and personnel to Sentara Obici Hospital.
    - Increase resiliency of Suffolk's roadways by incorporating impacts of sea level rise and climate change, raising the project area to the 100-year flood elevation, at a minimum.
    - Reduce flooding of critical infrastructure, ultimately reducing pollution to the Nansemond River.
    - Reduce flooding of properties that have the potential to contaminate the environment, protecting fish and wildlife habitat in the Nansemond River and preserving the recreational benefits of the river that include fishing, boating, and kayaking.
    - Increase the hydraulic opening beneath the Kimberly Bridge to prevent flooding of the bridge and allow larger boats to travel beneath the bridge (for emergency access and recreational use).

The City of Suffolk Public Works Department will vet the proposed design alternatives identified as part of this study. The results of this study will be incorporated into the City-wide Resilience Plan. The flooding issue at the North Main Street crossing of the Nansemond River is also described in the City of Suffolk's May 2004 Stormwater Master Plan (available upon request). Funding for further design and construction of identified design alternatives would be sought through the City's Capital Improvement Plan (CIP) as well as grant programs such as Virginia Department of Conservation and Recreation Community Flood Preparedness Fund, the Federal Emergency Management Building Resilient Infrastructure and Communities Grant, and Virginia Department of Transportation funding sources.

The City of Suffolk, with the assistance of Timmons Group, developed a survey with resilience-based questions that was made available to the public from March 1, 2022 through March 31, 2022. The purpose of the survey was to receive input from citizens to guide projects for the Resilience Plan that is currently under development. In the survey, a total of 84 of 123 survey respondents noted Main Street as a street they travel on that floods. In addition, there was an overwhelming response to the survey on social media, where many residents expressed their frustration with the flooding on N. Main Street.

Improvements to the Kimberly Bridge and the reduction of flooding on N. Main Street will positively impact many communities within Suffolk as well as neighboring communities in northeast North Carolina. This is a main thoroughfare for residents to reach necessities such as grocery stores, banks, gas stations, doctor's offices, schools, etc., and a main route to Sentara Obici Hospital, as well as a hurricane evacuation route. This portion of North Main Street is one of the most heavily traveled arterial roads in the city, experiencing an Annual Average Daily Traffic Volume (AADT) of 26,000 vehicles per the 2020 Virginia Department of Transportation Daily Traffic Volume Estimates. This study will also result in more resilient utility infrastructure and identify opportunities to reduce the impacts of flooding on utility infrastructure within the study corridor.

Throughout the rest of Hampton Roads and the Commonwealth of Virginia, many communities face challenges of infrastructure flooding and tidal influence coupled with sea level rise. The proposed study may provide best practices that could be used as case studies in other settings of this type, while also providing a framework for studies focused on targeted infrastructure flood resilience problems. The City is an active participant on several Hampton Roads Planning District Commission (HRPDC) Committees including The Coastal Resiliency Committee, The Regional Stormwater Workgroup, and The Regional Environmental Committee. The City is also an active participant in the Hampton Roads Transportation Planning Organization (HRTPO) and its sub-committees. City staff are willing to share the results and findings of this study with peers and colleagues from other localities to use as a template for studies in their communities, if they see a benefit and/or need.

5. Statewide Context

The study funded by this grant will improve Virginia's flood protection and prevention capabilities, from a transferability and statewide context. Communities across the Commonwealth face the challenges of infrastructure flooding and tidal influence coupled with sea level rise. The proposed study may provide best practices that could be used as case studies in other settings of this type, while also providing a framework for studies focused on targeted infrastructure flood resilience problems.

D. Budget Narrative – All Grant Categories

The median household income in the study area of zip code 23434 is $63,386, which is less than 80% of the median household income for the City of Suffolk, as identified by Census.gov from 2016 – 2020 data. Hence, the study area meets the definition of a "low-income geographic area" as defined by the *2022 Virginia Community Flood Preparedness Fund Round 3 Grant Manual*. As a result, the City of Suffolk is seeking funding support for 90% of the proposed Finney Outfall to Nansemond River Drainage Study.

The total cost for the proposed study is $298,747.16 According to the guidance outlined in the DCR 2022 Round 3 Grant Manual for the Virginia Community Flood Preparedness Fund, grant matching requirements for the Flood Prevention and Protection studies that are located in and serve a low-income geographic area are eligible for a Fund 90% / Match 10% ratio. Therefore, the City respectfully requests financial assistance from the Fund in the amount of $268,872.44 and the City is committing to fund the remaining $29,874.72 via the Stormwater Utility Fund from the Professional Services line of the annual operating budget for Public Works Engineering. Evidence of the City of Suffolk's ability to obtain these funds to partially fund the proposed study is found on Page 243 of the City of Suffolk FY 2021-2022 Adopted Operating and Capital Budget, which can be found on the City website at the following link: https://www.suffolkva.us/DocumentCenter/View/5717/FY-2021-2022-Adopted-Operating-and-Capital-Budget A summary of the financial costs for the proposed study is shown in Table 1, below.

All match funding will be used towards consultant work to complete the study, along with the $29,874.72 of contributed City funds. In addition to the direct funding included as a match, the City of Suffolk also commits to managing all aspects of project management using existing qualified staff. A detailed breakdown of how the proposed funding for the Kimberly Bridge Feasibility Study will be used is shown in the Table included in the Moffatt and Nichol Scope of Work and Fee documents, attached to this application. Furthermore, signed documentation from the City Manager authorizing the request for funding is included with this application.

Table 1. Costs for Kimberly Bridge Feasibility Study

Flood Prevention and Protection Studies in Low-Income Geographic Areas - Fund 90% / Match 10%			
Item	**Total**	**Request from Grant Fund**	**Match**
Kimberly Bridge Feasibility Study	$ 298,747.16	$ 268,872.44	$ 9,874.72
Total Project Cost:			$ 298,747.16
Amount of funds requested from the Fund			**$ 268,872.44**
Amount of contribution by City:			$ 29,874.72

Attachments:

Link to the current floodplain ordinance:

Unified Development Ordinance Article 4- Sec. 31-416.2- Floodplain Overlay District
https://library.municode.com/va/suffolk/codes/unified_development_ordinance?nodeId=SUFFOLK_UNIFIED_DEVELOPMENT_ORDINANCE_ART4ZO_S31-416.2FLOVDIF

Unified Development Ordinance Appendix B- B-15- Flood Prevention Plan
https://library.municode.com/va/suffolk/codes/unified_development_ordinance?nodeId=SUFFOLK_UNIFIED_DEVELOPMENT_ORDINANCE_APXBSURE_B-15FLPRPL

A link to the current hazard mitigation plan:

2017 Hampton Roads Hazard Mitigation Plan and Appendices
https://www.hrpdcva.gov/library/view/620/2017-hampton-roads-hazard-mitigation-plan-and-appendices/

A link to the current comprehensive plan:

City of Suffolk, Virginia 2026 Comprehensive Plan
https://www.suffolkva.us/DocumentCenter/View/890/2026-Comprehensive-Plan-PDF

Social vulnerability index score from ADAPT VBA's Virginia Vulnerability Viewer:
According to ADAPT VA's Virginia Vulnerability Viewer, the focus area of this study received a score of High Social Vulnerability.

Flooding of North Main Street (U.S. Route 32/U.S. 460 Business) on Jan. 3, 2022; resulted in extended road closures and traffic detours for several hours. Photo is looking northward on North Main Street.

Floodwaters and Nansemond River Tides rise above the hydraulic opening of the Kimberly Bridge on Jan. 3, 2022, causing flooding of North Main Street (U.S. Route 32/U.S. 460 Business); resulted in extended road closures and traffic detours for several hours.

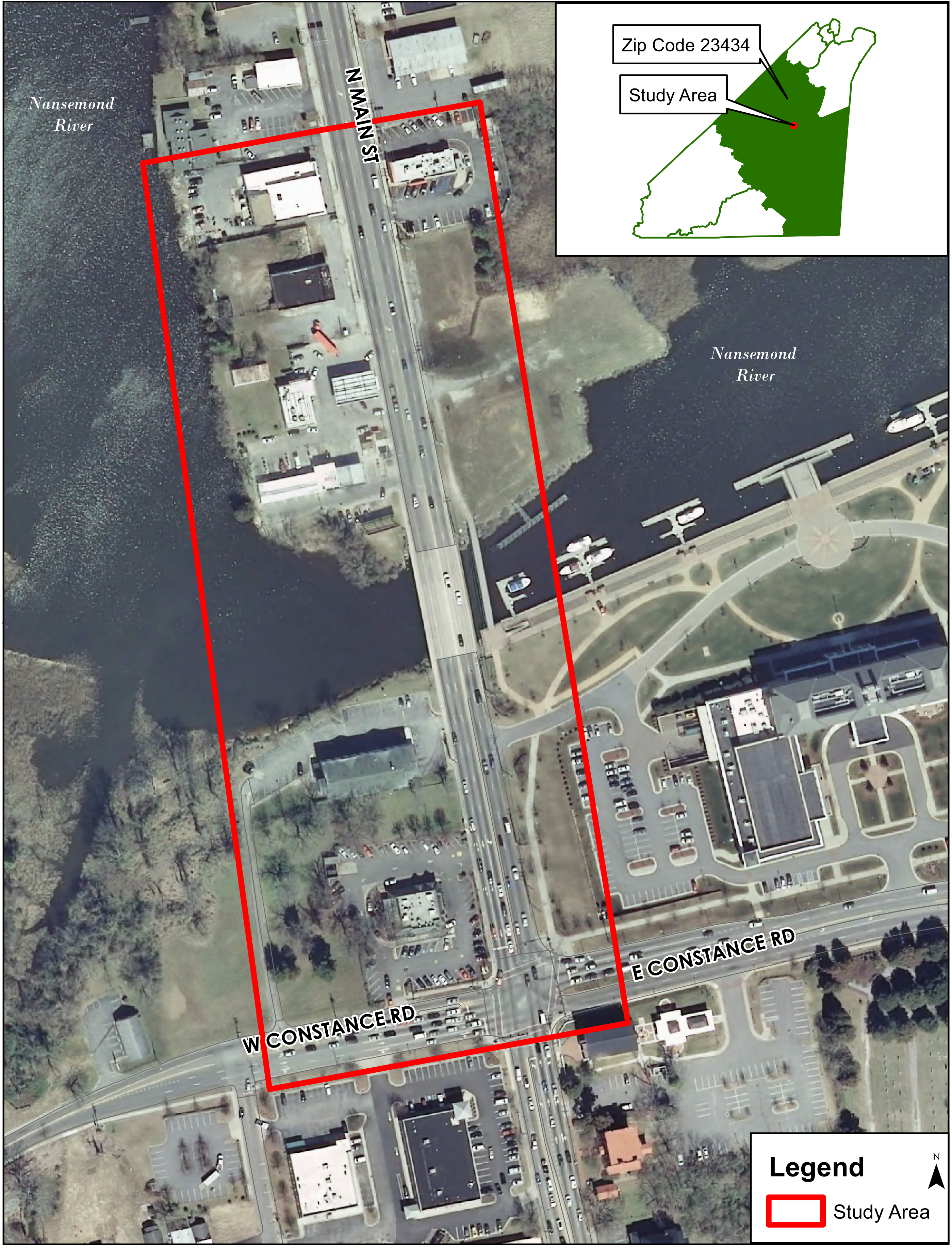
Flooding of North Main Street (U.S. Route 32/U.S. 460 Business) and Kimberly Bridge during Hurricane Matthew in October 2016.

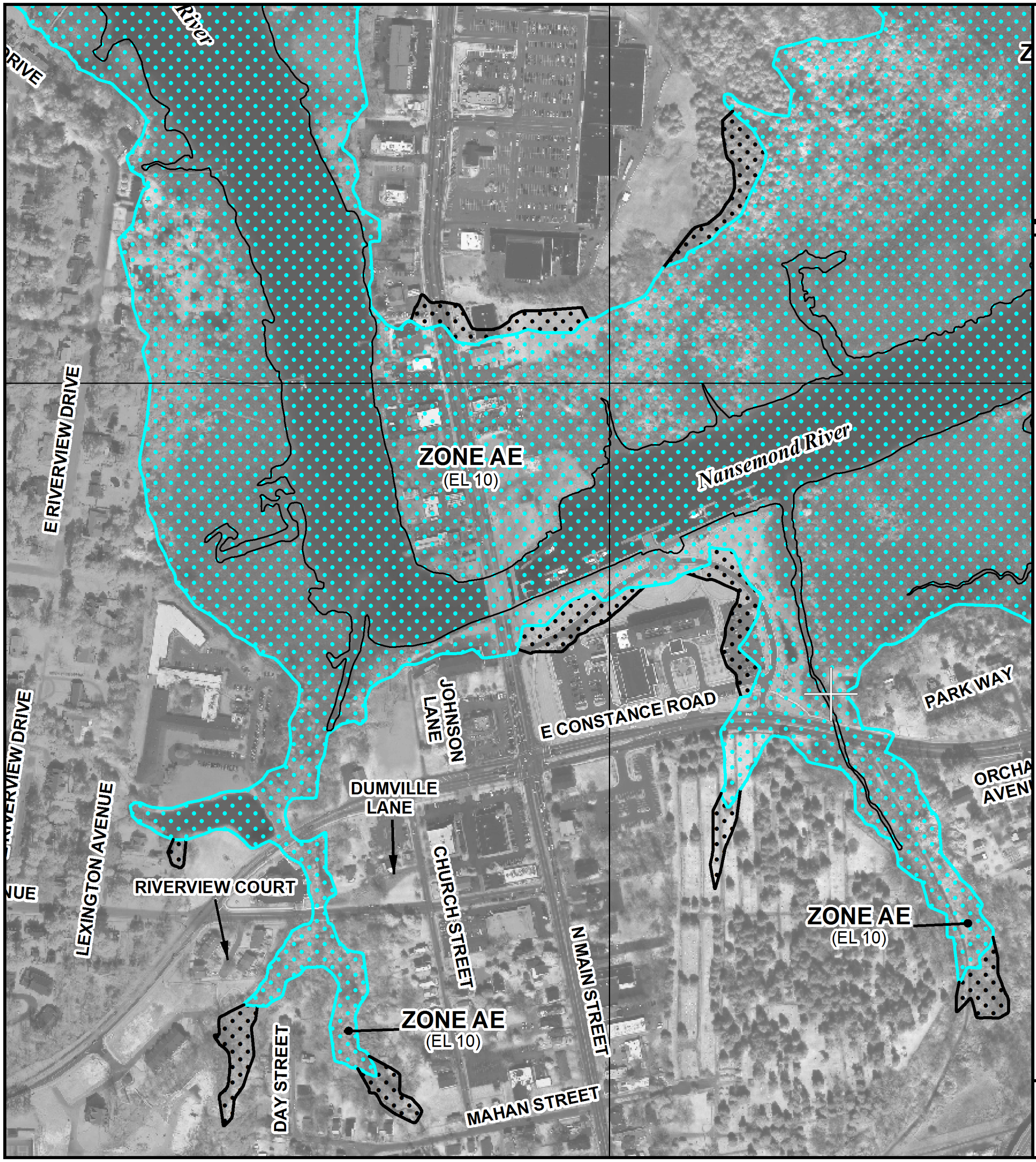
Flooding of North Main Street (U.S. Route 32/U.S. 460 Business) and Kimberly Bridge during Hurricane Matthew in October 2016. This photo is looking northward and towards the upstream reaches of the Nansemond River.

Flooding of North Main Street (U.S. Route 32/U.S. 460 Business) during Hurricane Sandy in October 2012; resulted in extended road closures and traffic detours for several hours as well as impacts to local businesses. Photo is looking northward on North Main Street.

Floodwaters and Nansemond River Tides rise above the hydraulic opening of the Kimberly Bridge during Hurricane Sandy in October 2012 causing flooding of North Main Street (U.S. Route 32/U.S. 460 Business), resulting in extended road closures and traffic detours for several hours.

Kimberly Bridge Feasibility Study Area





call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 F

150 0 150 3

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0227E

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
SUFFOLK,
VIRGINIA
INDEPENDENT CITY

PANEL 227 OF 390

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SUFFOLK, CITY OF	510156	0227	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

U.S. DEPARTMENT OF HOMELAND SECURITY

MAP NUMBER
5101560227E

MAP REVISED
AUGUST 3, 2015

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

moffatt & nichol

101 West Main St., Suite 3000
Norfolk, VA 23510

(757) 628-8222
www.moffattnichol.com

April 1, 2022

Mr. Matt Fanghella, EIT
Civil Engineer II - Stormwater
City of Suffolk – Public Works Engineering

RE: Work Order Proposal: North Main Street at Kimberly Bridge Feasibility Study

Dear Mr. Fanghella:

Pursuant to your request, Moffatt & Nichol (M&N) presents this proposal for evaluating alternatives to reduce impacts from current and future flooding of North Main Street in the vicinity of Kimberly Bridge. The primary purpose of this work order is to study the conditions at and around the bridge to determine the cause and extent of the flooding issues and to develop alternative recommendations for address these issues. This proposal will consider three water level events to aid in development of three structural/roadway design alternatives. In order to complete this conceptual work and analysis the M&N team will collect limited topographic and hydrographic survey data along the Kimberly Bridge corridor between US 58 Business Route and north of the Kimberly Bridge as detailed below. The survey data will provide documentation of existing conditions, and that data will continue to be utilized in future development (under future work orders) of more detailed engineering design and preparation of construction documents.

If you should have any questions or need additional information, please do not hesitate to contact Jousha Hill or myself at (757) 628-8222. We look forward to providing these services to the City and we thank you for the opportunity to assist.

Sincerely,
MOFFATT & NICHOL

Ira Brotman, P.E.
Vice President

Attachments:

- Scope of Work

Background

North Main Street (US Route 32) is a primary route for residents of the southern portions of Suffolk and serves as a critical connector for all residents requiring access to Sentara OBICI Hospital. Currently, a segment of North Main Street between Constance Road and just north of the North Main Street Bridge (Kimberly Bridge) shown in Figure 1 is prone to significant flooding during rain and tidal events. **These conditions make it impossible to drive through safely, delaying commutes and slowing down emergency response times.**

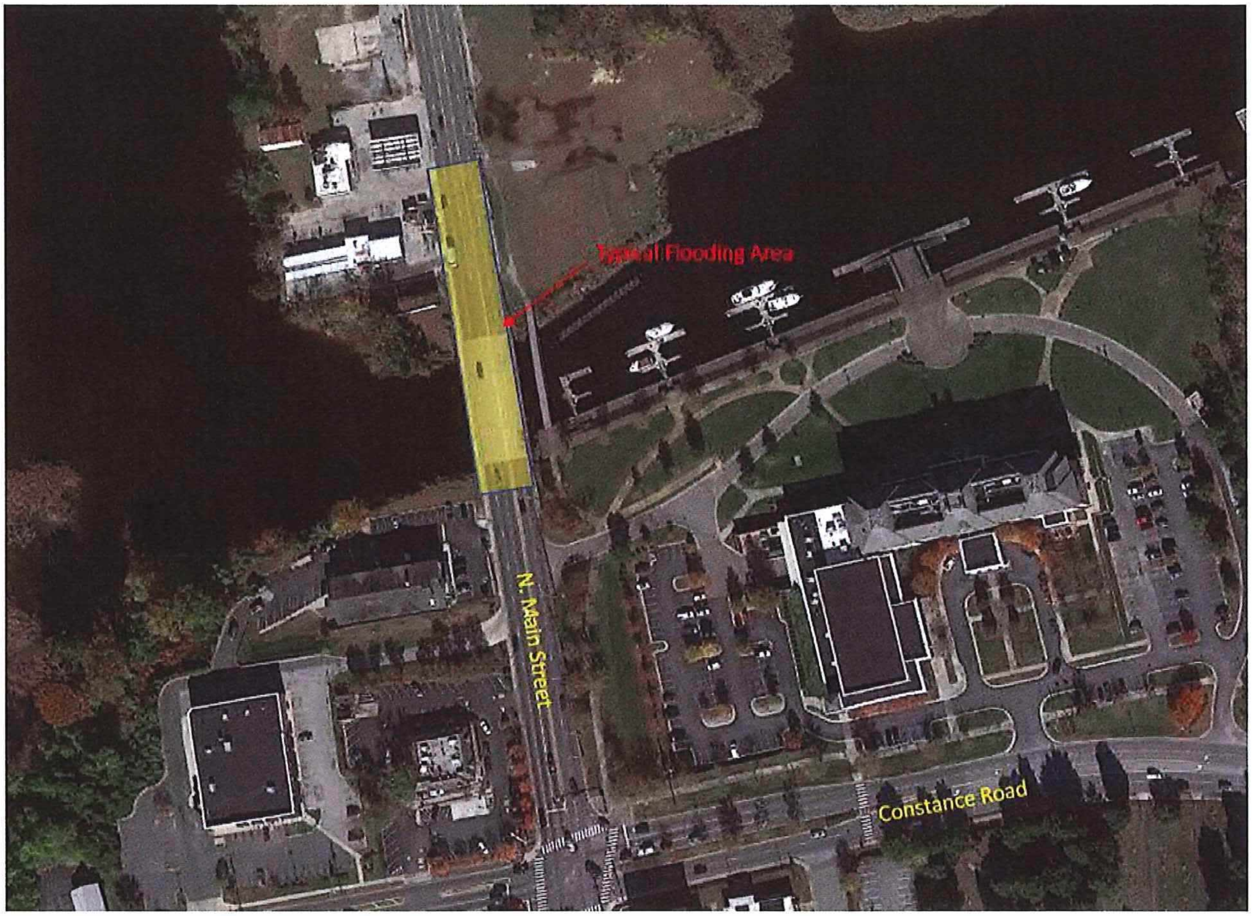


Figure 1 – North Main Street Segment

With the continual increase in frequency and magnitude of rain events in addition to the increase in tidal flooding from sea level rise, M&N has been tasked to develop a sustainable flood mitigation strategy, improving the community's resiliency, for this roadway segment of North Main Street.

Scope of Services

The scope of services included in this work order are organized into the following tasks :

Task 1 – Meetings and Project Management
Task 2 – Review Existing Documentation

Task 3 – Field Investigations
Task 4 – Basis for Feasibility Study
Task 5 – Hydrologic, Hydraulic and Drainage Analyses
Task 6 – Establish Alternatives
Task 7 – Develop Conceptual Design of Alternatives
Task 8 – Conceptual Design Technical Memorandum

Task 1 – Meetings and Project Management

Task 1 includes the unifying coordination, engagement, project management, and quality management tasks necessary for successful development of conceptual designs and the required analysis and reporting necessary to support the City's various goals for this phase of project development.

Task 2 – Review Existing Documentation

Task 2 includes reviewing the following documents:

- Original request for Kimberly Bridge Feasibility Study Reports
    - Phase I Report: Drainage & Bridge Analysis dated July 25, 2013
    - Phase 2 Report: August 13, 2013
    - Phase 3 Report: Property Acquisition
- Review existing roadway and bridge plans, inspection reports, etc.
- 2015 effective FEMA Flood Insurance Study (FIS) report and Flood Insurance Rate Map (FIRM) information

Task 3 – Field Investigations

Summary: Task 3 includes gathering additional field data necessary to confirm existing conditions in the project area that may constrain the spatial limits, sizes or effective capacity of features included in the project design. As described below, field data collected within the limits of the project area will include survey of upland topography, river bed bathymetric survey, bridge structure geometry, surface feature and drainage infrastructure information, along with utility alignments marked by "VA811." Field data gathered will continue to be useful during more detailed design phases of project development that would occur under separate, future scopes of work. Depending on the selected project alternative, additional survey data and other field investigations may be needed in subsequent design phases.

Topographic, Bathymetric, and Bridge Survey. Precision Measurements Inc. (PMI) will provide a topographic survey file, in Microstation format and hard copy sheets, sealed, signed and dated by a licensed Professional Land Surveyor.

Planimetric and topographic mapping shall be captured throughout the project limits from the US Route 58 (Constance Road) / Main Street intersection to 1,500 linear feet (LF) north of the Kimberly

Bridge. The survey effort will include property research, establishing horizontal and vertical control and property ties, and survey and mapping of planimetric features such as buildings and paved surfaces; trees and other above-ground site features; storm drain structures, ditches and swales; utilities as marked by "VA811" Utility Designation; and topographic cross-sections and spot elevations.

Bathymetric survey (cross sections) shall include channel survey of a reach covering approximately 3000 LF upstream and 3000 LF downstream at predetermined locations appropriate for building the HEC-RAS hydraulic model described in Task 5.

Bridge survey shall include high chord, low chord, rail type/height/survey shots, pier type/size/location/spacing, abutments, and internal cross section on the upstream and downstream fascia.

A complete list of items included in the topographic survey is described in detail in PMI's scope and fee proposal, attached to this M&N work order proposal.

The horizontal datum for this project will be referenced to the Virginia State Plane Coordinate System, North American Datum of 1983 (NA2011). Measurements shall be based on the U.S. Survey foot. The vertical datum shall be referenced to the North American Vertical Datum of 1988 (NAVD 88).

Task 4 – Basis of Feasibility Study

Task 4 includes establishing a basis for the feasibility study. At a minimum this will consider the following:

- Water Level Events – (3 Events)
  The first two will be in accordance with the typical adopted VIMS and Hampton Roads Planning District events and include:

  1) 100-year return period with 1.5' Sea Level Rise
  2) 100-year return period with 3' Sea Level Rise.

  The third water level event will be in accordance with the following:

  3) VDOT Manual of The Structure and Bridge Division – Part 2 – Chapter 33 "Considerations of Climate Change and Coastal Storms" dated April 2021

- Magnitude of Sea Level Rise to be accounted for in the design water levels and project elevations
- Roadway – roadway configuration (number of lanes). Roadway elevation will match recommended bottom chord elevations based on water level events.

- Bridge – bridge configuration (number of lanes), rehab vs. replacement; see Task 6 for additional information on the three design alternatives. Alternatives will take into consideration water level events for bottom chord elevation.
- Drainage – storm design size
- H&H – see Task 5 for additional breakdown
- Utilities – identify potential utility impacts for improvements
- Property Acquisition – high level cost summary of property acquisitions for alterative options
- Pollution Control – identify high level potential pollutants that are a concern
- Traffic Impacts / MOT – high level phasing plan based on recommended alternatives
- Environmental (Regulations and Phase I) -
- Resiliency considerations - sea level rise, event frequencies, etc.

For each of the above noted items, assumptions will be identified based on discussions with the City in addition to being defined by the data captured in Tasks 2 and 3. Once these have been established, this information will assist in developing the approaches for the remaining tasks of the feasibility study. The above will be summarized in the Design Technical Memorandum detailed below.

Task 5 – Hydrologic, Hydraulic and Drainage Analyses

5.1 Drainage Study/Analysis. A drainage analysis of the area will be completed on the existing infrastructure. The focus will include:

1. Confirm the existing drainage areas and capacity of conveyance systems using City information (drainage area maps and GIS mapping).
2. Calculate the stormwater runoff for each drainage area to create runoff hydrographs, time of concentration and the acreage of each drainage area.
3. Route the existing conveyance systems for the 10-year storm event using the hydrodynamic method that takes tidal fluctuations into account. Routing results will be utilized in the evaluation of sustainable flood defense strategies and discussed further in Task 6.

5.2 Hydrologic & Hydraulic (H&H) Analyses. M&N Hydraulic Design staff will coordinate with M&N Roadway Design staff during the conceptual plan development for the water level events identified in Task 4 to verify decisions on the roadway grade made in this phase do not negatively impact the development of future design phases. Items of interest and input from the Hydraulic Design staff would be the need for bridge spread, hydraulic opening of the bridge, anticipated low chord, storm drainage, placement of cross pipes, and potential hydroplaning scenarios.

This also includes completing an H&H analysis of the natural, existing, and proposed conditions of the project site for the water level events identified in Task 4. The H&H analysis will investigate and document the impacts of the proposed crossing alternatives on flow velocities and water surface levels in the river from a coastal and riverine flooding control situation. The H&H analysis and results will be summarized in a technical memo.

Steps in the H&H for the bridge shall include:

1. M&N will obtain existing available information on the hydrology and hydraulics of the contributing drainage area to the project site. Currently, the Flood Insurance Study (FIS) dated for release August 3, 2015 shows the project is located in a FEMA AE Zone with a Stillwater elevation of 10.0'.
2. M&N will conduct a site visit, during which bank conditions, flow velocities, and normal creek water surface elevations will be investigated. Photographs of the site and overbank conditions will be taken for documentation.
3. M&N will develop a HEC-RAS hydraulic model of the natural and then the existing conditions of the river as a baseline with which to compare the hydraulic effects of the alternative bridge designs. The HEC-RAS model will be developed by M&N based on bridge and river survey data. The hydraulic model is expected to extend at least 3000 feet upstream and downstream of the project site. Riverine simulations will be run for water level events identified in Task 4. That same model will then be used and converted to an unsteady state model will be run to model the tidal fluctuations and storm surge for same water level events.
4. M&N will also simulate the proposed bridge alternatives in the HEC-RAS model. At the concept design phase, simulations will include bent spacing of the proposed crossings, to evaluate the hydraulic impacts. Long-term scour effects will be analyzed. Stream stability will also be studied and any necessary countermeasures will be designed. Model results, including water surface profile, flow velocities, and scour potential will be reported and compared with the results of the existing conditions model simulations.
5. Hydraulic impacts and scour calculations will be made with recommendations for scour protection at abutments.
6. Recommendations for the hydraulic opening of the bridge will also be provided which will be used to help in determining the bridge concepts identified in Task 6.
7. M&N will prepare a Conceptual (Preliminary) H&H analysis report, including data utilized, assumptions, computations, and recommendations. The report will include all necessary forms and supporting information, such as photographs, survey profiles, and comparison tables.

Task 6 – Establish Alternatives

Summary: Task 6 includes utilizing the results of Tasks 4 and 5 and establishing sustainable and resilient flood defense alternatives to meet the City's needs for this segment of North Main Street. From these alternatives, a meeting will be held with the City to validate Task 5 and determine three (3) alternatives from this task to further develop in Task 7.

In addition, M&N will evaluate the existing bridge components and make recommendations on their use in future improvements to compliment above. The analysis will include considerations of the following concepts.

1. Evaluate raising existing bridge superstructure via phased construction to required minimum water level events identified in Task 4 in addition to including 1 foot of freeboard.

2. Evaluate phased construction bridge replacement in the same alignment as the existing bridge to meet the minimum water level events identified in Task 4 in addition to including 1 foot of freeboard.
3. Evaluate a bridge replacement on a new alignment then dismantle the existing bridge to meet minimum water level events identified in Task 4 in addition to including 1 foot of freeboard.

4. Prepare conceptual plan, elevation and section for each concept.

Task 7 – Develop Conceptual Design of Alternatives

Summary: Task 7 includes conceptual design phase (10% design) engineering for raising of roadway corridor (including the bridge) along Main Street and Kimberly Bridge for the three selected alternatives based on the recommended water level events identified in Task 4 and included below.

7.1 Design Alternative Preliminary Engineering. Each alternative will review the proposed bridge concepts identified in Task 6 and incorporated into their design alternatives as needed.

Design Alternative #1 will be development of preliminary finished grade plans, roadway profiles, and cross sections using a minimum finished grade elevation for the 100-year return period flood event with a sea level rise of 1.5 feet. The concept plans will show major roadway design features and include finished grade typical section (with assumed pavement design) along with conceptual typical sections for staged construction. Conceptual design cross sections will be provided at 200-foot intervals along N Main Street.

Design Alternative #2 will be development of the same information as prepared for Design Alternative #1 using a minimum finished grade elevation for the 100-year return period flood event with a sea level rise of 3.0 feet. .

Design Alternative #3 will be development of the same information as prepared for Design Alternative #1 using a minimum finished grade elevation matching recommended bottom chord bridge elevation defined by the VDOT Manual of The Structure and Bridge Division – Part 2 – Chapter 33 "Considerations of Climate Change and Coastal Storms" dated April 2021.

A planning level opinion of probable construction cost analysis will be provided showing the comparative construction costs of the major design features for Design Alternative #1 thru Alternative #3 as it relates to roadway and bridge improvements. This is intended to just show relative costs between the three alternatives but not be a comprehensive estimate.

An alternatives analysis will be prepared with qualitative screening and ranking of the alternatives relative to: level of protection provided, flexibility, design complexity, land use considerations, construction costs magnitude, land required, and benefit costs related to overall construction costs. Based on this ranking a recommended design approach will be identified.

Deliverables from Task 7 will include:

- Conceptual design Alternative #1 plan drawing in PDF;
- Conceptual design Alternative #2 plan drawing in PDF;
- Conceptual design Alternative #3 plan drawing in PDF;
- Planning level opinion of probable construction cost analysis in PDF format;
- Existing condition H&H model files and stormwater volume capture evaluations documented in a technical note.

Task 8 – Conceptual Design Technical Memorandum

The Conceptual Design Technical Memorandum and supporting data presented with it will provide the City with plan and section graphics and its benefits for resiliency. The report, along with the alternative design drawings, will also form the basis for scoping the remaining field work and detailed engineering and architectural design work that would be needed (under future scopes of work and budgets) to create the plans and specifications for bidding and construction of the projects.

Deliverables:

- Draft Conceptual Design Technical Memorandum
- Final Conceptual Design Technical Memorandum

Assumptions and Exclusions

- This scope of work does not include any new field investigations except for that specifically included in Task 2 and further described in the attached subconsultant proposals.
- No detailed pavement design, geotechnical stability or seepage analysis is included in this scope of services.
- No wetland delineations, wetland impacts assessments, environmental or other permitting or engagement with permitting agencies is included in this scope of services.
- It is assumed that the City will coordinate any and all public outreach and public engagement efforts related to the project. This scope of services does not include significant involvement in coordinating or leading public outreach or public meetings or in crafting a public engagement strategy. The M&N Team will be available to provide interim work products in the form of graphics and slide content for the City's public engagement efforts, and members of the M&N Team will be available to attend up to two public meetings, if requested.
- It is assumed that the City will provide available GIS information, Record Drawings and electronic files pertaining to the work area, including any known utilities.

M&N Team Fees

A breakdown of MN Team Fee is attached for each task in addition to a copy of the survey limits and fee being completed by PMI. The total fee is anticipated to be $298,747.16.

Schedule of Work

The M&N Project Team anticipates the following overall schedule for this effort, including assumed City reviews, with completion times given in weeks after Notice To Proceed (NTP).

M&N Team Deliverable / Milestone	Time from NTP
Task 1 – Meetings and Project Management	Continuous
Task 2 – Review Existing Documentation provide by City	2 weeks
Task 3 – Field Investigation	16 weeks
Task 4 – Basis for Feasibility Study	18 weeks
Task 5 - Hydrologic, Hydraulic and Drainage Analyses	24 weeks
Task 6 – Establish Alternatives	26 weeks
Task 7 – Develop Conceptual Design of Alternatives	30 weeks
Task 8 – Conceptual Design Technical Memorandum	32 weeks

Precision Measurements, Incorporated
Surveying ♦ Mapping ♦ GPS ♦ Hydrographic Surveying ♦ 3-D Scanning

April 4, 2022
File No. 22219

Mr. Jousha Hill, PE
Moffatt & Nichol
101 W. Main Street, Suite 3000
Norfolk, VA 23510

Re: Kimberly Bridge - Suffolk, VA

Dear Mr. Hill:

The following is our understanding of the scope of services and related fixed fee for the above-mentioned project.

SURVEYING SERVICES

Precision Measurements Inc. (PMI) shall provide to Moffatt & Nichol a topographic survey file, in MicroStation (V8i) digital format and hard sheets, sealed, signed and dated by a Licensed Land Surveyor. The survey limits are from and including the intersection of U.S. Route 58 & Main Street north along Main St. to approximately 1,500'± passed the north side of Kimberly Bridge with a band width of 200' from the edge of pavement on both sides of Main St. and is roughly shown as the yellow line on attachment hereto.

Topographic Survey

The surveying procedure shall be as follows:

- Property Research - Immediately upon receipt of the notice to proceed, the Surveyor shall compile data on all properties affected by the project. Information to be obtained shall include current owner names, deed book and page of conveyance, property lines, right-of-ways, easements and tax parcel information.
- Establish Horizontal Control – The horizontal datum for this project shall be referenced to the Virginia State Plane Coordinate System, North American Datum of 1983 (1994HARN). Measurements shall be based on the U.S. Survey foot. Survey base lines shall be established throughout the project limits. Semi-permanent survey markers (P-K nails, pins, etc.) shall be set at all breakpoints along the survey base lines.
- Establish Vertical Control – The vertical datum shall be referenced to the North American Vertical Datum of 1988 (NAVD 88). Supplemental project benchmarks shall be set at each project site.
- Property Ties – Field ties shall be made to the boundaries of all affected properties. The boundaries of the properties shall be computed and related to the project meridian and coordinate system.
- Topographic Mapping – Planimetric and topographic mapping shall be captured throughout the project limits. Base mapping shall be provided in MicroStation (V8i) digital format at a scale of 1"=25' utilizing the current VDOT Cad Standards. The topographic survey shall include, but is not limited to:
- Existing buildings - type of structure, number of stories, house number

629 Phoenix Drive, Suite 100, Virginia Beach, Virginia 23452 • 11835 Canon Blvd., Suite B-103, Newport News, Virginia 23606
1047 Technology Park Drive, Glen Allen Virginia 23059 • 4215 Lafayette Center Drive, Suite 2A, Chantilly, Virginia 20151
7720 Main Street, Middletown, Virginia 22645 • 9005 Chevrolet Drive, Suite 5, Ellicott City, MD 21042
6750 N. Andrews Avenue, Suite 2032, Fort Lauderdale, FL 33309
www.precisionmeasurements.com

- Existing paved surfaces (excluding pavement markings)
- Curb and/or gutter
- Sidewalks and driveways
- Delineate gravel and dirt driveways and parking areas (excluding pavement markings)
- Pavement and Parking lot markings will be placed per google earth
- Ditches - top of bank, toe of slope, centerline
- *Storm drain facilities (closed) - rims, inverts, and pipe sizes
- *Storm drain facilities (open) - inverts and pipe sizes
- *Gravity sanitary sewer – rims (no invert data required)
- Force mains - valves and any other above ground appurtenances
- Water mains - valves, meters, hydrants and any other above ground appurtenances
- Gas mains - valves and any other visible above ground appurtenances
- Above ground traffic control devices
- Above ground telephone and T.V. - pedestals and any other visible above ground appurtenances
- Above ground electric - any visible above ground appurtenances
- Utility poles - type of service and pole number
- Overhead wires - type of service
- Tree lines - large wooded areas
- Single trees – 8-inch caliper and larger (type and actual caliper), if not in wooded area
- Elevation cross-sections @ 50-foot intervals (all streets and outfalls)
- **Rights-of ways
- **Property lines
- **Property owners - name, deed reference, map reference and GPIN
- Hydro Graphic survey at cross-sections per shape files from Moffatt & Nichol received on 3/31/2022.
- ***“VA811” for underground utility designations (PMI to Locate, Cad)
- Bridge detail (high cord, low cord, rail type/height, pier locations type/size/spacing, abutments)

3D DTM File (xml format) A separate 3D surface model shall be prepared for use in generating a digital terrain model. This drawing shall consist of break lines, contours, and points located at the proper X, Y and Z coordinates. This file shall be based on 1’ contour intervals.

Utility Survey

***”VA811” Utility Designation – PMI shall coordinate with “VA811” utilizing the “dig ticket” process to designate utilities at 5 locations along the project. These locations will only be a 100’ radius around a stake in the ground for them to designate the utilities. PMI cannot guarantee “VA811” will designate any utilities on private property, public property and/or government property. PMI shall research utility information both public and franchise. Utilities that we have record information on and have not been designated shall be shown per record at quality level C/D. You may not have any utilities shown between the 5 dig ticket locations.

Every reasonable effort shall be made to locate all systems of interest whether indicated on records available to us or not. However, we do not guarantee that all existing utility systems can or shall be detected. Further, this service is not intended to detect non-utility structures such as, but not limited to: foundations, irrigation systems, septic systems, wells, tunnels, concrete or metal structures, or the true size and limits of subsurface utility vaults and manholes.

The designation results shall be collected with total station survey and referenced to project datum. The results shall be processed, annotated and merged into the final delivery file.

DELIVERABLES

s(#).dgn – Survey Data File
su(#).dgn – Utility Data File
sctl(#).dgn – Survey Control Data File
sbd(#).dgn – Survey Boundary Data File
spo(#).dgn – Property Owner File
scr(#).dgn – Contour File
sdt(#).dgn – 3D Points & Break lines Data
s(#).dat – XYZ File (GeoPak)
s(#).tin – Triangle Irregular Network File (GeoPak)

Sealed and dated Existing Conditions Sheets (22"x34") (.pdf)

FEE ESTIMATE

Topographic Survey	$76,894.00
Hydrographic Survey	$ 6,702.00
Underground Utilities	
"VA811" QL-C Designation, Location & Cad	$ 8,868.00
Total	**$92,464.00**

ASSUMPTIONS/EXCLUSIONS

- Not all VDOT standards and requirements will be performed on this project, only VDOT Cad Standards
- *Storm and Gravity Sewer (rims, inverts, size & material). Pipe system shall be traced and shown to next structure outside of the project limits. Pipe inverts, size & material are determined to the best of our ability and if accessible. No confined space entry is included in this scope and fee.
- Problem Manholes, Inspection, location, measurements or inverts of underground sanitary or storm structures if those structures are inaccessible because they are bolted, welded, buried, paved over, broken, under debris, fenced off, unsafe, too deep (over 25'), designated as non-accessible or confined space entry only. Working with Problem Manholes shall be considered beyond the scope of this proposal.
- **Property lines, right-of-way, easements and owner information shall be based on available tax assessor and courthouse information. No title report or title research shall be performed with this scope and fee. All easements, restrictions or encumbrances that may affect the properties may not be reflected.
- PMI request owner notifications letters be sent to all properties adjacent to the survey limits area.
- Any items not listed on in this proposal is not included, such as test hole, wetland flags, soil borings, etc.

- Paint striping will be placed per google earth overlay.

DELIVERY SCHEDULE

Final delivery will be within approximately 55 - 65 business days or sooner after commencing field work. Delivery schedule is subject to change based on current workload, weather conditions and unforeseen obstacles.

Thank you for allowing us the opportunity to provide you with this proposal, utilizing our Surveying services. If I can be of any additional assistance or you have any questions, comments or require additional information, please feel free to contact me. I look forward to working together on this very important project.

Respectfully,
Precision Measurements, Inc.

Richard A. Thomas
Newport News Branch Manager

"Attachment"

Fee Proposal
Kimberley Bridge Feasiblity Study

City of Suffolk
Public Works Engineering

Proposal No:

Date: April 3, 2022

I. MAN-HOUR BUDGET BY LABOR COSTS

Task		Classification Rate	Princ. $ 259.60	Project Manager $ 198.97	Superv. Engineer $ 186.54	Engineer $ 126.07	Junior Engineer $ 100.26	ACAD TECH $ 121.25	Admin $ 77.67	Total Hours	Total Labor Cost
1	**Meetings and Project Management**		2	40	20	32	24	-	8	126	$ 19,270.64
2	**Review of Existing Documents**		-	4	16	16	-	-	-	36	$ 5,797.64
3	**Field Investigation**		-	8	-	12	8	-	-	28	$ 3,906.68
4	**Basis of Feasibity Study**		2	4	16	8		-	-	30	$ 5,308.28
5.1	**Drainage Study / Analysis**		4	8	40	180		24	-	256	$ 35,694.36
5.2	**Hydrologic & Hydraulic (H&H) Analyses**		4	24	80	120		-	8	236	$ 36,486.64
6.1	**Establishing Alternatives**		-	4	12	-	24	-	-	40	$ 5,440.60
6.2	**Bridge Concepts**										
	6.2.1 - Raising Existing Bridge		-	8	28	40	-	24	-	100	$ 14,767.68
	6.2.2 - Replace Bridge Within Existing Alignment via Phased Approach		-	8	28	40	-	24	-	100	$ 14,767.68
	6.2.3 - Replace Bridge Along New Alignment		-	8	32	56	-	32	-	128	$ 18,500.96
7	**Develop Conceptual Design of Alternatives**		-	8	24	40	24	80	4	180	$ 23,528.44
8	**Conceptual Design Technical Memorandum**		4	12	24	40	-	-	8	88	$ 13,567.16
		Total Labor Budget	$ 4,154	$ 27,060	$ 59,693	$ 73,625	$ 8,021	$ 22,310	$ 2,175	**1348**	**$ 197,036.76**
		Total Labor Hours	16	136	320	584	80	184	28		

II. SUMMARY

Task		Total Cost Labor	Total Cost Subconsultants	Total Cost
1	**Meetings and Project Management**	$ 19,270.64	$ -	$ 19,270.64
2	**Review of Existing Documents**	$ 5,797.64	$ -	$ 5,797.64
3	**Field Investigation**	$ 3,906.68	$ 101,710.40	$ 105,617.08
4	**Basis of Feasibity Study**	$ 5,308.28	$ -	$ 5,308.28
5.1	**Drainage Study / Analysis**	$ 35,694.36	$ -	$ 35,694.36
5.2	**Hydrologic & Hydraulic (H&H) Analyses**	$ 36,486.64	$ -	$ 36,486.64
6.1	**Establishing Alternatives**	$ 5,440.60	$ -	$ 5,440.60
6.2	**Bridge Concepts**			
	6.2.1 - Raising Existing Bridge	$ 14,767.68	$ -	$ 14,767.68
	6.2.2 - Replace Bridge Within Existing Alignment via Phased Approach	$ 14,767.68	$ -	$ 14,767.68
	6.2.3 - Replace Bridge Along New Alignment	$ 18,500.96	$ -	$ 18,500.96
7	**Develop Conceptual Design of Alternatives**	$ 23,528.44	$ -	$ 23,528.44
8	**Conceptual Design Technical Memorandum**	$ 13,567.16	$ -	$ 13,567.16
		$ 197,036.76	$ 101,710.40	**$ 298,747.16**

*sub fee was $92,464*1.10 for MN Markup.

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

2022 Round 3 CFPF Grant Application #2 City of Suffolk CID 510156

2 messages

Matthew M. Fanghella <mfanghella@suffolkva.us> Wed, Apr 6, 2022 at 4:59 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Heather W. Baggett" <hbaggett@suffolkva.us>, "Erin M. Rountree" <erountree@suffolkva.us>

Good afternoon,

Please find attached the second of 2 applications from the City of Suffolk for the Round 3 2022 CFPF Grant Funding, ahead of the 4/8 deadline.

The City is requesting funding for an updated study for the Kimberly Bridge Feasibility Study. Additionally, may you please confirm the receipt of this correspondence and this application?

Thank you,

Matt Fanghella, EIT

Civil Engineer II – Stormwater

City of Suffolk – Public Works Engineering

757-514-7675 office

757-266-7924 cell

mfanghella@suffolkva.us

CID510156_CityofSuffolk_CFPF-2.pdf
12163K

CFPF, rr <cfpf@dcr.virginia.gov> Thu, Apr 7, 2022 at 12:01 PM
To: "Matthew M. Fanghella" <mfanghella@suffolkva.us>

Received

[Quoted text hidden]

CITY OF SUFFOLK

P.O. BOX 1858, SUFFOLK, VIRGINIA 23439-1858 PHONE: (757) 514-4012

CITY MANAGER

April 6, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Dear Sir or Ma'am:

Please accept this written correspondence as signed documentation authorizing the City of Suffolk's request for funding from Round 3 of the 2022 Virginia Community Flood Preparedness Fund (CFPF).

The CFPF funding would enable the City of Suffolk to conduct the Finney Outfall to Nansemond River Drainage Area Study in Downtown Suffolk. The total cost of the proposed study is $72,881.36 Following the 90% Fund / 10% Match requirements for this category, the City respectfully requests funding from the CFPF in the amount of $65,593.22 Furthermore, the City will provide the 10% matching contribution from the Public Works Professional Services budget, in the amount of $7,288.14

Thank you for your consideration of this grant proposal. If you have any questions about this proposal please contact Matt Fanghella at 757-514-7675 or mfanghella@suffolkva.us or Heather Baggett at 757-514-7627 or hbaggett@suffolkva.us.

Sincerely,

Albert S. Moor, II P.E.
City Manager

p.c. Robert Lewis, Director of Public Works

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Suffolk

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

__ X __**Study**

NFIP/DCR Community Identification Number (CID): 510156

***If a state or federally recognized Indian tribe,* Name of tribe:** n/a

Name of Authorized Official: Albert S. Moor, II P.E.

Signature of Authorized Official: ____________________

Mailing Address (1): P.O. Box 1858

Mailing Address (2): City Manager's Office

City: Suffolk **State:** VA **Zip:** 23439

Telephone Number: (757) 514-7675 **Cell Phone Number:** (757) 266-7924

Email Address: amoor@suffolkva.us

Contact Person (If different from authorized official): Matt Fanghella, EIT

Mailing Address (1): P.O. Box 1858

Mailing Address (2): Public Works Engineering

City: Suffolk **State:** VA **Zip:** 23439

Telephone Number: (757) 514-7675 **Cell Phone Number:** (757) 266-7924

Email Address: mfanghella@suffolkva.us

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes No **X**

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

X Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

X Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): Suffolk, Virginia

NFIP Community Identification Number (CID#): (See appendix F 510156

Is Project Located in an NFIP Participating Community? **X** Yes □ No

Is Project Located in a Special Flood Hazard Area? **X** Yes □ No

Flood Zone(s) (If Applicable): Zone AE

Flood Insurance Rate Map Number(s) (If Applicable): 5101560227E

Total Cost of Project: $ 72,881.36

Total Amount Requested: $ 65,593.22

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**City of Suffolk, Virginia**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	**X**
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	**X**
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	**N/A**
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	**X**
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	**X**
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration		**X Yes** **☐ No**
Applicant Name:	**City of Suffolk, Virginia**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	**35**
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	**45**
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	
☐ Regional hydrologic and hydraulic studies of floodplains.	**45**	
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	**8**
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	**0**
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	**10**
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	**0**
Total Points		**98**

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	X Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	X Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	X Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	X Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No X N/A
A link to or a copy of the current hazard mitigation plan	X Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	X Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	X Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No X N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	X Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	X Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No X N/A

City of Suffolk – Department of Public Works
2022 Virginia Community Flood Preparedness Fund Grant Round 3
Finney Outfall to Nansemond River Drainage Study

Part IV

A. Scope of Work Narrative – Studies

The City of Suffolk, Virginia is submitting this grant application to Round 3 of the 2022 Virginia Community Flood Preparedness Fund (CFPF) in the Study category. Specifically, the City is requesting funding to support a study of the drainage system and area that is downstream of the Finney Outfall and ultimately discharges to the Nansemond River. Currently, this area experiences flooding after significant rain events, which impacts critical infrastructure, historic resources, and nature-based resources which are valued and treasured by the citizens of Suffolk.

1. Type of Study and Details of the Study

This Finney Outfall to Nansemond River Drainage Study will address both current and future flooding of the City's drainage system from the Finney Outfall to the drainage system's confluence with the Nansemond River. The Finney Outfall drains stormwater from a 109-acre, highly developed, urban drainage area in the heart of Downtown Suffolk, an area of the city that was built predominantly in the late 1800's and early 1900's. Downstream of the Finney Outfall, the drainage system flows approximately 2,700 feet in a predominantly northward direction to its confluence with the Nansemond River. The drainage system from the Finney Outfall to the Nansemond River consists primarily of open channel flow with a series of culvert crossings at various points. Several critical infrastructure points and community assets suffer from the impacts of flooding through this area. Within this 2,700-foot flow path there is a culvert pipe crossing underneath an active railroad bed which serves a double-track railroad for CSX Transportation, two culvert crossings underneath the Suffolk Seaboard Coastline Trail, and a culvert crossing underneath E. Constance Road (U.S. 58 Business). This flow path also passes the Suffolk Seaboard Station Railroad Museum and the Cedar Hill Cemetery. There have been slope failures along the drainage system adjacent to the cemetery due to the flooding, which prompted the need for emergency repairs. Furthermore, the flooding along this system impacts critical infrastructure including utility infrastructure and road closures due to flooding of E. Constance Road (U.S. 58 Business) which is a major thoroughfare through the City and entrance point for traveling into or out of the City to connect eastern Hampton Roads localities (Chesapeake, Virginia Beach, Norfolk). The flooding also impacts the Suffolk Seaboard Coastline Trail and has slowed City plans to expand this nature-based community asset. Finally, the flow path's end point at its confluence with the Nansemond River is tidally influenced which also increases flooding impacts. In addition to the current flooding issues in the study area, this area is also expected to be negatively impacted by the effects of climate change including sea level rise and more intense storm events.

The City of Suffolk is seeking CFPF grant funding to develop a study of the Finney Outfall to Nansemond River Drainage Area and has contracted the engineering consultant Timmons Group to develop the hydraulic and hydrologic study. The H&H study will include a drainage analysis of the existing storm sewer system utilizing City GIS, additional data provided, and field survey data. The analysis will include storm piping, water quantity conveyance, and storage calculations of the drainage area with detailed analysis along the study area. The analysis shall be conducted in PCSWMM with 1D pipes and storages to start and convert portions as needed from a 1-D analysis to a 2-D analysis that includes overland flow and ponding as needed. The drainage analysis will be based on the 25-yr design storm as well as two (2) other more extreme design storm events which will be paired with two (2) tailwater elevations representing current day MHW and another forward looking option as agreed upon with the City. These more extreme design storms and forward looking tailwater options will enable the City to consider the impacts of climate-change and its consequences and base decision making for potential improvements in this drainage area using the best available science and data. Once the results of this analysis are reviewed, the City will select two (2) design storm/tailwater scenarios to use to identify potential modifications to the system to relieve flooding.

Once the City receives notification of award of grant funding, the City will provide Timmons Group with the Notice to Proceed for The Finney Outfall to Nansemond River Drainage. The approximate time for completion of the drainage study is 23 weeks. Potential modifications and projects identified by this study would be included in the City of Suffolk Resilience Plan, which is currently under development.

2. Benefit of the Study to Community Resilience

The Finney Outfall to Nansemond River Drainage Study will increase community resilience by identifying the cause of the flooding and recommend potential flood reduction projects to reduce both current and future flooding. Reduced flooding in this area would also reduce the impact of flooding on utility infrastructure within the study corridor as well as historic and cherished community assets and alleviate the roadway flooding that occurs on E. Constance Road, all of which would result in increased community resilience.

Furthermore, the median household income in the study area is $63,386, which is less than 80% of the median household income for the City of Suffolk of $79,899, as identified by Census.gov from 2016 – 2020 data. Hence, the study area meets the definition of a “low-income geographic area” as defined by the *2022 Virginia Community Flood Preparedness Fund Round 3 Grant Manual*. The adaptation and protection efforts identified by this study will work to enhance equity throughout the project area which is a key Commonwealth Resilience Planning Principle.

Finally, the proposed study will protect historic and community assets and prioritize nature-based solutions to the maximum extent practical. The project study corridor is home to The Suffolk Seaboard Station Railroad Museum, The Suffolk Seaboard Coastline Trail, and Cedar Hill Cemetery. The Cedar Hill Cemetery is a 25-acre, public cemetery dating back to 1802 and it has been designated as a historic cemetery and a national historic district. The cemetery has suffered from slope failures due to the flooding and drainage issues within the study area. Similarly, the City has additional plans for the expansion and enhancement of the Suffolk Seaboard Coastline Trail; however, these plans are paused due to the impacts of flooding on the trail within the study area. It is the City’s intent that proposed improvements within this area will incorporate nature-based solutions to preserve the natural habitat and community resilience in this area.

3. Qualifications

The Finney Outfall to Nansemond River Drainage Study and the CFPF grant award will be managed by the City of Suffolk Public Works Engineering Division. Public Works Engineering staff members have a strong knowledge of the City’s stormwater system, work with flooding and drainage concerns within the city on a daily basis, and lead resiliency initiatives in the City. Furthermore, two staff members are in training to earn their Certified Floodplain Manager (CFM) Certifications. The City’s contracted consultant, Timmons Group, will conduct this study under the direction of the consultant’s Senior Project Manager who is a licensed Professional Engineer (P.E.) in the Commonwealth of Virginia and a Certified Floodplain Manager (CFM), as recognized by the Association of State Floodplain Managers. Timmons group has previous experience and demonstrated success in developing drainage studies for the City of Suffolk and for other localities in the region.

4. Objectives of the Study and Regional Resilience

The objectives of this study include:

- Identifying the cause(s) of the flooding in this area
- Identifying potential flood protection and flood reduction projects within this area
- Reduce flooding of critical infrastructure: including utility infrastructure and E. Constance Road and historic and natural assets including Cedar Hill Cemetery, Suffolk Seaboard Station Railroad Museum, and Suffolk Seaboard Coastline Trail.

The City of Suffolk Public Works Department will vet the potential flood protection projects identified as part of this study. Agreed upon solutions would be incorporated into the City-wide Resilience Plan which is currently under development. Funding for further design and construction of identified projects and modifications to the drainage system would be sought after through inclusion in the City's Capital Improvement Plan (CIP) as well as potential grant programs such as Virginia Department of Conservation and Recreation Community Flood Preparedness Fund, the Federal Emergency Management Building Resilient Infrastructure and Communities Grant, and Virginia Department of Transportation funding sources.

While this study impacts only a portion of Suffolk, it supports an identified regional need for coastal resiliency and resilient infrastructure. E. Constance Road (U.S. 58 Business) is a major arterial road within the City and serves as a significant entrance point into the city from the East. More importantly, E. Constance Road is a connector road to Sentara Obici Hospital and eastern Hampton Roads cities (Chesapeake, Norfolk, Virginia Beach), and is identified as a Hurricane Evacuation Route by the Virginia Department of Emergency Management. E. Constance Road was identified as a point of interest in the Master Thoroughfare Plan included in Chapter 6 of the 2026 City of Suffolk Comprehensive Plan and experiences an Annual Average Daily Traffic Volume (AADT) of 16,000 vehicles per the 2019 Virginia Department of Transportation Daily Traffic Volume Estimates. This study will also result in more resilient utility infrastructure and identify opportunities to reduce the impacts of flooding on utility infrastructure within the study corridor.

Throughout the rest of Hampton Roads and the Commonwealth of Virginia, many communities face challenges of infrastructure flooding and tidal influence coupled with sea level rise. The proposed study may provide best practices that could be used as case studies in other settings of this type, while also providing a framework for studies focused on targeted infrastructure flood resilience problems. The City is an active participant on several Hampton Roads Planning District Commission (HRPDC) Committees including The Coastal Resiliency Committee, The Regional Stormwater Workgroup, and The Regional Environmental Committee, the Hampton Roads Transportation Planning Organization (HRTPO) and its subcommittees. City staff are willing to share the results and findings of this study with peers and colleagues from other localities to use as a template for studies in their communities, if they see a benefit and/or need.

5. Statewide Context

The study funded by this grant will improve Virginia's flood protection and prevention capabilities, from a transferability and statewide context. Communities across the Commonwealth face the challenges of infrastructure flooding and tidal influence coupled with sea level rise. The proposed study may provide best practices that could be used as case studies in other settings of this type, while also providing a framework for studies focused on targeted infrastructure flood resilience problems.

D. Budget Narrative – All Grant Categories

The median household income in the study area of zip code 23434 is $63,386, which is less than 80% of the median household income of $79,899 for the City of Suffolk, as identified by Census.gov from 2016 – 2020 data. Hence, the study area meets the definition of a "low-income geographic area" as defined by the *2022 Virginia Community Flood Preparedness Fund Round 3 Grant Manual*. As a result, the City of Suffolk is requesting funding support for 90% of the proposed Finney Outfall to Nansemond River Drainage Study.

The total cost for the proposed study is $72,881.36 According to the guidance outlined in the DCR 2022 Round 3 Grant Manual for the Virginia Community Flood Preparedness Fund, grant matching requirements for the Flood Prevention and Protection studies that are located in and serve a low-income geographic area are eligible for a Fund 90% / Match 10% ratio. Therefore, the City respectfully requests financial assistance from the Fund in the amount of $65,593.22 and the City is committing to fund the remaining $7,288.14 via the Stormwater Utility Fund from the Professional Services line of the annual operating budget for Public Works Engineering. Evidence of the City of Suffolk's ability to obtain these funds to partially fund the proposed study is found on Page 243 of the City of Suffolk FY 2021-2022 Adopted Operating and Capital Budget, which can be found on the City website at the following link: https://www.suffolkva.us/DocumentCenter/View/5717/FY-2021-2022-Adopted-Operating-and-Capital-Budget A summary of the financial costs for the proposed study is shown in Table 1, below.

All match funding will be used towards consultant work to complete the study, along with the $7,288.14 of contributed City funds. In addition to the direct funding included as a match, the City of Suffolk also commits to managing all aspects of project management using existing qualified staff A detailed breakdown of how the proposed funding for the proposed Finney Outfall to Nansemond River Drainage Study will be used is shown in Table 2, below. Furthermore, signed documentation from the City Manager authorizing the request for funding is included with this application.

Table 1. Costs for Finney Outfall to Nansemond River Drainage Study

Flood Prevention and Protection Studies in Low-Income Geographic Areas Fund 90% / Match 10%			
Item	**Total**	**Request from Grant Fund**	**Match**
Finney Outfall to Nansemond River Drainage Study	$ 72,881.36	$ 65,593.22	$ 7,288.14
Total Project Cost:			
Amount of funds requested from the Fund			**$ 65,593.22**
Amount of contribution by City			$ 7,288.14

Table 2. Detailed Breakdown of Proposed Funding Costs.

TASK/LABOR CLASSIFICATION	SENIOR PROJECT MANAGER	SENIOR PROJECT ENGINEER / PROJECT MANAGER	SENIOR DESIGNER	PROJECT ENGINEER II	CLERICAL	TOTAL HOURS
Services						
1. Records Review & Site Visit	7	14	16	28	0	65
2. Perform Drainage Analysis	34	84	82	110	0	310
3. Recommend Mitigation Measures	8	16	24	32	2	82
TOTAL HOURS EACH CLASSIFICATION	49	114	122	170	2	457
CLASSIFICATION RATES	$195.00	$160.00	$125.00	$115.00	$80.00	
Total Labor - Design Services	$ 9,555.00	$ 18,240.00	$ 15,250.00	$ 19,550.00	$ 160.00	**$ 62,755.00**
Topographic Survey Allowance (not to exceed)						**$10,000**
Total - Basic Services						**$ 72,755.00**
Direct Expense						$ 72,755.00
	216	Mileage @ $0.585			$ 126.36	
TOTAL DIRECT EXPENSE					**$ 126.36**	
TOTAL FEE NOT TO EXCEED					**$72,881.36**	
Amount Covered with funds from CFPF					**$65,593.22**	

Attachments:

Link to the current floodplain ordinance:

Unified Development Ordinance Article 4- Sec. 31-416.2- Floodplain Overlay District
https://library.municode.com/va/suffolk/codes/unified_development_ordinance?nodeId=SUFFOLK_UNIFIED_DEVELOPMENT_ORDINANCE_ART4ZO_S31-416.2FLOVDIF

Unified Development Ordinance Appendix B- B-15- Flood Prevention Plan
https://library.municode.com/va/suffolk/codes/unified_development_ordinance?nodeId=SUFFOLK_UNIFIED_DEVELOPMENT_ORDINANCE_APXBSURE_B-15FLPRPL

A link to the current hazard mitigation plan:

2017 Hampton Roads Hazard Mitigation Plan and Appendices
https://www.hrpdcva.gov/library/view/620/2017-hampton-roads-hazard-mitigation-plan-and-appendices/

A link to the current comprehensive plan:

City of Suffolk, Virginia 2026 Comprehensive Plan
https://www.suffolkva.us/DocumentCenter/View/890/2026-Comprehensive-Plan-PDF

Social vulnerability index score from ADAPT VBA's Virginia Vulnerability Viewer:
According to ADAPT VA's Virginia Vulnerability Viewer, the focus area of this study received a score of Moderate Social Vulnerability.

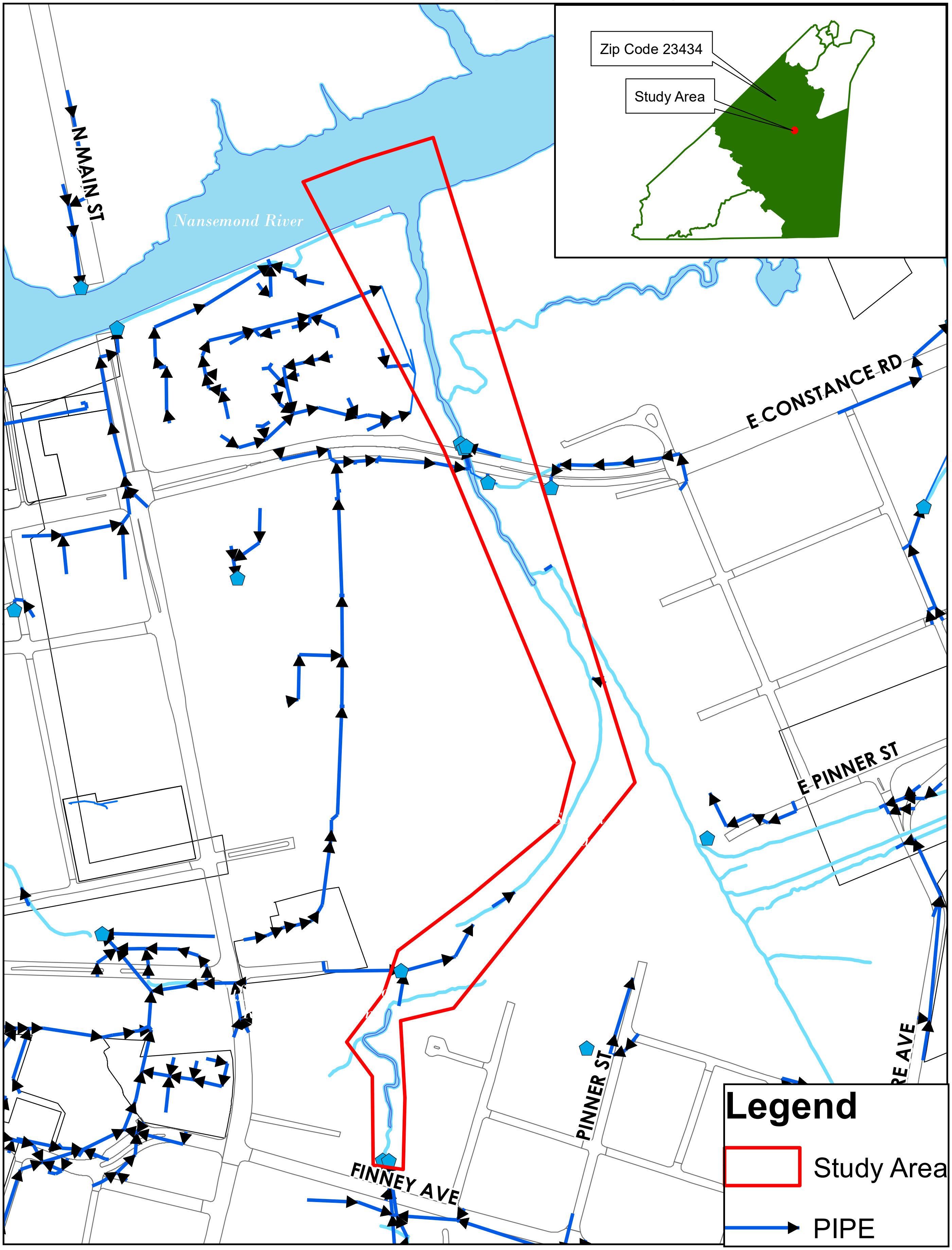
Flooding of E. Constance Road (U.S. 58 Business) during Hurricane Sandy in October 2012. Photo is looking eastbound towards Chesapeake.

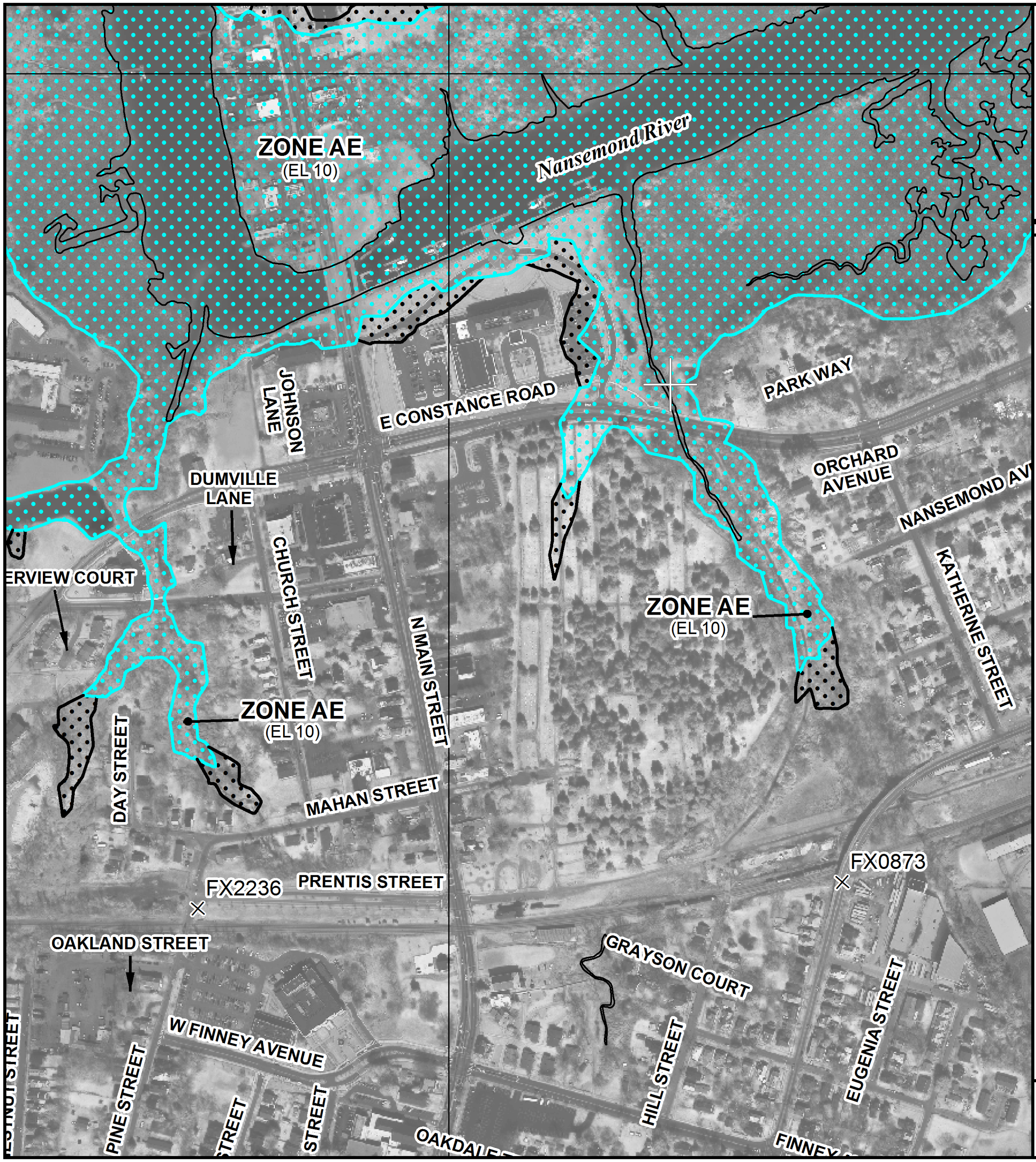
Flooding of E. Constance Road (U.S. 58 Business) during Hurricane Sandy in October 2012. Photo is looking westbound towards intersection with N. Main Street (U.S. 32/U.S. 460 Business)

Flooding of E. Constance Road (U.S. 58 Business) during Hurricane Sandy in October 2012. Photo is looking westbound towards intersection with N. Main Street (U.S. 32/U.S. 460 Business)

Overbank Flooding of open channel drainage system in the area downstream of Finney Outfall in a rain event on November 12, 2020. Photo is looking downstream towards CSX Railroad, the Suffolk Seaboard Coastline Trail, and the historic Cedar Hill Cemetery. This event also related in flooded utility infrastructure.

Finney Outfall to Nansemond River Drainage Study Area





call the National Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 F

150 0 150 3

PANEL 0227E

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
SUFFOLK,
VIRGINIA
INDEPENDENT CITY

PANEL 227 OF 390

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SUFFOLK, CITY OF	510156	0227	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

U.S. DEPARTMENT OF HOMELAND SECURITY

MAP NUMBER
5101560227E

MAP REVISED
AUGUST 3, 2015

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

WORK ORDER NUMBER ?

RE: Finney Outfall to Nansemond River Drainage Study

CONTRACT: Agreement between the City of Suffolk (the “City”) and Timmons Group (the “Consultant”) For Engineering Services.

All work to be performed in accordance with the terms, limitations, and conditions of said agreement.

SCOPE OF WORK: The “Consultant” shall provide drainage investigations in accordance with the attached Scope of Work.

SCHEDULE OF WORK: The “Consultant” shall complete the work within twenty-three (23) from execution of this work order.

COMPENSATION: The “Consultant” shall be paid in accordance with the referenced contract, a fee not to exceed $ 72,881.36. See Attachment.

SUBMITTED: ______________________________ **3-30-22**

Liz Scheessele, PE, CFM, ENV SP Date
Contract Manager / Group Leader
Timmons Group

APPROVED: ______________________________

City of Suffolk Date

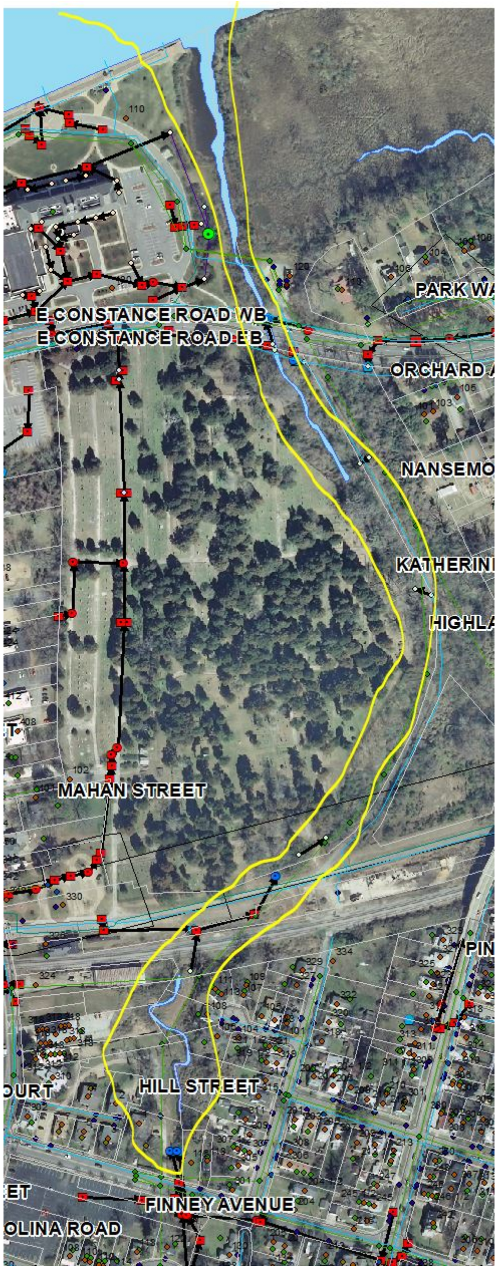
____

Finney Outfall to Nansemond River Drainage Study

PROJECT DESCRIPTION

The City of Suffolk is interested in addressing current and future flooding along a stretch of the drainage system from the Finney outfall to the confluence with Nansemond River. This area currently experiences flooding which results in flooded infrastructure, including neighboring utilities infrastructure and an adjacent historic cemetery. The figure below shows the area of interest in yellow.

There have been slope failures along the system adjacent to the cemetery. Emergency repairs have been made and a design is underway for additional stabilization.



At the downstream end, there is tidal influence that also impacts system capacity and water levels.

In addition to the current issues along this area of interest, the area is expected to experience impacts related to climate change – such as sea level rise and more intense storm events.

Future hydraulics will also be impacted by drainage improvements in the upstream watershed. Several years ago, the City tasked Timmons Group to develop a Master Plan for drainage improvements for the Finney (Oldetown) drainage area, which is just upstream of the area of interest, to alleviate flooding and relocate the aging storm sewer network into the right-of-way. The initial phase of recommended improvements from that study are about to begin the design stage. Though these improvements are designed to alleviate flooding from the current 10-year design storm, it is important to the City to identify and mitigate impacts to the area of interest for larger storm events and also take into consideration rising water levels in the Nansemond River.

The Consultant shall review available data, provide site observations, perform analysis services to identify problematic stormwater items, and recommend revisions to the network to help alleviate future flooding problems.

SCOPE OF SERVICES

1. Records Review & Site Visit and Supplemental Survey
2. Perform Drainage Analysis
3. Recommend Mitigation Measures

The project schedule is for a period of twenty-three (23) weeks. The project milestones are:

Notice to Proceed	
Records Review, Site Visit, and Survey	10 weeks
Perform Existing Conditions Drainage Analysis	4 weeks
Interim Meeting	1 week
Develop Modification Options	4 weeks
Review Meeting	1 week
Prepare Informal Writeup	3 weeks

The Scope of detailed engineering services provided are grouped into the following:

- Basic Services
- Reimbursable Expenses

Reference Information

The following information has been or will be made available to Timmons Group and will be used as a reference for the work provided in this proposal:

- Historic flooding data - Information on flooding locations, dates, and extents within the study
- City of Suffolk GIS
- Plan documentation if available
- Data on the storm system (ditch and culverts) throughout the project area including:
  - Size/cross section dimensions
  - Length
  - Material
  - Invert Elevations

The following is a detailed discussion of the services proposed:

BASIC SERVICES

1) Records Review, Site Visit, and Survey

The Consultant will review existing record documents and discuss with City operations staff any recurring flooding or maintenance issues. The Consultant shall perform a site investigation of the project site to gather observations. Observations will include, but are not limited to, apparent right of way (ROW) and private property drainage patterns within the vicinity of the potential recommended alignments, typical ditch segment cross sections, visible encroachments and obstructions, system connectivity and inventory data to supplement provided data sources, and general condition assessment. Observations may extend to the boundaries of the contributing drainage area for verification purposes.

The Consultant shall review previous work done within the drainage area including:

- Downstream of Outfall Impact Analysis task from Oldetown – Pinner Street Drainage & Utility Improvements task order (assumed complete)
- Cedar Hill Stream Restoration Concept Plan
- Cedar Hill Slope Stabilization design work (ongoing)
- Train Station Basin BMP Improvements – assuming H&H calcs complete

Based on this and City-provided data, the Consultant shall identify additional topographic survey needs to support the analysis. The Consultant shall perform supplemental topographic survey as needed, up to the allotment that has been incorporated into the fee proposal.

2) Perform Drainage Analysis

The Consultant will perform a drainage analysis of the existing storm sewer system utilizing City GIS, the data provided, and field observation data. The analysis will include storm piping, water quantity conveyance, and storage calculations of the drainage area with detailed analysis along the area of interest as shown in the figure described in the Project Description. The analysis shall be conducted in PCSWMM with 1D pipes and storages to start and convert potions as needed from a 1-D analysis to a 2-D analysis that includes overland flow and ponding as needed. The drainage analysis will be based on the 25-yr (as a surrogate for a current 10-yr) as well as 2 other more extreme design storm events of the City's choosing paired with two (2) tailwater elevations representing current day MHW and another forward-looking option as agreed upon with the City.

Once the no action scenarios have been developed and presented, the Consultant and the City shall select two (2) design storm / tailwater scenarios to use to identify potential modifications to the system to relieve flooding.

The Consultant shall attend up to two (2) meetings with the City: one (1) to present the existing conditions and initial improvement alternatives and the other one (1) to present final improvement options. There will be no formal written deliverable at this point. However, working documents and graphics will be prepared as needed to support the meeting(s).

3) Recommend Mitigation Measures

An informal brief write-up shall be prepared and submitted electronically that summaries the analyses and the resulting recommendations.

The write-up will include:

- Project description
- Drainage analysis methodology, assumptions, and results
- Proposed system recommendations for the selected storm events
- Associated budgetary construction cost estimates

DELIVERABLES

Task 1 – none
Task 2 – Working Documents for Existing Conditions review meeting
Task 3 – Informal Write-up, provided electronically.

REIMBURSABLE EXPENSES

A. Mileage

The Consultant will perform up to three (3) round trips between the Consultant and Owner's offices or project site during the investigations estimated at 72 miles each.

The following additional services are not deemed necessary at this time and are therefore not included in the current scope of services. If, during the course of the work, the Owner requests additional services be performed, the Consultant will provide the services through a contract modification.

ADDITIONAL SERVICES

1. Topographic survey services, beyond the allotment included
2. Easement acquisition plats
3. Additional meetings other than those identified
4. Submittals other than those listed
5. Public relation efforts and Private Property Coordination
6. Permitting efforts
7. Traffic Control
8. Environmental services
9. Design Services
10. Subsurface utility location
11. Construction Services

CITY OF SUFFOLK
Agreement for Engineering Services
Finney Outfall to Nansemond River Drainage Study
Work Order No. ?
2022 RATES

Timmons Group
2901 S Lynnhaven Rd Ste 200
Virginia Beach, Va. 23452
March 30, 2022

TASK/LABOR CLASSIFICATION	SENIOR PROJECT MANAGER	SENIOR PROJECT ENGINEER / PROJECT MANAGER	SENIOR DESIGNER	PROJECT ENGINEER II	CLERICAL	TOTAL HOURS	TASK FEE
Services							
Basic Services							
1. Records Review & Site Visit	7	14	16	28		65	$8,825
2. Perform Drainage Analysis	34	84	82	110	0	310	$42,970
3. Recommend Mitigation Measures	8	16	24	32	2	82	$10,960
TOTAL HOURS EACH CLASSIFICATION	49	114	122	170	2	457	
CLASSIFICATION RATES	$195.00	$160.00	$125.00	$115.00	$80.00		
Total Labor - Design Services	$9,555.00	$18,240.00	$15,250.00	$19,550.00	$160.00		**$62,755.00**
Topographic Survey Allowance (not to exceed)							**$10,000.00**
Total - Basic Services							**$72,755.00**
DIRECT EXPENSE							$72,755.00
	216	Mileage @ $0.585			$126.36		
TOTAL DIRECT EXPENSE					**$126.36**		
TOTAL FEE NOT TO EXCEED					**$72,881.36**		

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

2022 Round 3 CFPF Grant Application #1 City of Suffolk CID510156

1 message

Matthew M. Fanghella <mfanghella@suffolkva.us> Wed, Apr 6, 2022 at 4:55 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Heather W. Baggett" <hbaggett@suffolkva.us>, "Erin M. Rountree" <erountree@suffolkva.us>

Good afternoon,

Please find attached the first of 2 applications from the City of Suffolk for the Round 3 2022 CFPF Grant Funding, ahead of the 4/8 deadline.

The City is requesting funding for the Finney Outfall to Nansemond River Drainage Area Study. Additionally, may you please confirm the receipt of this correspondence and this application?

Thank you,

Matt Fanghella, EIT

Civil Engineer II – Stormwater

City of Suffolk – Public Works Engineering

757-514-7675 office

757-266-7924 cell

mfanghella@suffolkva.us

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6739K

2022 Virginia Community Flood Preparedness Fund

First Colonial Road and Oceana Boulevard Stormwater Improvements

City of
Virginia Beach

Table of Contents

I. Appendix A: Application Form

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

City of Virginia Beach

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

✓ **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 515531

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Toni Utterback, P.E.

Signature of Authorized Official: TPU

Mailing Address (1): 2875 Sabre Street, Suite 250

Mailing Address (2): ____________________

City: Virginia Beach **State:** Virginia **Zip:** 23452

Telephone Number: (757) 385-8746 **Cell Phone Number:** (____) ________________

Email Address: TPUtterback@vbgov.com

Contact Person (If different from authorized official): Charles Bodnar

Mailing Address (1): 2875 Sabre Street, Suite 250

Mailing Address (2): ____________________

City: Virginia Beach **State:** Virginia **Zip:** 23452

Telephone Number: (757) 385-8430 **Cell Phone Number:** (____) ____________

Email Address: cbodnar@vbgov.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ✓ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☑ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    ○ Policy management and/or development.
    ○ Stakeholder engagement and strategies.

Location of Project (Include Maps): First Colonial Road and Oceana Boulevard Stormwater Improvements

NFIP Community Identification Number (CID#):(See appendix

F 515531

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☑ No

Flood Zone(s) (If Applicable): Zone AE (EL 8)

Flood Insurance Rate Map Number(s) (If Applicable): 5155310128G

Total Cost of Project: $3,675,750.00

Total Amount Requested $1,837,875.00

II. Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Virginia Beach	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	✓
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	City of Virginia Beach

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	25
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		63

III. Appendix D: Checklist for All Categories

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

IV. Required Application Components

B. Scope of Work Narrative – Projects

1. Project Information

The City of Virginia Beach is pleased to submit the First Colonial Road and Oceana Boulevard Stormwater Improvements project for consideration under the Flood Prevention and Protection Projects category of the 2022 Virginia Community Flood Preparedness Fund.

The following project information details the project site description including the scope of work to mitigate flooding, and highlights the impacted population, residential and commercial structures, and critical facilities in and around the project site.

a. Project Site Description

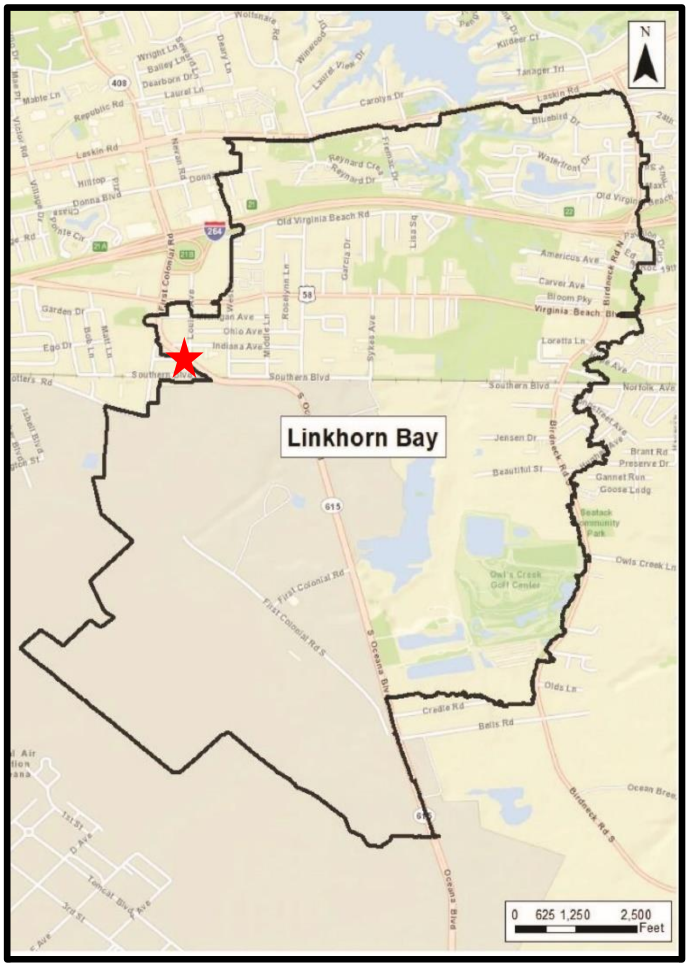


Figure 1: Project Location

The project is located south of Interstate 264, approximately 2.5 miles west of the oceanfront. The project area is included in the Linkhorn Bay drainage basin within the City of Virginia Beach shown in Figure 1. First Colonial Road at the convergence of Oceana Boulevard, experiences frequent flooding, as shown in Figure 4. Street flooding also occurs on Indiana Avenue and South First Colonial Road. Nearby private property experiences flooding, but habitable structures are unaffected. The flooding in this area is caused by inadequate stormwater infrastructure in the neighborhood adjacent to the roads. The City of Virginia Beach's Master Stormwater Management Models (SWMM) indicate First Colonial Road and Oceana Boulevard begin to experience flooding in a 10-year storm event. The location of the Simulated Flooding Area (SFA) is shown in Figure 2.

Figure 2: Location Map of First Colonial Road and Oceana Boulevard SFA

First Colonial Road/Oceana Boulevard is a secondary evacuation route and provides one of the primary access roads to Naval Air Station (NAS) Oceana. The proposed project involves constructing a Stormwater Management Facility (SWMF) on City-owned property between New York Avenue and Southern Boulevard to provide additional runoff storage. Stormwater will be diverted from the stormwater pipes along Oceana Boulevard. The SWMF will slowly release the stormwater back into the South Oceana Boulevard stormwater pipes further downstream. Figure 3 shows a concept plan of the stormwater improvements required. Figure 4 illustrates the simulated flood depths of the existing 100-year storm before and after the proposed stormwater improvements are constructed.

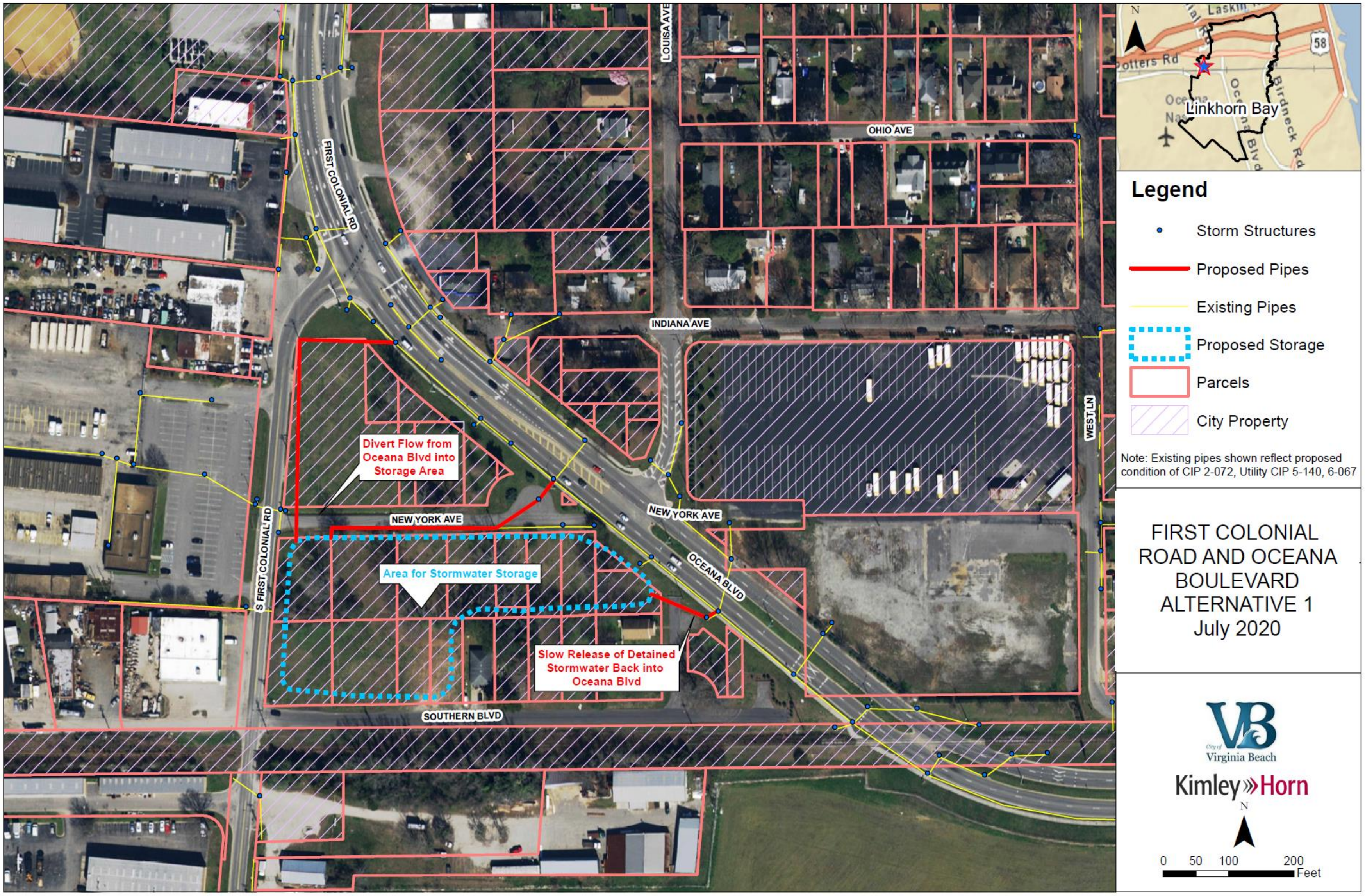
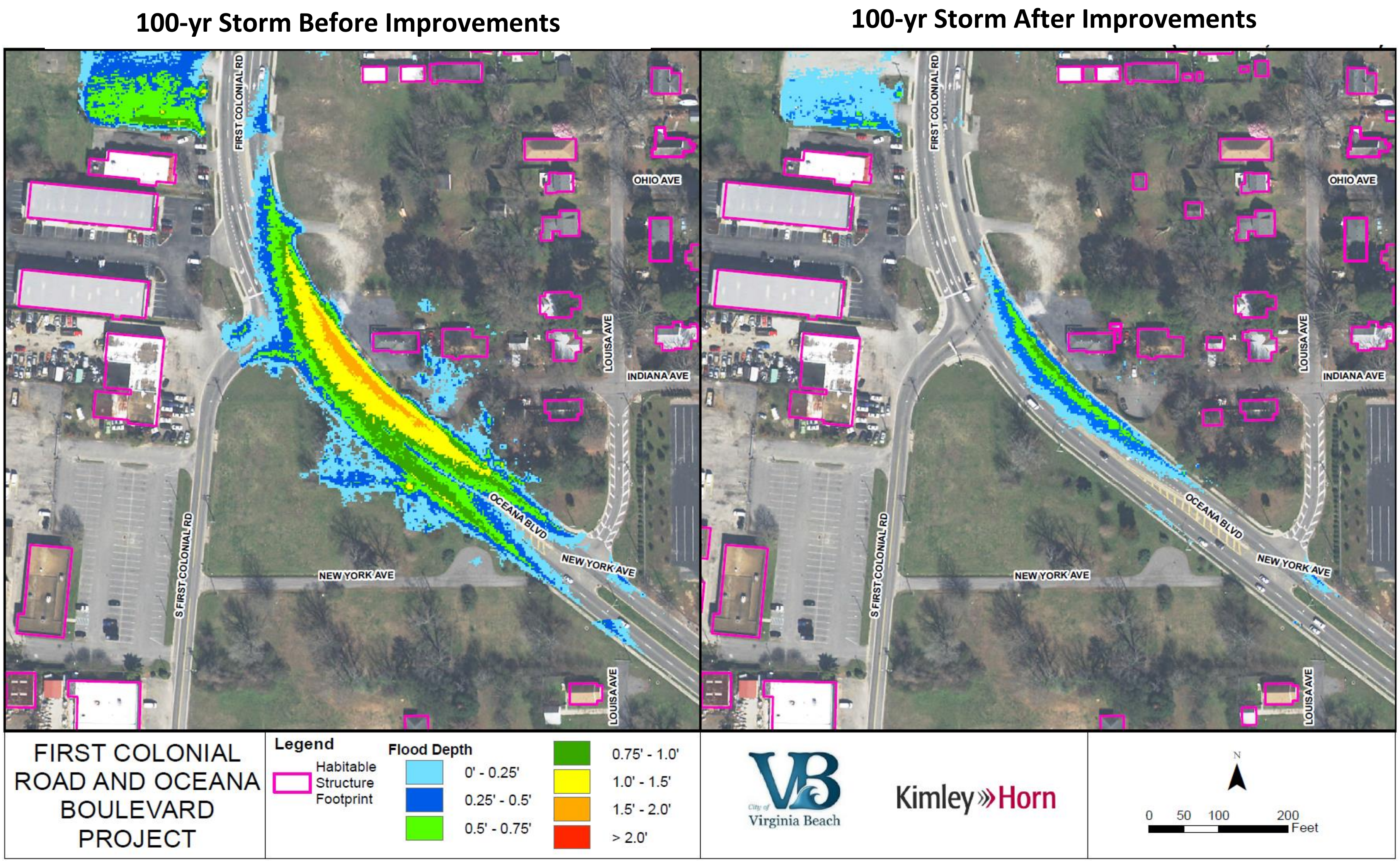


Figure 3: Project Concept Plan



100-yr Storm Before Improvements

100-yr Storm After Improvements

Figure 4: Flood Depth Maps

No habitable structures are impacted in the 100-year storm based on the City of Virginia Beach's Hazus data. Applying the Benefit-Cost Ratio (BCR) methodology, the project is given a BCR of one (1); however, as additional HAZUS data becomes available, the score should be re-evaluated, and the ranking score appropriately adjusted. In addition, the project is given a Benefit Ratio (BR) of one (1) due to mitigation of all street flooding to meet the requirements of the City of Virginia Beach *Public Works Design Standards Manual (PWDSM)*.

Utility relocations for the proposed Stormwater Management Facility and pipe connections are not expected. No property acquisition is required as all construction will occur within the right-of-way (ROW) or on City-owned property.

b. Population

The First Colonial Road and Oceana Boulevard project is located in census block group 518100448.062, as shown in Figure 5, which has a population of 944. The residential population has declined by approximately 14% in the past two decades. The median household income in 2021 dollars is $65,733. There are approximately 427 residential housing units, 37% which are owner-occupied, 51% which are renter-occupied, and 12% which are vacation rentals. Residents are 60% white, 27% black, 12% Hispanic, and 1% other.

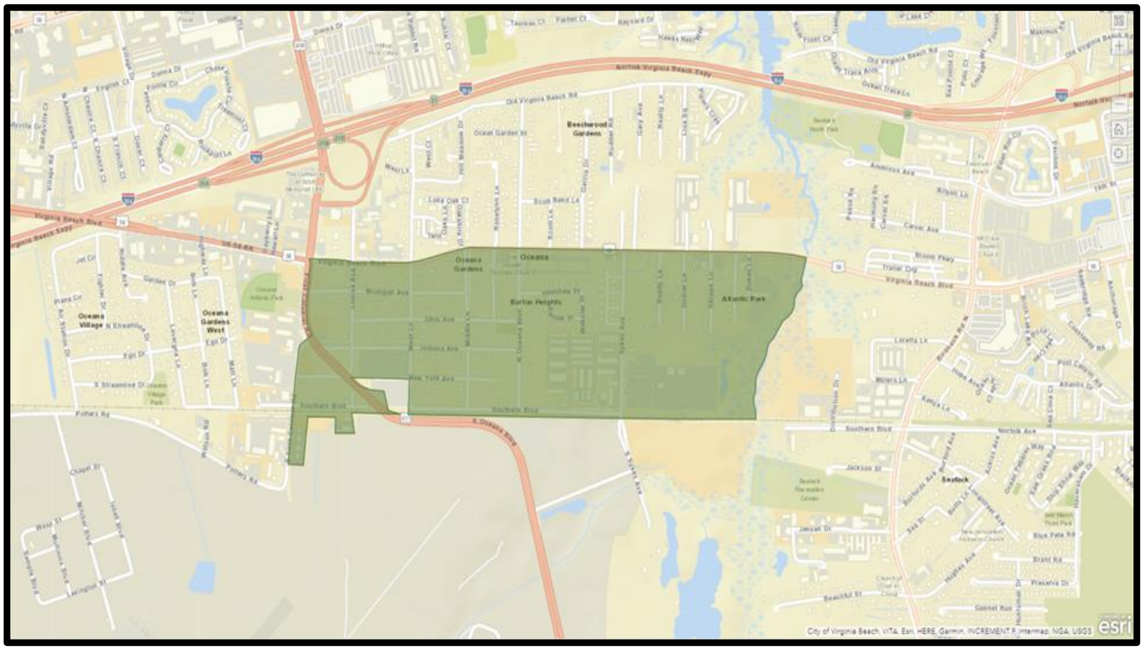


Figure 5: Census Block Group for First Colonial Road and Oceana Boulevard

As shown in Figure 6, the project is located within a designated qualified opportunity zone as determined by the United States Secretary of the Treasury via delegation of authority to the Internal Revenue Service.

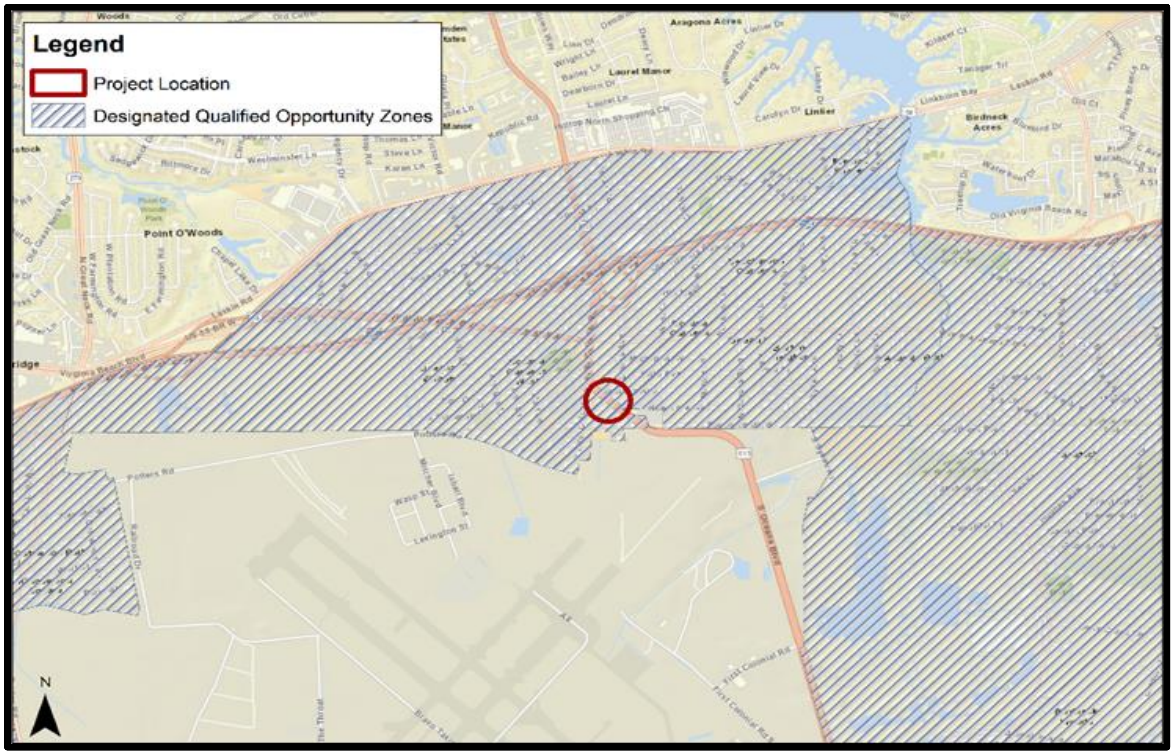


Figure 6: Opportunity Zone for First Colonial Road and Oceana Boulevard
(Source: Virginia Economic Development Partnership (VEDP) GIS Open Data)

c. Historic Flooding Data and Hydrologic Studies Projecting Flood Frequency

The City maintains records of where residents report flood issues, and what type of flooding is causing the issue. Residents regularly report flood issues through a hotline which is then recorded in a flood event database. Within a half-mile radius around the project location, there have been 110 instances of flood reports associated with heavy rain or high tide recorded in the database between 1995 and 2021.

d. Local Government to Provide its Share of the Cost

The City of Virginia Beach is fully prepared to cover the cost share of the proposed project, as highlighted in Section D. Budget Narrative – Amount of Cash Funds Available. The funding for the grant match is contained within the City budget.

e. Local Floodplain Management Regulations

The City recognizes the vital importance of floodplains in the natural movement of water through the community.

Appendix K of the Virginia Code of Ordinances regulates development in the community's floodplains. The City requires that a permit is obtained for any construction or development in the special flood hazard area (SFHA).

For more information and details regarding the City's floodplain management and ordinances, please see:

- Virginia Beach Floodplain Ordinance

In addition, a copy of the floodplain ordinance has been included in Section E: Supporting Documentation.

f. Repetitive Loss and/or Severe Repetitive Loss Properties

The repetitive loss database from 2019-2020 shows one repetitive loss property within a quarter of a mile radius around the project area – see support letter from City of Virginia Beach Floodplain Administrator in Section E: Supporting Documentation.

g. Residential and/or Commercial Structures

The project area consists of 14 residential structures and 15 commercial structures.

h. Critical Facilities

The following six critical facilities are located within a two-mile radius around the proposed project site: NAS Oceana, Virginia Beach Police Department Second Precinct, EMS 14 Virginia Beach, Fire Station #11 Beach Borough, Virginia Beach Convention Center, and Linkhorn Park Elementary School.

NAS Oceana is the sole East Coast Master Jet Base and is home to all east coast strike fighter jet squadrons.

The Virginia Beach Convention Center is used as a command center during severe snowstorms and is used a mass vaccination site.

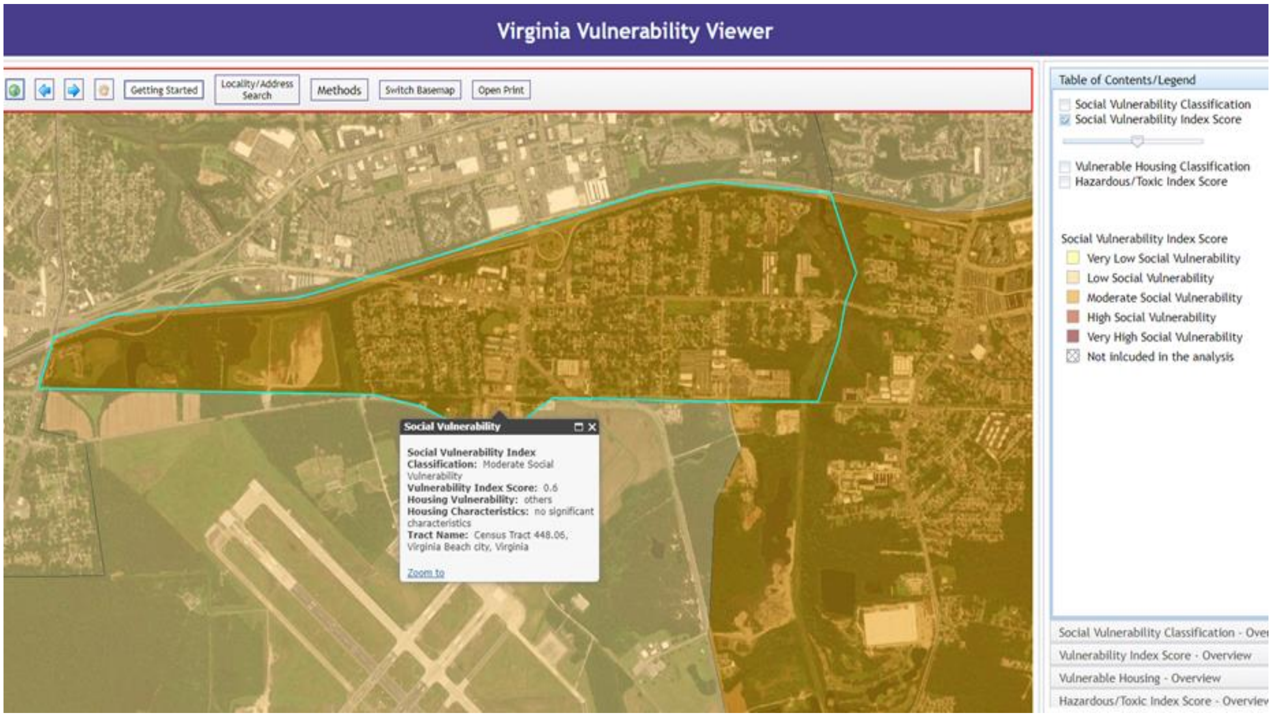
Linkhorn Park Elementary School is used as a secondary emergency shelter.

2. Need for Assistance

The City of Virginia Beach has invested significant time, money, and resources in understanding, planning for and communicating the threats of sea level rise and recurrent flooding to the community. The planning stage is now complete, and the City is ready to turn to implementation. Virginia Beach understands that the costs of mitigating the community are substantial and is seeking funds to support the implementation of vital mitigation projects, alongside dedicated resources that the City is procuring.

Monetary support to implement the proposed project will benefit not only Virginia Beach and the surrounding community members but will have trickle-down impacts for the broader Lynnhaven River Watershed.

The project is in a Moderate social vulnerability classification with an index score of 0.6, per ADAPT Virginia's Vulnerability Viewer, see Figure 7.



Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 448.06, Virginia Beach city, Virginia

Figure 7: ADAPT Virginia Vulnerability Viewer for First Colonial Road and Oceana Boulevard

3. Goals and Objectives

The major benefit of the project is ensuring that First Colonial Road/Oceana Boulevard provides safe access to NAS Oceana and can effectively serve as an evacuation route in a 100-year storm with 3.0 feet sea level rise. The project also relieves flooding in an area that is considered economically disadvantaged and is located within a Strategic Growth Area (SGA), which is identified in the City's Comprehensive plan as an area designated to absorb future growth in the City. Street flooding along South First Colonial Road and Indiana Avenue will be resolved, as well as the flooding that occurs on the private property along Indiana Avenue.

This project is among the highest-ranked projects within the City because it provides a solution to mitigate the flooding and does not require property acquisition since the project is located within the right-of-way (ROW) or on City property.

4. Approach, Milestones, and Deliverables

The following approach, milestones, and deliverables lays out a plan of action.

Our milestone schedule assumes an executed agreement date in September 2022. The expected progression of the project is shown in our milestone schedule, and notable deliverables for each milestone are listed below.

By the end of the grant period, the project will have completed construction.

a. Approach & Deliverables

Activity 1 – Field Investigation

The City will prepare and obtain required authorizations to conduct surveys. The City will then compile existing datasets and coordinate with identified subcontractors to survey baseline field conditions at the identified project site. This baseline field data will support the development of engineering design criteria. The data will also serve as an input for evaluating the most effective design of the project features to meet the project goals and objectives.

Deliverables:

- Field Survey Data Reports and Mapping Database
- List of Project Area Property Owners and Tax Map Parcel Boundary Mapping

Activity 2 – Final Design

The project team will leverage the collected field data in conjunction with the existing hazard outputs from the Sea Level Wise study to develop technical design criteria for existing and future condition scenarios. Hydrologic and Hydraulic Stormwater Management Modeling (SWMM) modeling will also be performed and developed for the Project Area to calibrate field-collected data including tidal levels and flows. Stormwater drainage outfalls will be field evaluated, and analyses performed to determine appropriate pipe sizes and replacement requirements.

Under this activity, the project team will develop engineering and design plans, including a construction schedule and staging plan for implementation. Preliminary cost estimates will be developed at the 60% design level and refined at the 90% design level. Technical specifications and bid quantities will be developed for construction procurements, including proposed materials and quantities.

Deliverables:

- Hydrologic and Hydraulic Analyses- SWMM Modeling
- 30%, 60%, 90% and PS&E design plans
- Design renderings
- Final plans, specifications, and bid sheets
- Construction cost estimates
- Construction schedule estimate

Activity 3 – Construction

Contractor procurement activities will begin which include bid document development, coordination, requests for information and reporting. A construction work plan will be developed to include identification of project staging area, construction phasing sequence, and anticipated construction schedule.

Deliverables:

- Pre-construction survey
- Conduct weekly inspections to monitor construction progress
- Post-construction survey and as-built plans

b. Milestone Schedule

The milestone schedule assumes an executed agreement date in September 2022. The expected progression of the project is shown in the milestone schedule, and notable deliverables for each milestone are listed below:

Year 1:

- *4th Quarter (2022)*
    - Field Investigation
    - 30% Concept Design Submission
- *1st Quarter (2023)*
    - 30% Concept Design Submittal
- *2nd Quarter (2023)*
    - 60% Design Submission
    - Public Engagement Meeting
- *3rd Quarter (2023)*
    - 90% Design PS&E
    - Submit Bid Documents

Year 2:

- *4th Quarter (2023)*
    - 100% Final PS&E
    - Submit Bid Documents
- *1st Quarter (2024)*
    - Final Bid Coordination / Acceptance
- *2nd Quarter (2024)*
    - Construction NTP, Oversight, Management, and Inspection Services

Year 3:

- *4th Quarter (2025)*
    - Project Closeout
    - Begin Warranty Period

Table 1: Schedule Summary

Activity	Schedule	Duration
Design	10/2022 – 01/2024	15 Months
Site Acquisition/Easements	N/A	0 months
Utility Relocation	N/A	0 Months
Total Construction	04/2024-10/2025	18 Months
Contingency	N/A	0 Months

5. Relationship to Other Projects

In addition, the City has several other planned and ongoing efforts that will work in conjunction with this project to provide flood reduction in the drainage basin and surrounding areas. Furthermore, there is an upcoming Public Utilities waterline replacement project within the project area.

Stormwater Master Plan

The City Council initiated an update of the City's Stormwater Master Plan in 2014. This effort is running on a partial parallel track and interchanging information with aspects of the sea level rise study. Existing and future nuisance flooding and decreasing system performance due to sea level rise will be addressed between the Stormwater Master Plan and the recommendations from the Sea Level Wise Adaptation Strategy plan.

Ongoing Flood Protection

Indicators for sea level rise impacts within the City have included nuisance flooding and instances of repetitive losses to coastal flooding. The City has been progressive in addressing flooding issues and fully intends to follow this effort with the adoption of strategies that protect our vitality. In the last five years, the City has completed $43.8 million in flood protection projects, and over the next 10 years, the City expects to spend an additional $135 million on currently identified flood protection projects. We are firmly committed to the implementation of strategies and in-the-ground solutions as it moves forward with these projects - providing measurable returns and case study examples of communities adapting to the changing hazard environment.

6. Maintenance Plan

The City of Virginia Beach has a comprehensive maintenance plan in place to proactively preserve City-owned assets. This includes measures to clean all 1,700 miles of City-maintained pipe at least once every five years and perform CCTV of the system at least once every 15 years as required by the City's Municipal Separate Storm Sewer System (MS4) permit. In addition, there are currently 3,384 City BMP facilities that are inspected every five years, and maintenance and/or repairs are completed as needed. It also includes a contract street sweeping program that aims to sweep all City-maintained streets, excluding the Oceanfront and Town Center areas, seven times per year. The contract street sweeping is supplemented by in-house street sweeping crews that regularly sweep the Oceanfront and Town Center Areas.

In addition, reactive maintenance is completed as needed by in-house crews including cave-in repairs, minor pipe replacement, etc. Dedicated local funds are also available each year to utilize for contract reactive repairs as needed.

The pipe and BMP installed with this project will be added to the City's maintenance inventory and placed on the maintenance cycle as aforementioned.

7. Criteria

The City has demonstrated, through this application, that the grant criteria have been met. For more details and locations of criteria, please see Table 2 below. The completed scoring criteria are included in Appendix B of this application.

Table 2: Grant Criteria

Criteria	Satisfaction?
Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?	Yes.
Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or is a link provided?	Yes. Approved on July 20, 2021. The Virginia Beach Resilience Plan (Sea Level Wise) can be found on our website.
For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?	Not Applicable.
Has the applicant provided evidence of an ability to provide the required match funds?	Yes. Please see Section D: *Budget Narrative Amount of Cash Funds Available* for more information.
Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on the prevention of flooding?	Yes. Please see Section B: *Scope of Work Narrative* for more details.

D: Budget Narrative

The following budget narrative details the proposed project expenditures.

1. Estimated Total Project Cost

A detailed cost breakdown for the project area is provided in Table 3 below. This cost breakdown is based on the 15% design concept.

Table 3: Cost breakdown

Element	Element Sub-Total
Design	$ 390,000
Site Acquisition	$ -
Utility Relocation	$ 195,000
Construction Engineering and Inspection	$ 292,500
Construction Total Construction	$ 1,950,000
Overall Project Contingency (30%)	$ 848,250
Estimated Total Cost	**$ 3,675,750**

2. Funds Requested from the Fund

The City is requesting a total of $1,837,875 (50% of total project cost estimate) in funding over the proposed period of performance, with a cost-share/in-kind contribution by the City of $1,837,875 (50% of total project cost estimate). The funding will support the implementation of the detailed work plan and scope outlined in this narrative.

3. Cash Funds Available

The City has $1,837,875 of cash on hand, contained within the City budget. This amount of cash funds is sufficient, that when combined with the potential grant funding, the City will have all necessary funds available to complete the project.

4. Funding Authorization

Please refer to supporting documentation Section E: Supporting Documentation City Manager Approval, for the documentation authorizing the funding request.

E: Supporting Documentation

1. Detailed Construction Estimate
2. Virginia Beach Resilience Plan DCR Approval
3. City Manager Approval
4. City of Virginia Beach Floodplain Administrator Support Letter
5. Copy of Floodplain Ordinance

1. Detailed Construction Estimate

Kimley»Horn

CITY OF VIRGINIA BEACH
DEPARTMENT OF PUBLIC WORKS
STORMWATER ENGINEERING CENTER

City of Virginia Beach

OPINION OF PROBABLE CONSTRUCTION COST (2020 DOLLARS)
LINKHORN BAY DRAINAGE BASIN
PROJECT: FIRST COLONIAL ROAD AND OCEANA BOULEVARD ALTERNATIVE 1

	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL COST
GENERAL					**$197,050**
	MOBILIZATION	1	LS	$99,500	$99,500
	FIELD OFFICE (TYPE III)	6	MO	$1,500	$9,000
	CONSTRUCTION SURVEYING	1	LS	$10,000	$10,000
	CLEARING AND GRUBBING	3	AC	$15,000	$45,000
	TEST PITS	10	EA	$500	$5,000
	REMOVE EXISTING CONCRETE CURB AND GUTTER	50	LF	$10	$500
	REMOVE EXISTING CONCRETE SIDEWALK	30	SY	$10	$300
	DEMOLITION OF PAVEMENT	1850	SY	$15	$27,750
DRAINAGE					**$1,184,250**
	15" CONC. PIPE	150	LF	$185	$27,750
	24" CONC. PIPE	400	LF	$275	$110,000
	42" CONC. PIPE	500	LF	$350	$175,000
	SELECT BORROW FOR TRENCH BACKFILL, CBR-15	1,000	CY	$35	$35,000
	24" END SECTION ES-1 OR 2	1	EA	$1,500	$1,500
	42" END SECTION ES-1 OR 2	1	EA	$4,000	$4,000
	EROSION CONTROL STONE CL. 1, EC-1	70	TON	$200	$14,000
	STORMWATER BMP	1	LS	$720,000	$720,000
	MINOR STRUCTURE EXCAVATION	1,200	CY	$25	$30,000
	STORMWATER MANAGEMENT DRAINAGE STRUCTURE SWM-1	1	EA	$15,000	$15,000
	CVB STD MANHOLE	4	EA	$7,500	$30,000
	CVB STD CATCH BASIN	4	EA	$5,500	$22,000
INCIDENTALS					**$11,000**
	STD. CG-6 CURB AND GUTTER	50	LF	$25	$1,250
	HYDRAULIC CEMENT CONCRETE SIDEWALK 4"	30	SY	$50	$1,500
	CONCRETE ENTRANCE PAVEMENT 7"	55	SY	$150	$8,250
MAINTENANCE OF TRAFFIC					**$34,000**
	TEMPORARY (CONSTRUCTION)SIGN	2,700	EACH/DAY	$5	$13,500
	ELECTRONIC ARROW BOARD	30	EACH/DAY	$250	$7,500
	FLAGGER SERVICE	480	HR	$25	$12,000
	GROUP 2 CHANNELIZING DEVICES	1,000	EACH/DAY	$1.00	$1,000
EROSION AND SEDIMENT CONTROL					**$61,500**
	TEMPORARY SILT FENCE (TYPE A)	2,200	LF	$10	$22,000
	CONSTRUCTION ENTRANCE - VDOT #1 AGGREGATE	30	TN	$100	$3,000
	DROP INLET SILT TRAP	15	EA	$500	$7,500
	TEMPORARY SEED	100	LB	$30	$3,000
	TOPSOIL (CLASS B, 4" DEPTH)	400	CY	$65	$26,000
CONSTRUCTION CONTINGENCY 30%					**$450,000**
CONSTRUCTION SUBTOTAL					**$1,950,000**
DESIGN & CONSTRUCTION SERVICES					**$682,500**
	ENGINEERING DESIGN	20%	% OF CN SUBTOTAL	$390,000	$390,000
	CONSTRUCTION ENGINEERING AND INSPECTIONS			$292,500	$292,500
	UTILITY RELOCATION ALLOWANCE	10%	% OF CN SUBTOTAL	$195,000	$195,000
	SUBTOTAL				$2,827,500
	CONTNGENCY	30%	% OF CN SUBTOTAL	$848,250	$848,250
TOTAL CONSTRUCTION COST					**$3,675,750**

Notes:

This cost opinion is based solely on the conceptual design exhibit dated June 2020 and represents a Class 3 Estimate as defined by AACE International recommended practice No. 18R-97.

The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.

2. Virginia Beach Resilience Plan DCR Approval

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH *of* VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of
Administration and Finance

Russell W. Baxter
Deputy Director of
Dam Safety & Floodplain
Management and Soil & Water
Conservation

Nathan Burrell
Deputy Director of
Government and Community Relations

Thomas L. Smith
Deputy Director of
Operations

July 20, 2021

Toni Utterback, P.E.
Department of Public Works
2875 Sabre Street, Suite 250
Virginia Beach, VA 23452

RE: Virginia Beach Resilience Plan Second Submission - CFPF

Dear Ms. Utterback:

Thank you for the resubmission of the Sea Level Wise Adaptation Plan for City of Virginia Beach. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the June 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on July 31, 2024.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

    a. Project-based: Four watersheds—each with a defined geographic area, analysis of community social and environmental characteristics, types of flooding, and a tailored flood resilience strategy with <u>discrete projects identified</u>.

Projects focused on flood control and resilience include:

Neighborhood	Flood Control Project
Elizabeth River	City-wide alignment, living shoreline, marsh restoration, land conservation
Lynnhaven	Chesapeake Bay alignment, Lesner Bridge Neighborhood alignment (East & West), beach & dune nourishment, ecological revetments, shellfish reef restoration, seagrass restoration
Oceanfront	Atlantic Oceanfront alignment, Rudee Heights alignment
Southern Rivers	West Neck Creek city-wide alignment, Muddy Creek Road city-wide alignment, Sandbridge city-wide alignment

**additional projects listed within the Sea Level Wise Adaptation Strategy.*

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

    a. Nature-based infrastructure: Flood mitigation projects throughout the city incorporate nature-based solutions and were identified for maximum use within specific watersheds.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**
    a. All parts of a locality: Locality divided into four watersheds, covering the entirety of the jurisdictional boundary.
    b. Social vulnerability: Social implications of flood hazards and analysis of populations at-risk documented.
    c. Demographic Analysis: Demographic and Population Vulnerability Analysis conducted by Dewberry and incorporated into the Plan.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**
    a. Coordination with other projects, plans, and activities: Contains the planning processes and frameworks which outline local and regional plans used by the City and address resilience; and how they have been integrated for flood adaptation planning.
    b. Clearly articulated timeline or phasing for plan implementation: Program phases clearly articulated and described in detail—Impact assessment, Adaptation research, Strategy development, and Long-term implementation.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**
    a. Technically backed water-resources analysis, sea level rise projections, storm surge, and climate change incorporated into strategic approach.

VA DCR looks forward to working with you as you work to make Virginia Beach a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl Glover, DCR

3. City Manager Approval

City of Virginia Beach

VBgov.com

DEPARTMENT OF BUDGET AND MANAGEMENT SERVICES
(757) 385-8234
FAX (757) 385-1857

MUNICIPAL CENTER
BUILDING 1
2401 COURTHOUSE DRIVE
VIRGINIA BEACH, VA 23546-9012

INTER-OFFICE MEMORANDUM

DATE: March 30, 2022

TO: Patrick Duhaney, City Manager

FROM: Kaitlyn James, Budget and Management Services KJ

SUBJECT: **Virginia Community Flood Preparedness Fund Grant – Round III**

The Department of Public Works is requesting permission to submit two applications for the Virginia Community Flood Preparedness Fund Grant from the Virginia Department of Conservation and Recreation. The Virginia Community Flood Preparedness Fund was established in the 2020 session of the General Assembly. Money in this fund comes from the auction of carbon allowances through the Regional Greenhouse Gas Initiative. It was established to provide support to localities across Virginia to reduce the impacts of flooding, including flooding driven by climate change.

The first application is for the First Colonial Road and Oceana Boulevard Stormwater Improvements project in the amount of $1,837,875. This project will provide upgraded stormwater infrastructure to mitigate frequent flooding. First Colonial Road/Oceana Boulevard is a secondary evacuation route and provides one of the primary access roads to Naval Air Station (NAS) Oceana. This project does not require property acquisition since the project is located with the right-of-way or on City property. There is sufficient funding for the fifty percent local match for this grant in CIP 100601, "First Colonial and Oceana Boulevard."

The second application is for $5,000,000 for a Back Bay Wetlands Restoration project to provide march terraces in Back Bay to promote wetland restoration and reduce frequent flooding. If awarded, the grant will require a local match of $24.1 million. There is sufficient funding within CIP 100551, "Stormwater Green Infrastructure," which has appropriations to date of $40 million as a result of the bond referendum.

Budget & Management Services recommends this grant application for approval. Please indicate approval or disapproval below. The application due date is April 8, 2022.

3/30/2022
Approve (Date)

N/A
Disapprove (Date)

4. City of Virginia Beach Floodplain Administrator Support Letter

City of Virginia Beach

VBgov.com

DEPARTMENT OF PLANNING & COMMUNITY DEVELOPMENT
PHONE (757) 385-4621
FAX (757) 385-5667
VA Relay Number TTY: 711

2875 SABRE STREET, SUITE 500
VIRGINIA BEACH, VA 23452-7385

January 31, 2022

Wendy Howard Cooper
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

RE: Community Flood Preparedness Fund – First Colonial Rd and Oceana Blvd

Dear Ms. Cooper:

While the proposed project is not located in a Federal Emergency Management Agency (FEMA) mapped Special Flood Hazard Area (SFHA), the area encompassed by the project is considered to be an area subject to recurrent flooding. This particular area begins to experience flooding during the 10-yr storm event due to inadequate stormwater infrastructure. First Colonial Road/Oceana Boulevard is a secondary evacuation route and is one of the primary access roads to Naval Air Station (NAS) Oceana. While there are no repetitive loss properties in the project neighborhood, there is one (1) repetitive loss property located just outside the project neighborhood.

If I can provide any further information or assistance, please call me at 757-385-4621, or e-mail me at wmcnamar@vbgov.com.

Sincerely,

Whitney McNamara

Whitney McNamara, CFM
Floodplain Administrator and CRS Coordinator

5. Copy of Floodplain Ordinance

ORD-3309

AN ORDINANCE TO ADOPT APPENDIX K, (FLOODPLAIN ORDINANCE) OF THE CITY CODE, PERTAINING TO FLOODPLAIN DISTRICTS, PERMITS, VARIANCE CONDITIONS AND ENFORCEMENT

Section Added: Appendix K, Floodplain Ordinance

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF VIRGINIA BEACH, VIRGINIA:

That Appendix K, Floodplain Ordinance, of the Code of the City of Virginia Beach, Virginia, is hereby adopted to read as follows:

ARTICLE I - GENERAL PROVISIONS

Sec. 1.1. Statutory authorization and purpose.

A. This ordinance is adopted pursuant to the authority granted to localities by Va. Code § 10.1 – 600 et seq.

B. The City Council finds the purpose of these provisions is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

1. Regulating uses, activities, and development that, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;

2. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;

3. Requiring all uses, activities, and developments that do occur in flood-prone districts be protected or flood-proofed against flooding and flood damage;

4. Protecting individuals from buying land and structures that are unsuited for intended purposes because of flood hazards; and

5. Acknowledging that the tide data over the last 100 years shows that Virginia Beach is facing an increased danger of flooding caused by both sea level rise and subsidence.

Sec. 1.2. Applicability.

These provisions shall apply to all privately and publicly owned lands within the jurisdiction of the City of Virginia Beach and identified as areas of special flood hazard according to the Flood Insurance Rate Map (FIRM) that is provided to the City of Virginia Beach by the Federal Emergency Management Agency (FEMA) and dated May 4, 2009 or identified as floodplains subject to special restrictions in Section 4.10 of this ordinance.

Sec. 1.3. Definitions.

Base flood. The flood having a one (1) percent chance of being equaled or exceeded in any given year; also referred to as the one hundred (100) year flood.

Base flood elevation. The FEMA designated one (1) percent annual chance water surface elevation. The water surface elevation of the base flood in relation to the datum specified on the City's FIRM.

Basement. Any area of the building having its floor sub-grade (below ground level) on all sides.

Breakaway wall. A wall that is not part of the structural support of the building and is intended, through its design and construction, to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

City Council. The body designated to review appeals made by individuals with regard to decisions of the Floodplain Administrator in the interpretation of this ordinance.

City Manager. The City Manager of the City of Virginia Beach, or his designees.

Development. Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, the placement of manufactured homes, streets, mining, dredging, filling, grading, paving, excavation or drilling operations, storage of equipment or materials, or the subdivision of land.

Elevated building. A non-basement building built to have the lowest floor elevated above the ground level by means of solid foundation perimeter walls, pilings, or columns (posts and piers).

Encroachment. The advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures, or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

Existing construction. Structures for which the "start of construction" commenced before the effective date of the most recent FIRM (May 4, 2009) "Existing construction" may also be referred to as "existing structures."

Flood or flooding.

1. A general or temporary condition of partial or complete inundation of normally dry land areas from:

    a. The overflow of inland or tidal waters;

    b. The unusual and rapid accumulation or runoff of surface waters from any source; or

    c. Mudflows, which are proximately caused by flooding as defined in paragraph 1.b. of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

2. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, an unanticipated force of nature such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event that results in flooding as defined in paragraph 1.a. of this definition.

Flood Insurance Rate Map (FIRM). An official map of the City, on which FEMA has delineated both the special flood hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

Flood Insurance Study (FIS). A report by FEMA that examines, evaluates, and determines flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation, and determination of mudflow and flood-related erosion hazards.

Floodplain. Any land area susceptible to being inundated by water from any source.

Flood proofing. Any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, or structures and their contents.

Floodway. The channel of a river or other watercourse and the adjacent land areas that shall be reserved to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot. The “floodway” may also be referred to as the “regulatory floodway”.

Freeboard. A factor of safety usually expressed in feet above the base flood elevation for purposes of floodplain management. “Freeboard” tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization in the watershed. When a freeboard is included in the height of a structure, the flood insurance premiums may be less expensive.

Highest adjacent grade. The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

Historic structure. Any structure that is:

1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

2. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

3. Individually listed on a state inventory of historic places in states with historic preservation programs that have been approved by the Secretary of the Interior; or

4. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

    a. By an approved state program as determined by the Secretary of the Interior or

    b. Directly by the Secretary of the Interior in states without approved programs.

Hydrologic and Hydraulic Engineering Analysis. Analyses performed by a professional engineer licensed by the Commonwealth of Virginia, in accordance with standard engineering practices that are accepted by the Virginia Department of Conservation and Recreation and FEMA, used to determine the base flood, other frequency floods, flood elevations, floodway information and boundaries, and flood profiles.

Letters of Map Change (LOMC). A Letter of Map Change is an official FEMA determination, by letter, that amends or revises an effective FIRM or FIS. Letters of Map Change include:

1. Letter of Map Amendment (LOMA): An amendment based on technical data showing that a property was incorrectly included in a designated Special Flood Hazard Area (SFHA). A LOMA amends the current effective FIRM and establishes that a land as defined by metes and bounds or a structure is not located in a SFHA.

2. Letter of Map Revision (LOMR): A revision based on technical data that may show changes to flood zones, flood elevations, floodplain and floodway delineations, and planimetric features. A Letter of Map Revision Based on Fill (LOMR-F) is a determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer exposed to flooding associated with the base flood. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the City's floodplain management ordinance.

3. Conditional Letter of Map Revision (CLOMR): A formal review and comment as to whether a proposed flood protection project or other project complies with the minimum National Flood Insurance Program (NFIP) requirements for such projects with respect to delineation of SFHAs. A CLOMR does not revise the effective FIRM or FIS.

Lowest floor. The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Federal Code 44CFR §60.3.

Manufactured home. A structure, transportable in one or more sections, that is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than one hundred eighty (180) consecutive days, but does not include a recreational vehicle.

Manufactured home park or subdivision. A parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

Market value. The value of a structure, established prior to the damage in question, as determined by property values used for tax assessment purposes (assessment) as adjusted by the Virginia Beach Real Estate Assessor (market factor) to reflect current market conditions, or as determined by an independent appraisal done by a professional appraiser.

New construction. For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after October 3, 1970 and includes any subsequent improvements to such structures. For floodplain management purposes, new construction means structures for which the start of construction commenced on or after the effective date of a floodplain management ordinance adopted by the City and includes any subsequent improvements to such structures.

Post-FIRM structures. A structure for which construction or substantial improvement occurred after October 3, 1970.

Pre-FIRM structures. A structure for which construction or substantial improvement occurred on or before October 3, 1970.

Recreational vehicle. A vehicle that is:

1. Built on a single chassis;

2. Four hundred (400) square feet or less when measured at the largest horizontal projection;

3. Designed to be self-propelled or permanently towable by a light duty truck; and

4. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

Regulatory flood protection elevation (design flood elevation). The base flood elevation plus the freeboard required by this ordinance.

Special flood hazard area (SFHA). The land in the floodplain subject to a one (1) percent or greater chance of being flooded in any given year as set forth in this ordinance. These areas are designated as AE, AO, A, and VE on the FIRM.

Start of construction. For other than new construction and substantial improvement under the Coastal Barrier Resources Act (P.L. 97-348), means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement, or other improvement was within one hundred eighty (180) days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Structure. For floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

Substantial damage. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.

Substantial improvement. Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the start of construction of the improvement. This term includes structures that have incurred substantial damage regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications that have been identified by the local code enforcement official and are the minimum necessary to assure safe living conditions; or

2. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

3. Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined above, shall comply with

all ordinance requirements that do not preclude the structure's continued designation as a historic structure. Documentation that a specific ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic places shall be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.

Violation. The failure of a structure or other development to be fully compliant with the provisions of the floodplain ordinance in effect at the time of construction or development. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this ordinance is presumed to be in violation until such time as that documentation is provided.

Watercourse. Any natural or artificial lake, river, creek, stream, ditch, channel, waterway, gully, ravine, swale, or wash in which water flows, either continuously, periodically, or intermittently, and which has a definite channel, bed, or banks.

Sec. 1.4. Compliance and liability.

A. No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this ordinance and any other applicable ordinances and regulations that apply to uses within the City.

B. The degree of flood protection sought by the provisions of this ordinance is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study, but does not imply total flood protection. Larger floods may occur on rare occasions. Flood heights may be increased by man- made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that districts outside the floodplain district or land uses permitted within such district will be free from flooding or flood damages.

C. This ordinance shall not create liability on the part of the City of Virginia Beach or any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.

Sec. 1.5. Records.

Records of actions associated with administering this ordinance shall be kept on file and maintained by the Floodplain Administrator.

Sec. 1.6. Abrogation and greater restrictions.

This ordinance supersedes any ordinance currently in effect in the floodplain. Any ordinance, however, shall remain in full force and effect to the extent that its provisions are more restrictive.

Sec. 1.7. Severability.

If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance be declared by the courts to be unconstitutional or invalid for any reason whatsoever, such decision shall not affect the validity of the ordinance as a whole other than the part so declared to be unconstitutional or invalid.

Sec. 1.8. Penalty for violations.

Any person who fails to comply with any of the requirements or provisions of this ordinance or directions of the directors of planning or public works or any authorized employee of the City of Virginia Beach shall be guilty of the appropriate violation and subject to the penalties therefore. Any violation of the provision of this ordinance shall be punishable by a fine of not more than one hundred dollars ($100.00). Each person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of this ordinance is committed.

The Virginia Uniform Statewide Building Code (VA USBC) addresses building code violations and the associated penalties in Section 104 and Section 115.

In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this ordinance. The imposition of a fine or penalty for any violation of, or noncompliance with, this ordinance shall not excuse the violation or noncompliance or permit it to continue, and all such persons shall be required to correct or remedy such violations within a reasonable time. Any structure constructed, reconstructed, enlarged, altered, or relocated in noncompliance with this ordinance may be declared by the City of Virginia Beach to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this ordinance.

ARTICLE II - ADMINISTRATION

Sec. 2.1. Designation of the floodplain administrator.

The City Manager of the City of Virginia Beach is hereby appointed the Floodplain Administrator to administer and implement this ordinance. The Floodplain Administrator has delegated the duties and responsibilities set forth in this ordinance to the Departments of Public Works and Planning, as specified below.

Sec. 2.2. Duties and responsibilities of the Department of Public Works.

The duties and responsibilities of the Department of Public Works shall include but are not limited to:

A. Interpreting floodplain boundaries and providing available base flood elevation and flood hazard information;

B. Verifying that applicants proposing an alteration of a watercourse have notified adjacent communities, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management), and other appropriate agencies (Virginia Department of Environmental Quality (VADEQ), United States Army Corps of Engineers (USACE), etc.) and have submitted copies of such notifications to FEMA;

C. Advising applicants for new construction or substantial improvement of structures that are located within an area of the Coastal Barrier Resources System established by the Coastal Barrier Resources Act that Federal flood insurance is not available on such structures; areas subject to this limitation are shown on FIRMs as Coastal Barrier Resource System Areas or Otherwise Protected Areas;

D. Submitting to FEMA, or requiring applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the City, within six (6) months after such data and information becomes available if the analyses indicate changes in base flood elevations;

E. Maintaining and permanently keeping Flood Insurance Studies, FIRMs (including historic studies and maps and current effective studies and maps) and Letters of Map Change;

F. Notifying FEMA when the corporate boundaries of the City of Virginia Beach have been modified and:

    1. Providing a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to this ordinance has either been assumed or relinquished through annexation; and

    2. If the FIRM for any annexed area includes SFHAs that have flood zones with regulatory requirements that are not set forth in this ordinance, prepare amendments to this ordinance to adopt the FIRM and appropriate requirements, and submit the amendments to the City Council for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended ordinance shall be provided to the Department of Conservation and Recreation

(Division of Dam Safety and Floodplain Management) and FEMA.

G. Upon the request of FEMA, completing and submitting a report concerning participation in the NFIP, which may request information regarding the number of buildings in the SFHA, the number of permits issued for development in the SFHA, and the number of variances issued for development in the SFHA.

Sec. 2.3. Duties and responsibilities of the Department of Planning.

The duties and responsibilities of the Department of Planning shall include but are not limited to:

A. Reviewing applications for permits to determine whether proposed activities will be located in the SFHA;

B. Reviewing applications to determine whether proposed activities will be reasonably safe from flooding and requiring new construction and substantial improvements to meet the requirements of this ordinance;

C. Reviewing applications to determine whether all necessary permits have been obtained from the Federal, State, or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the SFHAs of free- flowing non-tidal waters of the State;

D. Approving applications and issuing permits to develop in flood hazard areas if the provisions of this ordinance have been met, or disapproving applications if the provisions of this ordinance have not been met;

E. Granting administrative variances pursuant to Section 6.1 of this ordinance;

F. Inspecting, or causing to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with this ordinance or to determine if non-compliance has occurred or violations have been committed;

G. Reviewing Elevation Certificates and requiring incomplete or deficient certificates to be corrected;

H. Maintaining and permanently keeping documentation supporting the issuance and denial of permits, Elevation Certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been flood proofed, and other required design certifications, variances, and records of enforcement actions taken to correct violations of this ordinance;

I. Enforcing the provisions of this ordinance, investigating violations, issuing notices of violations or stop work orders, and requiring permit holders to take corrective action;

J. Advising the City Council regarding the intent of this ordinance and, for each application for a variance, preparing a staff report and recommendation; and

K. Administering the requirements related to proposed work on existing buildings:

1. Making determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged; and

2. Making reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.

Sec. 2.4. Shared duties and responsibilities.

The duties and responsibilities shared by the Departments of Public Works and Planning shall include but are not limited to:

A. Undertaking, as determined appropriate by the Floodplain Administrator due to the circumstances, other actions that may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other Federal, State, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in SFHAs; and assisting property owners with documentation necessary to file claims for Increased Cost of Compliance coverage under National Flood Insurance Program (NFIP) flood insurance policies; and

B. It is the duty of the City Floodplain Administrator to take into account flood, mudslide, and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the city, whether or not those hazards have been specifically delineated geographically (e.g., via mapping or surveying).

Sec. 2.5. Use and Interpretation of FIRMs.

The Floodplain Administrator shall make interpretations, where needed, as to the exact location of SFHAs, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of FIRMs and data:

A. Where field surveyed topography indicates that adjacent ground elevations:

  1. Are below the base flood elevation, even in areas not delineated as a SFHA on a FIRM, the area shall be considered a SFHA and subject to the requirements of this ordinance;

  2. Are above the base flood elevation, the area shall be regulated as a SFHA unless the applicant obtains a Letter of Map Change that removes the area from the SFHA.

B. In FEMA-identified SFHAs where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified SFHAs, any other flood hazard data available from a Federal, State, local or other source shall be reviewed and reasonably used.

C. Base flood elevations and designated floodway boundaries on FIRMs and in Flood Insurance Studies (FISs) shall take precedence over base flood elevations and floodway boundaries by any other sources if such sources show reduced floodway widths or lower base flood elevations.

D. Other sources of data shall be reasonably used if such sources show increased base flood elevations or larger floodway areas than are shown on FIRMs and in FISs.

E. If a Preliminary FIRM and/or a Preliminary FIS has been provided by FEMA:

  1. Upon the issuance of a Letter of Final Determination by FEMA, the preliminary flood hazard data shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering this ordinance.

  2. Prior to the issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to Section 4.6 and used where no base flood elevations or floodway areas are provided on the effective FIRM.

  3. Prior to issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary base flood elevations or floodway areas exceed the base flood elevations or designated floodway widths in existing flood hazard data provided by

FEMA. Such preliminary data may be subject to change or appeal to FEMA.

Sec. 2.6. Jurisdictional boundary changes.

A. The City floodplain ordinance in effect on the date of annexation shall remain in effect and shall be enforced by the municipality for all annexed areas. The City shall pass a resolution acknowledging and accepting responsibility for enforcing floodplain ordinance standards prior to annexation of any area containing identified flood hazards. If the FIRM for any annexed area includes SFHAs that have flood zones with regulatory requirements that are not set forth in this ordinance, the City shall prepare amendments to this ordinance to adopt the FIRM and appropriate requirements, and submit the amendments to the City Council for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended ordinance shall be provided to the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and FEMA.

B. In accordance with the Code of Federal Regulations, Title 44 Subpart (B) Section 59.22 (a) (9) (v), all NFIP participating communities shall notify FEMA and, optionally, the Department of Conservation and Recreation in writing whenever the boundaries of the community have been modified by annexation or the community has otherwise assumed or no longer has authority to adopt and enforce floodplain management regulations for a particular area.

C. So that all FIRMs accurately represent the community's boundaries, a copy of a map of the community suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority shall be included with the notification.

Sec. 2.7. District boundary changes.

The delineation of any of the Floodplain Districts may be revised by the City of Virginia Beach where natural or man-made changes have occurred or where more detailed studies have been conducted or undertaken by the USACE or other qualified agencies, or an individual documents the need for such change. However, prior to any such change, approval shall be obtained from FEMA.

Sec. 2.8. Interpretation of district boundaries.

Initial interpretations of the boundaries of the Floodplain Districts shall be made by the Floodplain Administrator. Should a dispute arise concerning the boundaries of any of the Districts, the City Council shall make the necessary determination. The person questioning or contesting the location of the District boundary shall be given a reasonable opportunity to present his case to the City Council and to submit his own technical evidence if he so desires.

Sec. 2.9. Submitting technical data.

A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six (6) months after the date such information becomes available, a community shall notify FEMA of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and floodplain management requirements will be based upon current data.

Sec. 2.10. Letters of map revision.

When development in the floodplain causes a change in the base flood elevation, the applicant, including state agencies, shall notify FEMA by applying for a Conditional Letter of Map Revision or a Letter of Map Revision.

Sec. 2.11. Appeals to decisions made by the Floodplain Administrator.

It is further provided that any decision of the Floodplain Administrator or his designee may be modified, reversed, or affirmed by the City Council upon appeal by any aggrieved party to such decision, if such appeal is filed with the Floodplain Administrator within thirty (30) days of such decision.

ARTICLE III - ESTABLISHMENT OF FLOODPLAIN DISTRICTS

Sec. 3.1. Description of Floodplain Districts.

A. Special Flood Hazard Areas (SFHA)

The SFHAs shall include land in the floodplain subject to a one (1) percent or greater chance of being flooded in any given year. The basis for the delineation of these districts shall be the FIS and the FIRM for the City of Virginia Beach prepared by FEMA, Federal Insurance Administration, dated May 4, 2009, and any subsequent revisions or amendments thereto.

The boundaries of the SFHAs are established as shown on the FIRM, which is declared to be a part of this ordinance and shall be kept on file at the City of Virginia Beach Department of Public Works, and include the following districts:

1. The **Floodway District** is in an **AE Zone** and is delineated, for the purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one (1) percent annual chance flood without increasing the water surface elevation of that flood more than one (1) foot at any point. The areas included in this District are specifically defined in Table 7 of the above-referenced FIS and shown on the accompanying FIRM.

2. The **AE Zones** on the FIRM accompanying the FIS shall be those areas for which one (1) percent annual chance flood elevations have been provided and the floodway has **not** been delineated.

3. The **A Zone** on the FIRM accompanying the FIS shall be those areas for which no detailed flood profiles or elevations are provided, but the one (1) percent annual chance floodplain boundary has been approximated.

4. The **AO Zone** on the FIRM accompanying the FIS shall be those areas of shallow flooding identified as AO on the FIRM.

5. Reserved.

6. The **VE or V Zones** on FIRMs accompanying the FIS shall be those areas that are known as Coastal High Hazard areas, extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storm or seismic sources.

B. Floodplain subject to special restrictions.

The City of Virginia Beach may identify and regulate local flood hazard or ponding areas that are not delineated on the FIRM. These areas are identified in Section 4.10 and may be delineated on a map using best available topographic data and locally derived information such as flood of record, historic high water marks, or approximate study methodologies.

ARTICLE IV – FLOODPLAIN DISTRICT PROVISIONS

Sec. 4.1. Permit and application requirements.

A. Permit Requirement

All uses, activities, and development occurring within any floodplain district, including placement of manufactured homes and structures, shall be undertaken only upon the issuance of the appropriate permit. Such development shall be undertaken only in strict compliance with the provisions of this Ordinance and with all other applicable codes and ordinances, as amended, such as the VA USBC and the City of Virginia Beach development ordinances. Prior to the issuance of any such permit, the Building Official shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding. Under no circumstances shall any use, activity, or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system.

B. Site Plans and Permit Applications

All applications for development within any floodplain district and all building permits issued within the floodplain shall incorporate the following information:

1. The elevation of the base flood at the site;

2. The elevation of the lowest floor (including basement) or, in V zones, the lowest horizontal structural member;

3. For structures to be flood-proofed (non-residential only), the elevation to which the structure will be flood-proofed; and

4. Topographic information showing existing and proposed ground elevations.

Sec. 4.2. General Standards.

A. The following provisions shall apply to all permits issued in all floodplain districts:

1. New construction and substantial improvements of all structures shall be located, elevated, and constructed according to the VA USBC and anchored to prevent flotation, collapse, or lateral movement of the structure.

2. Manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state anchoring requirements for resisting wind forces.

3. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

4. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

5. Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

6. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

7. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

8. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

9. No use shall be permitted if such use will increase the amounts of potentially damaging materials, including those likely to be injurious to health, that might be transported in floods.

B. In all SFHAs, the following additional provisions shall apply:

1. Prior to any proposed alteration or relocation of any channels or of any watercourse or stream, within the City a permit shall be obtained from the USACE, VADEQ, the Virginia Marine Resources Commission, and the Wetlands Board through the joint permit application process. Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management), other required agencies, and FEMA.

2. The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

3. Sand dunes, barrier beaches, and other natural protective barriers shall remain intact to provide protection against wind, waves, and erosion drainage. Any person who desires to use or alter any coastal primary sand dune, other than for the purpose of conducting the activities specified in section 1602 of the Zoning Ordinance of the City of Virginia Beach, shall first obtain a permit from the USACE, VADEQ, the Virginia Marine Resources Commission, and the Wetlands Board through the joint permit application process.

Sec. 4.3. Elevation and construction requirements.

In all SFHAs where base flood elevations have been provided in the FIS or generated by a licensed professional in accordance with Section 4.6 of this ordinance, the following provisions shall apply:

A. Residential Construction Requirements

New construction or substantial improvement of any residential structure or manufactured home in Zones AE and A with detailed base flood elevations shall have the lowest floor, including basement, elevated to a minimum of two (2) feet above the base flood level.

B. Non-Residential Construction Requirements

New construction or substantial improvement of any commercial, industrial, or non-residential building or manufactured home shall have the lowest floor, including basement, elevated a minimum of two (2) feet above the base flood level. Buildings located in AE zones may be flood-proofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the base flood elevation plus a minimum of two (2) feet freeboard are water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A professional engineer or architect licensed by the Commonwealth of Virginia shall certify that the standards of this subsection are satisfied. Such certification, including the specific elevation (in relation to NAVD88) to which such structures are flood proofed, shall be maintained by the Building Official.

C. Space Below the Lowest Floor Requirements

In zones A, AE, and AO, fully enclosed areas of new construction or substantially improved existing structures that are below the regulatory flood protection elevation shall:

1. Not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door), limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

2. Be constructed entirely of flood resistant materials below the regulatory flood protection elevation.

3. Include measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings shall either be certified by a professional engineer or architect licensed by the Commonwealth of Virginia or meet or exceed the following minimum design criteria:

    a. Provide a minimum of two (2) openings on different sides of each enclosed area subject to flooding.

    b. The total net area of all openings shall be at least one (1) square inch for each square foot of enclosed area subject to flooding.

    c. If a building has more than one (1) enclosed area, each area shall have openings to allow floodwaters to automatically enter and exit.

d. The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade.

e. Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.

f. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

D. Manufactured Homes and Recreational Vehicle Requirements

1. All manufactured homes placed, or substantially improved, on individual lots or parcels must meet all the requirements for new construction, including the elevation and anchoring requirements in Article 4, section 4.2, and section 4.3 of this ordinance.

2. All recreational vehicles placed on sites shall either:

a. Be on the site for fewer than one hundred eighty (180) consecutive days; or

b. Be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions); or

c. Meet all the requirements for manufactured homes in Article 4 section 4.3(D)(1).

Sec. 4.4. Floodway requirements.

The following provisions shall apply within the Floodway District of an AE zone:

A. Within any floodway area, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment will not affect normal flood flow, result in any increase in flood levels within the community, increase erosion within or adjoining to the floodway, cause the diversion of floodwaters during the occurrence of the base flood discharge, increase peak flows or velocities in a manner likely to lead to added property damage or hazards to life, or increase the amounts of damaging materials that might be transported in floods. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Floodplain Administrator.

Encroachments, including fill, new construction, substantial improvements, and other development within the floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge is specifically prohibited. No variance shall be granted for any development, use, or activity that would cause any increase in the water surface elevation of the base flood.

If the above provisions are satisfied, all new construction and substantial improvements shall comply with all applicable provisions of Article 4.

B. The placement of new or replacement manufactured homes (mobile homes) is prohibited.

C. The following uses and structures may be permitted in the floodway district, subject to the requirements of Articles III, IV, V, and VI of this ordinance:

1. Public and private outdoor recreational facilities;
2. Agricultural uses, including farming, grazing, and the raising of poultry or livestock; provided, that poultry or livestock shall not be housed within five hundred (500) feet of any residential, apartment, or hotel district;
3. Open uses, such as public and private roadways, off street parking, or loading and unloading areas related to uses in adjoining districts;
4. Commercial mining, soil removal, and sand pits subject to regulations applicable to extractive industries as set forth in the conditional use provisions of the Zoning Ordinance of the City of Virginia Beach;
5. Public improvements, such as dams, levees and channel improvements, and utilities installations and substations, including temporary storage of materials, except flammable, toxic or noxious materials, and temporary location of maintenance installations; and
6. Uses and structures customarily accessory and clearly incidental and subordinate to uses listed above, including in connection with agricultural uses; roadside stands for the sale of agricultural products produced on the premises; provided that:
    a. Only one (1) such stand shall be permitted per lot;
    b. No such stand shall exceed five hundred (500) square feet in floor area; and

c. No such stand on the street frontage shall be erected within twenty (20) feet of the property line.

Sec. 4.5. AE Zone requirements.

The following provisions shall apply within all AE zones:

A. Until a regulatory floodway is designated, no new construction, substantial improvements or other development (including fill) shall be permitted within the areas of special flood hazard, designated as Zone AE on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the City.

B. Notwithstanding the criteria set forth in Section 4.10, development activities in Zones AE on the City of Virginia Beach FIRM that increase the water surface elevation of the base flood by more than one (1) foot may be allowed, provided that the applicant first applies, with the City of Virginia Beach's endorsement, for a Conditional Letter of Map Revision, and receives the approval of FEMA.

Sec. 4.6. A Zone requirements.

The following provisions shall apply within an A zone:

A. For these areas, the Floodplain Administrator shall obtain, review, and reasonably utilize any base flood elevations and floodway information from federal, state, and other acceptable sources, when available. Where the specific one (1) percent annual chance flood elevation cannot be determined for this area using other sources of data, such as the USACE Floodplain Information Reports, the U.S. Geological Survey Floodprone Quadrangles, etc., then the applicant for the proposed use, development, and/or activity shall determine this base flood elevation. For development proposed in the A Zone the applicant shall use technical methods that correctly reflect currently accepted non-detailed technical concepts, such as flood hazard analyses, point on boundary, known high water marks from past floods, or detailed methodologies including hydrologic and hydraulic analyses. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Floodplain Administrator.

B. The Floodplain Administrator reserves the right to require a hydrologic and hydraulic analysis for any development and to determine the base flood elevation. When such base flood elevation data is utilized, the lowest floor shall be elevated to minimum of two (2) feet above the base flood level. During the permitting process, the Floodplain Administrator shall obtain:

1. The elevation of the lowest floor (including the basement) of all new and substantially improved structures; and

2. If the structure has been flood-proofed in accordance with the requirements of this ordinance, the elevation (in relation to NAVD88) to which the structure has been flood-proofed.

C. When the data is not available from any source, the lowest floor of the structure shall be elevated to not less than two (2) feet above the highest adjacent grade.

Sec. 4.7. AO Zone requirements.

The following provisions shall apply within an AO zone:

A. All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated above the highest adjacent grade an amount not less than the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated no less than two (2) feet above the highest adjacent grade.

B. All new construction and substantial improvements of non-residential structures shall:

1. Have the lowest floor, including basement, elevated above the highest adjacent grade an amount not less than the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated at least two (2) feet above the highest adjacent grade; or

2. Together with attendant utility and sanitary facilities be completely flood-proofed to the specified flood level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

C. Adequate drainage paths around structures on slopes shall be provided to guide floodwaters around and away from proposed structures.

Sec. 4.8. Reserved.

Sec. 4.9. V and VE Zone requirements.

The following provisions shall apply within V and VE Zones:

A. All new construction and substantial improvements in Zones V and VE shall be elevated on pilings or columns so that:

1. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to a minimum of two (2) feet above the base flood level; and

2. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Wind and water loading values shall each have a one (1) percent chance of being equaled or exceeded in any given year.

B. A professional engineer or architect licensed by the Commonwealth of Virginia shall develop or review the structural design, specifications, and plans for the construction and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of Article IV, Section 4.6 A.

C. The Floodplain Administrator shall obtain the elevation (in relation to NAVD88) of the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures in Zones V and VE. The Floodplain Administrator shall maintain a record of all such information.

D. All new construction shall be located landward of the reach of mean high tide.

E. All new construction and substantial improvements shall have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood-lattice work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purpose of this section, a breakaway wall shall have a design safe loading resistance of not less than ten (10) and no more than twenty (20) pounds per square foot. Use of breakaway walls that exceed a design safe loading resistance of twenty (20) pounds per square foot may be permitted only if a professional engineer or architect licensed by the Commonwealth of Virginia certifies that the designs proposed meet the following conditions:

1. Breakaway wall collapse shall result from water load less than that which would occur during the base flood; and

2. The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum wind and water loading values to be used in this determination shall each

have a one (1) percent chance of being equaled or exceeded in any given year.

F. The enclosed space below the lowest floor shall be used solely for parking of vehicles, building access, or storage. Such space shall not be partitioned into multiple rooms, temperature-controlled, or used for human habitation.

G. The use of fill for structural support of buildings is prohibited. When non-structural fill is proposed in a coastal high hazard area, appropriate engineering analyses shall be conducted to evaluate the impacts of the fill prior to issuance of a development permit.

H. Existing nonconforming uses and structures located below the level of the base flood elevation, as shown in the FIS and accompanying FIRMs, shall not be expanded.

I. The man-made alteration of sand dunes, which would increase potential flood damage, is prohibited.

Sec. 4.10. Floodplain subject to special restrictions.

A. All FIRM delineated SFHAs located in the following areas shall be identified as a floodplain subject to special restrictions:

1. North Landing River and its tributaries south of Lynnhaven Parkway;

2. West Neck Creek and its tributaries south of Shipps Corner Road, London Bridge Road, and the portion of Dam Neck Road east of its intersection with London Bridge Road; and

3. Bays, creeks, lakes, guts, coves, wetlands, marshes and swamps and their tributaries comprising the Back Bay watershed south of South Birdneck Road and east of Princess Anne Road and General Booth Boulevard.

B. The following provisions shall apply within the floodplain subject to special restrictions:

1. Notwithstanding any provision of this ordinance to the contrary, no filling shall be permitted, including filling with material excavated from the same floodplain except for

    a. The purpose of public roadway or other similar public works construction;

b. The maintenance, alteration, or relocation of bona fide agricultural ditches, swales, or agricultural pathways or those ditches required for proper lot drainage;

c. For shoreline stabilization or maintenance projects, such as riprap revetment, bulkheads, or other treatment used to stabilize and protect the banks of waterways, the City Manager or his designee may approve the placement of fill provided the following criteria are met:

  i. A joint permit application is submitted;

  ii. The alignment of the stabilization structure is along the escarpment or in line with adjacent stabilization structures; and

  iii. Fill must be the minimum necessary to support the stabilization project.

2. The City Manager, or his designee, may approve the placement of fill provided that the following criteria are met:

  a. Proposed fill within the floodplain:

    i. Shall be mitigated to result in no decrease in flood storage volume on the site;

    ii. Shall be mitigated entirely on the same site that will incur the fill;

    iii. Shall be contiguous to the existing floodplain that is being filled; and

    iv. Shall be limited to the smallest amount of area and volume possible to correct irregularities within the boundary of the project.

  b. The combined areas of fill and mitigation shall not exceed five (5) percent of the total area within the floodplain located on the site that will incur the fill.

3. Residential dwelling structures shall not be located within the floodplains subject to special restrictions on lots created after October 23, 2001. Residential dwelling structures located in local flood hazard areas as of October 23, 2001 may be expanded with attached additions to a total footprint of less than one thousand (1,000) square feet; such additions shall also comply with the requirements set forth in Article V of this ordinance.

4. On lots where single family dwellings are permitted by right and which were recorded on or before October 23, 2001 and meet the requirements of section 402(b) of the City Zoning Ordinance, the minimum fill necessary shall be permitted only for the following:

   a. A driveway or other on-site parking area;

   b. To ensure the proper functioning of a septic system;

   c. To ensure proper lot drainage given the existing and proposed development in the immediate area; and

   d. To meet the VA USBC requirements for slab or crawl foundations.

Sec. 4.11. Subdivision proposal requirements.

A. All subdivision proposals shall be consistent with the need to minimize flood damage.

B. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.

C. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards.

D. Base flood elevation data shall be obtained from the most recent FIRM (May 4, 2009) or developed using detailed methodologies, including hydraulic and hydrologic analysis, comparable to those contained in a FIS for all final plats and other development proposals (including manufactured home parks and neighborhoods).

ARTICLE V – EXISTING STRUCTURES IN FLOODPLAIN AREAS

Sec. 5.1. Existing structures.

A structure or use of a structure or premises that lawfully existed prior to the adoption of this ordinance, but which is not in conformity with this ordinance, may be continued subject to the following conditions:

A. Any existing structures in the Floodway Area shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion or enlargement would not result in any increase in the base flood elevation.

B. Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain areas to an extent or amount of less than fifty (50) percent of its market value shall conform to the VA USBC.

C. Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, in a floodplain area to an extent or amount of fifty (50) percent or more of its market value shall be undertaken only in full compliance with this ordinance and shall require the entire structure to conform to the VA USBC.

ARTICLE VI - VARIANCES AND APPEALS

Sec. 6.1. Administrative variances.

The Floodplain Administrator shall approve or deny an application requesting an administrative variance after receipt of a complete application. Administrative variances may only be granted for the following uses, development, or redevelopment:

A. A residential attached garage or detached garages constructed at the elevation corresponding to the base flood elevation may be flood proofed according to the requirements outlined in Section 4.3 B of this ordinance in lieu of the elevation requirements.

B. As defined in Section 4.10 Floodplains subject to special restrictions.

C. Any structure or use sustaining damage not caused by flood to an extent or amount of fifty (50) percent or more of its market value to allow the structure to be rebuilt to the freeboard height in effect at the start of construction for the original structure. If the structure is a Pre-FIRM structure, full compliance with the current VAUSBC freeboard above the base flood elevation is required. Structures that are utilizing an approved land management plan for their on-site waste disposal may be allowed to continue the use of the land management plan as long as it is approved by the City and the Health Department, even for damage or destruction resulting from flood.

Sec. 6.2. City Council variances.

A. Notwithstanding any other provision of this ordinance, the City Council shall have the authority to grant such variances from the terms of this ordinance as will not be contrary to the public interest in cases in which the strict application of the provisions of this ordinance would effectively prohibit or unreasonably restrict the use of the subject property. No variance shall be granted for any proposed use, development, or activity within any Floodway District that will cause any increase of the base flood elevation.

B. In acting upon applications for variances, the City Council shall satisfy all relevant factors and procedures specified in other sections of this ordinance and shall consider the following additional factors:

1. The danger to life and property due to increased flood heights or velocities caused by encroachments.

2. The danger that materials may be swept on to other lands or transported in floods posing the risk of injury to others.

3. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.

4. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.

5. The importance of the services provided by the proposed facility to the community.

6. The requirements of the facility for a waterfront location.

7. The availability of alternative locations not subject to flooding for the proposed use.

8. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.

9. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.

10. The safety of access by ordinary and emergency vehicles to the property in time of flood.

11. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site.

12. The historic nature of a structure. Variances for repair or rehabilitation of historic structures may be granted upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

13. Such other factors that are relevant to the purposes of this ordinance.

Sec. 6.3. Application process.

A. Applications for variances from the requirements of this ordinance shall be made to the City Council and filed with the director of planning. The fee for such applications shall be six hundred fifty dollars ($650.00). Except in cases in which such fee is waived, the director shall not accept any application not accompanied by payment of the required fee. The procedure for the advertising, hearing and determination of applications for floodplain variances shall be in accordance with the requirements pertaining to applications for subdivision variances, as set forth in Section 9.4 of the Subdivision Ordinance. In cases in which a variance application is filed by reason of a natural disaster that is the subject of a federal declaration of emergency, application and associated advertising fees shall be waived and such application shall be given expedited processing to the maximum practical extent.

B. All applications shall be accompanied by the following:

1. A separate map, on a 1" = 100' or greater scale, identifying all proposed land disturbance, including fill and mitigation areas, and the limits of the existing and proposed SFHAs, tidal and non-tidal wetlands, Southern Watershed Management Area Buffer, and CBPA Resource Protection Area Buffer; and

2. A preliminary floodplain study addressing the physical and environmental characteristics of the floodplain located on adjoining properties and in the general area. Such study shall be sufficient to show that the variance, if granted, will meet the standards defined in Section 6.3 and in addition thereto, shall:

   a. Contain supporting data and calculations as appropriate, given the preliminary nature of the floodplain study;

   b. Comply with all applicable Public Works Specifications and Standards; and

   c. Be certified by a professional engineer, architect, surveyor, landscape architect or practitioner of a related field having a valid license issued by the Commonwealth of Virginia or who is exempt from licensure pursuant to applicable provisions of the Virginia Code.

Sec. 6.4. Requirements.

No variance shall be granted unless the following requirements are met:

A. Such variance will not create or result in:

   1. Unacceptable or prohibited increases in flood heights;

   2. Additional threats to public safety;

   3. Extraordinary public expense;

   4. Nuisances; or

   5. Fraud or victimization of the public.

B. The granting of such variance will not be detrimental to other property in the vicinity.

C. The circumstances giving rise to the variance application are not of a general or recurring nature.

D. Such circumstances arise from the physical character of the property or from the use or development of adjacent property and not from the personal situation of the applicant.

E. The granting of such variance will not be in conflict with any city ordinance or regulation.

F. Variances shall be the minimum necessary to provide relief.

G. All variances shall meet all of the requirements for the Chesapeake Bay Preservation Area Ordinance (Appendix F) and the Southern Watersheds Management Ordinance (Appendix G), unless a variance therefrom is granted.

Sec. 6.5. Notification.

The Floodplain Administrator shall notify the applicant for a variance in writing that the issuance of a variance to construct a structure below the base flood elevation a) increases the risks to life and property and b) will result in increased premium rates for flood insurance.

Sec. 6.6. Records.

A record of all variance actions, including justifications for the granting of variances and notifications issued pursuant to this section shall be maintained by the Floodplain Administrator. Any variances that are issued shall be noted in the annual or biennial report submitted to FEMA.

Sec. 6.7. Appeals to variance decisions.

Appeals of decisions by the City Council under this ordinance shall be subject to review by the Circuit Court of the City of Virginia Beach, if filed within thirty (30) days from the date of City Council action.

Adopted by the Council of the City of Virginia Beach, Virginia, on the 26th day of November, 2013.

CFPF, rr <cfpf@dcr.virginia.gov>

City of Virginia Beach CFPF Round 3 Submission

1 message

Stanley F. Smith Jr. <SFSmitJr@vbgov.com> Wed, Apr 6, 2022 at 1:55 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Hello,

Please find attached two CFPF project submission packages for the City of Virginia Beach:

- CID515531_VirginiaBeach_CFPF-1: *March Terrace Creation in Back Bay*
- CID515531_VirginiaBeach_CFPF-2: *First Colonial Road and Oceana Boulevard Stormwater Improvements*

All necessary application forms and required documents for each project are located within the pdfs. Please let us know if you have any questions or require further information. Thank you in advance for your consideration of these projects.

Thanks,

Stanley

Stanley Smith, Jr., P.E.

City of Virginia Beach

Public Works Engineering

484 Viking Drive

Virginia Beach, VA 23452

(Direct) 757-385-8459 **|** sfsmitjr@vbgov.com

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2 attachments

CID515531_VirginiaBeach_CFPF-1.pdf
6926K

CID515531_VirginiaBeach_CFPF-2.pdf

6001K

2022 Virginia Community Flood Preparedness Fund

Marsh Terrace Creation in Back Bay

City of
Virginia Beach

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I. Appendix A – Application Form

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
City of Virginia Beach

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

Y **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 515531

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Toni Utterback

Signature of Authorized Official: TPU

Mailing Address (1): 2875 Sabre Street, Suite 250

Mailing Address (2): ____________________

City: Virginia Beach **State:** Virginia **Zip:** 23452

Telephone Number: (757) 385-8746 **Cell Phone Number:** (____) ________________

Email Address: TPUtterback@vbgov.com

Contact Person (If different from authorized official): C.J. Bodnar

Mailing Address (1): 2875 Sabre Street, Suite 250

Mailing Address (2): __________

City: Virginia Beach **State:** Virginia **Zip:** 23452

Telephone Number: (757) 385-8430 **Cell Phone Number:** (____) ________

Email Address: CBodnar@vbgov.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No ✓

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☑ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☑ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Bonney Cove in Back Bay

NFIP Community Identification Number (CID#):(See appendix F 515531

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): Zone VE (EL 5 Feet), Zone AE (EL 4 Feet), Zone Open Water

Flood Insurance Rate Map Number(s) (If Applicable): 5155310215G and 5155310220G

Total Cost of Project: $29,126,604.00

Total Amount Requested $5,000,000.00

II. Appendix B – Completed Scoring Criteria Sheet

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	✓
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☑ Wetland restoration, floodplain restoration ☑ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		65

III. Appendix D – Checklist for All Categories

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative

Supporting Documentation	Included
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A

Budget Narrative

Supporting Documentation	Included
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

IV. Required Application Components

B: Scope of Work Narrative - Projects

1. Project Information

The City of Virginia Beach ("City") is pleased to submit the Marsh Terrace Creation in Back Bay project for consideration under the Flood Prevention and Protection Projects category in the 2022 Virginia Community Flood Preparedness Fund. The City has made significant investments in the study of historical flooding data, current and future hydrology, and the projected increase in flood frequency due to changing rainfall patterns and sea level rise. These studies culminated in Virginia Beach's Resilience Plan, socialized as "Sea Level Wise,"[1] which includes a conceptual suite of projects focused on flood control and resilience. The Virginia Beach Resilience Plan leverages four overarching adaptation strategies to identify actionable projects for each of the City's four unique major watersheds. This project represents the first adaptation project to advance to construction to implement the City's Resilience Plan.

The adaptation strategy for the Southern Rivers Watershed, which includes Back Bay, focuses on employing natural mitigation methods, an integrated system of defense structures, and complementary measures, such as land-use strategies. Collectively these approaches are designed to strategically reduce flow into and within Back Bay and improve flood storage and overall coastal resiliency (see Part IV: Section E1 – Project Map 1). Marsh restoration was identified as a key resilience-building strategy as part of an extensive evaluation of structural and non-structural alternatives. Marsh restoration provides multiple benefits of flood risk reduction, enhanced habitat, and improved water quality.

As part of the Virginia Coastal Resilience Master Planning Framework, a precursor to the first phase of the Virginia Coastal Resilience Master Plan (CRMP), the Commonwealth of Virginia identified guiding principles for a statewide resilience strategy. One of these guiding principles is recognizing the importance of protecting and enhancing natural infrastructure and prioritizing nature-based infrastructure.[2] The City's marsh restoration project aligns with this principle and was highlighted as an exemplary nature-based project in the CRMP. The CRMP impact assessment shows a high vulnerability of nature-based features to coastal flood hazards that is consistent with the City's analysis. In the Hampton Roads region, the CRMP impact assessment estimates a decrease from 40,600 acres to 2,940 acres of tidal wetlands by 2080, representing a 93% decline in tidal wetlands.[3] Back Bay was identified as a hotspot for tidal wetland loss, emphasizing the critical location of the City's marsh restoration effort (see Part IV: Section E1 – Project Map 2).

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[1] City of Virginia Beach (2020). Virginia Beach Sea Level Wise Adaptation Strategy (PDF).

[2] Office of Governor Ralph S. Northam Commonwealth of Virginia. (2020). Virginia Coastal Resilience Master Planning Framework (PDF).

[3] Office of Governor Ralph S. Northam Commonwealth of Virginia and Virginia Department of Conservation and Recreation (2021). Virginia Coastal Resilience Master Plan Phase 1 (PDF).

The City's design concept for the marsh restoration project leverages "marsh terracing," an innovative coastal engineering technique widely used in Texas and Louisiana to convert shallow subtidal bottom to marsh. This technique has not yet been implemented along the U.S. East Coast and has not yet been implemented in the Mid-Atlantic region. Through the export of proven expertise from successful marsh terraces, this project would lay the foundation for future projects in the region, Virginia, and other states along the East Coast. The project would document detailed cost estimates, demonstrate effective construction practices for large-scale marsh creation projects, identify best sources for local/regional materials, and establish partnerships with permitting officials at various levels of government. The City's development of this project indicates its commitment to nature-based approaches and to taking critical steps to realize its broader resilience efforts.

This project represents a collaborative effort between the City's Department of Public Works alongside other City departments, public constituents, local nonprofits, and state and federal agencies. In selecting the project location and developing the design approach, the City has coordinated closely with the Back Bay National Wildlife Refuge (BBNWR), part of the U.S. Fish and Wildlife Service (USFWS), and the Virginia Department of Wildlife Resources (VDWR). Environmental organizations committed to stewardship of Back Bay have also contributed input throughout the design process, including the Back Bay Restoration Foundation (BBRF), Friends of Back Bay, the Back Bay National Wildlife Refuge Society, and the Albemarle-Pamlico National Estuary Partnership (APNEP). Project field investigations involved local support from Old Dominion University (ODU) and others, and outside expertise from Louisiana. The National Fish and Wildlife Foundation (NFWF) provided grant funding under the National Coastal Resilience Fund (NCRF) to support design, permitting, and environmental assessments. Broad support of the project is demonstrated by contributions from the organizations noted above along with other stakeholders engaged in the restoration effort.

The marsh terrace project design is progressing and will be ready for construction in the CFPF grant timeline. Between 2019 and 2021, the City obligated roughly $781,000 in contracts to support field investigations, environmental assessments, and engineering designs. Following preliminary (30%) designs, the City presented preliminary designs and artistic renderings at a public information meeting held at a local elementary school in October 2021. Participants submitted comments regarding environmental and community impacts. The project is currently progressing from 30% to 60% design, alongside environmental assessments. By winter/early spring 2023, the City anticipates that the project will have 95% designs, and all necessary permits will have been submitted for regulatory agency review. Table 1 summarizes ongoing tasks related to the project and an anticipated schedule for completion.

Table 1: Completed, ongoing, and anticipated activities leading up to construction.

Activity	Description	Schedule
Stakeholder Scoping Workshop	In November 2020, the City hosted a virtual workshop to receive initial input from project stakeholders.	Completed (Fall 2020)
Site Characterization and Vegetation Survey	In fall 2020, a site characterization and vegetation survey within Bonney Cove was conducted under a USFWS Special Use Permit (SUP). The purpose of the survey was to document existing emergent marsh and submerged aquatic vegetation (SAV) species composition and percent coverage within the proposed project area. MAP Environmental, Inc. conducted a literature review of marsh terracing projects in the Gulf Coast region to identify effective practices for project planning and design.	Completed (Fall 2020)
Bathymetric Survey	An updated bathymetric survey of Bonney Cove, also covered under a USFWS SUP, was completed in March 2021. This data serves as an input to identify appropriate design elevations to determine quantities of materials necessary to build the proposed marsh terraces and for numerical modeling of project alternatives.	Completed (Spring 2021)
Geotechnical Investigation	A geotechnical investigation of Bonney Cove was conducted in the spring of 2021. The permitted survey, (Virginia Marine Resources Commission (VMRC) Permit No. 2020-2286, U.S. Army Corps of Engineers (USACE) Permit No. 2020-02439, and USFWS SUP) included the collection of 10 soil borings in locations that avoided aquatic vegetation habitat. The soil samples were retrieved by drilling with a specialized airboat-mounted drill rig which was essential for drilling in shallow areas as it avoids disruption to bottom habitat. The soil samples were analyzed to determine the suitability and physical characteristics of the soils within the project area. Additional soil analysis was conducted to determine the suitability of Back Bay sediments for building components of the marsh terraces.	Completed (Spring 2021)

Activity	Description	Schedule
Water Quality and Hydrodynamic Survey	ODU conducted a water quality and hydrodynamic survey of Bonney Cove in the spring of 2021. The USFWS permitted survey collected water samples and deployment/retrieval of hydrodynamic sensors (pressure sensors, acoustic Doppler current profilers, and optical backscatter sensors) at three sampling points in Bonney Cove. Sensor equipment was deployed during two one-month periods (3/10/2021 – 4/12/2021 and 5/19/2021 – 6/8/2021). The water level, wave, and current data served as an input to the numerical model calibration. The water quality parameters (including pH, salinity, temperature, dissolved oxygen, chlorophyll, and turbidity) will serve as a reference to compare pre-and post-construction water quality conditions.	Completed (Summer 2021)
30% Design	Dewberry leveraged the field-collected data to establish design criteria for the project to ensure that it will be resilient in the face of changing future conditions during wind-tide events. Artistic design renderings were developed to enable stakeholders to visualize the implemented project.	Completed (Fall 2021)
Public Engagement – 30% Design	The City held a public information meeting on October 14, 2021, at Creeds Elementary School. The project team delivered a 10-minute presentation of the proposed project followed by an open-format discussion where participants reviewed the preliminary (30%) designs and artistic renderings and submitted comments regarding environmental and community impacts.	Completed (Fall 2021)
Numerical Modeling	Numerical modeling has been completed to evaluate the proposed project's impact on water levels, wave heights, and flow velocities within and surrounding the project area. Potential water quality impacts were also evaluated. The numerical modeling effort involved the development of an XBeach model, which is a nearshore model that accounts for wave-vegetation interactions based on field-derived drag coefficients.	Completed (Winter 2021)

Activity	Description	Schedule
Environmental Assessment and Scoping	In coordination with the USFWS and with technical assistance from Dewberry, the City evaluated the potential environmental impacts of the project. The draft environmental assessment document was distributed to key stakeholders with jurisdictional authority or a vested interest in the project for review and comment. The City anticipates this document will be finalized in the Spring of 2022.	Anticipated Completion (Spring 2022)
60% Design	Upon approval of the Environmental Assessment document, the project can continue to advance past the 30% preliminary design phase.	Anticipated Completion (Fall 2022)
Construction Permitting	The City will prepare a Joint Permit Application (JPA) for the proposed project, leveraging the 60% design plans. Applications will include general information about the applicant, the amounts and types of waters and wetlands proposed to be impacted (as delineated for the NEPA document), and an alternatives analysis detailing the avoidance and minimization efforts made.	Anticipated JPA Approval (Winter 2022 – Early Spring 2022)
95% Design	The 95% design will progress concurrently during agency review of the JPA.	Anticipated Completion (Winter 2022)

The following sections provide details regarding the project site and highlight the impacted population, residential and commercial structures, and critical facilities. This section also provides an overview of the historical, existing, and projected flood conditions in and around the project site.

a. Project Site Description

Bonney Cove, located within Back Bay of the City's Lower Southern Rivers Drainage Basin, was selected as the site location for this marsh terrace project (Figure 1). Bonney Cove has experienced significant historical ecological degradation. Historical shoreline data from 1869 indicates that approximately 50% of present-day open water in Bonney Cove (260 acres) was previously marsh (Figure 2). Hydraulic modeling analysis identified Bonney Cove as a location where marsh restoration has the potential to reduce the propagation of floodwater through key pathways within Back Bay. This project aims to stabilize two critically eroding marsh islands that serve as a key flood pathway into northern Back Bay, promote the growth of aquatic vegetation, and provide flood risk reduction benefits to communities in the surrounding area.

As mentioned previously, the CRMP impact assessment identified Back Bay as a hotspot for tidal wetland loss, emphasizing the critical location of the City's marsh restoration effort (see Part IV: Section E1 – Project Map 2). In coordination with Audubon North Carolina, the Currituck Sounds Coalition identified the area around the project site as highly suitable for marsh restoration[4] (see Part IV: Section E1 – Project Map 3). ConserveVirginia's Floodplain and Flooding Resilience layer, available through the Virginia Natural Heritage Data Explorer, identified the Back Bay and adjacent areas as having flood resilience value (see Part IV: Section E1 – Project Map 4).[5] The project site is within U.S Fish and Wildlife Service's BBNWR, which has high ecological diversity. The Virginia Natural Heritage Data Explorer illustrates areas within and around Back Bay with "High" and "Very High" ecological core ratings (see Part IV: Section E1 – Project Map 4).[5]

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[4] Audubon North Carolina. (2021). Currituck Sound Coalition Marsh Conservation Plan. (PDF)

[5] Virginia Department of Conservation and Recreation. (2022). Virginia Natural Heritage Data Explorer.

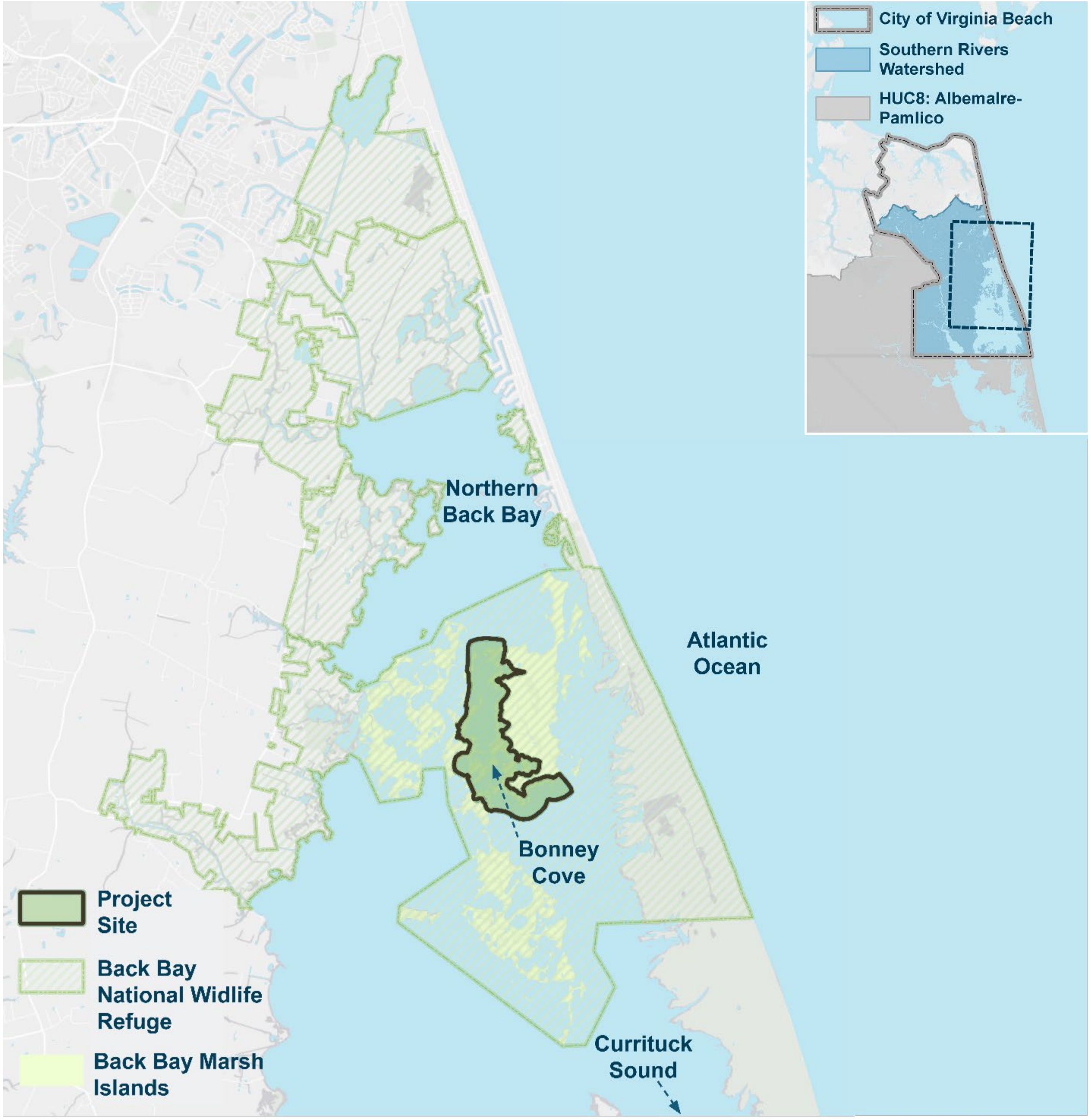
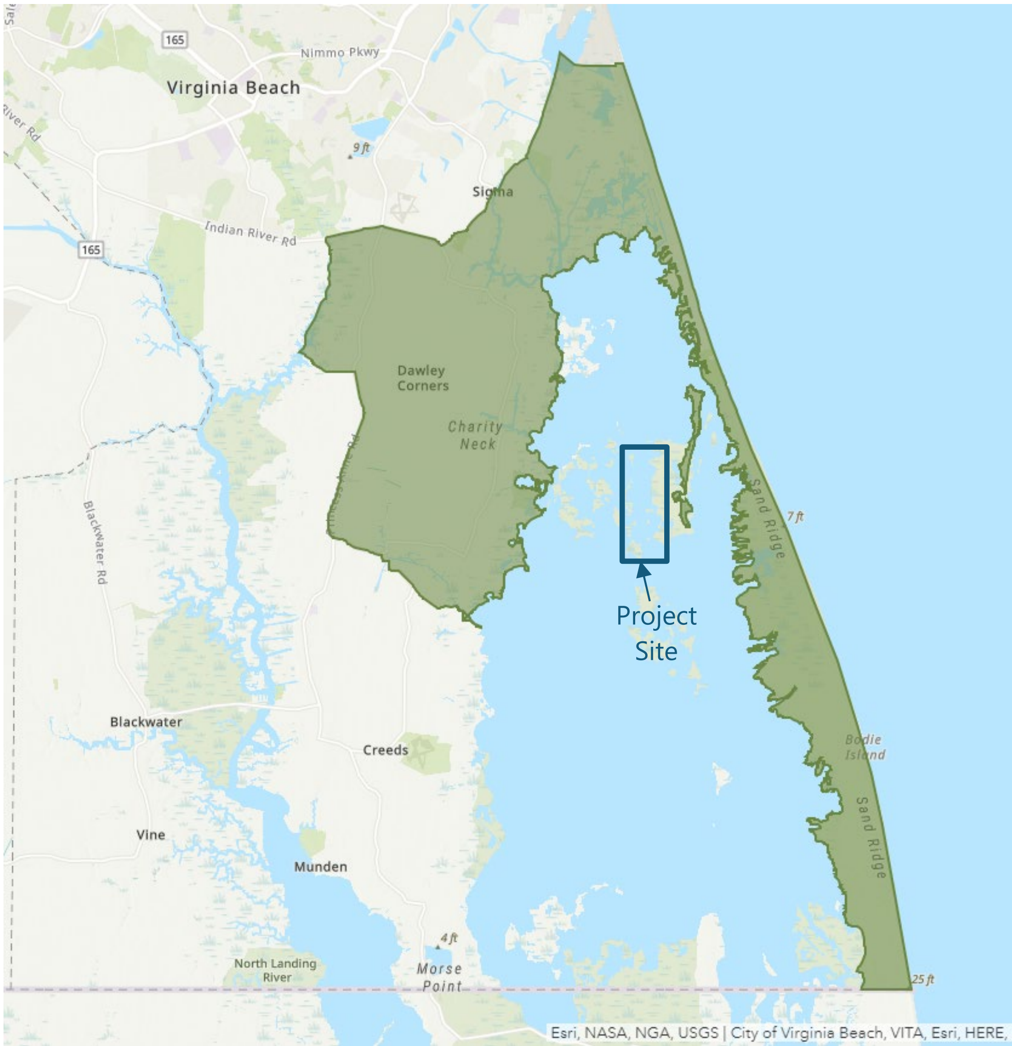


Figure 1: Project site location map.

Figure 2: Historical marsh erosion within the project area.

b. Population

As shown in Figure 3, two census block groups (518100454.121 and 518100464.001) adjacent to Back Bay are within the extent of the anticipated project benefits. The total population of these two block groups is 3,531.[6] The residential population has grown approximately 1.8% in the past two decades. The median household income in 2021 dollars is $99,078. There are approximately 2,500 residential housing units, of which 43.1% are owner-occupied, 11.4% are renter-occupied, and 45.5% are vacant. The high percentage of vacant housing units can likely be attributed to seasonal rentals within the Sandbridge Resort Area. The race and ethnicity demographics of the community are 94.4% White, 1.4% Black, 3.4% Hispanic, and less than 1% Asian and American Indian.



Esri, NASA, NGA, USGS | City of Virginia Beach, VITA, Esri, HERE,

Figure 3: Census block groups selected for population estimates.

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[6] Population, household income, housing units, and demographic data obtained from Esri ArcGIS Community Analyst (2022). Esri forecasts for 2021 based on U.S. Census Bureau 2010 data.

c. Historic Flooding Data and Hydrologic Studies Projecting Flood Frequency

Historical and Existing Flood Data

The project is located within a Federal Emergency Management Agency (FEMA) mapped Special Flood Hazard Area (SFHA), as shown in *Part IV: Section E1 - Project Map 5*. Based on the City's current flood maps (effective January 16, 2015), the project site's flood zones are VE, AE, and Open Water. Portions of the site are within Otherwise Protected areas.

Marshes are vital to the Southern Rivers Watershed for the ecological and flood reduction benefits they provide. The Southern Rivers Watershed contains 90% of the City's land area under an elevation of 3 feet, making this area particularly susceptible to flood impacts. As illustrated in Figure 4, sustained southerly winds push water up from the Albemarle-Pamlico Sound through the Currituck Sound and into Back Bay, creating a phenomenon referred to locally as "wind tide flooding". Marsh habitat loss has contributed to the opening of a secondary channel in Bonney Cove that has increased water flow during wind tide and other flood events to areas with high community exposure.

Within today's marsh system, it takes between two to five days of sustained southerly winds to cause flooding, depending on the wind speed and direction. Over the last four years, more than five wind tide flooding events have occurred in this area. The increasing frequency of flooding events is primarily attributed to a foot of relative sea level rise in the last 50 years and degradation of marsh and seagrass habitat.

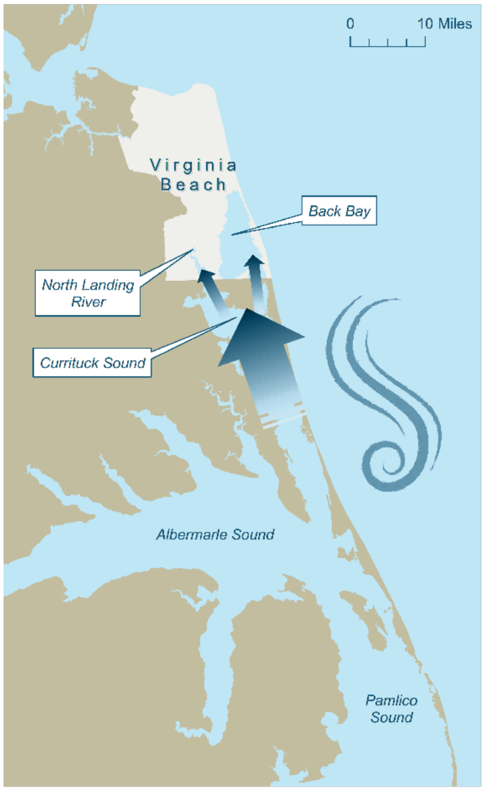

Figure 4: Flood pathways in the Southern Rivers Watershed.

The City maintains records of where residents report flood issues and what type of flooding is causing the issue. Residents regularly report flood issues through a hotline, which are then recorded in a flood event database. The census block groups adjacent to the project area reported 111 flood issues associated with heavy rain or high tide between 2001 and 2019, as shown in *Part IV: Section E1 - Project Map 6*.

Projected Flood Frequency

The USFWS, the City, and other stakeholders have made significant investments in detailed assessments, sophisticated computer models, and water level gauges to better understand historical and future wind tide flooding. Figure 5 displays the projected flood pathways under the 10-year and 100-year storm event under a 3 feet sea level rise scenario surrounding the project site. Unmitigated, the continued loss of these marsh island systems is expected to result in more frequent and intense wind tide events. This effect can be attributed mainly to the reduced friction in the water column from the increased water depth and eroded vegetation, which allows water to move more quickly through key hydraulic pathways. Another term for this is "fetch", which is defined as the open water distance over which a given wind can blow and generate higher waves without obstruction.

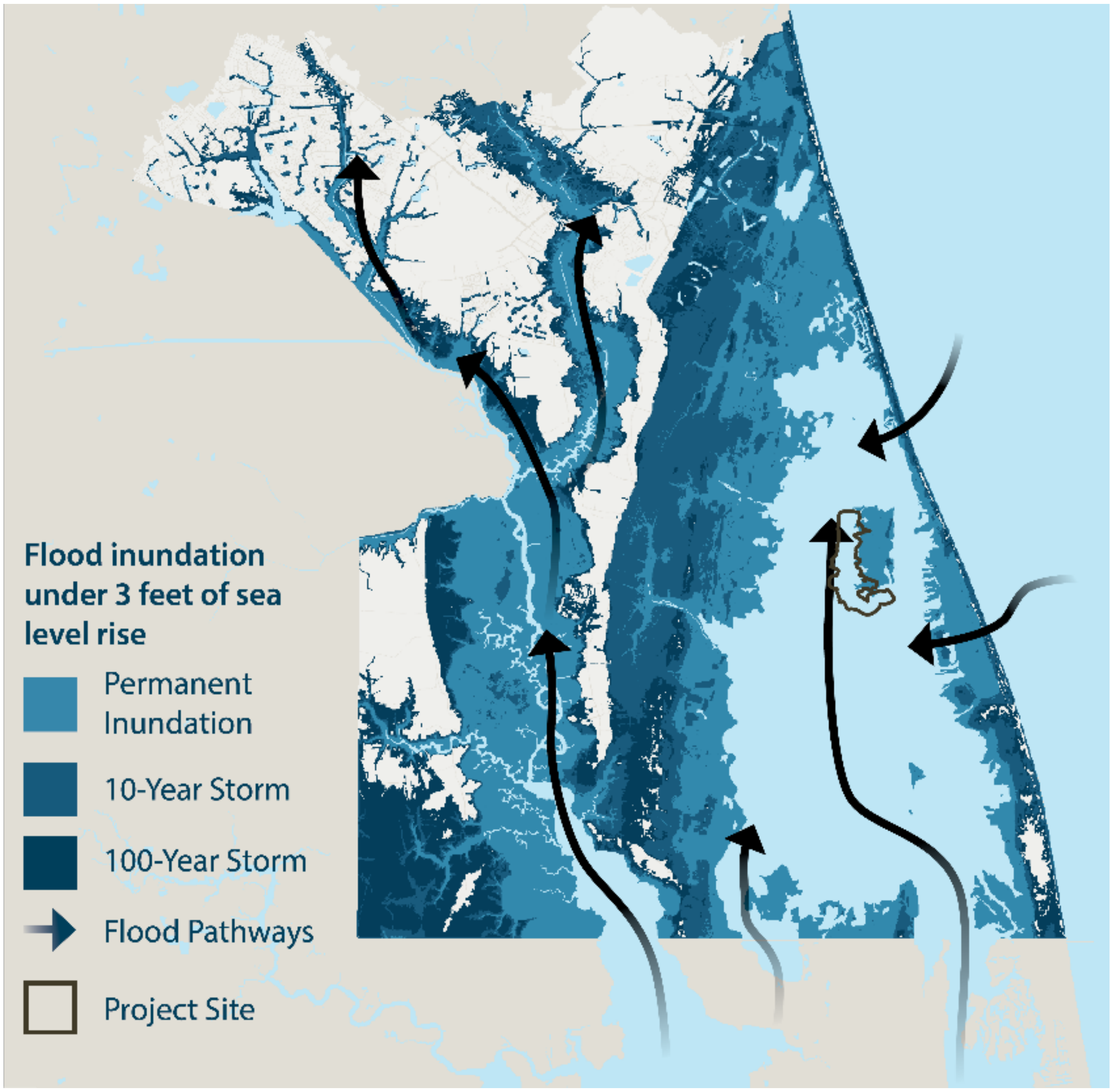

Figure 5: Flood pathways into the Southern Rivers Watershed with 3 feet of sea level rise.

Numerical modeling also shows that as sea levels continue to rise, a shorter duration wind event will produce more wind-induced flooding in less time. The three lines in Figure 6 represent the water level response to a sustained 15-mph wind for each sea level rise scenario. With the existing marsh system today (blue line), it takes approximately five days of sustained southerly wind to cause flooding. With 1.5 feet (yellow line) and 3 feet (red line) of sea level rise, the peak water level could be reached two to three days sooner, respectively. Model simulations showed that marsh island creation across Back Bay would help delay the onset of flooding by several days, which would allow the City and residents more preparation time[7].

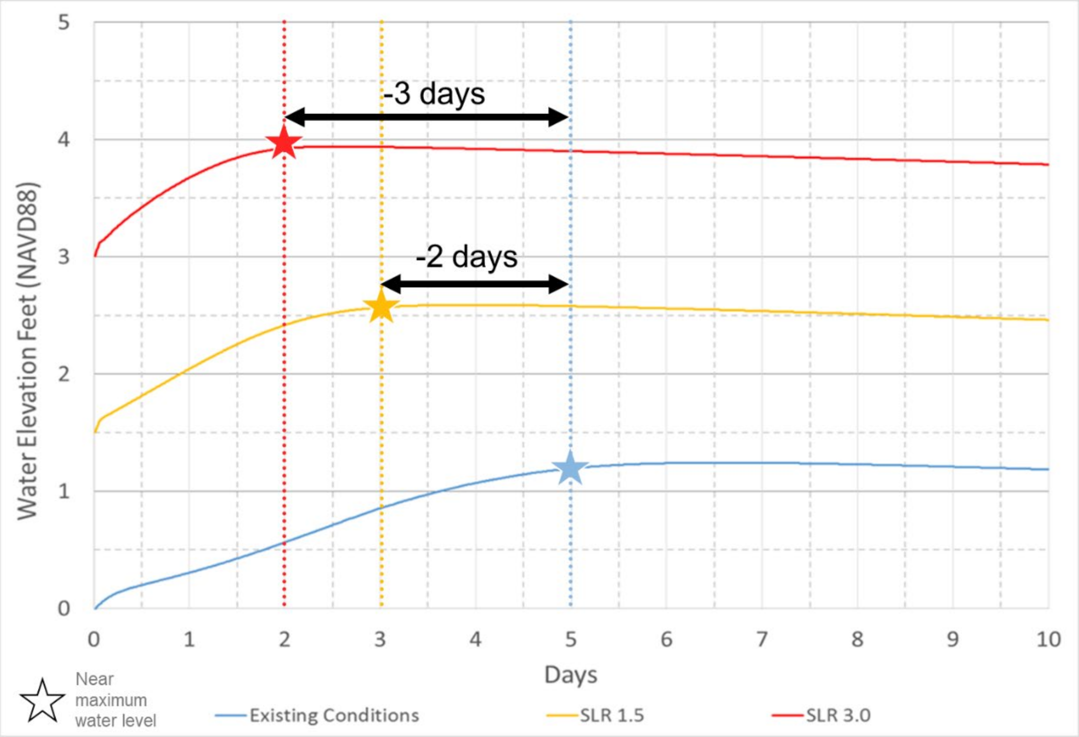

Figure 6: Water-level response under sustained 15-mph southerly wind.

The City analyzed future marsh conditions using the Sea Level Affecting Marshes Model (SLAMM).[7] Figure 7 illustrates areas likely to experience accelerated degradation of marsh in Back Bay due to rising water levels. If no action is taken, substantial marsh loss is projected in Bonney Cove under 3 feet of sea level rise. Within a 1-mile radius of Bonney Cove, the City's SLAMM model predicts that approximately 730 additional acres could be eroded into open water in response to sea level rise. This represents more than a 70% reduction as compared to the existing marsh system surrounding Bonney Cove today. It is also presumed that open water areas would continue to experience high levels of turbidity, which will continue to negatively affect SAV communities in Back Bay.

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[7] City of Virginia Beach. (2018). Analysis of Marsh Response to Sea Level Rise (PDF).

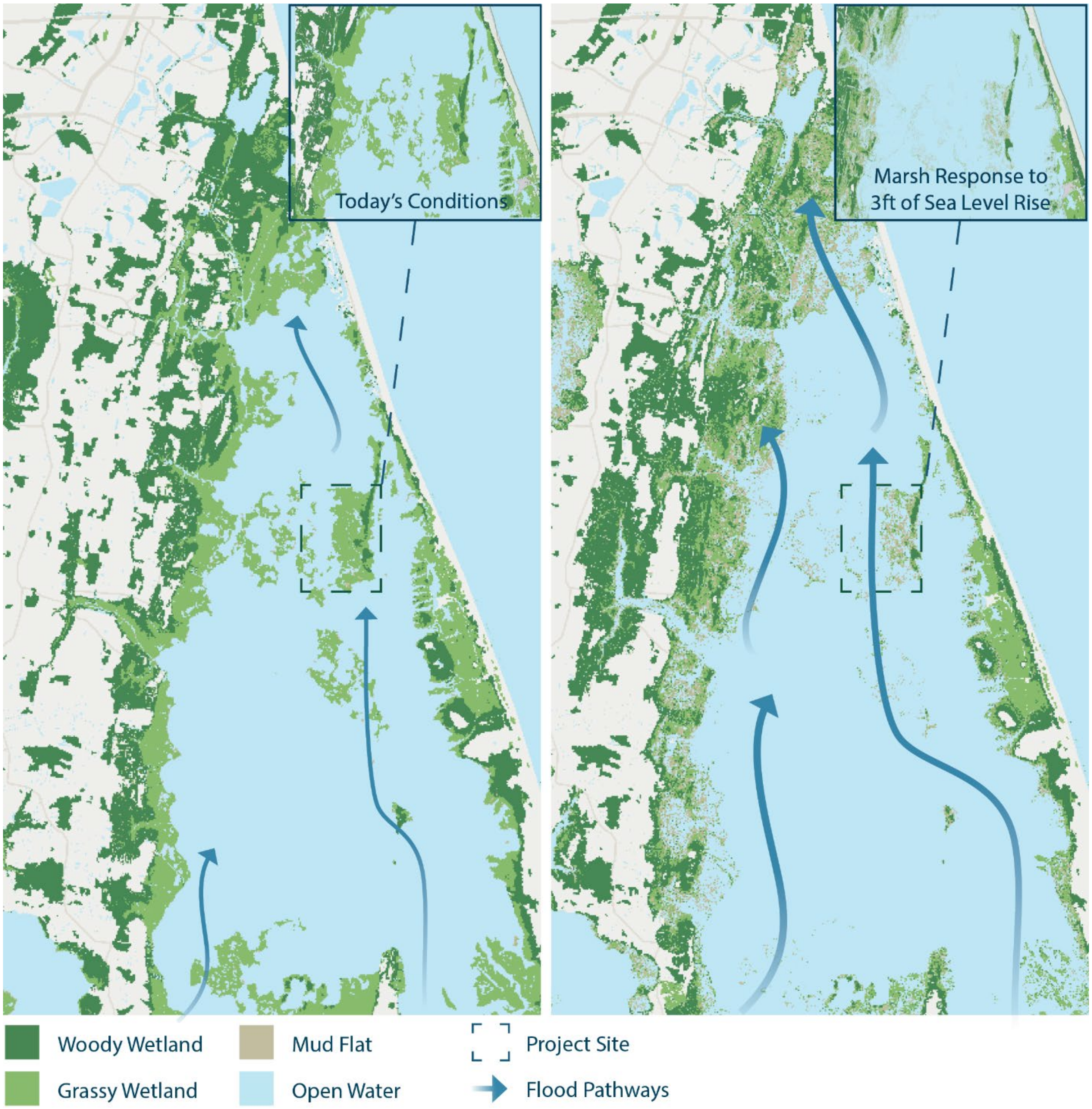

Figure 7: Comparison of current marsh conditions to future marsh conditions with 3 feet of sea level rise.

The proposed project site in Bonney Cove has a predominant south-southwest wind direction, which contributes to significant wave generation in the large unobstructed open-water areas and provides a continuous source of scouring and erosion in those areas. Marsh loss is likely to continue in the project area, creating a negative feedback cycle as continued fragmentation of the marsh would further deteriorate the remaining stands of healthy marsh and increase fetch. Today, the site faces low to medium fetch exposure, but in the future, the site could experience high to very high fetch exposure, as defined by the Virginia Institute of Marine Science (VIMS)

Shoreline Design Guidelines for Shore Protection in Virginia's Estuarine Environments.[8] Projections of increasing fetch at the site are summarized in *Part IV: Section E1 - Project Map 7*.

The proposed marsh terraces are expected to modify the hydrodynamics in Back Bay primarily by shortening wind fetches in the dominant southerly wind direction. Water levels, wave heights, and flow velocity were evaluated with a numerical model under a 50-year wind event for a "no action" scenario and a scenario with the marsh terraces constructed.[9] The marsh terraces are expected to reduce water levels to the north of the project site by approximately 30% (0.2 feet) compared to the "no action" alternative. Within the project site, the marsh terraces are expected to reduce wave heights by 45% (0.2 feet) and decrease flow velocities by 0.1 feet per second. As a result of these factors, the project is anticipated to help offset the impacts of sea level rise. Bonney Cove is an ideal location to apply habitat restoration measures to restore marsh communities, reduce fetch within the Bay, and contribute to local flood resilience.

d. Local Government to Provide its Share of the Cost

The City of Virginia Beach is fully prepared to cover the cost share of the proposed project, as highlighted in the attached budget narrative, "Amount of Cash Funds Available." The funding for the grant match is contained within the City budget.

e. Local Floodplain Management Regulations

The City recognizes the vital importance of floodplains in the natural movement of water through the community. Appendix K of the Virginia Beach Code of Ordinances regulates development in the community's floodplains. The City requires that a permit is obtained for any construction or development in the Special Flood Hazard Area. For more information and details regarding the City's floodplain management and ordinances, please refer to the following:

- Link to current floodplain ordinance: Virginia Beach Floodplain Ordinance.

In addition, a copy of the current floodplain ordinance has been included in *Part IV, Section E5.* For further information regarding the City's hazard mitigation and comprehensive planning, please refer to the following:

- Link to current hazard mitigation plan: Regional Hazard Mitigation Planning.
- Link to current comprehensive plan: Virginia Beach Comprehensive Planning.

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[8] Virginia Institute of Marine Science. (2010). Living Shoreline Design Guidelines for Shore Protection in Virginia’s Estuarine Environments; Version 1.2 (PDF).

[9] City of Virginia Beach. (2022). Numerical Modeling of Back Bay Marsh Terrace Project.

f. Repetitive Loss and/or Severe Repetitive Loss Properties

The repetitive loss database shows 113 repetitive loss and severe repetitive loss properties within the two census block groups (518100454.121 and 518100464.001) associated with the project area.

g. Residential and/or Commercial Structures

A detailed economic flood loss assessment presented in the City's Resilience Plan showed that approximately 45% of the entire future risk exposure in the City is concentrated in the Southern Rivers watershed. Of that risk, 65% is concentrated in three communities north of Back Bay (Figure 8).[10] Under a "no action" scenario, average annualized flood losses would increase from $974 thousand, representing present day conditions, to $6 million with 1.5 feet of sea level rise as anticipated by 2050. This figure equals an increase of six times present day conditions. With 3 feet of sea level rise as anticipated by 2080, annualized losses are expected to drastically increase to $80 million, more than 80 times today's conditions.

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[10] City of Virginia Beach. (2020). Coastal Flood and Economic Loss Analysis (PDF).

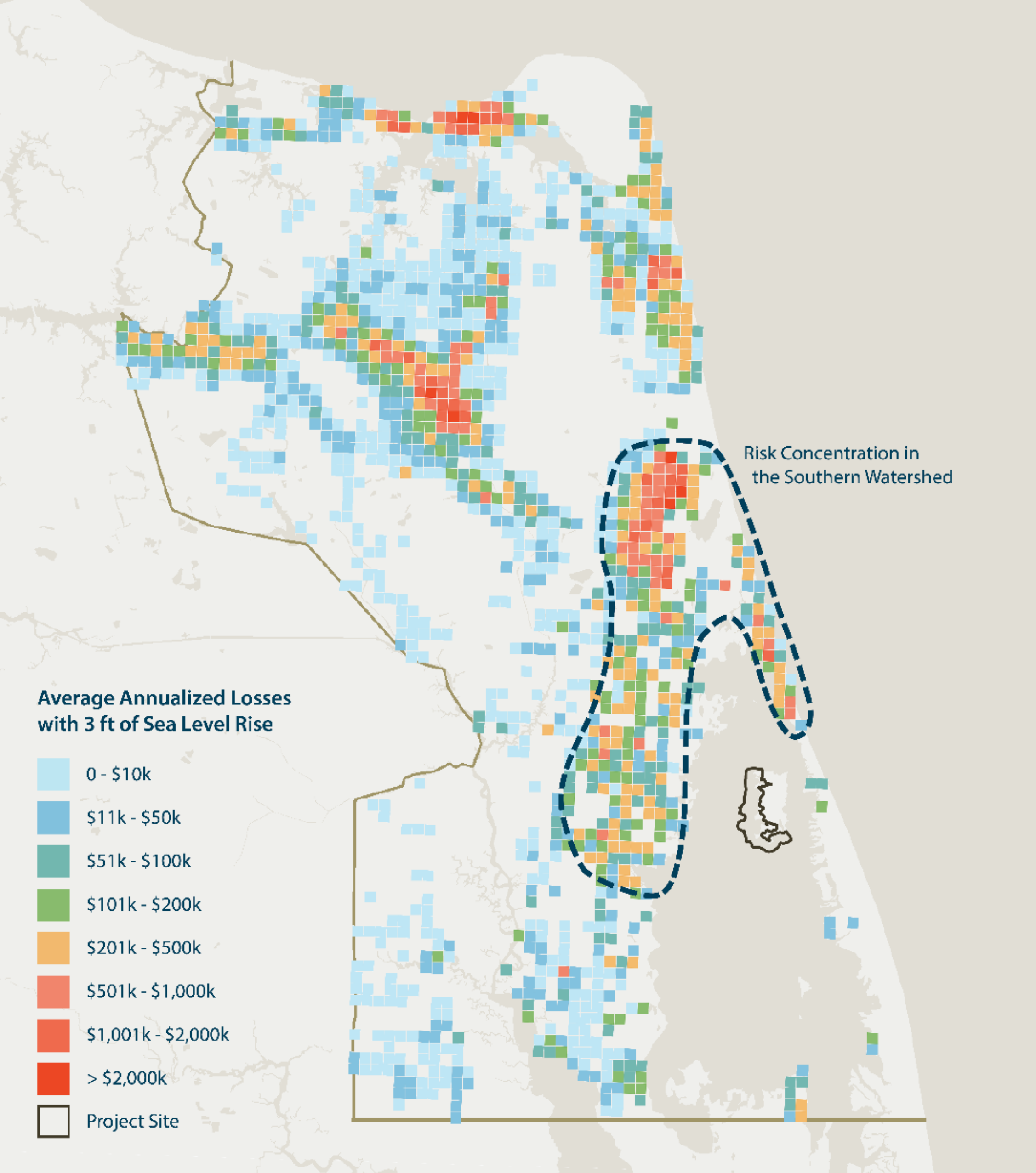

Figure 8: Concentration of average annualized losses estimated with 3 feet of sea level rise under a "no action" scenario presented in the City's Resilience Plan.

Within the two census block groups adjacent to Back Bay near the project area, there are approximately 70 commercial structures and 2,350 residential structures. Of those structures, approximately 635 structures are vulnerable to flooding during a 50-year event today. With 3 feet of sea level rise, approximately 2,060 structures are expected to be vulnerable during a 50-year event, representing approximately 85% of the residential structures within the project vicinity. These numbers underscore the importance of implementing the proposed project alongside complimentary flood risk reduction projects.

h. Critical Facilities

The two census block groups near the project site include 10 critical facilities. Table 2 summarizes critical facilities by type, total number, and the number of facilities exposed to the 50-year storm scenario under current and future "no action" scenarios. Under current 50-year storm conditions, 2 communication facilities and 1 electric power station would be exposed to flooding. With 3 feet of sea level rise, the number of critical facilities exposed to flooding increases to 9 total facilities.

Table 2: Summary of critical facilities located in the selected census block groups and flood hazard exposure to the 50-year storm event under current conditions and with 1.5 feet and 3 feet of sea level rise.

Type of Facility	Number of Facilities	Current 50-year storm	50-year storm with 1.5 feet sea level rise	50-year storm with 3 feet sea level rise
Communication	3	2 (66%)	2 (66%)	3 (100%)
Electric Power	1	1 (100%)	1 (100%)	1 (100%)
Fire Station	1	0	0	0
Potable Water	2	0	2 (100%)	2 (100%)
School	1	0	0	1 (100%)
Wastewater Treatment	2	0	0	2 (100%)

2. Need for Assistance

The City of Virginia Beach has invested significant time, money, and staff resources in understanding, communicating, and planning for the threats of sea level rise and recurrent flooding to the community. The City is ready to begin the implementation of adaptation measures, and the marsh terrace project is the first project to advance to construction from the City's Resilience Plan. The project represents the first step in restoring Back Bay and the larger Albemarle-Pamlico estuary, and serves as a pilot for additional restoration projects. Virginia Beach understands that flood mitigation costs are substantial and is seeking funds to support project implementation alongside dedicated resources procured by the City. The City's Department of Public Works Stormwater Engineering Center has closely coordinated with the City's Department of Planning & Community Development throughout the design and permitting process. The Department of Public Works will oversee the construction of the marsh terrace project, including providing construction inspectors to monitor that the project is built to the City's design standards and technical specifications. Additionally, the City has access to necessary software, including AutoCAD and ArcGIS Desktop, and support from consultants to augment the City’s technical capabilities.

Examples of City staff who will support the project include the following:

- Program Manager for the Technical Services Division of the Stormwater Engineering Center.
- Project Manager for Green Infrastructure Projects for the Technical Services Division of the Stormwater Engineering Center.
- Environmental Planner / Certified Floodplain Manager from the Wetlands & Shoreline Construction Team of the Planning Administration Division of the Department of Planning & Community Development.
- Planning Evaluation Coordinator from the Chesapeake Bay Preservation Area & Southern Rivers Watershed Team of the Planning Administration Division of the Department of Planning & Community Development.
- Full-time Construction Inspector from the City’s Public Works Engineering Division.
- Grant Coordinator from the City’s Public Works Engineering Division.

Additional staffing will be provided as needed to ensure project success.

Monetary support to implement the proposed project will benefit Virginia Beach communities north of the project site. Based on Adapt Virginia's Social Vulnerability Viewer, the Social Vulnerability Index scores of the communities located in the two census block groups adjacent to Back Bay near the project site range from -0.8 to -0.6, which classifies as Low Social Vulnerability.

This project benefits communities in northern Back Bay with a high concentration of flood losses (as shown in Figure 8). These communities contribute significantly to Virginia Beach's rural economy, including agriculture, forestry, fishing, hunting, and eco-tourism. In Hampton Roads, these industries contribute a combined $100 million in gross domestic product.[11] Protection of vulnerable natural infrastructure, such as the marshes in Back Bay, is critical to ensuring these industries can continue to thrive within the region.

3. Goals and Objectives

The overarching goal of this project is to construct the City's first nature-based adaptation project in the Southern Rivers Watershed and one of the CRMP's exemplary nature-based projects. This project aims to stabilize two critically eroding marsh islands from further degradation, decrease turbidity to promote the growth of aquatic vegetation and provide flood risk reduction benefits through increased friction and wave attenuation. The following section summarizes the objectives through which this goal will be realized.

Objective 1 – Sustainable Habitat Creation

The proposed project aims to restore marsh island communities in Bonney Cove that have historically provided environmental and flood reduction benefits to the communities in northern Back Bay. As illustrated in Figure 9, when an intact marsh begins to fragment and convert to open water, fetch increases and enables greater wave energy, increasing marsh erosion rates, and ultimately accelerating conversion to an ever-expanding body of open water. Strategic marsh restoration and creation in Bonney Cove would help mitigate the cycle of marsh island erosion and loss of SAV currently occurring in Back Bay, thereby protecting the remaining marsh islands and reducing fetch and wave energy.

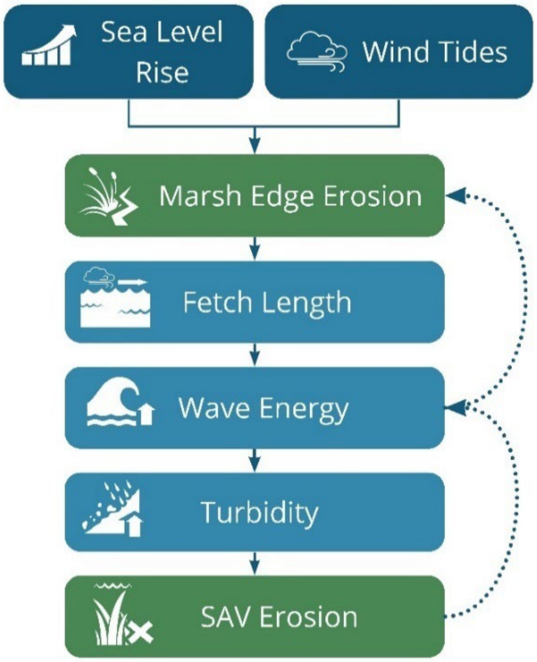

Figure 9: Cycle of marsh erosion, SAV loss, and increased wind-driven flooding.

The primary objective of this project is to create a sustainable coastal marsh island system in Back Bay through reclamation of historically lost marsh habitat and protection of existing marsh complexes from erosion. This restoration effort aims to provide multiple benefits of reduced flood impacts, enhanced fish and wildlife habitat, and improved water quality. The project is designed to achieve the following outcomes:

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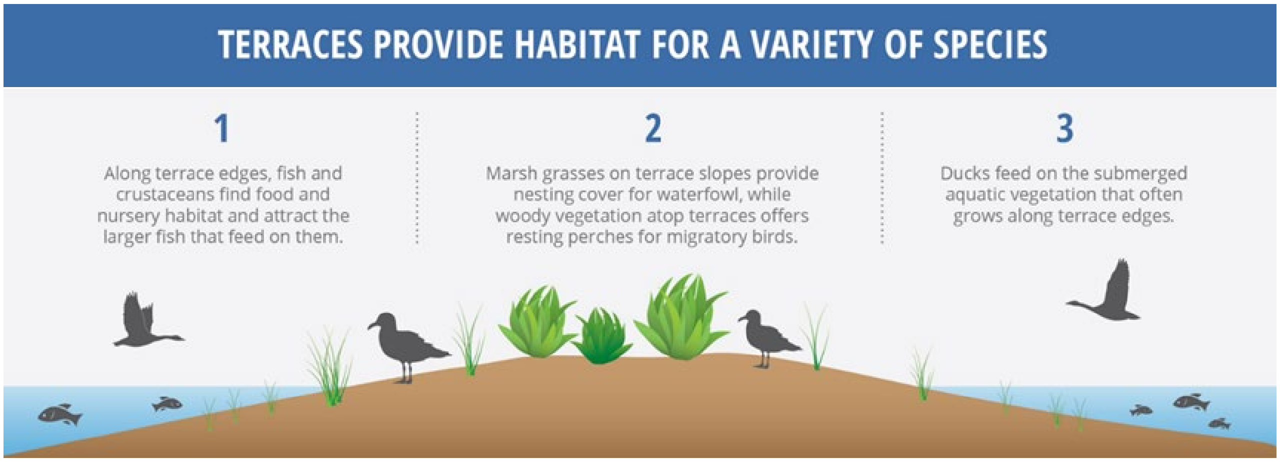
[11] Office of Governor Ralph S. Northam Commonwealth of Virginia and Virginia Department of Conservation and Recreation. (2021). Virginia Coastal Resilience Master Plan Phase 1 (PDF); data referenced sourced from the US Bureau of Economic Analysis. (2019).

- Decrease turbidity to create conditions that promote the growth of emergent vegetation and aquatic grasses;
- Maximize habitat value for ecologically important fish and wildlife populations (e.g. Largemouth Bass, Bluegill, Yellow Perch, Striped Bass, Blueback Herring, Alewife, American Eel, etc.); and,
- Reduce fetch, wave heights, and flow velocities to mitigate erosion of fringing marsh systems that provide a buffer for the low-lying neighborhoods and roads that experience frequent flooding in northern Back Bay.

The City selected marsh terracing as the preferred restoration approach because the design is compatible with Back Bay's shallow bottom and the historical loss of habitat. Marsh terraces are narrow, man-made islands placed in shallow open water to restore previous marsh environments. Typically arranged in a chevron pattern, the overall field of marsh terraces dissipates waves, decreases turbidity, and slows down the moving water. The resulting calmer water conditions allow more sunlight to penetrate to the shallow bottom, promoting the establishment and growth of marsh seagrass and ultimately improving habitat quality for fish and wildlife. Further, as opposed to one continuous marsh platform, marsh terraces maximize habitat for a variety of fish and wildlife species, as illustrated in Figure 10.


TERRACES PROVIDE HABITAT FOR A VARIETY OF SPECIES

1 Along terrace edges, fish and crustaceans find food and nursery habitat and attract the larger fish that feed on them.

2 Marsh grasses on terrace slopes provide nesting cover for waterfowl, while woody vegetation atop terraces offers resting perches for migratory birds.

3 Ducks feed on the submerged aquatic vegetation that often grows along terrace edges.

Figure 10: Conceptual diagram of marsh terraces.

Marsh terracing is commonly used in the Gulf Coast region to restore marshes in shallow, open water areas. The proposed project represents the first marsh terracing project in Virginia and the larger Mid-Atlantic region. This project illustrates the City's commitment to nature-based solutions and a critical first step in a more comprehensive vision of restoration in Back Bay and the larger Albemarle-Pamlico estuary, as shown in *Part IV: Section E1 - Project Map 8*.

Based on the current design (30%), the project will create 40 individual marsh terraces totaling approximately 27,000 linear feet (a 51-acre footprint) across Bonney Cove. This includes emergent (low and high marsh) and upland vegetated habitat, submerged terrace habitat, and SAV habitat between the terraces.

Expected Benefits:

- Conversion of 51 acres of open-water subaqueous bottom habitat into marsh terraces, consisting of approximately:
    - 5 acres of low marsh habitat; low marsh plantings would include Big Cordgrass (*Spartina cynosuroides*) and Saltmarsh Cordgrass (*Spartina alterniflora*).
    - 9 acres of high marsh habitat; high marsh plantings would include Black Needlerush (*Juncus roemerianus*) and Salt Meadow Hay (*Spartina patens*).
    - 19 acres of upland vegetated habitat; upland vegetation would include Arrow-leaf Tearthumb (*Persicaria sagittate*), Groundsel Tree (*Baccharis halimifolia*), Wax Myrtle (*Myrica cerifera*), and Bald Cypress (*Taxodium distichum*).
    - 18 acres of unvegetated terrace habitat; anticipated to create suitable conditions for the emergence of SAV.
- Additionally, approximately 310 acres of open water SAV habitat would remain between the proposed marsh terraces, and it is anticipated that construction of the terraces would create conditions within the project area favorable to the re-establishment of SAV populations.

Objective 2 – Mill Landing Road & Boat Ramp Improvements

The project's second objective is to employ a construction approach that is compatible with the shallow nature of Back Bay and the large quantity of material required to build the marsh terraces. The engineering team performed a constructability review of suitable landing sites to stage construction operations for the terraces. The Mill Landing boat ramp, owned by VDWR and located at the end of Mill Landing Road, was identified as the preferred staging and construction access location for the following reasons:

- Mill Landing boat ramp proximity to the site (3 miles); see Figure 11.
- Proximity of Mill Landing boat ramp to identified sand borrow sources.
- Ownership by one of the key project stakeholders, VDWR, who are highly supportive of the project.
- Limited alternative options; the only one other public boat ramp, Back Bay Landing boat ramp (also owned by VDWR), is heavily trafficked and located much further from the site (6 miles).

Furthermore, Mill Landing Road is a low-lying road that experiences frequent inundation and wind-driven flooding (Figure 12). This project was identified as an opportunity to improve the condition of the road as part of the marsh terrace construction activities, bringing additional benefits to the overall project. The City has been in close coordination with VDWR since January 2022 to secure the appropriate approvals for the use of Mill Landing boat ramp and parking lot and ensure compliance with all applicable regulations. Formal approval from VDWR is pending and anticipated in April 2022. Before marsh terrace construction, the City would prepare Mill Landing Road and the boat ramp parking lot as a construction access and staging area through strategic widening of the parking lot and roadway and creation of vehicular pull-offs to allow vehicles to move over safely and allow construction vehicles to pass. After terrace construction is complete, the City would improve the condition of the Mill Landing Road and boat ramp to benefit residents and community stakeholders interested in visiting the project.

Expected Benefits:

- Enables constructability of the marsh terraces.
- Improved condition of the Mill Landing Road and boat ramp/parking lot to enable access to the project post-construction to promote project awareness and educational opportunities.

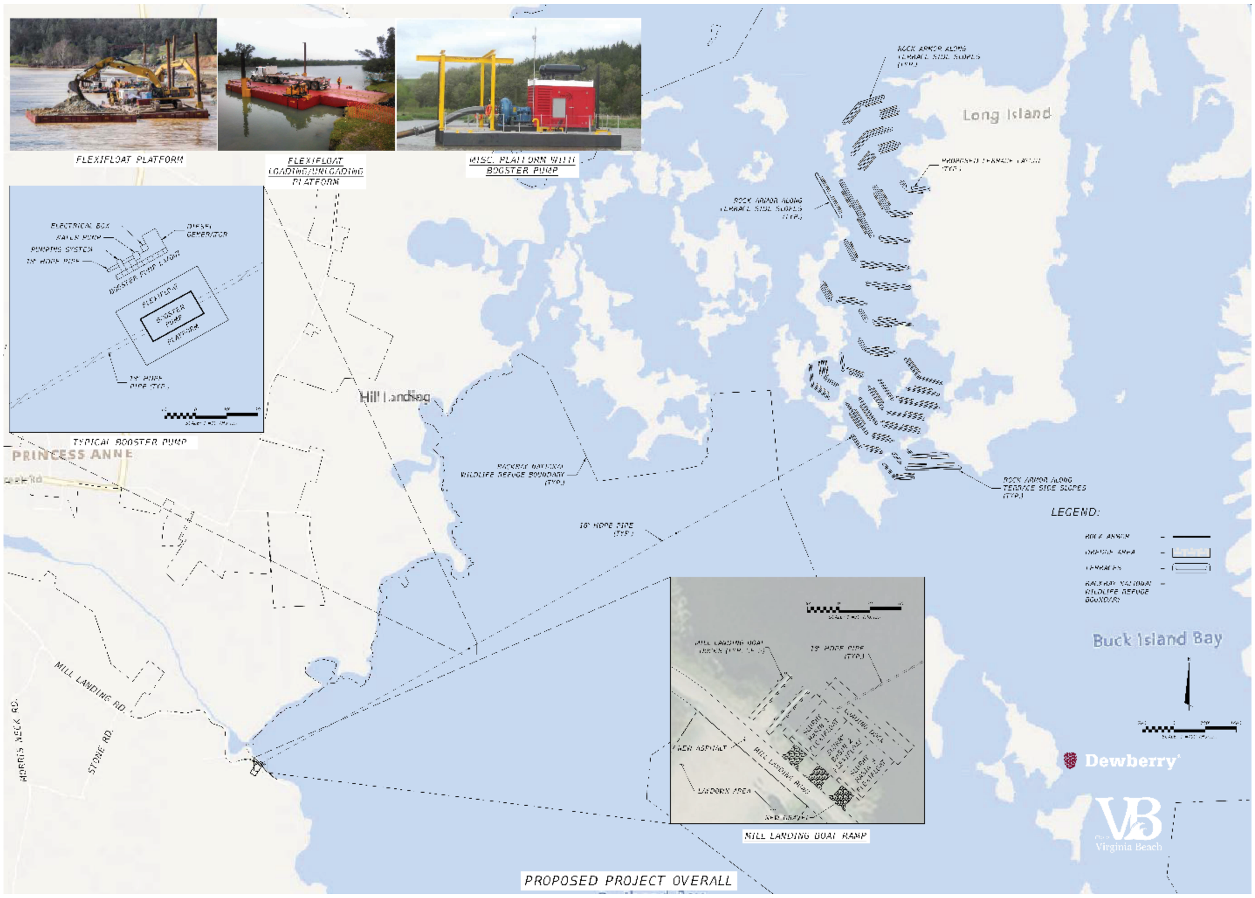


Figure 11: Overall proposed construction approach.

Figure 12: Mill Landing Road and Boat Ramp

Objective 3 – Stakeholder Engagement and Dissemination

The City will continue to meaningfully engage project partners and stakeholders throughout project procurement, construction, and post-construction monitoring. The project's lessons learned and expected benefits will be communicated through local meetings and outreach meetings to other communities, planning entities, and academic institutions within the region and state. Further, the project team intends to seek opportunities to share findings at national conferences and develop materials to facilitate dissemination to multiple audiences identified in the following table:

Table 3: Summary of opportunities for City, regional, state, and national stakeholder engagement; expected benefits.

	Approach
CITY	Host local community engagement meetings throughout construction to keep the public informed. Facilitate internal municipal awareness through presentations to the following staff: • City of Virginia Beach Management Leadership Team (MLT), which includes the City Manager, Deputy City Managers, and Department heads from across the city. • Virginia Beach City Council.
REGION	Share lessons-learned to regional and state stakeholders, improving knowledge-based, awareness, and capacity for future efforts through presentations to the following groups: • Hampton Roads Adaptation Forum – a regional dialogue for academics, non-profits, consultants, and municipalities committed to resilience measures. • The Hampton Roads Planning District Commission (HRPDC) Coastal Resiliency Committee. • Albemarle-Pamlico National Estuarine Partnership (APNEP). • Regional conferences on green infrastructure, coastal resilience, and sea level rise adaptation.
STATE	• Coordinate with DCR to highlight project construction as a success story for the Virginia CRMP, which identifies natural and nature-based solutions and collaboration across state wetland programs as a priority. • Present at state-level conferences on water resources, floodplain management, and resilience, such as Resilient Virginia and Virginia Lakes and Watersheds Association (VLWA). Opportunity to provide a presentation at VLWA as a demonstration project to be captured in the CRMP update.
NATION	• Disseminate as a case study with lessons-learned through presentations at national conferences, such as Restore America's Estuaries, Association of State Floodplain Managers, or the American Shore and Beach Preservation Association, etc. • Leverage working relationships and existing contract work with the U.S. Army Corps of Engineers and partners to integrate lessons learned into the International Natural and Nature-Based Feature Design Guidelines, currently under development. • Disseminate to Georgetown Climate Center's Adaptation Clearinghouse and the Climate Action Knowledge Exchange (CAKE), hosted by EcoAdapt, as additional materials on Virginia Beach's coastal resilience case studies.

4. Approach, Milestones, and Deliverables

The following approach, milestones, and deliverables lay out a plan of action. The milestone schedule follows in *Section B: Milestone Schedule*.

a. Approach & Deliverables

Activity 1 – Contractor Procurement

Contractor procurement activities will begin with the development of 100% Final plans, specifications, and construction estimates (PS&E) and packaging of approved permits. The project team will prepare the bid Request for Proposal (RFP), provide Bid Packages, and assist with reviewing bids obtained. Any Request for Information (RFI) and bid clarifications will be addressed should they arise during the bidding process. Based upon the review of bids, qualifications of the contractor, or identified pre-qualifications and other specification requirements in the bid documents, the engineering consultant will assist the City in their selection of the contractor(s). It is anticipated that contractor procurement will be conducted in three phases:

1. Mill Landing Road/Boat Ramp Construction Preparation Contractor Procurement.
2. Marsh Terrace Contractor Procurement.
3. Final Mill Landing Road/Boat Ramp Improvements Contractor Procurement.

Deliverables:

- 100% Final PS&E.
- Bid Document Development, Coordination, Requests for Information and Reporting.

Assumptions:

- At the time of submission of this grant application, a Joint Permit Application is being prepared; approved permits are anticipated in early 2023.
- It is anticipated that the bidding process, award, and material production will occur over 12 months (Year 1 – 2023) for the first phase (Mill Landing Road and boat ramp construction preparation) and second phase (marsh terrace contractor).
- It is anticipated the third phase (final Mill Landing Road and boat ramp improvements) will begin procurement in summer 2025.

Activity 2 – Mill Landing Road & Boat Ramp Construction

As soon as the Mill Landing Road and boat ramp contractor is selected, construction activities to prepare Mill Landing Road and boat ramp for construction of the marsh terraces can commence. Construction activities will include mobilization, erosion and sediment control, clearing and grubbing, boat ramp lot expansion, construction of a new, improved boat ramp, establishment of temporary construction pull-offs, Mill Landing base stone and parking lot installation, and establishment of construction signage.

Back Bay is too shallow to accommodate conventional barges for material placement. As a result, hydraulic pumping of the sand core through an 18-inch diameter pipe is necessary to avoid extensive impacts to the bottom of Back Bay. The contractor will install the pipe along the bottom of Back Bay for 3 miles from Mill Landing boat ramp to the southern extent of the project site and then an additional mile to the northern extent of the site. The pipe will be marked by a buoy every 10 feet and temporary signage as reasonable. Booster stations would be placed approximately every mile. These booster stations would consist of a pontoon-mounted diesel engine pump capable of moving the sand slurry from the laydown area at Mill Landing boat ramp to the site. Given the distance to the site, 4 or 5 booster stations are anticipated to be necessary to create the sand cores of the terrace. It is estimated that 450 gallons per minute (GPM) of sand slurry would be pumped through the pipe.

After construction of the marsh terraces is complete (see Activity 3), the final construction contractor will make improvements to Mill Landing Road and boat ramp parking lot, including re-paving or graveling the surfaces impacted by construction activities.

Deliverables:

- Conduct weekly inspections to monitor construction progress of the Mill Landing Road and boat ramp portion of the project.

Assumptions:

- It is anticipated that the Mill Landing Road and boat ramp construction activities can occur simultaneously with material production in Year 1 (2023).

Activity 3 – Marsh Terrace Construction

Once the Mill Landing Road and boat ramp construction preparation is complete, marsh terrace construction activities can commence, beginning with the construction of the slurry basins adjacent to the Mill Landing boat ramp parking lot. The Marsh Terrace Construction Contractor will construct the terraces according to the 100% Final PS&E documents. The most recent engineering designs and design report are available upon request; they are not included as an attachment to this proposal due to file size. Figure 13 shows the overall layout of the terraces, and Figure 14 and Figure 15 show the project renderings. Terrace construction will begin in the northern extent of the project site at Terrace #100, noted in Figure 13, and the contractor will work south towards Terrace #140. The contractor will complete each terrace (including installation of plants) before moving onto the next.

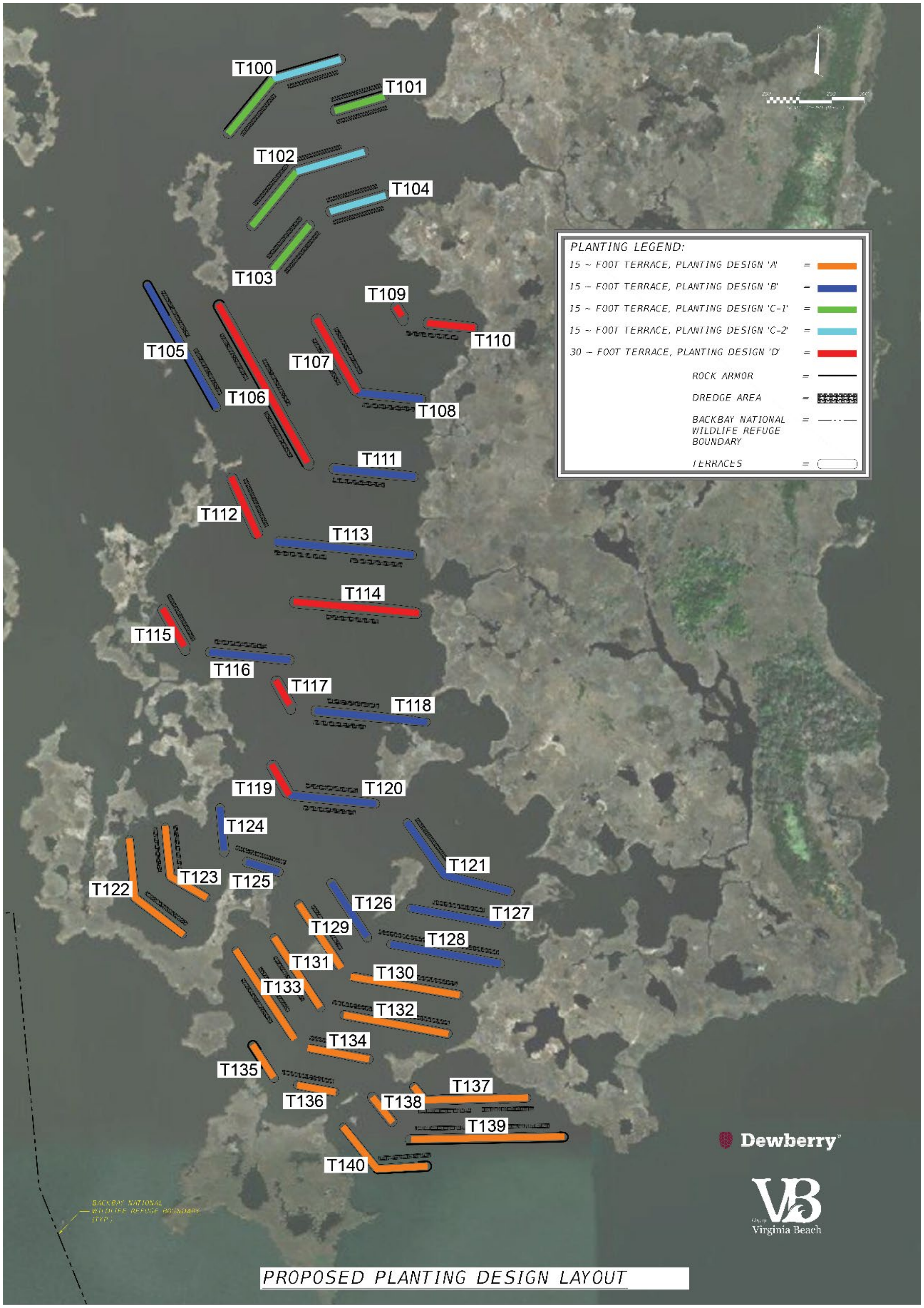
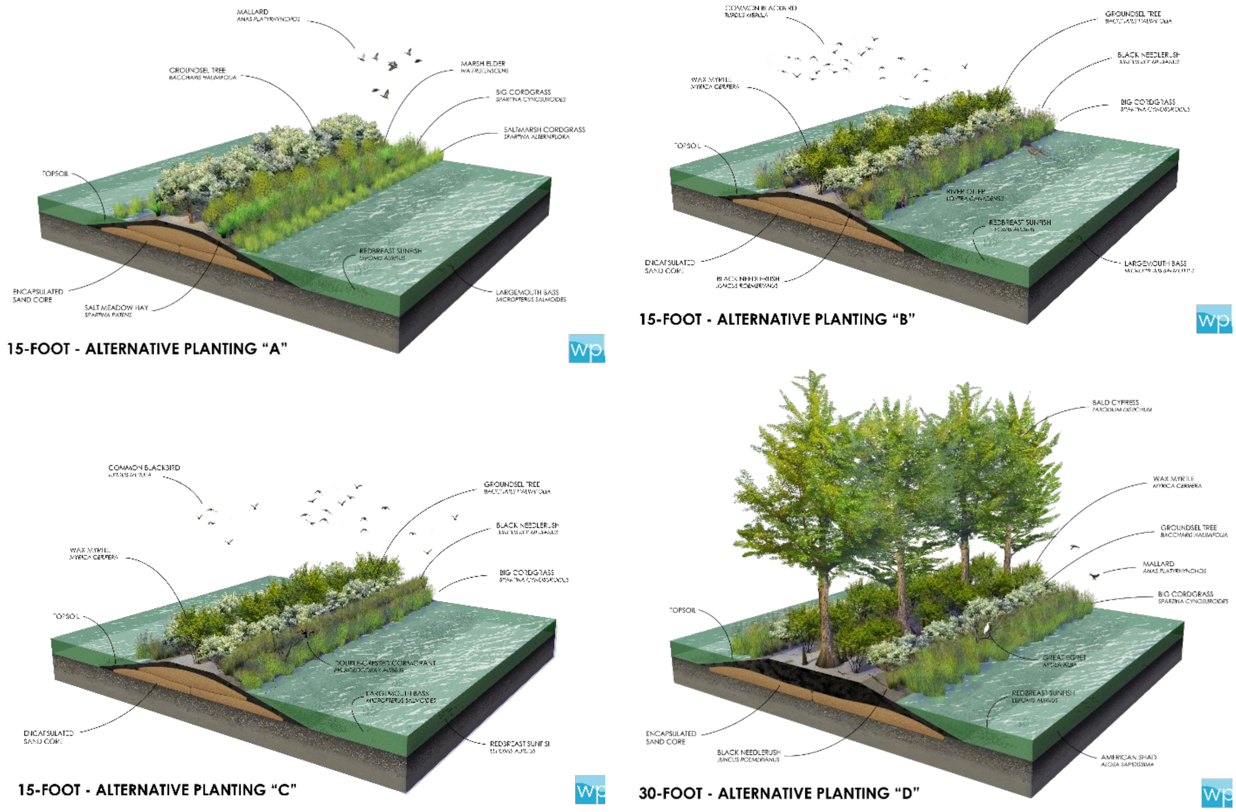


Figure 13: Marsh terrace layout across Bonney Cove.

Figure 14: Marsh terrace design rendering.



15-FOOT - ALTERNATIVE PLANTING "A"

15-FOOT - ALTERNATIVE PLANTING "B"

15-FOOT - ALTERNATIVE PLANTING "C"

30-FOOT - ALTERNATIVE PLANTING "D"

Figure 15: Marsh terrace cross-section design renderings.

The following section provides a high-level description of the proposed design and construction approach.

Terrace Orientation:

The orientation of the terraces will be perpendicular to the predominant wind direction (south-southwest) to maximize wave energy reduction. The terraces in the northern extent of the project site will be angled perpendicular to a north-northwest wind direction. The terraces would be segmented in a chevron pattern (duck-wing pattern) to provide the most favorable fish and swimming crustacean (termed "nekton") habitat while also allowing adequate circulation to promote sedimentation and maintaining navigability throughout the project area. The terraces would not be connected to the adjacent marsh; this gap, or physical open water barrier, is intended to deter the invasion of Common Reed (*Phragmites australis*) stands from adjacent marshes.

Spacing:

The terraces would be spaced at approximately 300-foot intervals in the northern and southern quarters, and then 600-foot or greater intervals in the center. This arrangement aims to lessen the open water and subsequent wave action at the northern and southern ends of the site and allow adequate construction space for marine-based construction equipment.

Terrace Elevation and Width:

To achieve a sustainable marsh elevation throughout the project life, the marsh terraces would initially be built to a higher elevation during construction and allowed to settle to the desired target elevation over time. Taller terraces improve the functionality and resiliency of the system while also providing diversified habitat for fish and wildlife. The goal is that, by the end of the 30-year design life and with 1.5 feet of relative sea level rise, the terraces will be at or above the elevation of a moderate wind tide event (when Back Bay water levels are anticipated to reach +3.0 feet NAVD88 over the design water level). This threshold was determined to ensure the terraces would not be fully overtopped during a future wind tide event and maintain resiliency to anticipated sea level rise. The 1.5 feet sea level rise scenario is consistent with the near-term planning scenarios identified in the City's Resilience Plan to represent conditions from 2035 to 2050 and adopted by the Hampton Roads Planning District Commission (HRPDC) as part of resolution number 2018-01.

The terraces would have a top width of 15 or 30 feet and be built to an elevation of +4.5 to +5.0 feet NAVD88, depending on the width of the crest, underlying soils, and local bottom depth, with side slopes of 4 horizontal to 1 vertical (4H:1V). The +4.5- to +5.0-foot elevation is calculated based on a target elevation of +3.0 feet NAVD88 or higher at the end of the project's 30-year design life and an estimated settlement of approximately 1 to 2 feet, depending on where the terrace is located. The geotechnical investigation revealed that terraces in the site's southern portion are expected to experience greater settlement than those to the north.

Terrace Composition:

The terraces would consist of a sand-filled core that is encapsulated by a high-strength blend of woven and non-woven geotextile fabrics. The sand for this material will come from nearby offsite sources and be pumped through the 18-inch diameter pipe described in Activity 2. Once the cores are in place, long-reach excavators would travel along the tops of the terraces and begin to shape the cross slopes. Existing adjacent material devoid of SAV would be mechanically dredged and placed over the sand-filled cores. The marsh terraces would be covered with 1 to 3 feet of suitable fill, depending on crest widths, and then planted with native emergent and brackish plant species to stabilize the terraces and provide wind-driven flood reduction benefits.

Deliverables:

- Conduct daily inspections to monitor construction progress of the marsh terraces.

Assumptions:

- It is anticipated that construction of the terraces will occur over 2 years from 2024 through 2025, with the following assumptions:
    - Construction activities are not permitted within BBNWR from October 31 through February 28, annually, to limit disturbance to wintering waterfowl and migration during those months.
    - Mill Landing boat ramp will return to public use every weekend (beginning at 5:00 p.m. each Friday) during the duration of construction activities.

Activity 4 – Maintenance Plan

The City will prepare a maintenance and management plan for the project to demonstrate how it will be maintained after the lifespan of this grant for a minimum of five (5) years. The Maintenance Plan will establish monitoring goals, objectives, metrics, and success criteria that will be used to identify maintenance needs. The Maintenance Plan will outline the proposed monitoring strategy, such as the establishment of transects, quadrants, and photo stations to enable consistent tracking of the project across each monitoring year. The Maintenance Plan will also include a proposed schedule for annual monitoring inspections, which typically occur during the peak of the growing season, to track vegetation growth and identify any needed nuisance and invasive species management measures.

Deliverables:

- Project Maintenance Plan.

Assumptions:

- Ongoing post-construction monitoring, operation, and maintenance is not covered under this activity (see below).

Activities Not Included Under this Grant

Post-Construction Monitoring:

Post-construction monitoring and inspections will occur for a minimum of five (5) years following construction. Given the period of performance for the CFPF grant, post-construction monitoring activities have not been included in this application.

Stakeholder Engagement and Dissemination:

To achieve Objective 3 (Stakeholder Engagement and Dissemination), the City is committed to continued engagement of project partners and stakeholders throughout project procurement, construction, and post-construction monitoring. No financial support is requested for City personnel time on this project, and these activities are not included in this grant application.

b. Milestone Schedule

The milestone schedule assumes an executed agreement date of September 2022. The scope of work proposed in this grant application will begin in 2023, once the City receives approved permits. The project's expected progression is shown in the following milestone schedule, noting deliverables for each milestone:

Year 1 (2023)

- *1st Quarter*
    - 100% Final PS&E
    - Submit Bid Documents
    - Maintenance Plan
- *2nd Quarter*
    - Final Bid Coordination/Acceptance
    - Construction NTP and Mobilization for Mill Landing Road & Boat Ramp
    - Initiation of Marsh Terrace Material Production
- *3rd Quarter:*
    - Construction NTP and Mobilization for Slurry Basin Installation
    - Oversight, Management, and Inspection Services of Mill Landing Road & Boat Ramp, Pipe, and Slurry Basin Installation
- *4th Quarter:*
    - Completion of Mill Landing Road/Boat Ramp Construction Improvements and Slurry Basin Construction

Year 2 (2024)

- *1st Quarter*
    - Completion of Marsh Terrace Material Production
    - Construction Mobilization for Marsh Terraces (beginning on March 1, 2024)

- *2nd Quarter*
    - Construction of Marsh Terraces #100 – 105
- *3rd Quarter*
    - Construction of Marsh Terraces #106 – 114
- *4th Quarter*
    - Construction of Marsh Terraces #115 – 119
    - Marsh Terrace Construction Demobilization (to accommodate break in construction period from October 31, 2024 – February 28, 2025)

Year 3 (2025)

- *1st Quarter*
    - Construction Re-Mobilization for Marsh Terraces (beginning on March 1, 2025)
- *2nd Quarter*
    - Construction of Marsh Terraces #120 – 134
- *3rd Quarter*
    - Construction of Marsh Terraces #135 – 140
- *4th Quarter*
    - Mill Landing Road & Boat Ramp Final Improvements & Demobilization

c. Potential Project Partners

The following table highlights the specific project partners, their roles, and their capabilities concerning the proposed project.

Table 4: Potential Project Partners.

Entity	Role	Description
U.S. Fish and Wildlife Service, Back Bay National Wildlife Refuge	Project Partner / Advisor / Adjacent Land Owner	BBNWR owns the land adjacent to the project footprint and monitors migratory bird hunting within Presidential Proclamation boundaries. BBNWR has coordinated with the City on project design and will continue to be involved during project construction as a stakeholder and advisor.
Virginia Department of Wildlife Resources	Project Advisory / Stakeholder	As owner of the Mill Landing boat ramp, the City has coordinated closely with VDWR on project design. Furthermore, VDWR has been monitoring SAV distribution in Back Bay for decades and will be a critical partner for identifying native seagrass species and techniques for restoration based on extensive experience from previous SAV restoration projects in Back Bay.

Entity	Role	Description
Virginia Beach Department of Planning & Community Development	Permit Compliance	The City's Department of Public Works has been in close coordination with the City's Department of Planning & Community Development throughout the design and permitting process. Continued involvement and coordination during construction and post-construction monitoring is anticipated.
Dewberry	Engineering Contractor	Engineering consultant to support the City with contractor procurement and construction administration.
To be Determined	Construction Contractors	Construction contractor for the Mill Landing Road and boat ramp and marsh terrace construction activities.
Friends of Back Bay	Project Advisory / Stakeholder	Friends of Back Bay was formed in the 1980s to lead efforts to expand and conserve BBNWR, including securing millions in funding to support the Refuge’s expansion. The City has coordinated with the BBNWR Society throughout the design and permitting process and will continue this coordination through construction and post-construction monitoring.
Back Bay National Wildlife Refuge Society	Project Advisory / Stakeholder	The Back Bay National Wildlife Refuge Society (BBNWR Society) is an independent, 501(c)(3) non-profit group dedicated to supporting the mission of the USFWS National Wildlife Refuge System and specifically promoting awareness of the BBNWR through education and participation. The City has coordinated with BBNWR Society throughout the design and permitting process and will continue this coordination through construction and post-construction monitoring.
Back Bay Restoration Foundation	Project Advisory / Stakeholder	Back Bay Restoration Foundation (BBRF) is an independent, 501(c)(3) non-profit group focusing on growing concerns about issues such as recurrent flooding, sea level rise, and development in the Southern Rivers Watershed. The group aims to serve as an advocate for the Bay and surrounding residents. The City has coordinated with BBRF throughout the design and permitting process and will continue this coordination through construction and post-construction monitoring.

5. Relationship to Other Projects

This project represents the first nature-based project in the Southern Rivers Watershed to advance to design and construction to implement the City's Resilience Plan. As previously mentioned, the City received approximately $135,000 in NFWF NRCF funding in 2020 for the previous phase (design and permitting) for the project. The City continues to meet the obligations and period of performance of this NFWF grant.

In its Resilience Plan, Virginia Beach identifies an adaptation approach for the Southern Rivers Watershed that emphasizes natural mitigation methods and integrated systems of defenses. As a natural mitigation strategy, the marsh terrace project aims to serve as a first line of defense during flood events, reducing wind-driven fetch, wave energy, and flow velocities to protect the important marsh buffer surrounding the shorelines of Back Bay. Other projects are also needed to provide multi-layered flood protection to northern Back Bay communities (Figure 16). Several of these projects are highlighted below. It should be noted that the projects described below are either not yet funded or will be funded in the future through the City’s Capital Improvement Program.

Figure 16: Southern Rivers Watershed Adaptation Vision.

Backside of Sandbridge Flood Defense System

Protection of the Sandbridge resort community from increasing coastal flood hazards would require a complex and expensive structural protection system because of the manufactured land configuration on the backside of Sandbridge. The proposed protection system includes elevating Sandbridge Road and constructing a network of seawalls, levees, and gates along the Back Bay shoreline of Sandbridge. This project does not have designated funding at this time.

Hell Point Creek Flood Defense System

As part of the integrated Sandbridge City-Wide flood defense network, a storm surge barrier across Hell Point Creek could block flood waters originating from Back Bay. Sandbridge Road would also need to be raised to ensure floodwaters could not flank the system. This project does not have designated funding at this time.

Sandbridge/New Bridge Intersection Improvements

Road and shoulder improvements are planned to increase safety at the New Bridge Road/Sandbridge Road intersection and reduce the need for road closures due to flooding from the adjacent Ashville Creek.

Muddy Creek Road Flood Defense System

Muddy Creek Road provides access to important rural and agricultural communities and Back Bay and the Wildlife Refuge. Muddy Creek Road is one of the lowest-lying roadways in all of Virginia Beach and frequently floods. This City-Wide Structural Alternative Flood Protection analysis identified this roadway as a critical location to provide flood protection. The proposed system, known as the Muddy Creek Road Alignment, would transform much of Muddy Creek Road into a levee, with the road on the top. The City's numerical modeling effort shows that the Muddy Creek Road Flood Defense System could potentially increase flood risk to the east of Muddy Creek Road (see *Part IV: Section E1 – Project Map 9*). Therefore, the implementation of nature-based strategies suitable to the low-lying shorelines of Back Bay is essential to mitigate these impacts. This project does not have designated funding at this time.

Voluntary Acquisition Program

Virginia Beach City Council has recently funded a $2.0 million City-wide voluntary acquisition program to encourage flood-prone property owners to apply for a buyout. Parcels acquired by the City, in the Southern Rivers Watershed, would then be converted to open space to serve as flood storage and a marsh migration buffer.

Stormwater Master Plan

The City Council initiated an update of the City's Stormwater Master Plan in 2014. This effort is interchanging information with aspects of the City's Resilience Plan to account for the impact of sea level rise on the stormwater system's performance. Specific stormwater drainage improvement projects are included within the Lower Southern Rivers Watershed Drainage Basin.

Virginia Coastal Resilience Master Plan

The CRMP highlighted the marsh terrace project as an exemplary nature-based resilience project. The CRMP emphasizes Virginia Beach's strategic use of multiple funding streams to implement a large-scale nature-based project. DCR’s contribution to the project’s construction could be highlighted as a success story for implementation of the CRMP.

Audubon North Carolina Currituck Sound Coalition Marsh Conservation Plan

In coordination with Audubon North Carolina, the Currituck Sounds Coalition identified marsh restoration priorities based on criteria for siting restoration projects, including vulnerability to sea level rise, historic increase in surface water, and distance to hardened shorelines. This assessment identified Virginia Beach’s marsh terrace project site as a high-priority area for restoration (see Part IV: Section E1 – Project Map 3). There is an opportunity to highlight this project as a success story in the next iteration of the Audubon's Marsh Conservation Plan, which is slated to be updated every three years.

6. Maintenance Plan

A Maintenance Plan will be developed as part of this project, as described in Section 4a (Activity 4).

7. Criteria

The City has demonstrated, through this application, that the grant criteria have been met. For more details and locations of criteria, refer to Table 5. Appendix B contains the completed scoring criteria.

Table 5: Grant criteria checklist.

Criteria	Satisfaction?
Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?	Yes.
Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or is a link provided?	Yes. Approved by DCR on July 20, 2021. The Virginia Beach Resilience Plan ("Sea Level Wise") can be found on the City's website.
For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?	Not Applicable.
Has the applicant provided evidence of an ability to provide the required match funds?	Yes. Please see *Part IV: Section D3 (Cash Funds Available)* and *Part IV: Section E3.*
Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on the prevention of flooding?	Yes. Please see *Part IV: Section B1 (Project Information)*.

D: Budget Narrative

The following budget narrative details the proposed project expenditures.

1. Estimated Total Project Cost

A detailed cost breakdown for each activity is presented in Table 6. This cost estimate is based on material quantities from the latest design files. The total project cost across all project activities is presented in Table 7.

Table 6: Cost breakdown by activity.

Element	Amount
Activity 1 – Contractor Procurement	
100% Final PS&E Package and Contractor Procurement	$ 30,000.00
Construction Administration	$ 22,000.00
Activity 1 Subtotal	$ 52,000.00
Activity 2 – Mill Landing Road & Boat Ramp Construction	
Mobilization & Demobilization	$ 511,000.00
Mill Landing Road and Boat Ramp Construction Preparation	$ 120,000.00
New Boat Ramp	$ 210,000.00
Mill Landing Parking Lot Expansion	$ 180,000.00
Temporary Pull-offs	$ 300,000.00
Mill Landing Road and Parking Lot Post-Construction Improvements	$ 650,000.00
Activity 2 Subtotal	$ 1,971,000.00
Activity 3 – Marsh Terrace Construction	
Mobilization & Demobilization	$ 8,733,931.00
Construction Equipment	$ 1,735,000.00
Construction Materials	$ 12,156,551.00
Construction Labor	$ 665,000.00
Activity 3 Subtotal	$ 23,290,482.00
Activity 4 – Maintenance Plan	
Development of Maintenance Plan	$ 14,000.00
Activity 4 Subtotal	$ 14,000.00

Table 7: Summary of total costs across all activities.

Activity Totals	Amount
All Activities Subtotal	$ 25,327,482.00
Overall Project Contingency (15%)	$ 3,799,122.00
Total Project Cost Estimate	$ 29,126,604.00

2. Funds Requested from the Fund

The City is requesting a total of **$ 5,000,000.00** (17% of total project cost estimate) in funding from the CFPF Round 3 to support contractual services of the engineering consultant and construction contractor to execute Activity 3 (Marsh Terrace Construction). No support is requested for City personnel.

The City as prime recipient is providing a cash match of **$ 24,126,604.00** (83% of total project cost estimate) to cover contractual services to support Activity 1 (Contractor Procurement), Activity 2 (Mill Landing Road & Boat Ramp Construction), remaining construction costs associated with Activity 3 (Marsh Terrace Construction), Activity 4 (Maintenance Plan), and all direct overhead costs related for the project.

3. Cash Funds Available

The City has **$ 24,126,604.00** in cash on hand, contained within the City budget. This amount of cash funds is sufficient so that when combined with the potential grant funding, the City will have all necessary funds available to complete the project.

4. Funding Authorization

Please refer to *Part IV: Section E3* for the documentation authorizing the funding request.

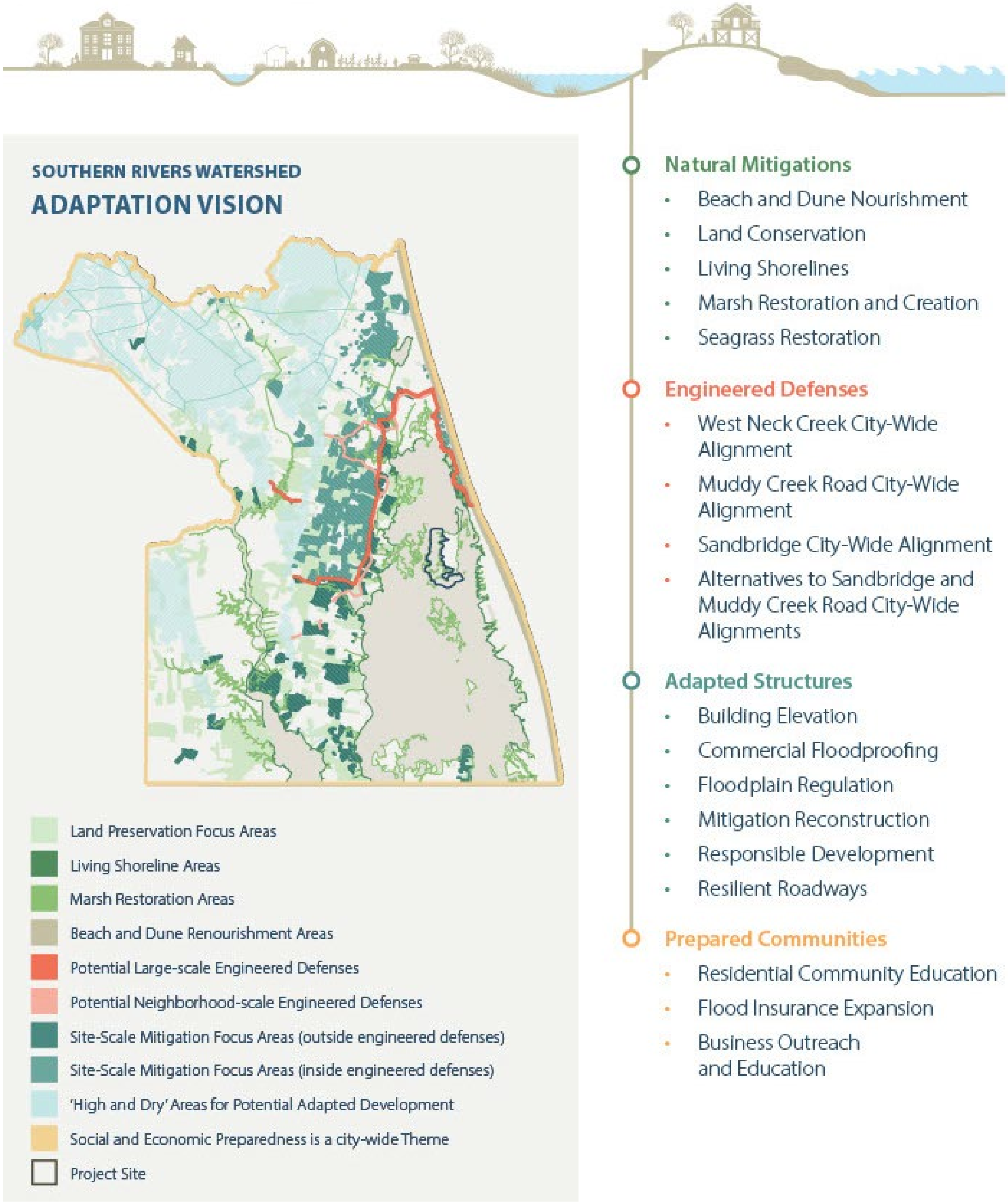
E: Supporting Documentation

1. Project maps, including:
    - FIRMette of the project areas
    - Historic flood reports and projected flooding data
    - Other contextual maps and supporting research referenced in the Scope of Work Narrative
2. Virginia Beach Resilience Plan DCR Approval
3. Authorization to request funding from the Fund from governing body or chief executive of the local government
4. City of Virginia Beach Floodplain Administrator Support Letter
5. Copy of the current Floodplain Ordinance

1. Project Maps

a. Project Map 1: Southern Rivers Watershed Adaptation Vision

Natural and nature-based features are the primary pillar of the adaptation strategy for the Southern Rivers Watershed identified in the City's Resilience Plan. The Plan identified living shorelines, marsh restoration and creation, and land conservation as suitable strategies along the shorelines of Back Bay.



Natural Mitigations
- Beach and Dune Nourishment
- Land Conservation
- Living Shorelines
- Marsh Restoration and Creation
- Seagrass Restoration

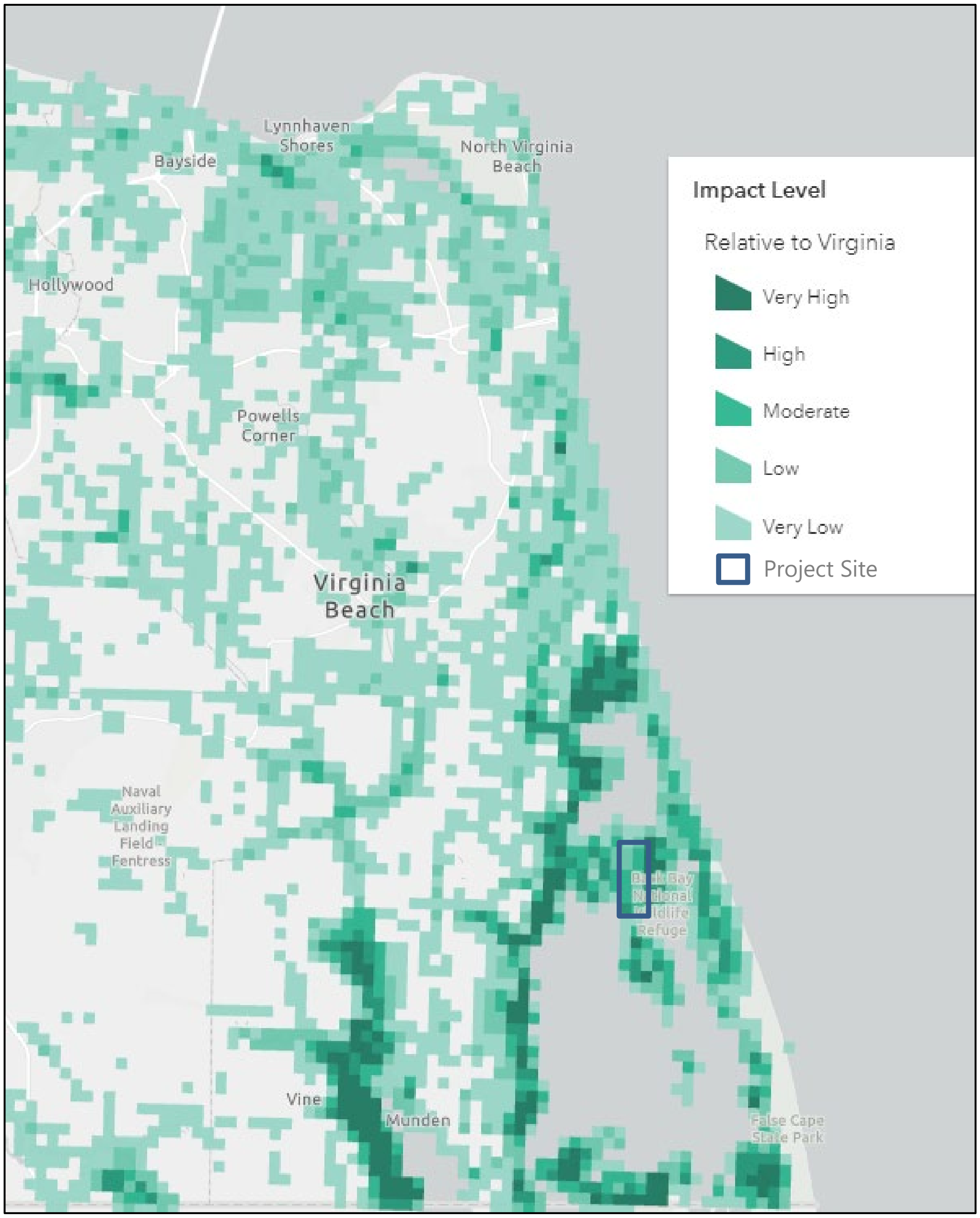
Engineered Defenses
- West Neck Creek City-Wide Alignment
- Muddy Creek Road City-Wide Alignment
- Sandbridge City-Wide Alignment
- Alternatives to Sandbridge and Muddy Creek Road City-Wide Alignments

Adapted Structures
- Building Elevation
- Commercial Floodproofing
- Floodplain Regulation
- Mitigation Reconstruction
- Responsible Development
- Resilient Roadways

Prepared Communities
- Residential Community Education
- Flood Insurance Expansion
- Business Outreach and Education

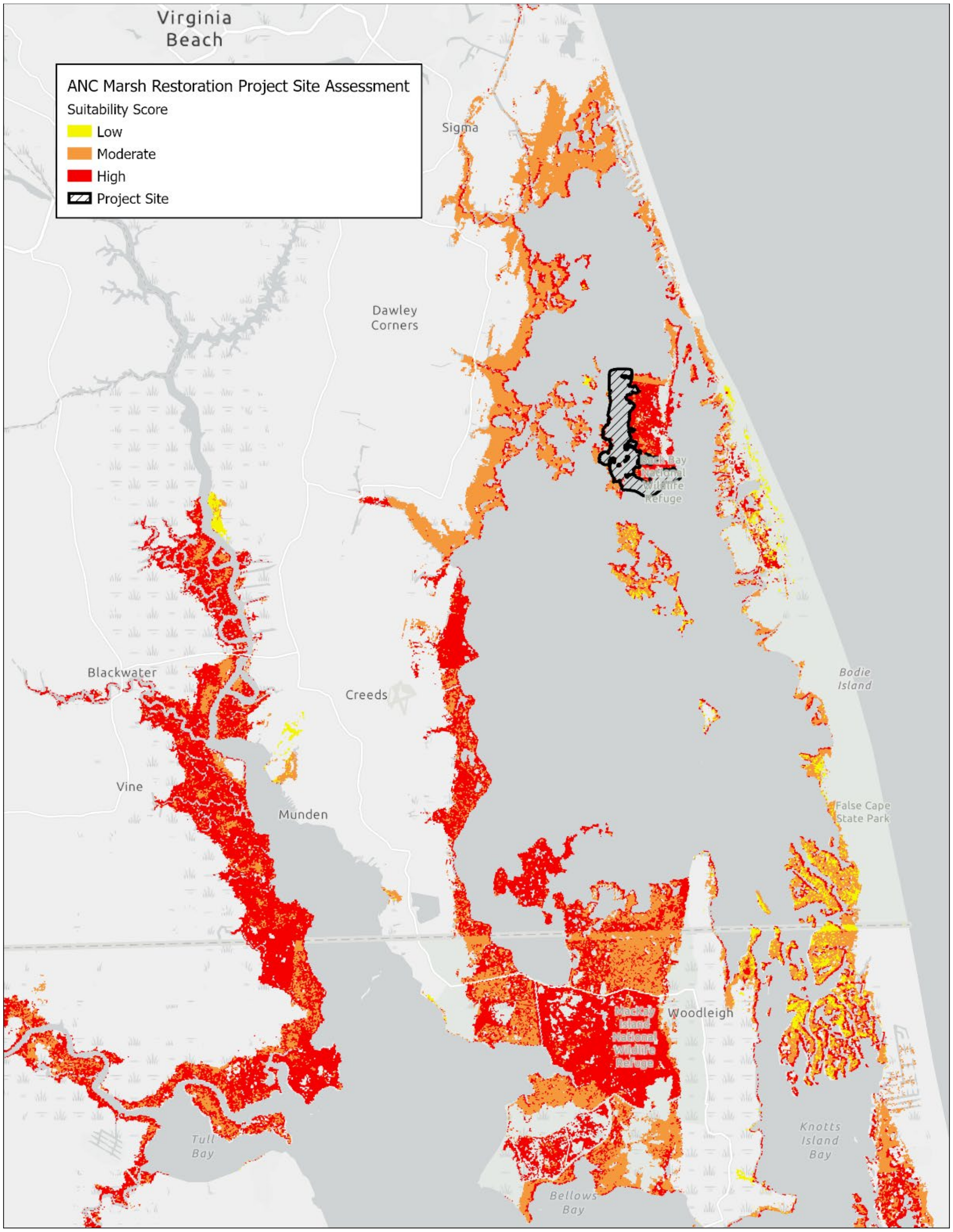
b. Project Map 2: Virginia CRMP Impact Assessment for Tidal Wetlands

The Virginia Coastal Resilience Web Explorer displays impacts on natural infrastructure based on the Virginia CRMP impact assessment. For 2080, portions of tidal wetlands within the project area have "High" and "Very High" impact levels, which indicates areas of tidal marsh that are anticipated to be lost through inundation causing conversion to open water.



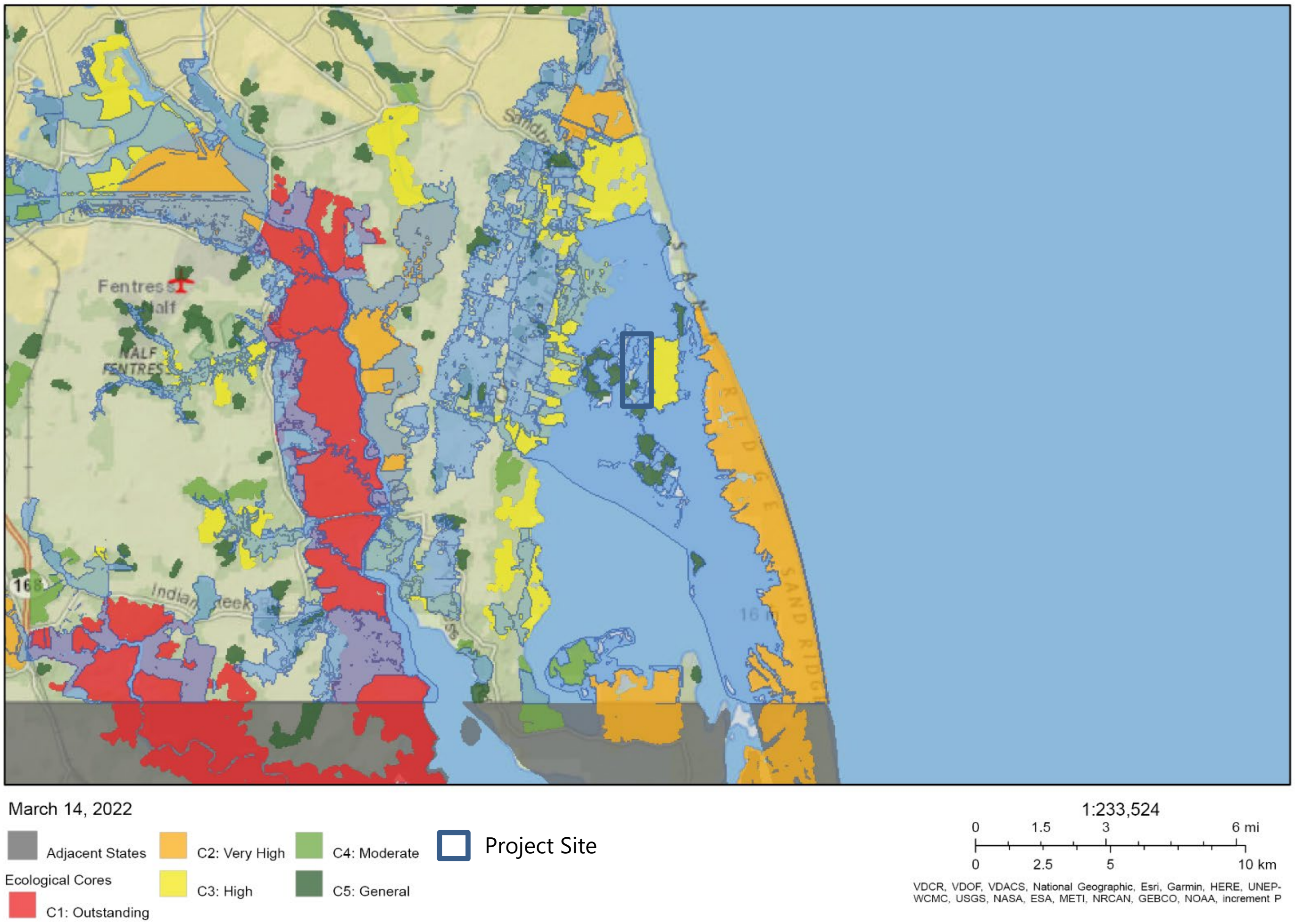
c. Project Map 3: Audubon North Carolina Marsh Restoration Project Site Assessment

Map showing marsh restoration priority areas based on analysis completed by the National Audubon Society. This assessment identified the project site as a high-priority area for restoration.



d. Project Map 4: Virginia Natural Heritage Data Explorer Ecological Cores and ConserveVirginia Data

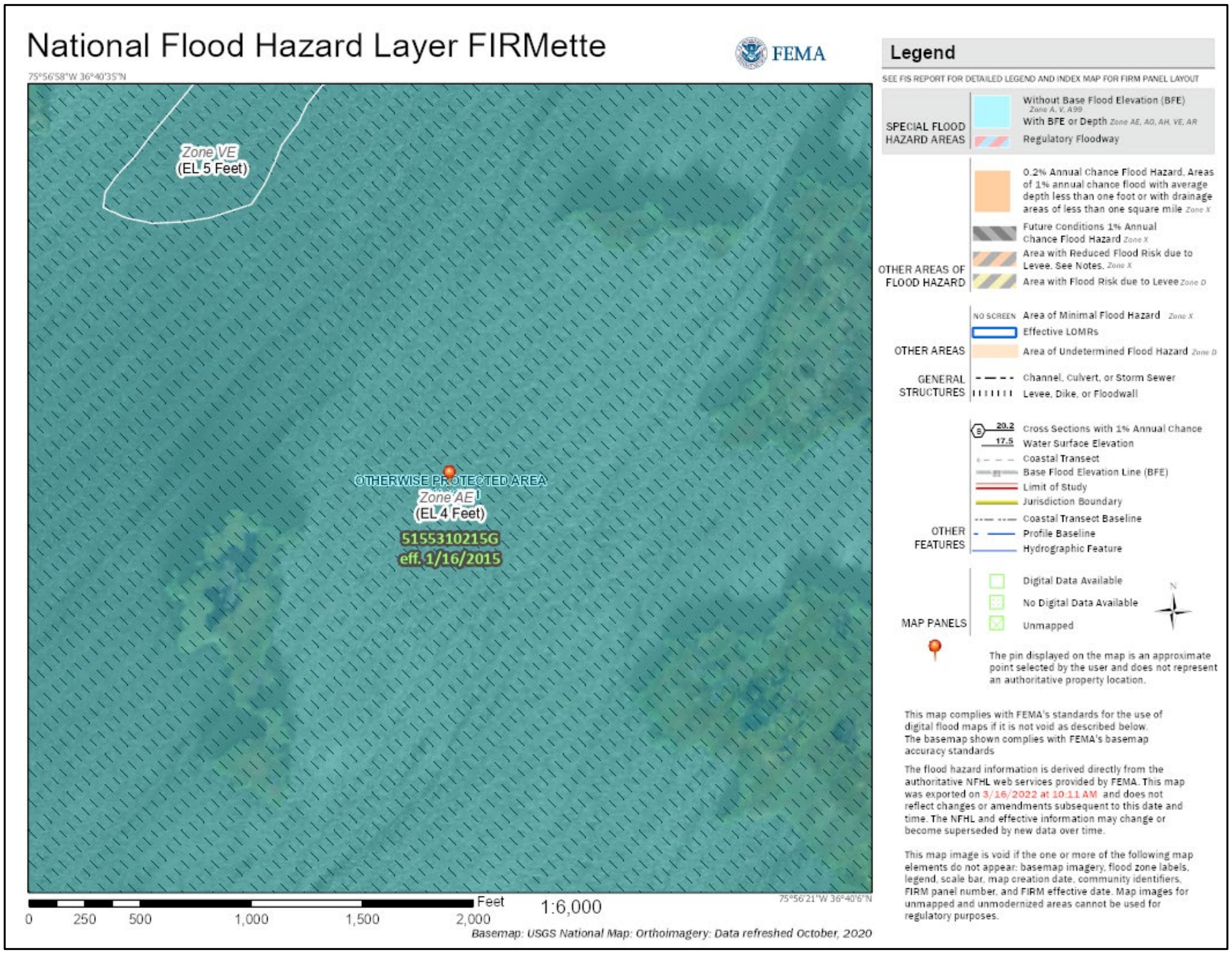
The Virginia Department of Conservation and Recreation Natural Heritage Data Explorer provides data from ConserveVirginia v3.0 and other data to support conservation planning. The following map displays Ecological Cores and the Floodplains and Flooding Resilience Category layer (blue polygon) from ConserveVirginia. The project area contains “High” (C3) and “General” (C5) Ecological Cores and is within the boundaries of the Floodplain and Flooding Resilience area.



e. Project Map 5: FIRMette of the Project Areas

The following maps provide an overview of the existing flood hazards for the project area, including the northern boundary (5A) and southern boundary (5B). Based on the City's current flood maps (effective January 16, 2015), the project site contains VE and AE flood zones and Open Water.

Map 5A – Northern Boundary



National Flood Hazard Layer FIRMette

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

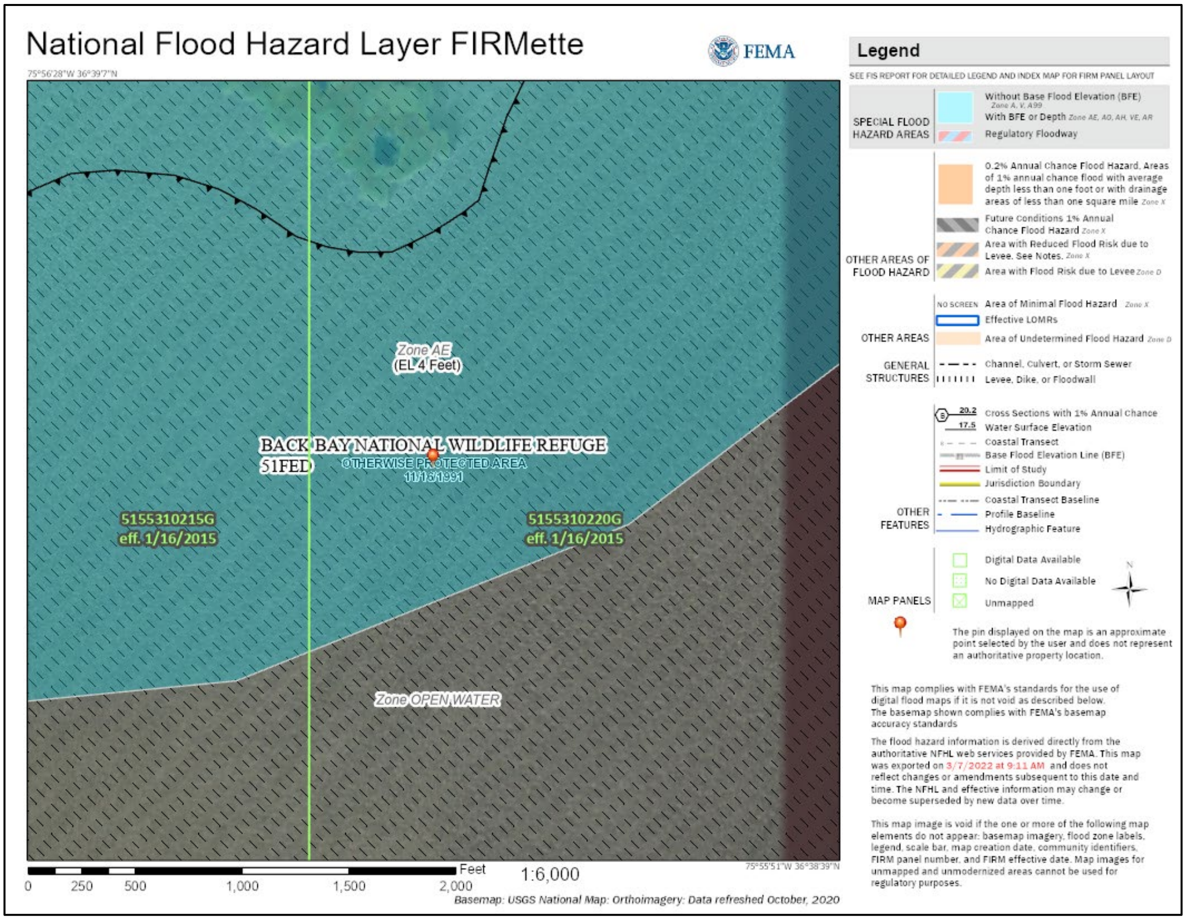
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/16/2022 at 10:11 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Map 5B – Southern Boundary



National Flood Hazard Layer FIRMette

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

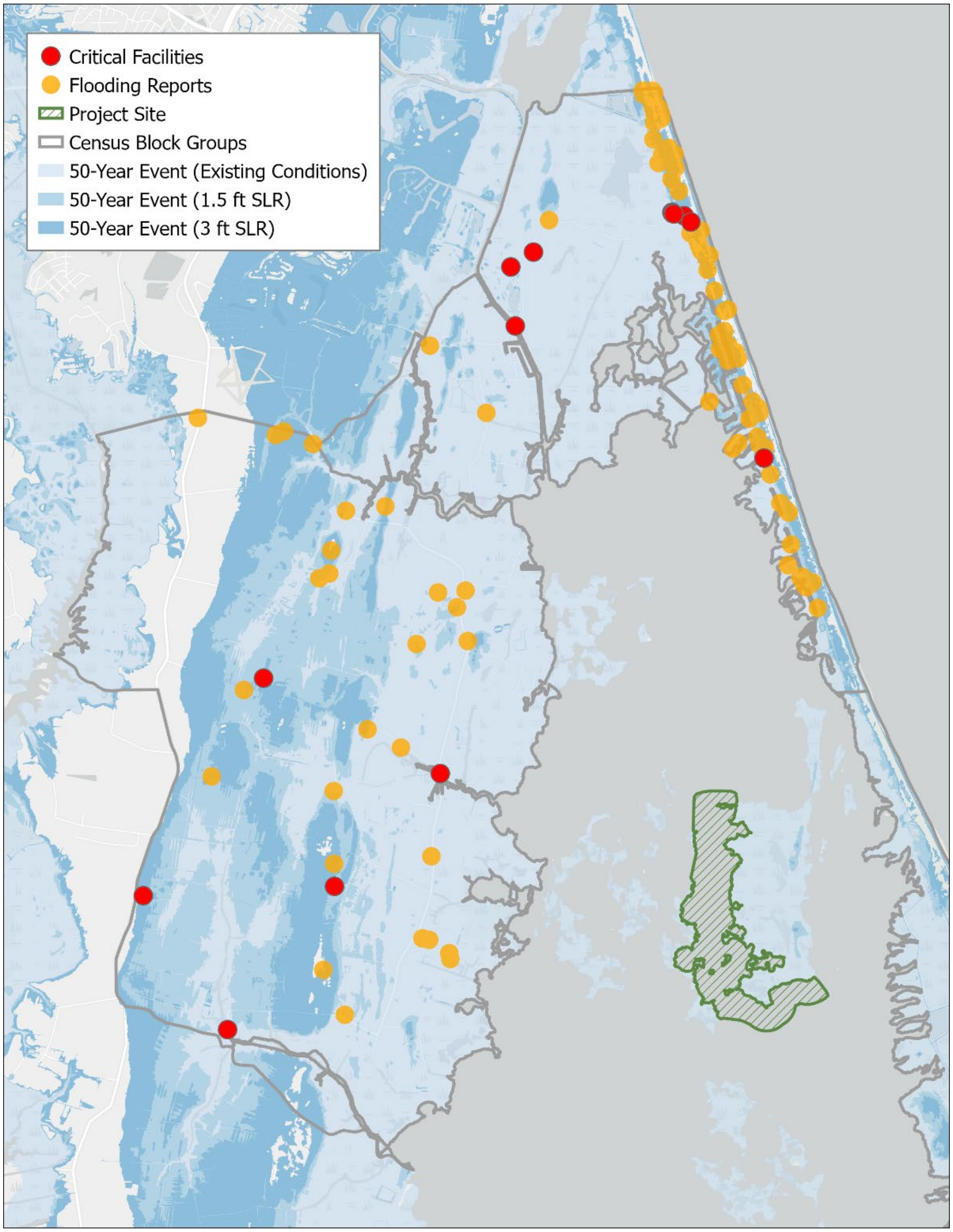
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/7/2022 at 9:11 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

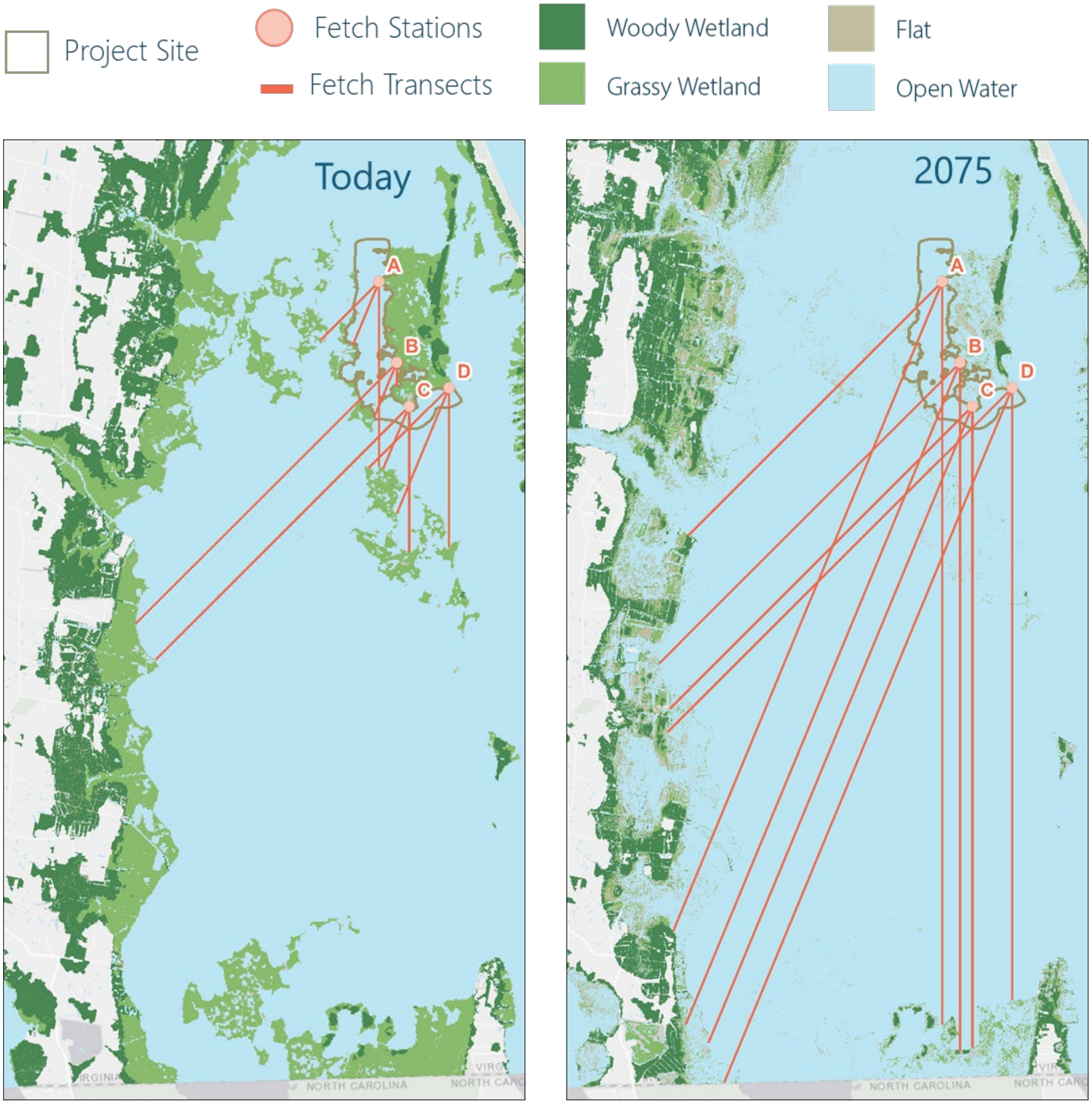
f. Project Map 6: Projected Flood Exposure within Project Areas

The following map highlights the potential flood exposure around the proposed project site during a 50-year storm event under three conditions: existing, 1.5 feet of sea level rise, and 3 feet of sea level rise. The map displays the locations of critical facilities and flood incidents reported by residents between 2001 and 2019 within the two census block groups near the project site. Critical facilities and flood incidences are relatively concentrated in the Sandbridge Resort Area.



g. Project Map 7: Wind Fetch Analysis of Proposed Project Area

The following map displays the transects used for the wind fetch analysis in the project area.



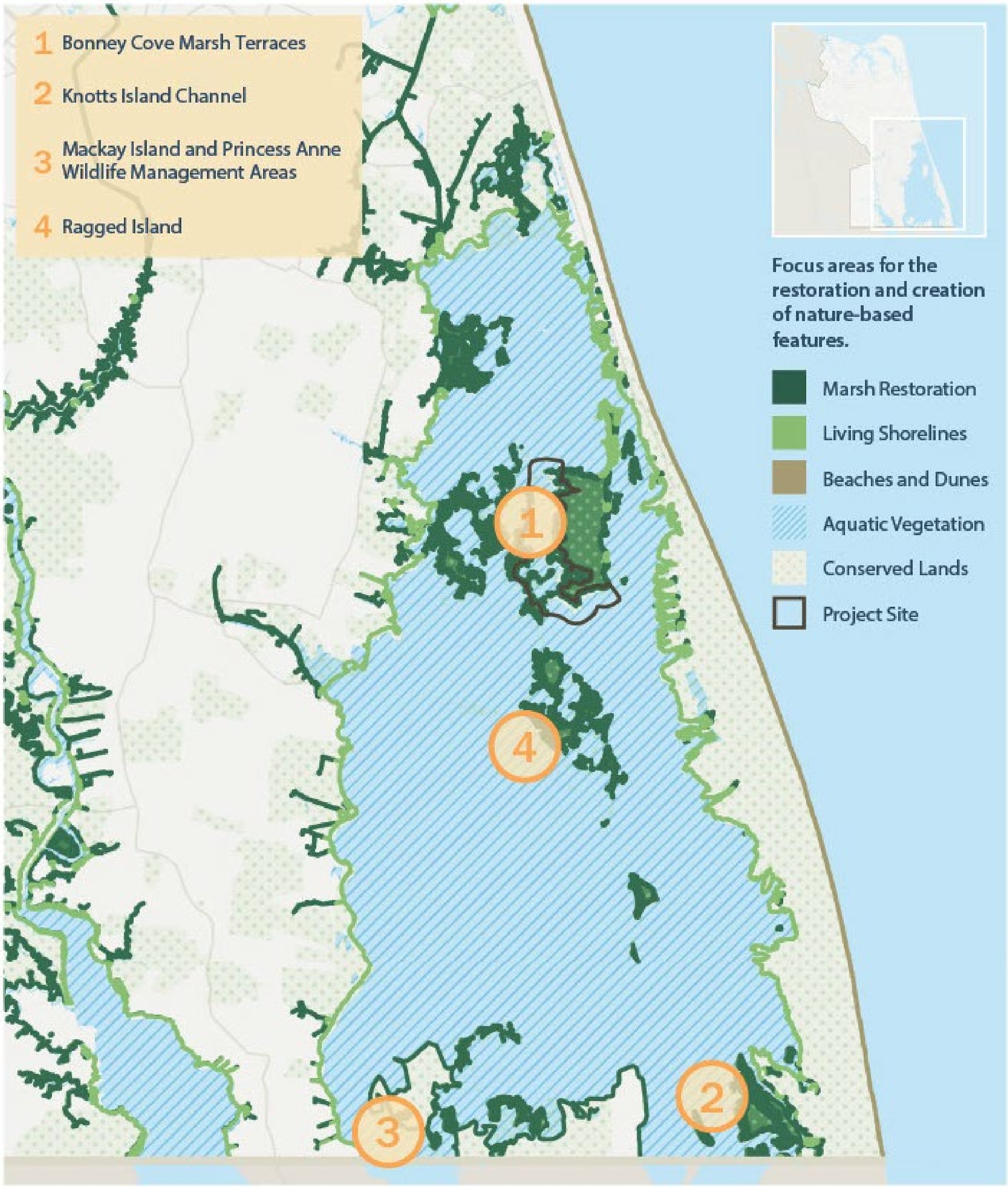
The following table displays specific values of fetch distances and classifications that correspond with the transects displayed in Map 7 above.

Table 8: Measurements of fetch transects referenced in Map 7.

Fetch Transect	Length, Miles (Today)	Classification	Length, Miles (3 feet SLR)	Classification
A-SW	0.9	Low	3.7	High
A-SSW	0.7	Low	7.3	Very High
A-S	1.9	Medium	7.7	Very High
B-SW	3.8	Medium	4.4	High
B-SSW	0.6	Low	7.4	Very High
B-S	0.2	Very Low	7.2	Very High
C-SW	3.7	Medium	4.4	High
C-SSW	0.7	Low	7.2	Very High
C-S	1.5	Medium	6.7	Very High
D-SW	1.2	Medium	5.1	Very High
D-SSW	1.4	Medium	7.8	Very High
D-S	1.7	Medium	6.4	Very High

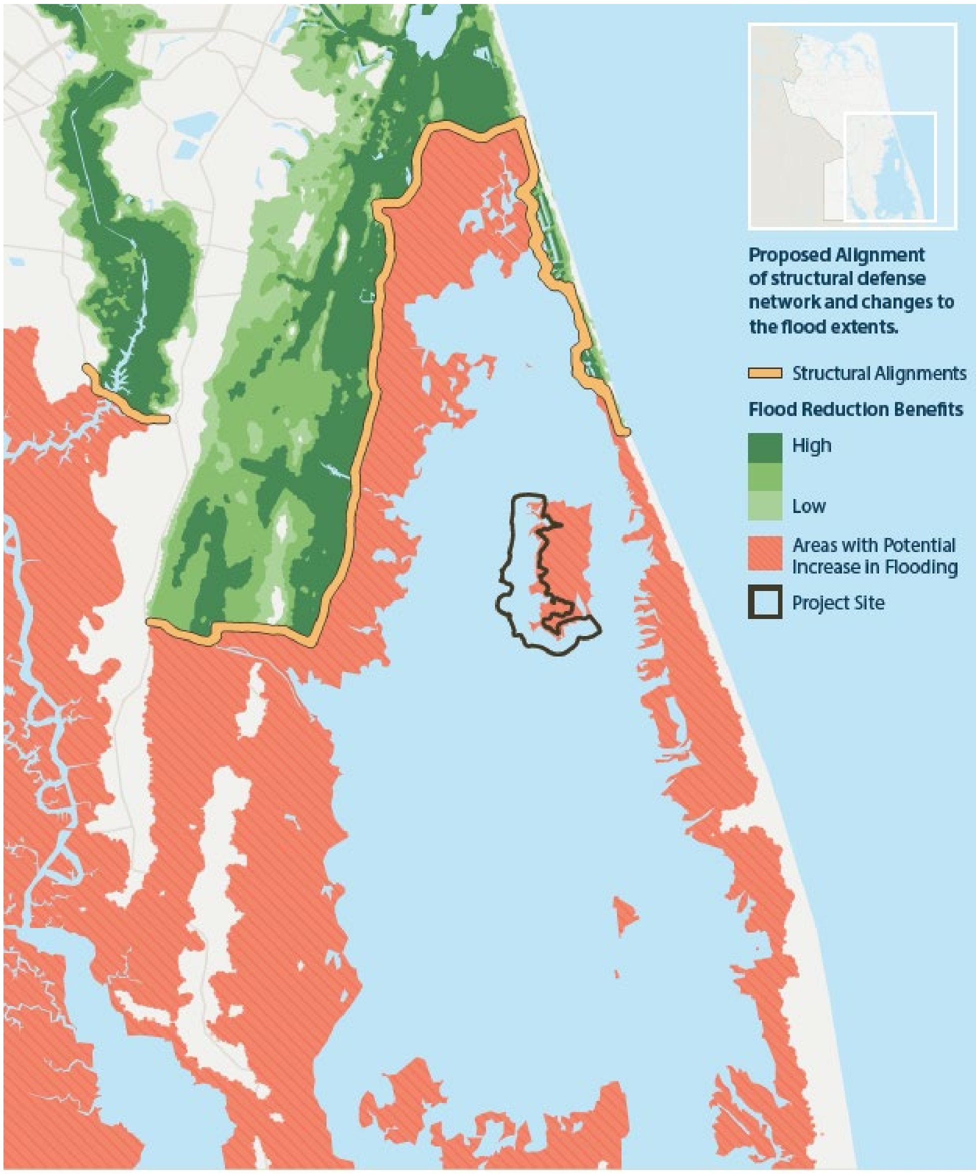
h. Project Map 8: Preliminary Sequencing Restoration Plan

The City has outlined a preliminary sequencing plan for marsh island restoration projects in Back Bay to strategically close hydraulic pathways and address priority restoration areas. Some of these projects would require coordination with the State of North Carolina.



i. Project Map 9: Relationship to Other Projects

Marsh island restoration serves as a critical first line of defense of the multi-layered protection system in the Southern Rivers Watershed. The following map shows the structural adaptation projects proposed for the Southern Rivers Watershed, including the Muddy Creek Road and Sandbridge flood defense systems. The City's numerical modeling shows that, if implemented, there is potential for small increases in flooding outside of these structural protection systems.[12] This emphasizes the need for complimentary measures, including the marsh terrace project, land acquisition, and conservation efforts, to mitigate this residual risk.



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[12] City of Virginia Beach (2020). City-wide Structural Alternatives for Coastal Flood Protection (PDF).

2. Virginia Beach Resilience Plan DCR Approval

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH *of* VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of
Administration and Finance

Russell W. Baxter
Deputy Director of
Dam Safety & Floodplain
Management and Soil & Water
Conservation

Nathan Burrell
Deputy Director of
Government and Community Relations

Thomas L. Smith
Deputy Director of
Operations

July 20, 2021

Toni Utterback, P.E.
Department of Public Works
2875 Sabre Street, Suite 250
Virginia Beach, VA 23452

RE: Virginia Beach Resilience Plan Second Submission - CFPF

Dear Ms. Utterback:

Thank you for the resubmission of the Sea Level Wise Adaptation Plan for City of Virginia Beach. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the June 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on July 31, 2024.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

    a. Project-based: Four watersheds—each with a defined geographic area, analysis of community social and environmental characteristics, types of flooding, and a tailored flood resilience strategy with discrete projects identified.

Projects focused on flood control and resilience include:

Neighborhood	Flood Control Project
Elizabeth River	City-wide alignment, living shoreline, marsh restoration, land conservation
Lynnhaven	Chesapeake Bay alignment, Lesner Bridge Neighborhood alignment (East & West), beach & dune nourishment, ecological revetments, shellfish reef restoration, seagrass restoration
Oceanfront	Atlantic Oceanfront alignment, Rudee Heights alignment
Southern Rivers	West Neck Creek city-wide alignment, Muddy Creek Road city-wide alignment, Sandbridge city-wide alignment

**additional projects listed within the Sea Level Wise Adaptation Strategy.*

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

600 East Main Street, 24th Floor | Richmond, Virginia 23219 | 804-786-6124

State Parks • Soil and Water Conservation • Outdoor Recreation Planning
Natural Heritage • Dam Safety and Floodplain Management • Land Conservation

   a. Nature-based infrastructure: Flood mitigation projects throughout the city incorporate nature-based solutions and were identified for maximum use within specific watersheds.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**
   a. All parts of a locality: Locality divided into four watersheds, covering the entirety of the jurisdictional boundary.
   b. Social vulnerability: Social implications of flood hazards and analysis of populations at-risk documented.
   c. Demographic Analysis: Demographic and Population Vulnerability Analysis conducted by Dewberry and incorporated into the Plan.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**
   a. Coordination with other projects, plans, and activities: Contains the planning processes and frameworks which outline local and regional plans used by the City and address resilience; and how they have been integrated for flood adaptation planning.
   b. Clearly articulated timeline or phasing for plan implementation: Program phases clearly articulated and described in detail—Impact assessment, Adaptation research, Strategy development, and Long-term implementation.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**
   a. Technically backed water-resources analysis, sea level rise projections, storm surge, and climate change incorporated into strategic approach.

VA DCR looks forward to working with you as you work to make Virginia Beach a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl Glover, DCR

3. Authorization to request funding from the Fund from governing body or chief executive of the local government

City of Virginia Beach

VBgov.com

DEPARTMENT OF BUDGET AND MANAGEMENT SERVICES
(757) 385-8234
FAX (757) 385-1857

MUNICIPAL CENTER
BUILDING 1
2401 COURTHOUSE DRIVE
VIRGINIA BEACH, VA 23546-9012

INTER-OFFICE MEMORANDUM

DATE: March 30, 2022

TO: Patrick Duhaney, City Manager

FROM: Kaitlyn James, Budget and Management Services KJ

SUBJECT: **Virginia Community Flood Preparedness Fund Grant – Round III**

The Department of Public Works is requesting permission to submit two applications for the Virginia Community Flood Preparedness Fund Grant from the Virginia Department of Conservation and Recreation. The Virginia Community Flood Preparedness Fund was established in the 2020 session of the General Assembly. Money in this fund comes from the auction of carbon allowances through the Regional Greenhouse Gas Initiative. It was established to provide support to localities across Virginia to reduce the impacts of flooding, including flooding driven by climate change.

The first application is for the First Colonial Road and Oceana Boulevard Stormwater Improvements project in the amount of $1,837,875. This project will provide upgraded stormwater infrastructure to mitigate frequent flooding. First Colonial Road/Oceana Boulevard is a secondary evacuation route and provides one of the primary access roads to Naval Air Station (NAS) Oceana. This project does not require property acquisition since the project is located with the right-of-way or on City property. There is sufficient funding for the fifty percent local match for this grant in CIP 100601, “First Colonial and Oceana Boulevard.”

The second application is for $5,000,000 for a Back Bay Wetlands Restoration project to provide march terraces in Back Bay to promote wetland restoration and reduce frequent flooding. If awarded, the grant will require a local match of $24.1 million. There is sufficient funding within CIP 100551, “Stormwater Green Infrastructure,” which has appropriations to date of $40 million as a result of the bond referendum.

Budget & Management Services recommends this grant application for approval. Please indicate approval or disapproval below. The application due date is April 8, 2022.

3/30/2022
Approve (Date)

N/A
Disapprove (Date)

4. Virginia Beach Floodplain Administrator Support Letter

City of Virginia Beach

VBgov.com

DEPARTMENT OF PLANNING & COMMUNITY DEVELOPMENT
PHONE (757) 385-4621
FAX (757) 385-5667
VA Relay Number TTY: 711

2875 SABRE STREET, SUITE 500
VIRGINIA BEACH, VA 23452-7385

March 31, 2022

Wendy Howard Cooper
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

RE: Community Flood Preparedness Fund – Marsh Terrace Creation, Back Bay

Dear Ms. Cooper:

The proposed project is located in both open water and a Federal Emergency Management Agency (FEMA) mapped Special Flood Hazard Area (SFHA). Hydraulic modeling analysis identified Bonney Cove as a location where marsh restoration has the potential to reduce the propagation of flood water through key pathways within Back Bay. This project aims to stabilize two critically eroding marsh islands that serve as a key flood pathway into northern Back Bay, promote the growth of aquatic vegetation, and provide flood risk reduction benefits to communities in the surrounding area. Within the two census block groups that would benefit from this project, there are 113 repetitive loss and severe repetitive loss properties.

If I can provide any further information or assistance, please call me at 757-385-4621, or e-mail me at wmcnamar@vbgov.com.

Sincerely,

Whitney McNamara

Whitney McNamara, CFM
Floodplain Administrator and CRS Coordinator

5. Copy of the Current Floodplain Ordinance

ORD-3685

AN ORDINANCE TO AMEND SECTIONS 1.1, 1.2, 1.3, 1.8, 2.1, 2.2, 2.3, 2.4, 2.8, 2.11, 3.1, 4.1, 4.2, 4.3, 4.4, 4.6, 4.8, 4.9, 4.10, 5.1, 6.1, AND 6.3 OF APPENDIX K, FLOODPLAIN ORDINANCE OF THE CITY CODE PERTAINING TO HOUSEKEEPING THE DELETION OF PUBLIC WORKS REQUIREMENTS AND THE ADDITION OF A COASTAL A ZONE AND A COASTAL HIGH HAZARD ZONE

Sections Amended: 1.1, 1.2, 1.3, 1.8, 2.1, 2.2, 2.3, 2.4, 2.8, 2.11, 3.1, 4.1, 4.2, 4.3, 4.4, 4.6, 4.8, 4.9, 4.10, 5.1, 6.1, and 6.3 of Appendix K, Floodplain Ordinance

WHEREAS, the public necessity, convenience, general welfare and good zoning practice so require;

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF VIRGINIA BEACH, VIRGINIA:

That Sections 1.1, 1.2, 1.3, 1.8, 2.1, 2.2, 2.3, 2.4, 2.8, 2.11, 3.1, 4.1, 4.2, 4.3, 4.4, 4.6, 4.8, 4.9, 4.10, 5.1, 6.1, and 6.3 of Appendix K, Floodplain Ordinance is hereby amended and reordained to read as follows:

APPENDIX K FLOODPLAIN ORDINANCE

ARTICLE I. GENERAL PROVISIONS

Sec. 1.1. Statutory authorization and purpose.

A. This ordinance is adopted pursuant to the authority granted to localities by Code of Virginia § ~~10.1-600 et seq~~ 15.2-984.

B. The city council finds the purpose of these provisions is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

1. Regulating uses, activities, and development that, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;

2. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;
3. Requiring all uses, activities, and developments that do occur in flood-prone districts be protected or flood-proofed against flooding and flood damage;

4. Protecting individuals from buying land and structures that are unsuited for intended purposes because of flood hazards; and

5. Acknowledging that the tide data over the last one hundred (100) years shows that Virginia Beach is facing an increased danger of flooding caused by both sea level rise and subsidence and has adopted the Sea Level Wise Adaptation Report as part of the Comprehensive Plan.

Sec. 1.2. Applicability.

These provisions shall apply to all privately and publicly owned lands within the jurisdiction of the City of Virginia Beach and identified as areas ~~of special flood hazard~~ at risk of flooding by the City of Virginia Beach or shown ~~according to~~ on the Flood Insurance Rate Map (FIRM) or included on the flood insurance study (FIS) that ~~is~~ are provided to the City of Virginia Beach by the Federal Emergency Management Agency (FEMA) and dated January 16, 2015 ~~or identified as floodplains subject to special restrictions in section 4.10 of this ordinance~~.

Sec. 1.3. Definitions.

. . . .

City manager. The City Manager of the City of Virginia Beach, or his designees.

Design Flood Elevation (regulatory flood protection elevation). The base flood elevation plus the freeboard required by this ordinance.

. . . .

Recreational vehicle. A vehicle that is:

1. Built on a single chassis;
2. Four hundred (400) square feet or less when measured at the largest horizontal projection;
3. Designed to be self-propelled or permanently towable by a light duty truck; and
4. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

~~*Regulatory flood protection elevation (design flood elevation)*. The base flood elevation plus the freeboard required by this ordinance.~~

. . . .

Sec. 1.8. Penalty for violations.

Any person who fails to comply with any of the requirements or provisions of this ordinance or directions of the ~~d~~Directors of ~~p~~Planning ~~or public works~~ or any authorized employee of the City of Virginia Beach shall be guilty of the appropriate violation and subject to the penalties therefore. Any violation of the provision of this ordinance shall be punishable by a fine of not more than one hundred dollars ($100.00). Each person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of this ordinance is committed.

The Virginia Uniform Statewide Building Code (VA USBC) addresses building code violations and the associated penalties in ~~section 104 and section 115~~ VA USBC § 104 and § 115. Violations and associated penalties of the Zoning Ordinance for the City of Virginia Beach are addressed in § 104 of the Zoning Ordinance.

In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this ordinance. The imposition of a fine or penalty for any violation of, or noncompliance with, this ordinance shall not excuse the violation or noncompliance or permit it to continue, and all such persons shall be required to correct or remedy such violations within a reasonable time. Any structure constructed, reconstructed, enlarged, altered, or relocated in noncompliance with this ordinance may be declared by the City of Virginia Beach to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this ordinance.

ARTICLE II. ADMINISTRATION

Sec. 2.1. Designation of the floodplain administrator.

The City Manager of the City of Virginia Beach is hereby appointed the floodplain administrator to administer and implement this ordinance. The floodplain administrator has delegated the duties and responsibilities set forth in this ordinance to the ~~departments of public works and planning, as specified below~~ Department of Planning and Community Development.

Sec. 2.2. Duties and responsibilities of the ~~department of public works~~ floodplain administrator or his designee.

The duties and responsibilities of the ~~department of public works~~ floodplain administrator of his designee shall include but are not limited to:

A. Interpreting floodplain boundaries and providing available base flood elevation and flood hazard information;

B. Verifying that applicants proposing an alteration of a watercourse have notified adjacent communities, the department of conservation and recreation (division of dam safety and floodplain management), and other appropriate agencies (Virginia Department of Environmental Quality (VADEQ), United States Army Corps of Engineers (USACE), etc.) and have submitted copies of such notifications to FEMA;

C. Advising applicants for new construction or substantial improvement of structures that are located within an area of the coastal barrier resources system established by the Coastal Barrier Resources Act that Federal flood insurance is not available on such structures; areas subject to this limitation are shown on FIRMs as coastal barrier resource system areas or otherwise protected areas;

D. Submitting to FEMA, or requiring applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the city, within six (6) months after such data and information becomes available if the analyses indicate changes in base flood elevations;

E. Maintaining and permanently keeping records that are necessary for the administration of these regulations, including:

1. ~~flood~~ Flood insurance studies, FIRMs (including historic studies and maps and current effective studies and maps) and letters of map change; and

2. Documentation supporting issuance and denial of permits, Elevation Certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been floodproofed, inspection records, other required design certifications, variances, and records of enforcement actions taken to correct violations of these regulations.

F. Notifying FEMA when the corporate boundaries of the City of Virginia Beach have been modified and:

    1. Providing a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to this ordinance has either been assumed or relinquished through annexation; and

    2. If the FIRM for any annexed area includes SFHAs that have flood zones with regulatory requirements that are not set forth in this

ordinance, prepare amendments to this ordinance to adopt the FIRM and appropriate requirements, and submit the amendments to the city council for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended ordinance shall be provided to the department of conservation and recreation (division of dam safety and floodplain management) and FEMA.

G. Upon the request of FEMA, completing and submitting a report concerning participation in the NFIP, which may request information regarding the number of buildings in the SFHA, the number of permits issued for development in the SFHA, and the number of variances issued for development in the SFHA.

H. Reviewing applications for permits to determine whether proposed activities will be located in the SFHA;

I. Reviewing applications to determine whether proposed activities will be reasonably safe from flooding and requiring new construction and substantial improvements to meet the requirements of this ordinance;

J. Reviewing applications to determine whether all necessary permits have been obtained from the federal, state, or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the SFHAs of free-flowing non-tidal waters of the state;

K. Approving applications and issuing permits to develop in flood hazard areas if the provisions of this ordinance have been met, or disapproving applications if the provisions of this ordinance have not been met;

L. Granting administrative variances pursuant to section 6.1 of this ordinance;

M. Inspecting, or causing to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with this ordinance or to determine if non-compliance has occurred or violations have been committed;

N. Reviewing elevation certificates and requiring incomplete or deficient certificates to be corrected;

O. Maintaining and permanently keeping documentation supporting the issuance and denial of permits, elevation certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been flood proofed, and other required design certifications, variances, and records of enforcement actions taken to correct violations of this ordinance;

P. Enforcing the provisions of this ordinance, investigating violations, issuing notices of violations or stop work orders, and requiring permit holders to take corrective action;

Q. Advising the city council regarding the intent of this ordinance and, for each application for a variance, preparing a staff report and recommendation; and

R. Administering the requirements related to proposed work on existing buildings:

1. Making determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged; and

2. Making reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.

S. Undertaking, as determined appropriate by the floodplain administrator due to the circumstances, other actions that may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other federal, state, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in SFHAs; and assisting property owners with documentation necessary to file claims for increased cost of compliance coverage under National Flood Insurance Program (NFIP) flood insurance policies; and

T. It is the duty of the city floodplain administrator to take into account flood, mudslide, and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the city, whether or not those hazards have been specifically delineated geographically (e.g., via mapping or surveying).

~~Sec. 2.3. Duties and responsibilities of the department of planning.~~ Reserved.

~~The duties and responsibilities of the department of planning shall include but are not limited to:~~

~~A.~~ ~~Reviewing applications for permits to determine whether proposed activities will be located in the SFHA;~~

~~B.~~ ~~Reviewing applications to determine whether proposed activities will be reasonably safe from flooding and requiring new construction and substantial improvements to meet the requirements of this ordinance;~~

~~C.~~ ~~Reviewing applications to determine whether all necessary permits have been obtained from the federal, state, or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the SFHAs of free-flowing non-tidal waters of the state;~~

~~D.~~ ~~Approving applications and issuing permits to develop in flood hazard areas if the provisions of this ordinance have been met, or disapproving applications if the provisions of this ordinance have not been met;~~

~~E.~~ ~~Granting administrative variances pursuant to section 6.1 of this ordinance;~~

~~F.~~ ~~Inspecting, or causing to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with this ordinance or to determine if non-compliance has occurred or violations have been committed;~~

~~G.~~ ~~Reviewing elevation certificates and requiring incomplete or deficient certificates to be corrected;~~

~~H.~~ ~~Maintaining and permanently keeping documentation supporting the issuance and denial of permits, elevation certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been flood proofed, and other required design certifications, variances, and records of enforcement actions taken to correct violations of this ordinance;~~

~~I.~~ ~~Enforcing the provisions of this ordinance, investigating violations, issuing notices of violations or stop work orders, and requiring permit holders to take corrective action;~~

~~J.~~ ~~Advising the city council regarding the intent of this ordinance and, for each application for a variance, preparing a staff report and recommendation; and~~

~~K.~~ ~~Administering the requirements related to proposed work on existing buildings:~~

  ~~1.~~ ~~Making determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged; and~~
  ~~2.~~ ~~Making reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.~~

~~Sec. 2.4. Shared duties and responsibilities.~~ Reserved.

~~The duties and responsibilities shared by the departments of public works and Planning shall include but are not limited to:~~

~~A.~~ ~~Undertaking, as determined appropriate by the floodplain administrator due to the circumstances, other actions that may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other federal, state, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in SFHAs; and assisting property owners with documentation necessary to file claims for increased cost of compliance coverage under National Flood Insurance Program (NFIP) flood insurance policies; and~~

~~B.~~ ~~It is the duty of the city floodplain administrator to take into account flood, mudslide, and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the city, whether or not those hazards have been specifically delineated geographically (e.g., via mapping or surveying).~~

. . . .

Sec. 2.8. Interpretation of district boundaries.

Initial interpretations of the boundaries of the floodplain districts shall be made by the floodplain administrator. Should a dispute arise concerning the boundaries of any of the districts~~, the city council shall make the necessary determination. The person questioning or contesting the location of the district boundary shall be given a reasonable opportunity to present his case to the city council and to submit his own technical evidence if he so desires~~ a surveyor shall provide either an elevation certificate or recent survey showing topographic elevations and delineating the Special Flood Hazard Area.

. . . .

Sec. 2.11. Appeals to decisions made by the floodplain administrator.

It is further provided that any decision of the floodplain administrator or his designee may be modified, reversed, or affirmed by the city council upon appeal by any aggrieved party to such decision, if such appeal is filed with the floodplain administrator within thirty (30) days of such decision through the application for a Floodplain Variance outlined in Section VI of this ordinance.

ARTICLE III. ESTABLISHMENT OF FLOODPLAIN DISTRICTS

Sec. 3.1. Description of floodplain districts.

A. Special flood hazard areas (SFHA). The SFHAs shall include land in the floodplain subject to a one (1) percent or greater chance of being flooded in any given year. The basis for the delineation of these districts shall be the FIS and the FIRM for the City of Virginia Beach prepared by FEMA, Federal Insurance Administration, dated January 16, 2015, and any subsequent revisions or amendments thereto.

The boundaries of the SFHAs are established as shown on the FIRM, which is declared to be a part of this ordinance and shall be kept on file at the City of Virginia Beach Department of ~~Public Works~~ Planning and Community Development, and include the following districts:

1. The Floodway District is in an AE Zone and is delineated, for the purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one (1) percent annual chance flood without increasing the water surface elevation of that flood more than one (1) foot at any point. The areas included in this district are specifically defined in Table 7 of the above-referenced FIS and shown on the accompanying FIRM.

2. The AE or AH Zones on the FIRM accompanying the FIS shall be those areas for which one (1) percent annual chance flood elevations have been provided and the floodway has not been delineated.

3. The A Zone on the FIRM accompanying the FIS shall be those areas for which no detailed flood profiles or elevations are provided, but the one (1) percent annual chance floodplain boundary has been approximated.

4. The AO Zone on the FIRM accompanying the FIS shall be those areas of shallow flooding identified as AO on the FIRM.

5. ~~Reserved.~~ The Coastal A Zone on the FIRM accompanying the FIS shall be those areas labeled as AE and are located seaward of the limit of moderate wave action (LiMWA) line.

6. The VE or V Zones on FIRMs accompanying the FIS shall be those areas that are known as coastal high hazard areas, extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storm or seismic sources.

B. ~~Floodplain subject to special restrictions~~ *Local Flood Hazard Areas*. The City of Virginia Beach may identify and regulate local flood hazard or ponding areas that are not delineated on the FIRM. These areas are ~~identified in section 4.10 and may be delineated on a map using best available topographic data and locally derived information such as flood of record, historic high water marks, or approximate study methodologies~~ identified as follows:~~.~~

a. *Other areas of flood risk*. The X and the X(Shaded) Zone on the FIRM where the City of Virginia Beach Stormwater Master Plan has identified areas, outside SFHAs delineated on the FIRM, that area susceptible to flooding. The most recent updated version of the modeling shall be used to identify areas that are likely to experience flooding.

b. *Floodplain Subject to Special Restrictions*. The Floodplain Subject to Special Restrictions is identified in section 4.10 and includes areas in the southern part of the city which are characterized by wind tides, low topography, and poorly draining soils.

ARTICLE IV. FLOODPLAIN DISTRICT PROVISIONS

Sec. 4.1. Permit and application requirements.

. . . .

B. Site plans and permit applications. All applications for development within any floodplain district and all building permits issued within ~~the~~ any floodplain district shall incorporate the following information:

1. For any addition, conversion of any non-habitable space to habitable space, or the construction or installation of a new accessory structure that requires a building permit.

   a. A physical survey, performed after the effective date of the FIRM that:

      i. accurately depicts current improvements on the property;
      ii. provides a flood zone determination and BFE or flood depth at the stie; and
      iii. delineates the location of the flood zones on the property.

   b. For structures located in the SFHA delineated on the FIRM, a current elevation certificate sealed by a licensed design professional.

2. For new construction and any substantial improvement of the principal structure:

   a. a proposed site plan sealed by a registered design professional that provides:

      ~~1~~i. The elevation of the base flood at the site;

      ~~2~~ii. The elevation of the lowest floor (including basement) or, in V Zones, the lowest horizontal structural member;

      ~~3~~iii. For structures to be flood-proofed (non-residential only), the elevation to which the structure will be flood-proofed; and

      4iv. Topographic information showing existing and proposed ground elevations.

Sec. 4.2. General standards.

. . . .

5. Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities, including duct work, shall be designed and/or ~~located so as to prevent water from entering or accumulating within the components during conditions of flooding~~ or above the design flood elevation.

6. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

7. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

8. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

9. No use shall be permitted if such use will increase the amounts of potentially damaging materials, including those likely to be injurious to health, that might be transported in floods.

10. For properties located in SFHAs delineated on the FIRM, an elevation certificate and, if applicable, a flood-proofing certificate shall be provided to the Floodplain Administrator prior to any foundation inspection, final inspections, and the issuance of any certificates of occupancy, in order to assure compliance with these floodplain regulations.

11. Prior to any proposed alteration or relocation of any channels or of any watercourse or stream within the city, a permit shall be obtained from the USACE, VADEQ, the Virginia Marine Resources Commission, and the Wetlands Board through the joint permit application process. Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the department of conservation and recreation (division of dam safety and floodplain management), other required agencies, and FEMA.

12. The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

~~B.~~ ~~In all SFHAs, the following additional provisions shall apply:~~

~~1.~~ ~~Prior to any proposed alteration or relocation of any channels or of any watercourse or stream, within the city a permit shall be obtained from the USACE, VADEQ, the Virginia Marine Resources Commission, and the Wetlands Board through the joint permit application process. Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the department of conservation and recreation (division of dam safety and floodplain management), other required agencies, and FEMA.~~

~~2.~~ ~~The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.~~

~~3. Sand dunes, barrier beaches, and other natural protective barriers shall remain intact to provide protection against wind, waves, and erosion drainage. Any person who desires to use or alter any coastal primary sand dune, other than for the purpose of conducting the activities specified in section 1602 of the Zoning Ordinance of the City of Virginia Beach, shall first obtain a permit from the USACE, VADEQ, the Virginia Marine Resources Commission, and the Wetlands Board through the joint permit application process.~~

Sec. 4.3. Elevation and construction requirements.

In all ~~SFHAs where base flood elevations have been provided in the FIS or generated by a licensed professional in accordance with section 4.6 of this ordinance~~ floodplain districts, with the exception of Coastal A and Coastal High Hazard (VE) zones, the following provisions shall apply:

A. Residential construction requirements. ~~New construction or substantial improvement of any residential structure or manufactured home in Zones AE, AH, and A with detailed base flood elevations shall have the lowest floor, including basement, elevated to a minimum of two (2) feet above the base flood level.~~ The lowest flood, including basement, shall be set to the higher of the following:

i. A minimum of two (2) feet above the base flood elevation established on the most recent FIRM or by the most recent FIS or,

ii. A minimum of one (1) foot above the 100-year HGL elevation measured at the nearest existing or proposed public drainage structure or BMP, in the City Stormwater Master Plan.

B. Non-residential construction requirements. New construction or substantial improvement of any commercial, industrial, or non-residential building or manufactured home shall have the lowest floor, including basement, elevated as ~~minimum of two (2) feet above the base flood level~~ established in Section 4.3 A of this ordinance. Buildings ~~located in AE or AH Zones~~ may be flood-proofed in lieu of being elevated provided that all areas of the building components below the ~~elevation corresponding to the base flood elevation plus a minimum of two (2) feet freeboard~~ design flood elevation are watertight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A professional engineer or architect licensed by the Commonwealth of Virginia shall certify that the standards of this subsection are satisfied. Such certification, including the specific elevation (in relation to NAVD88) to which such structures are flood proofed, shall be maintained by the building official.

C. ~~Space below the lowest floor requirements. In Zones A, AE, AH, and AO,~~ ~~f~~Fully enclosed areas of new construction or substantially improved existing structures that are below the ~~regulatory~~ design flood protection elevation shall:

1. Not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door), limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

2. Be constructed entirely of flood resistant materials below the ~~regulatory~~ design flood ~~protection~~ elevation.

3. Space below the lowest floor of SFHAs delineated on the FIRM shall ~~I~~include measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings shall either be certified by a professional engineer or architect licensed by the Commonwealth of Virginia or meet or exceed the following minimum design criteria:

. . . .

Sec. 4.4. Floodway requirements.

. . . .

B. The placement of new or replacement manufactured homes (mobile homes) is prohibited.

~~C.~~ ~~The following uses and structures may be permitted in the floodway district, subject to the requirements of articles III, IV, V, and VI of this ordinance:~~

~~1.~~ ~~Public and private outdoor recreational facilities;~~

~~2.~~ ~~Agricultural uses, including farming, grazing, and the raising of poultry or livestock; provided, that poultry or livestock shall not be housed within five hundred (500) feet of any residential, apartment, or hotel district;~~

~~3.~~ ~~Open uses, such as public and private roadways, off street parking, or loading and unloading areas related to uses in adjoining districts;~~

~~4.~~ ~~Commercial mining, soil removal, and sand pits subject to regulations applicable to extractive industries as set forth in the conditional use provisions of the Zoning Ordinance of the City of Virginia Beach;~~

~~5.~~ ~~Public improvements, such as dams, levees and channel improvements, and utilities installations and substations, including temporary storage of materials, except flammable, toxic or noxious materials, and temporary location of maintenance installations; and~~

~~6.~~ ~~Uses and structures customarily accessory and clearly incidental and subordinate to uses listed above, including in connection with agricultural uses; roadside stands for the sale of agricultural products produced on the premises; provided that:~~

  ~~a.~~ ~~Only one (1) such stand shall be permitted per lot;~~

  ~~b.~~ ~~No such stand shall exceed five hundred (500) square feet in floor area; and~~

  ~~c.~~ ~~No such stand on the street frontage shall be erected within twenty (20) feet of the property line.~~

. . . .

Sec. 4.6. A Zone requirements.

. . . .

B. The floodplain administrator reserves the right to require a hydrologic and hydraulic analysis for any development and to determine the base flood elevation. When such base flood elevation data is utilized, the lowest floor shall be elevated to minimum of two (2) feet above the base flood level. During the permitting process, the floodplain administrator shall obtain:

  1. The elevation of the lowest floor (including the basement) of all new and substantially improved structures; and

  2. If the structure has been flood-proofed in accordance with the requirements of this ordinance, the elevation (in relation to NAVD88) to which the structure has been flood-proofed.

~~C.~~ ~~When the data is not available from any source, the lowest floor of the structure shall be elevated to not less than two (2) feet above the highest adjacent grade.~~

Sec. 4.8. ~~Reserved~~ X and X(Shaded) Zone requirements. (Other Areas of Flood Risk).

A. *Residential construction requirements*. The lowest floor, including basements, shall be set to a minimum of one (1) foot above the 100-year HGL elevation measured at the nearest existing or proposed public drainage structure or BMP, in the City Stormwater Master Plan.

B. *Non-residential construction requirements*. New construction or substantial improvement of any commercial, industrial, or non-residential building or manufactured home shall have the lowest floor, including basement, elevated as established in Section 4.8 A of this ordinance above. Buildings may be flood-proofed in lieu of being elevated provided that all areas of the building components below the design flood elevation are watertight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A professional engineer or architect licensed by the Commonwealth of Virginia shall certify that the standards of this subsection area satisfied. Such certification, including the specific elevation (in relation to NAVD88) to which such structures are flood proofed, shall be maintained by the building official.

Sec. 4.9. – Coastal High Hazard (~~V and~~ VE Zone) requirements.

The following provisions shall apply within ~~V and VE Zones~~ Coastal A Zones and Coastal High Hazard Areas:

A. All new construction and substantial improvements, including to manufactured homes, shall be elevated on pilings or columns so that:

1. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to a minimum of ~~two~~ three (~~2~~3) feet above the base flood ~~level~~ elevation; and

2. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Wind and water loading values shall each have a one (1) percent chance of being equaled or exceeded in any given year.

B. A professional engineer or architect licensed by the Commonwealth of Virginia shall develop or review the structural design, specifications, and plans for the construction and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of article IV, section 4.6 A. A V Zone

Design Certificate shall be submitted to Permits and Inspections with plans for a building permit.

. . . .

I. ~~The man-made alteration of sand dunes, which would increase potential flood damage, is prohibited.~~ Sand dunes, barrier beaches, and other natural protective barriers shall remain intact to provide protection against wind, waves, and erosion drainage. Any person who desires to use or alter any coastal primary sand dune or beaches, other than for the purpose of conducting the activities specified in Article 1600, Section 1602 of the Zoning Ordinance of the City of Virginia Beach, shall first obtain a permit, or authorization, from the USACE, VADEQ, the Virginia Marine Resources Commission, and the Wetlands Board through the joint permit application process.

J. Manufactured homes are prohibited.

Sec. 4.10. Floodplain subject to special restrictions.

A. All ~~FIRM delineated~~ SFHAs that ultimately drain to Back Bay or the Currituck Sound ~~located in the following areas~~ shall be identified as a floodplain subject to special restrictions~~:~~.

~~1. North Landing River and its tributaries south of Lynnhaven Parkway;~~

~~2. West Neck Creek and its tributaries south of Shipps Corner Road, London Bridge Road, and the portion of Dam Neck Road east of its intersection with London Bridge Road; and~~

~~3. Bays, creeks, lakes, guts, coves, wetlands, marshes and swamps and their tributaries comprising the Back Bay and Small Coastal South watersheds south of South Birdneck Road and east of Princess Anne Road and General Booth Boulevard.~~

B. The following provisions shall apply within the floodplain subject to special restrictions:

1. Notwithstanding any provision of this ordinance to the contrary, no filling shall be permitted, including filling with material excavated from the same floodplain except for:

a. The purpose of public roadway or other similar public works construction undertaken by the Department of Public Works or Virginia Department of Transportation, or their agent for construction. This construction includes flood protection and flood mitigation projects;

b. The maintenance, alteration, or relocation of bona fide agricultural ditches, swales, or agricultural pathways or those ditches required for proper lot drainage;

c. For shoreline stabilization or maintenance projects, such as riprap revetment, bulkheads, or other treatment used to stabilize and protect the banks of waterways, the city manager or his designee may approve the placement of fill provided the following criteria are met:

i. A joint permit application is submitted;

ii. The alignment of the stabilization structure is along the escarpment or in line with adjacent stabilization structures; ~~and~~

iii. If there is an existing shoreline stabilization structure, any proposed replacement structure shall be no more than six (6) inches higher than the existing structure; and

~~iii~~iv. Fill must be the minimum necessary to support the stabilization project.

2. The city manager, or his designee, may approve the placement of fill provided that the following criteria are met:

a. Proposed fill within the floodplain:

i. Shall be mitigated to result in no decrease in flood storage volume on the site;

ii. Shall be mitigated entirely on the same site that will incur the fill;

iii. Shall be contiguous to the existing floodplain that is being filled; and

iv. Shall be limited to the smallest amount of area and volume possible to correct irregularities within the boundary of the project.

b. The combined areas of fill and mitigation shall not exceed five (5) percent of the total area within the floodplain located on the site that will incur the fill.

3. Residential dwelling structures shall not be located within the floodplains subject to special restrictions on lots created after October 23, 2001. Residential dwelling structures located in ~~local flood hazard areas as of~~ a SFHA and constructed prior to October 23, 2001 may be expanded with attached additions to a total footprint of less than one thousand (1,000) square feet; such additions shall also comply with the requirements set forth in article V of this ordinance.

. . . .

ARTICLE V. EXISTING STRUCTURES IN FLOODPLAIN AREAS

Sec. 5.1. Existing structures.

A structure or use of a structure or premises that lawfully existed prior to the adoption of this ordinance, but which is not in conformity with this ordinance, may be continued subject to the following conditions:

A. Any existing structures in the floodway area shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion or enlargement would not result in any increase in the base flood elevation.

B. Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain ~~areas~~ district to an extent or amount of less than fifty (50) percent of its market value shall conform to the VA USBC and meet the freeboard height in effect at the start of construction for the original structure.

C. Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, in any floodplain ~~area~~ district to an extent or amount of fifty (50) percent or more of its market value shall be undertaken only in full compliance with this ordinance and shall require the entire structure to conform to the VA USBC.

ARTICLE VI. VARIANCES AND APPEALS

Sec. 6.1. Administrative variances.

The floodplain administrator shall approve or deny an application requesting an administrative variance after receipt of a complete application. Administrative variances may only be granted for the following uses, development, or redevelopment:

A. As defined in section 4.10, floodplains subject to special restrictions, for filling only.

B. Any structure or use sustaining damage not caused by flood to an extent or amount of fifty (50) percent or more of its market value to allow the structure to be rebuilt to the freeboard height in effect at the start of construction for the original structure. If the structure is a pre-FIRM structure, full compliance with the current VAUSBC freeboard above the base flood elevation is required. Structures that are utilizing an approved land management plan for their on-site waste disposal may be allowed to continue the use of the land management plan as long as it is approved by the city and the health department, even for damage or destruction resulting from flood.

C. As defined in section 4.8 B, X and X(Shaded) Zone requirements. (Other Areas of Flood Risk), and 4.3 A(ii) when the required finished floor is higher than the BFE plus two feet of freeboard, where the floodplain administrator, in consultation with the Development Services Center, has determined that the proposed stormwater engineering design will approximately mitigate any impacts to the finished floor of the nonresidential development.

Sec. 6.3. Application process.

A. Applications for variances from the requirements of this ordinance shall be made to the city council and filed with the director of planning. The fee for such applications shall be ~~six hundred fifty dollars~~ seven hundred eighty ($~~650~~780.00). Such fee shall include all costs of notifications and advertising. Except in cases in which such fee is waived, the director shall not accept any application not accompanied by payment of the required fee. The procedure for the advertising, hearing and determination of applications for floodplain variances shall be in accordance with the requirements pertaining to applications for subdivision variances, as set forth in section 9.4 of the subdivision ordinance. In cases in which a variance application is filed by reason of a natural disaster that is the subject of a federal declaration of emergency, application and associated advertising fees shall be waived and such application shall be given expedited processing to the maximum practical extent.

B. All applications shall be accompanied by the following:

1. A separate map, on a 1″ = 100′ or greater scale, identifying all proposed land disturbance, including fill and mitigation areas, and the limits of the existing and proposed SFHAs, tidal and non-tidal wetlands, Southern Rivers Watershed Management Area Buffer, and CBPA Resource Protection Area Buffer; and

2. A preliminary floodplain study addressing the physical and environmental characteristics of the floodplain located on adjoining properties and in the general area. Such study shall be sufficient to show that the variance, if granted, will meet the standards defined in section 6.~~3~~4 and in addition thereto, shall:

   a. Contain supporting data and calculations required for a Preliminary Stormwater Engineering Analysis as appropriate~~,~~ ~~given the preliminary nature of the floodplain study~~;

   b. Comply with the Public Works Design Standards Manual; and

   c. Be certified by a professional engineer, architect, surveyor, landscape architect or practitioner of a related field having a valid license issued by the Commonwealth of Virginia or who is exempt from licensure pursuant to applicable provisions of the Virginia Code.

Adopted by the Council of the City of Virginia Beach, Virginia, on the 1st day of February, 2022.

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

City of Virginia Beach CFPF Round 3 Submission

1 message

Stanley F. Smith Jr. <SFSmitJr@vbgov.com> Wed, Apr 6, 2022 at 1:55 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Hello,

Please find attached two CFPF project submission packages for the City of Virginia Beach:

- CID515531_VirginiaBeach_CFPF-1: *March Terrace Creation in Back Bay*
- CID515531_VirginiaBeach_CFPF-2: *First Colonial Road and Oceana Boulevard Stormwater Improvements*

All necessary application forms and required documents for each project are located within the pdfs. Please let us know if you have any questions or require further information. Thank you in advance for your consideration of these projects.

Thanks,

Stanley

Stanley Smith, Jr., P.E.

City of Virginia Beach

Public Works Engineering

484 Viking Drive

Virginia Beach, VA 23452

(Direct) 757-385-8459 **|** sfsmitjr@vbgov.com

2 attachments

CID515531_VirginiaBeach_CFPF-1.pdf
6926K

CID515531_VirginiaBeach_CFPF-2.pdf

6001K

Attachment 1
CID515525_FairfaxCounty_CFPF-1 (Tucker)

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Fairfax County

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

X **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 515525

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bryan J. Hill, County Excutive

Signature of Authorized Official:

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 552

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-2531 **Cell Phone Number:** (___) N/A

Email Address: cexbryanhill@fairfaxcounty.gov

Contact Person (If different from authorized official): Craig Carinci

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 449

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-5500 **Cell Phone Number:** ( ) N/A

Email Address: craig.carinci@fairfaxcounty.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☒ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☒ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☒ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☒ Storm water system upgrades.
- ☒ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.

    ○ Policy management and/or development.

    ○ Stakeholder engagement and strategies.

Location of Project (Include Maps): Fairfax County Pimmit Run Watershed - Tucker Avenue Neighborhood

NFIP Community Identification Number (CID#):(See appendix F 515525

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): SFHA Zone A

Flood Insurance Rate Map Number(s) (If Applicable): 51059C0166F A map is included in the next page

Total Cost of Project: $9,834,000

Total Amount Requested $5,900,000

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	▨	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Areas of Minimal Flood Hazard *Zone X*
	▨	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- - - - -	Channel, Culvert, or Storm Sewer
	┼┼┼┼┼	Levee, Dike, or Floodwall
	(E) 18.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	(8) - - -	Coastal Transect
	— · —	Coastal Transect Baseline
	— · —	Profile Baseline
	——	Hydrographic Feature
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
OTHER FEATURES	——	Limit of Study
	——	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Department of Agriculture - Aerial Photography Field Office (USDA - APFO), National Agriculture Imagery Program (NAIP). This information was derived from digital orthophotography at a 2-foot resolution from photography dated 2019.

SCALE

Map Projection:
NAD 1983 UTM Zone 18N;
Western Hemisphere; Vertical Datum: NAVD 88

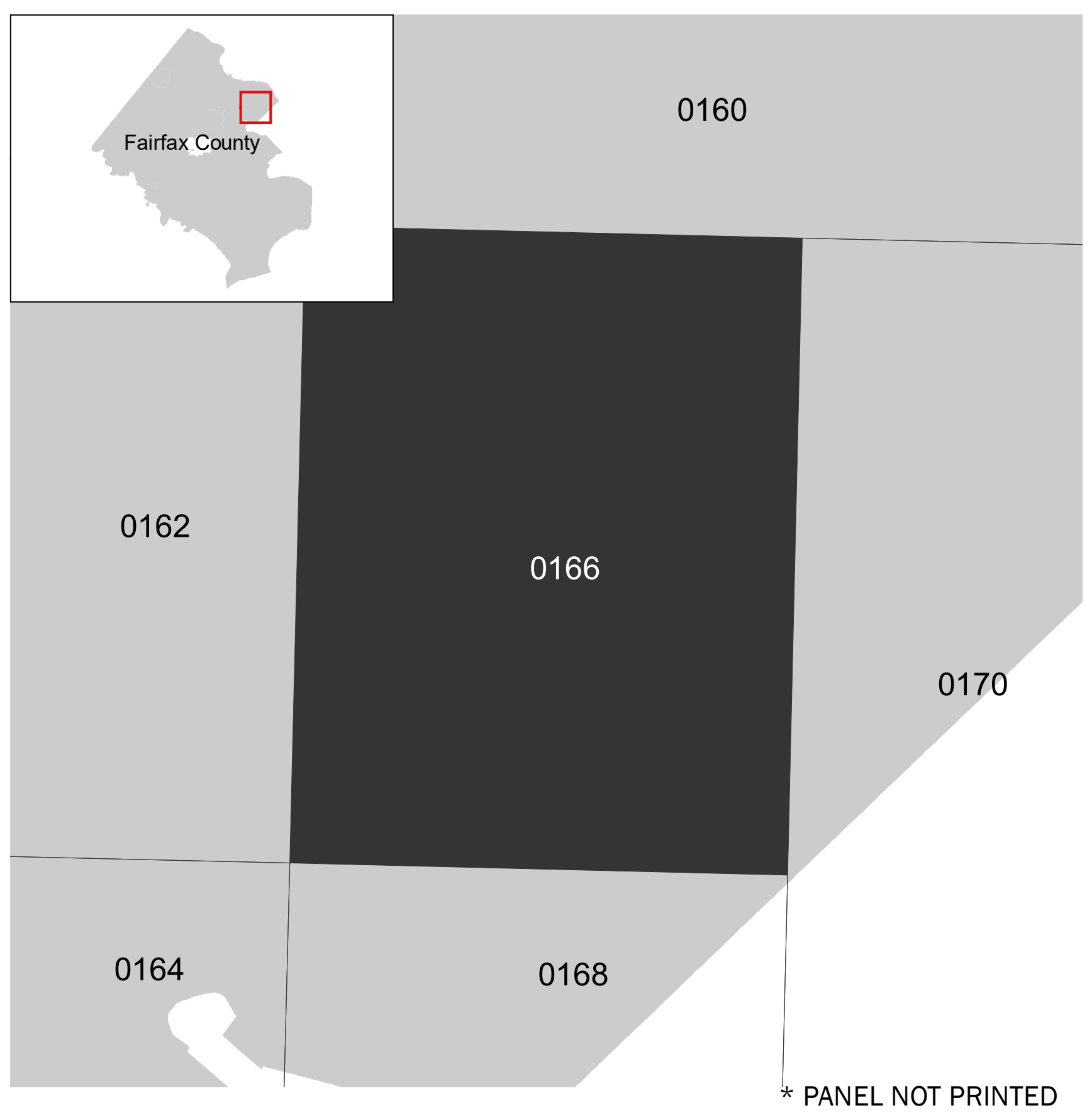
N

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY, VIRGINIA
And Incorporated Areas

PANEL **166** OF **450**

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY	515525	0166	F

PRELIMINARY
4/30/2021

VERSION NUMBER
2.6.4.6

MAP NUMBER
51059C0166F

MAP REVISED

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Fairfax County	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☐ **Yes** ☐ **No**
Applicant Name:	

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	X
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	X
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	X
No	**0**	
Total Points		60

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☒ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

FAIRFAX COUNTY

Tucker Avenue Neighborhood Stormwater Improvement

Virginia Community Flood Preparedness Fund

FY 2022 ROUND 3 GRANT APPLICATION

Contents

Attachments

Executive Summary

Fairfax County is applying for grant assistance under the Virginia Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF) Round 3 'Project' category to help mitigate flooding in the Tucker Avenue Neighborhood in McLean within the Dranesville Magisterial District. The project, *Tucker Avenue Neighborhood Stormwater Improvement*, is focused on implementing a neighborhood-wide conveyance system that can collect stormwater flow that currently overwhelms existing roads and a limited storm drainage system.

Virginia DCR approved the County's Resilience Plan on January 10, 2022. The County has integrated flood mitigation and resilience goals across areas of the local government, with flood resilience a priority addressed holistically through watershed and countywide comprehensive planning. The County has established requirements for development controls in the floodplain through zoning and the local floodplain ordinance. In order to address recent repetitive floodings, the County has prepared a draft flood response plan. The County is also developing a comprehensive regulated floodplain to assess and implement future projects.

The proposed project addresses the community concerns and supports resilience goals by addressing the entire watershed drainage problem within the project area.

Scope of Work Narrative

The County has participated in regional efforts in the development of several regional strategies and plans to **address resiliency**, mitigation, and impacts of climate change. These are described below.

1. Project Information

Background

Tucker Avenue Stormwater Neighborhood Improvement project is located in the Chesterfield and Chesterbrook Garden neighborhoods in Fairfax County (Map 1 below). These neighborhoods were built prior to the requirements for post construction stormwater management and very little infrastructure exists to carry the runoff from numerous residential lots and roadways. Infill lot development is occurring throughout the neighborhoods and as a result cumulative stormwater impacts are increasing across the drainage area. The existing drainage systems are inadequate. Much of the flow in the project area drains toward Tucker Avenue where no storm sewers or roadside ditches exist (Map 2). Runoff from Chesterfield Avenue and connected roads flows through the back of homes in Tucker Avenue resulting in rear yard flooding.

Population

Fairfax County has a population of about 1.17 million. The proposed project is in the Dranesville Magisterial District in McLean. The project impacts 222 single family homes and approximately 820 residents.

Historic Flooding Data and Hydrologic Studies

The project area has recorded multiple events of flooding in the past, most recently on July 8, 2019. Map 2 below also shows the reported storm drainage issues in the project drainage shed (houses highlighted by yellow color). Fifteen homes reported structural flooding because of the July 8, 2019, event.

Local Government Cost Share

Construction of the project is included in the County's FY23 stormwater capital improvement plan (CIP) and funding for the project is available in Regulatory Program Support under Fund 40100 Stormwater Services in the Fairfax County Fiscal Year 2023 budget (see Attachment 1 for the County's stormwater budget document)

County Floodplain Management Regulations

Fairfax County participates in the National Flood Insurance Program as well as Community Rating System Program (Attachment 2). Floodplains are regulated under article 5104 of the County's Zoning Ordinance. The Zoning Ordinance is included in the link below: https://online.encodeplus.com/regs/fairfaxcounty-va/doc-viewer.aspx#secid-462

Fairfax County regulates proposed uses and disturbances in the 100-year flood inundation area
associated with all channels or conveyance systems that have a contributing drainage area of
70 acres or more. Currently, existing floodplain boundaries and water surface elevations are available from several sources and a significant portion of regulated floodplain is not mapped.
A separate effort of developing a comprehensive regulated floodplain map is currently underway.

Based on the 2010 mapping of the Special Flood Hazard Areas (SFHAs) by FEMA, the floodplain immediately downstream of the project area is classified as SFHA Zone-A.

Project Priority

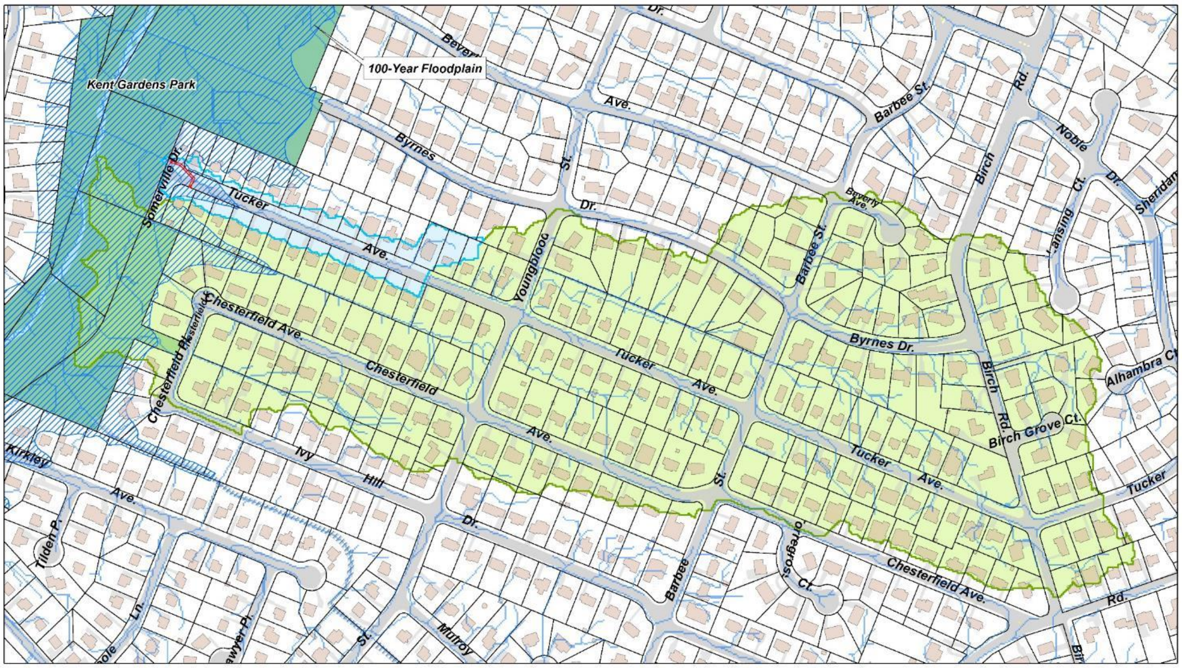
This project was prioritized in the district as a result of numerous structural and yard flooding complaints. The project area is a typical residential neighborhood where homes were built in the 1950's prior to floodplain regulations. There are two properties in this neighborhood which are not in FEMA mapped floodplain but have reported repetitive flooding and multiple homes that report yard flooding. Photos of recent flooding are shown in Figure 1 below.

During a recent extreme event on July 8, 2019, severe storms were recorded by the County's Contrail system. Actual accumulation of over 3.95-inches was recorded in one hour. Weather Underground recorded 3.48" within 45 minutes, and NOAA Atlas predicated 500-year 60-minute rainfall to be 3.98 inches.

Critical Facilities

Youngblood and Barbee Streets, which provide cross neighborhood access to the community, flood severely at the intersection of Tucker Avenue. During the July 8, 2019, event, the intersection was inundated with several feet of water due to an overwhelmed drainage system.

Map 1: Tucker Avenue Neighborhood location



Map 2: Project drainage

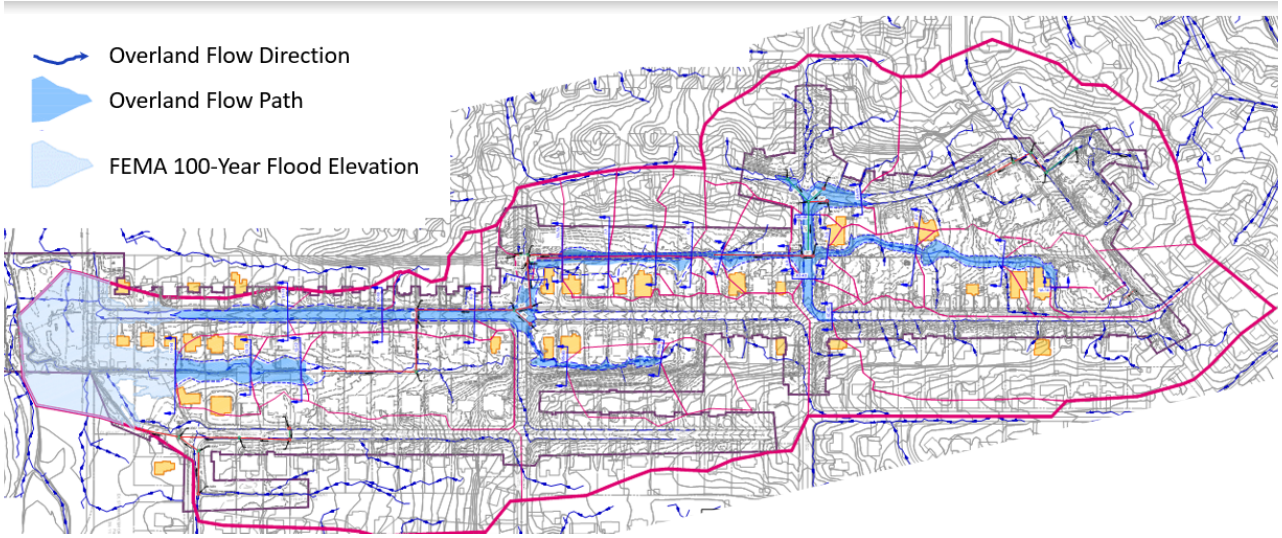


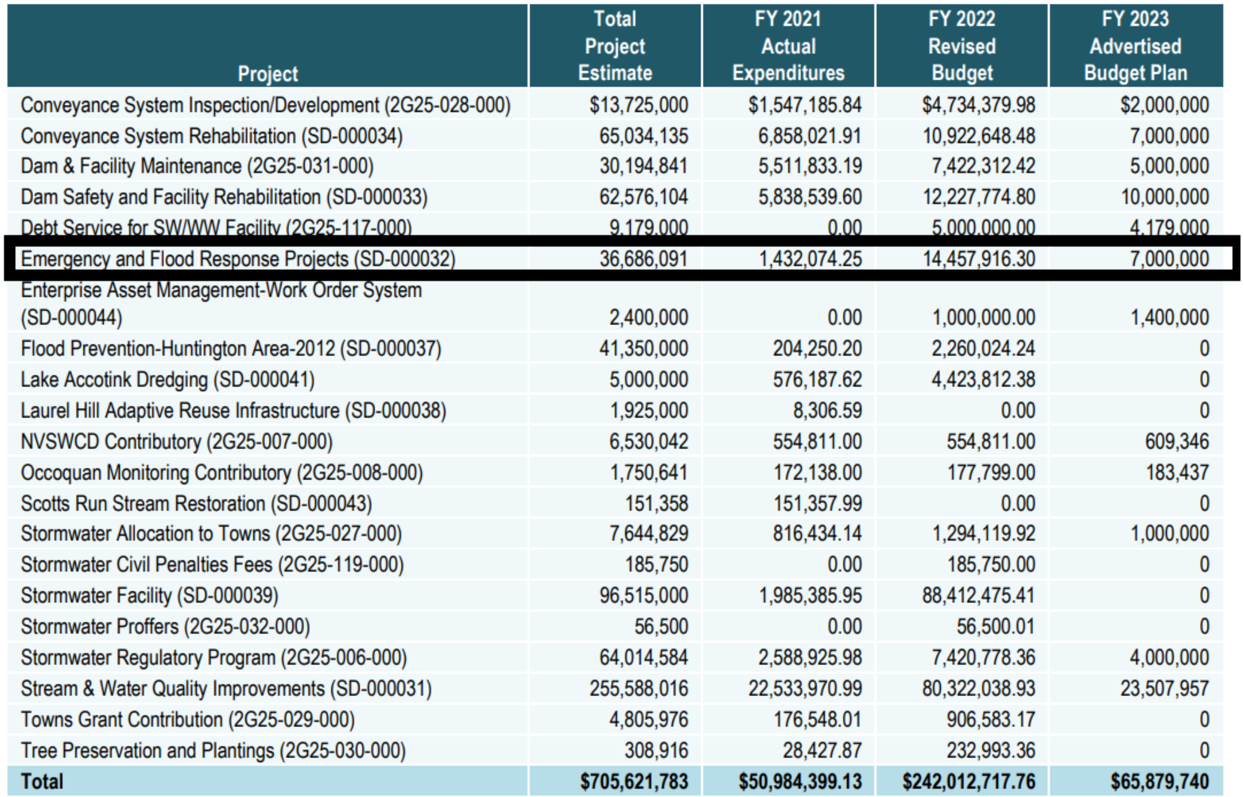
Figure 1: Community flooding July 8, 2019

2. Need for Assistance

Financial and Staff Resources

The Stormwater Services Emergency and Flood Response Projects program supports flood control projects for unanticipated flooding events that impact storm systems and structural flooding. The program provides annual funding for scoping, design, and construction activities related to flood mitigation projects. Fairfax County's advertised Fiscal Year 2023 Stormwater Services budget includes $7.0 million for emergency and flood response projects, but there is an estimated total cost of $36.7 million for active flood mitigation projects (see Figure 2). With the increase in the frequency and intensity of storms due to climate change, we expect the number of flood mitigation projects to grow and the associated project design and construction costs will extend well beyond what the County's current emergency and flood response program can support.

Figure 2. Fiscal Year 2023 Advertised Budget- Stormwater Services Summary of Capital Projects



Project	Total Project Estimate	FY 2021 Actual Expenditures	FY 2022 Revised Budget	FY 2023 Advertised Budget Plan
Conveyance System Inspection/Development (2G25-028-000)	$13,725,000	$1,547,185.84	$4,734,379.98	$2,000,000
Conveyance System Rehabilitation (SD-000034)	65,034,135	6,858,021.91	10,922,648.48	7,000,000
Dam & Facility Maintenance (2G25-031-000)	30,194,841	5,511,833.19	7,422,312.42	5,000,000
Dam Safety and Facility Rehabilitation (SD-000033)	62,576,104	5,838,539.60	12,227,774.80	10,000,000
Debt Service for SW/WW Facility (2G25-117-000)	9,179,000	0.00	5,000,000.00	4,179,000
Emergency and Flood Response Projects (SD-000032)	36,686,091	1,432,074.25	14,457,916.30	7,000,000
Enterprise Asset Management-Work Order System (SD-000044)	2,400,000	0.00	1,000,000.00	1,400,000
Flood Prevention-Huntington Area-2012 (SD-000037)	41,350,000	204,250.20	2,260,024.24	0
Lake Accotink Dredging (SD-000041)	5,000,000	576,187.62	4,423,812.38	0
Laurel Hill Adaptive Reuse Infrastructure (SD-000038)	1,925,000	8,306.59	0.00	0
NVSWCD Contributory (2G25-007-000)	6,530,042	554,811.00	554,811.00	609,346
Occoquan Monitoring Contributory (2G25-008-000)	1,750,641	172,138.00	177,799.00	183,437
Scotts Run Stream Restoration (SD-000043)	151,358	151,357.99	0.00	0
Stormwater Allocation to Towns (2G25-027-000)	7,644,829	816,434.14	1,294,119.92	1,000,000
Stormwater Civil Penalties Fees (2G25-119-000)	185,750	0.00	185,750.00	0
Stormwater Facility (SD-000039)	96,515,000	1,985,385.95	88,412,475.41	0
Stormwater Proffers (2G25-032-000)	56,500	0.00	56,500.01	0
Stormwater Regulatory Program (2G25-006-000)	64,014,584	2,588,925.98	7,420,778.36	4,000,000
Stream & Water Quality Improvements (SD-000031)	255,588,016	22,533,970.99	80,322,038.93	23,507,957
Towns Grant Contribution (2G25-029-000)	4,805,976	176,548.01	906,583.17	0
Tree Preservation and Plantings (2G25-030-000)	308,916	28,427.87	232,993.36	0
Total	**$705,621,783**	**$50,984,399.13**	**$242,012,717.76**	**$65,879,740**

Low Income Geographic Areas

The project does not fall in a low-income geographic area.

Vulnerability Index

Based on the Vulnerability Index Mapping (Attachment 3), the project is not in a socially vulnerable area.

Alternatives

The project is a hybrid solution.

3. Goals and Objectives

Following are the primary goals and objectives of the project:

- Improve drainage system and reduce localized flooding and erosion by designing an adequate drainage system as defined in the County codes and Public Facilities Manual. The design will evaluate the cumulative increases in runoff from infill development based on existing and future buildout conditions.
- Address public safety concerns.

- Improve water quality and stream protection. Stormwater runoff from the drainage area to this unnamed tributary to Little Pimmit Run is incised and causing the stream to erode. The downstream Pimmit Run is listed as impaired (does not meet water quality standards) by Virginia Department of Environmental Quality (DEQ).
- Use innovative, sustainable, and functional designs.
- Partner with the Virginia Department of Transportation and Fairfax County Department of Transportation to develop a sound, cost effective solution that can be collaboratively implemented and maintained.

Project details, goals and objectives, and activities are also included in the following project website:

https://www.fairfaxcounty.gov/publicworks/tucker-ave-stw

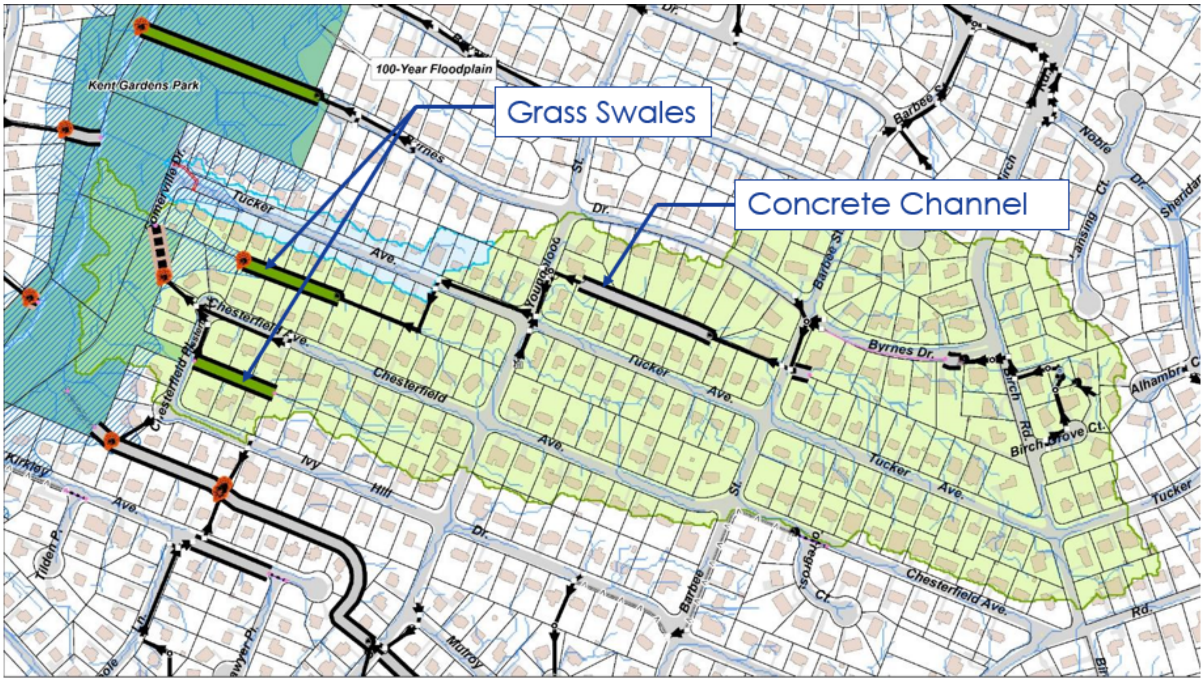
4. Approach, Milestones, and Deliverables

The existing conveyance system in the project drainage area is limited (Map 3 below). During a significant storm event the Tucker Avenue right of way serves as the overland relief path.

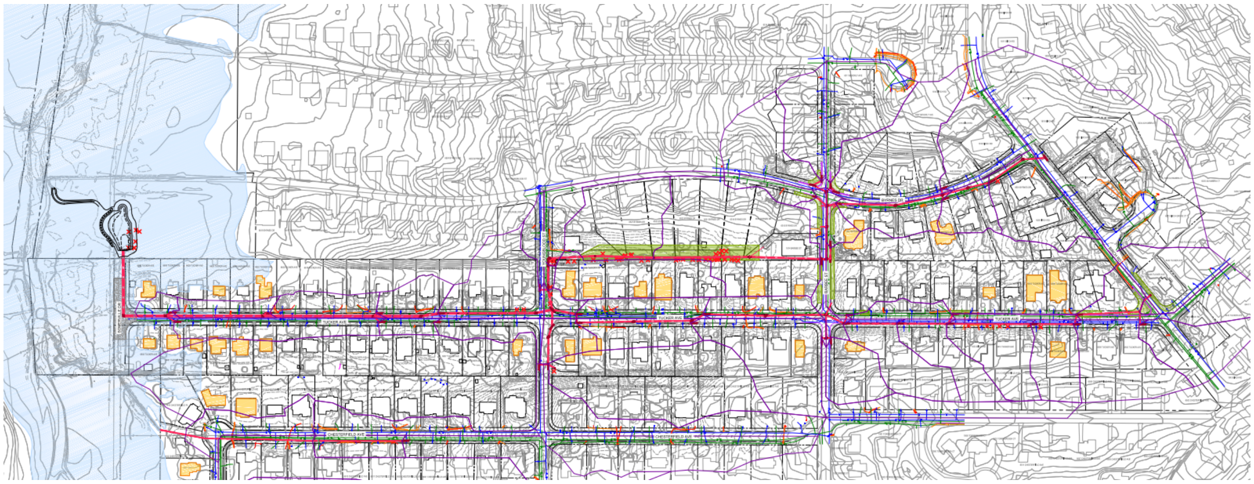
This project will design stormwater management facilities and conveyance systems in the neighborhood serving a drainage area of approximately 67 acres. A new storm sewer main will be constructed down Tucker Avenue, as well as improvements to the existing storm sewer system throughout the watershed. Green infrastructure facilities (four) will be constructed in strategic locations to provide water quality, quantity, and overland relief benefits. Map 4 below shows the proposed stormwater infrastructures in the project drainage area.

Typically, closed stormwater conveyance systems are designed to carry the 10-year flow. Due to repeated flooding in this neighborhood and to build resilience, the closed conveyance system is being designed to accommodate the 100-year flow capacity within the pipe.

Map 3: Existing conveyance system



Map 4: Proposed conveyance and green infrastructures system



A final design for the project is currently under review. Coordination with utility companies is currently underway to relocate their lines within areas of conflicts. The project is currently scheduled to go to construction in Fall of 2022. The construction is estimated to be complete in two (2) years once the contractor has mobilized.

5. Relationship to Other Projects

Fairfax County's Pimmit Run watershed management plan identified PM9814 as a neighborhood project that includes the El Nido, Chesterfield, Chesterbrook Garden, and Grass Ridge neighborhoods. This project was chosen from a portion of the larger project (PM9814) as the most severe flooding occurs in the Chesterfield and Chesterbrook Garden neighborhoods. Another neighborhood project is currently in conceptual design adjacent to this to address flooding. These projects are proposed to address the most severe flooding situations in their respective neighborhoods independent of each other.

The Pimmit Run watershed management plan can be found in the following link for the Middle Potomac Watershed management plan:

https://www.fairfaxcounty.gov/publicworks/stormwater/middle-potomac-watersheds

6. Maintenance Plan

Fairfax County has a dedicated maintenance program. The Maintenance and Stormwater Management Division (MSMD) maintains all public stormwater infrastructure and facilities. Since this project will be constructed by the County, it will be maintained by MSMD.

Scoring Criteria

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?
   The applicant (Fairfax County) is a local jurisdiction in the Commonwealth of Virginia

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?
   The County has an approved resilience plan (see Attachment 4)

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?
   This criterion is not applicable. The applicant is a local jurisdiction.

4. Has the applicant provided evidence of an ability to provide the required match funds?
   The project is included in the FY23 CIP for construction (see Attachment 1).

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?
   The main objective of this project is to reduce the flooding in the neighborhood. The project has been designed to provide resiliency in the closed system to handle the 100-year storm event. Green infrastructure has been proposed to provide water quality benefits and detention.

SUPPORTING DOCUMENTATION

Scope of Work Narrative	
Documents	**Link or Attachment**
Detailed map of the project area	Attachment 5
FirMette of the project area	Attachment 6
Historic flood damage data/image	Figure 2 above
Link to the current floodplain ordinance	https://online.encodeplus.com/regs/fairfaxcounty-va/doc-viewer.aspx#secid-462
No-fund maintenance and management plan	Described in maintenance plan above
Copy of the current hazard mitigation plan	https://www.fairfaxcounty.gov/emergencymanagement/sites/emergencymanagement/files/assets/documents/pdf/hazard%20mitigation%20plan%2010.22.19.pdf
Copy of the current comprehensive plan	https://www.fairfaxcounty.gov/planning-development/fairfax-county-comprehensive-plan
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	Attachment 3
Completed Scoring Criteria Sheet Appendix B, C, D	Included above as Appendix D

Budget Narrative

Estimated total project cost: $9,834,000
Encumbered: $1,897,964
Design & Construction Administration: $1,482,000
Land Acquisition: $211,465
Utilities: $204,499

Un-encumbered:
FFX Water relocation: $540,123
Construction: $7,395,913

See Attachment 7 for the project encumbrances and Attachment 8 for the construction estimate.

Amount of funds requested from the Fund: $5,900,000
This is the total amount of any grant assistance sought from the Fund. 100% of this grant will be applied to the construction of the project.

Amount of cash funds available (for construction): $2,037,000
Fairfax County already encumbered funds for the design task order, land acquisition and utilities designation. Additional funds are available in *Regulatory Program Support* under Fund 40100 Stormwater Services in the Fairfax County Fiscal Year 2023 budget (Attachment 1).

Authorization to request for funding: See Attachment 9 for the Not In Package (NIP) item to the Board of Supervisors authorizing a request for funding through the grant program.

SUPPORTING DOCUMENTATION

Budget Narrative	
Documents	**Link or Attachment**
Authorization to request funding from the Fund from governing body or chief executive of the local government	Attachment 9

Conclusion

Fairfax County has many older neighborhoods which were built prior to current floodplain regulations. Due to the global influence of climate change, rainfall intensity has changed over time resulting in the flooding of more and more neighborhoods like Tucker. On average, the Tucker Avenue neighborhood experiences structural or yard flooding 5-7 times a year. The implementation of this project, where limited conveyance exists, will provide the greatest relief to the neighborhood. The project not only provides a resilient conveyance system, but also improves water quality for the drainage shed. Fairfax County is therefore requesting funding support for the implementation of the project to reduce flooding threats to the neighborhood.

Attachments

Fund 40100: Stormwater Services

Mission

To develop and maintain a comprehensive watershed and infrastructure management program to protect property, health, and safety; to enhance the quality of life; and to preserve and improve the environment for the benefit of the public. To plan, design, construct, operate, maintain, and inspect stormwater infrastructure; perform environmental assessments through coordinated stormwater and maintenance programs in compliance with all government regulations utilizing innovative techniques, customer feedback and program review; and to be responsive and sensitive to the needs of the residents, customers, and public partners.

Focus

Stormwater Services are essential to protect public safety, preserve property values and support environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local jurisdictional waterways. Projects in this fund include repairs to stormwater infrastructure, measures to improve water quality such as stream stabilization, rehabilitation, safety upgrades of state regulated dams, repair and rehabilitation of underground pipe systems, surface channels, flood mitigation, site retrofits and best management practices (BMP), and other stormwater improvements.

The Board of Supervisors approved a special service district to support the Stormwater Management Program as part of the FY 2010 Adopted Budget Plan. This service district provides a dedicated funding source for both operating and capital project requirements by levying a service rate per $100 of assessed real estate value, as authorized by Code of Virginia Ann. Sections 15.2-2400. Since FY 2010, staff has made significant progress in the implementation of watershed master plans, public outreach efforts, stormwater monitoring activities, water quality and flood mitigation project implementation and operational maintenance programs related to existing storm drainage infrastructure including stormwater conveyance, and regulatory requirements.

A rate of $0.0400 per $100 of assessed value has been estimated to be required to fully support the stormwater program in the future; however, staff is currently evaluating the long-term requirements for the program to address the growth in inventory and other community needs. Some of the additional community needs under evaluation include debt service to support the Board's approval of the dredging of Lake Accotink, the anticipation of additional flood mitigation requirements, and strengthening the role and financial support for the implementation of stormwater requirements associated with Fairfax County Public Schools sites under renovation. This enhanced program may require incremental changes to the rate over time and may result in a higher rate to fully support the program. Staff continues to evaluate these requirements, as well as the staffing to support them, and analyze the impact of increased real estate values and revenue projections.

One of the recent initiatives being funded by the Stormwater Fund is the new Public Works complex which will consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions. Stormwater operations are currently conducted from various locations throughout the County, and a new colocation of both Stormwater and Wastewater staff will provide efficiencies and sharing of resources. Another initiative in progress is the planned dredging of Lake Accotink. Lake Accotink is a 55-acre lake surrounded by managed conservation areas, wetlands, deciduous and evergreen forests, and historic and prehistoric sites. Over 300,000 patrons visit the park annually to enjoy a variety of facilities and activities that vary with the season. Sediment from the upstream areas of the watershed has continued to be deposited in Lake Accotink over the years filling in the lake and limiting recreational use. Estimates for the cost of dredging including sediment disposal are still under review. Staff has identified the option of a low interest loan via the Virginia Clean Water Revolving Loan Fund (VCWRLF) as the preferred funding mechanism to fund the dredging project costs. The Stormwater fund will pay the future debt costs.

While staff continues to further evaluate the impact of recent initiatives and the long-term requirements for the Stormwater Program, the FY 2023 rate will remain the same as the FY 2022 Adopted Budget Plan level of $0.0325 per $100 of assessed value. However, based on capital project costs and projected revenues, it is anticipated that in the next several years, incremental rate increases will be required based on continued growth of stormwater facilities and infrastructure that must be inspected and maintained by the County, the implementation of flood mitigation projects, and additional requirements in the forthcoming Municipal Separate Storm Sewer System (MS4) Permit. On an annual basis, staff will continue to evaluate the program, analyze future requirements, and develop Stormwater operational and capital resource needs.

The FY 2023 levy of $0.0325 will generate $94,393,055, supporting $27,113,315 for staff and operational costs; $65,879,740 for capital project implementation including, infrastructure reinvestment, regulatory requirements, dam safety, and contributory funding requirements; and $1,400,000 transferred to the General Fund to partially offset central support services such as Human Resources, Purchasing, Budget and other administrative services supported by the General Fund, which benefit this fund.

Stormwater Services Operational Support

Stormwater Services operational support includes funding for staff salaries, Fringe Benefits, and Operating Expenses for all stormwater operations. In addition, Fund 40100 includes positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. Beginning in FY 2023, all funding for the transportation related salary expenses and equipment previously supported by Agency 87, Unclassified Administrative Expenses - Public Works Programs will be supported by capital projects in Fund 30010, General Construction and Contributions, as they do not qualify for expenses related to the stormwater service district. The transfer of funding to Fund 30010, General Construction and Contributions, will provide more transparency and the carryforward of balances at year-end.

Fund 40100 also supports the Urban Forestry Management Division (UFMD). The UFMD was established to mitigate tree loss and maximize tree planting during land development, enforce tree conservation requirements and monitor and suppress populations of Gypsy Moth, Emerald Ash Borer, and other forest pests. The division also implements programs needed to sustain the rich level of environmental, ecological, and socio-economic services provided by the County's tree canopy. The UFMD is aligned with the mission of Stormwater Services as it strives to "improve water quality and stormwater management through tree conservation." Tree canopy and forest soils function to mitigate significant levels of water pollution and stormwater runoff.

FY 2023 Stormwater Capital Project Support

Conveyance System Inspections, Development and Rehabilitation

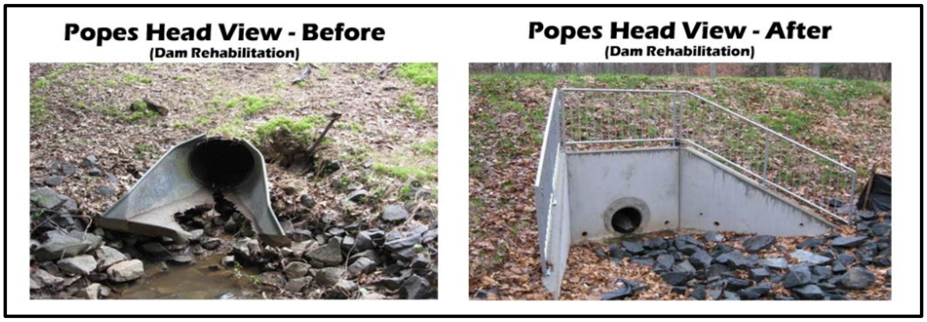
The County owns and operates approximately 1,500 miles of underground stormwater pipes and improved channels with an estimated replacement value of over one billion dollars. The County


Barnack Drive – Before
(Outfall Restoration)
Barnack Drive – After
(Outfall Restoration)

began performing internal inspections of the pipes in FY 2006. The initial results showed that approximately 5 percent of the pipes exhibit conditions of failure, and an additional 5 percent required maintenance or repair. MS4 Permit regulations require inspection and maintenance of these 1,500 miles of existing conveyance systems, 69,000 stormwater structures, and a portion of the immediate downstream channel at the 7,000 regulated pipe outlets. Acceptable industry standards indicate that one dollar reinvested in infrastructure saves seven dollars in the asset's life and 70 dollars if asset failure occurs. Once the initial internal inspections are complete, the goal of this program is to inspect pipes on a 20-year cycle and rehabilitate pipes and improve outfall channels before total failure occurs. Total funding in the amount of $9.0 million is included for Conveyance System Inspections, Development and Rehabilitation in FY 2023, including $2.0 million for inspections and development and $7.0 million for rehabilitation and outfall restoration.

Dam Safety and Facility Rehabilitation

There are approximately 7,900 stormwater management facilities in service that range in size from small rain gardens to large state regulated flood control dams. The County is responsible for inspecting approximately 5,500 privately-owned facilities and maintaining over 2,400 County owned facilities. This inventory increases annually and is projected to continually increase as new development and redevelopment sites occur in the County. This initiative also includes the removal of sediment that occurs in both wet and dry stormwater management facilities to ensure that adequate capacity is maintained to treat the stormwater. The program results in approximately 50 projects annually that require design and construction management activities as well as contract management and maintenance responsibilities. This program maintains the structures and dams that control and treat the water flowing through County owned facilities. This program improves dam safety by supporting annual inspections of 20 state-regulated dams and the Huntington Levee and by developing Emergency Action Plans required by the state. The Emergency Action Plans are updated annually. In addition, these plans include annual emergency drills and exercises, and flood monitoring for each dam. Total funding in the amount of $15.0 million is included in FY 2023, including $5.0 million for maintenance and $10.0 million for rehabilitation.



Popes Head View - Before
(Dam Rehabilitation)

Popes Head View - After
(Dam Rehabilitation)

Stormwater/Wastewater Facility

This project will provide funding for a Stormwater/Wastewater Facility which will consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions. Currently, Stormwater operations are conducted from various locations throughout the County, with the majority of staff located at the West Drive facility. Facilities for field maintenance operations and for field/office-based staff are inadequate and outdated for the increased scope of the stormwater program, and inadequate to accommodate future operations. This project is currently in design with construction anticipated to begin in early 2022. The facility is financed by EDA bonds with the Stormwater Services Fund and Wastewater Fund supporting the debt service. Funding in the amount of $4.2 million is included in FY 2023 to support the second year of debt service for the Stormwater/Wastewater Facility.

Emergency and Flood Response Projects
This program supports flood control projects for unanticipated flooding events that impact storm systems and structural flooding. The program provides annual funding for scoping, design, and construction activities related to flood mitigation projects. Funding in the amount of $7.0 million is included for the Emergency and Flood Response Projects in FY 2023.

Enterprise Asset Management-Work Order System
This project will provide funding for the transition from an Enterprise Asset Management (EAM) system to a more functional Asset Management Program (AMP). This funding will support the acquisition of software, servers and consultant services to migrate asset management and related work order management into the new system. The current system tracks assets, inspections, daily work management and associated contractor costs. Features of the replacement system include geographic information system (GIS) integration and field mobility. The Department of Public Works and Environmental Services (DPWES) Information Technology staff have collaborated with the Stormwater Management and the Wastewater Management staff to promote interagency capabilities, optimize performance, and improve system lifecycle management for the new system. This new system will meet the future expectations for both divisions and optimize service delivery for DPWES. Funding in the amount of $1.4 million is included in Capital Projects and an amount of $800,000 is included in Operating Expenses for this project in FY 2023.

Stormwater-Related Contributory Program
Contributory funds are provided to the Northern Virginia Soil and Water Conservation District (NVSWCD) and the Occoquan Watershed Monitoring Program (OWMP). The NVSWCD is an independent subdivision of the Commonwealth of Virginia that provides leadership in the conservation and protection of Fairfax County's soil and water resources. It is governed by a five-member Board of Directors - three members are elected every four years by the voters of Fairfax County and two members are appointed by the Virginia Soil and Water Conservation Board. Accordingly, the work of NVSWCD supports many of the environmental goals established by the Board of Supervisors. The goal of the NVSWCD is to continue to improve the quality of the environment and general welfare of the citizens of Fairfax County by providing them with a means of dealing with soil, water conservation and related natural resource problems. It provides County agencies with comprehensive environmental evaluations for proposed land use changes with particular attention to the properties of soils, erosion potential, drainage, and the impact on the surrounding environment. NVSWCD has consistently been able to create partnerships and leverage state, federal and private resources to benefit natural resources protection in Fairfax County. FY 2023 funding of $0.6 million is included in Fund 40100 for the County contribution to the NVSWCD.

The OWMP and the Occoquan Watershed Monitoring Laboratory (OWML) were established to ensure that water quality is monitored and protected in the Occoquan Watershed. Given the many diverse uses of the land and water resources in the Occoquan Watershed (agriculture, urban residential development, commercial and industrial activity, water supply, and wastewater disposal), the OWMP plays a critical role as the unbiased interpreter of basin water quality information. FY 2023 funding of $0.2 million is included in Fund 40100 for the County contribution to the OWMP.

Stormwater Allocation to Towns
On April 18, 2012, the State Legislature passed SB 227, which entitles the Towns of Herndon and Vienna to all revenues collected within their boundaries by Fairfax County's stormwater service district. An agreement was developed for a coordinated program whereby the Towns remain part of the County's service district and the County returns 25 percent of the revenue collected from properties within each town. This allows for the Towns to provide services independently such as

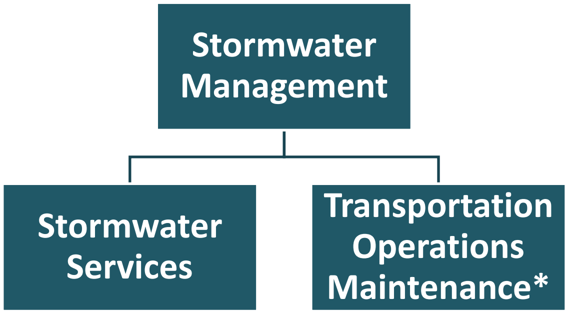
maintenance and operation of stormwater pipes, manholes, and catch basins. The remaining 75 percent remains with the County and the County takes on the responsibility for the Towns' Chesapeake Bay Total Maximum Daily Load (TMDL) requirements as well as other TMDL and MS4 requirements. This provides for an approach that is based on watersheds rather than on jurisdictional lines. Funding in the amount of $1.0 million is included for the Stormwater Allocations to Towns project in FY 2023.

Regulatory Program
The County is required by federal law to operate under the conditions of a state issued MS4 Permit. Stormwater staff annually evaluates funding required to meet the increasing federal and state regulatory requirements pertaining to the MS4 Permit, and State and Federal mandates associated with controlling water pollution delivered to local streams and the Chesapeake Bay. The MS4 Permit allows the County to discharge stormwater from its stormwater systems into state and federal waters. The County currently owns and/or operates approximately 15,000 outfalls, and 7,000 of these outfalls are regulated outfalls governed by the permit. The current permit was issued to the County in April 2015 and expired in April 2020. The County is operating under an administrative continuance until a new permit is issued. The permit requires the County to document the stormwater management facility inventory, enhance public outreach and education efforts, increase water quality monitoring efforts, provide stormwater management and stormwater control training to all appropriate County employees. The permit requires the County to implement sufficient stormwater projects that will reduce the nutrients and sediment to comply with the Chesapeake Bay and local stream TMDL requirements. Funding in the amount of $4.0 million is included for the Stormwater Regulatory Program in FY 2023.

Stream and Water Quality Improvements
This program funds water quality improvement projects necessary to mitigate the impacts to local streams and the Chesapeake Bay resulting from urban stormwater runoff. This includes water quality projects such as construction and retrofit of stormwater management ponds, implementation of green stormwater infrastructure facilities, stream restoration, and water quality projects identified in the completed Countywide Watershed Management Plans. These projects will aid in the reduction of pollutants and improve water quality in county streams that are considered to be in fair to very poor condition and likely do not meet CWA water quality standards. In addition, Total Maximum Daily Load (TMDL) requirements for local streams and the Chesapeake Bay are the regulatory drivers by which pollutants entering impaired water bodies must be reduced. The Chesapeake Bay TMDL was established by the EPA and requires that MS4 communities as well as other dischargers implement measures to significantly reduce the nitrogen, phosphorous and sediment loads in waters that drain to the Chesapeake Bay by 2025. MS4 Permit holders must achieve 35 percent of the required reductions within the current five-year permit cycle and 60 percent of the required reductions in the

next five-year permit cycle. In addition, compliance with the Chesapeake Bay TMDL requires that the County undertake construction of new stormwater facilities and retrofit existing facilities and properties. The EPA continually updates the Chesapeake Bay compliance targets and credits. It is anticipated that the changes to the assigned targets as well as how projects are credited will likely impact future compliance requirements. In addition to being required to meet the Chesapeake Bay TMDL targets, the current MS4 Permit requires the County to develop and implement action plans to address local impairments. Most of the 1,900 watershed management plan projects contribute toward achieving the Chesapeake Bay and local stream TMDL requirements. Funding in the amount of $23.5 million is included for Stream and Water Quality Improvements in FY 2023.

Organizational Chart



*Denotes functions that are included in both Fund 30010, General Construction and Contributions, and Fund 40100, Stormwater Services.

Budget and Staff Resources

Category	FY 2021 Actual	FY 2022 Adopted	FY 2022 Revised	FY 2023 Advertised
FUNDING				
Expenditures:				
Personnel Services	$20,448,442	$22,615,643	$22,813,269	$24,580,634
Operating Expenses	3,919,893	3,182,636	3,389,603	4,010,636
Capital Equipment	1,077,511	782,000	1,887,143	652,000
Capital Projects	50,984,399	61,600,414	242,012,718	65,879,740
Subtotal	**$76,430,245**	**$88,180,693**	**$270,102,733**	**$95,123,010**
Less:				
Recovered Costs	($1,832,157)	($2,129,955)	($2,129,955)	($2,129,955)
Total Expenditures	**$74,598,088**	**$86,050,738**	**$267,972,778**	**$92,993,055**
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)				
Regular	202 / 202	200 / 200	200 / 200	208 / 208

FY 2023 Funding Adjustments

The following funding adjustments from the FY 2022 Adopted Budget Plan are necessary to support the FY 2023 program:

Employee Compensation **$1,214,199**

An increase of $ 1,214,199 in Personnel Services includes $850,684 for a 4.01 percent market rate adjustment (MRA) for all employees and $363,515 for performance-based and longevity increases for non-uniformed merit employees, both effective July 2022.

Other Post-Employment Benefits **($106,403)**

A decrease of $106,403 in Personnel Services reflects required adjustments associated with providing Other Post-Employment Benefits (OPEBs) to retirees, including the Retiree Health Benefits Subsidy. For more information on Other Post-Employment Benefits, please refer to Fund 73030, OPEB Trust, in Volume 2 of the FY 2023 Advertised Budget Plan.

New Positions **$885,195**

An increase of $885,195 including Personnel Services of $857,195 and Operating Expenses of $28,000 is necessary to fund requirements associated with 8/8.0 FTE new positions, including 1/1.0 Engineering Technician III, 1/1.0 FTE Planner III, 1/1.0 FTE Project Manager I, 1/1.0 FTE Senior Engineering Inspector, 1/1.0 FTE Senior Engineer III, and 3/3.0 FTE Senior Maintenance Workers. The Engineering Technician III position will support address the increased workload of permit required pond inspections and maintenance. The Planner III position will review and provide needed stormwater expertise, advanced technical analysis, support and recommendations on planning and development efforts during planning, pre-zoning and rezoning processes. The Project Manager I position will support the Tree Preservation and Planting Program and manage projects that support the tree planting goals of Virginia's Final Phase III Watershed Implementation Plan. The projects will be geared towards increasing tree canopy through street and landscape tree plantings, afforestation and reforestation, and assisting with outreach and education programs. The Senior Engineering Inspector position will be responsible for reviewing erosion and sediment control plans, reviewing project designs, understanding job specifications, inspecting County stormwater infrastructure, updating work orders and keeping a daily log of work performed on construction sites. The Senior Engineer III position will initiate flood mitigation projects, coordinate with property owners to address their flooding concerns, and execute flood mitigation project design and implementation services. The three Senior Maintenance Worker positions will form an additional crew that will be deployed into the field to perform maintenance on the storm drainage system throughout the County.

Asset Management Program **$800,000**

An increase of $800,000 in Operating Expenses will support a new Asset Management Program (AMP). Funding will support the acquisition of software, servers, and consultant services to migrate asset management and related work order management into the new system. This new system will meet the future expectations for both Stormwater and Wastewater divisions and optimize service delivery for the Department of Public Works and Environmental Services.

Capital Equipment **($130,000)**

Funding of $652,000 in Capital Equipment, a decrease of $130,000 from the FY 2022 Adopted Budget Plan, is included primarily associated with replacement equipment that has outlived its useful life and is critical to stormwater services activities. Replacement equipment includes: $390,000 to replace two dump trucks that support all maintenance and emergency response programs and $40,000 to replace three equipment trailers that support all maintenance and emergency response programs in transporting construction materials, light duty and snow removal equipment. New equipment includes $222,000 for the purchase of three new pickup trucks and one new utility truck to support the new positions in FY 2023.

Capital Projects **$4,279,326**

Funding of $65,879,740 in Capital Projects, an increase of $4,279,326 from the FY 2022 Adopted Budget Plan, has been included in FY 2023 for priority stormwater capital projects.

Changes to FY 2022 Adopted Budget Plan

The following funding adjustments reflect all approved changes in the FY 2022 Revised Budget Plan since passage of the FY 2022 Adopted Budget Plan. Included are all adjustments made as part of the FY 2021 Carryover Review, FY 2022 Mid-Year Review, and all other approved changes through December 31, 2021:

Carryover Adjustments **$182,312,873**

As part of the *FY 2021 Carryover Review*, the Board of Supervisors approved funding of $182,312,873 based on the carryover of unexpended project balances in the amount of $179,413,809 and a net adjustment of $2,899,064. This adjustment includes the carryover of $1,312,110 in operating and capital equipment encumbrances, an increase of $197,626 to Personnel Services to support a one-time compensation adjustment of $1,000 for merit employees and $500 for non-merit employees to be paid no later than November 2021, and an increase to capital projects of $1,389,328. The adjustment to capital projects is based on the appropriation of the remaining operational savings of $783,662, higher than anticipated revenues of $304,634, revenues of $203,600 collected through the land development process that will support tree preservation and planting projects in FY 2022, revenues of $44,841 associated with dam and facility maintenance projects, miscellaneous revenues in the amount of $45,652, and the appropriation of $6,939 from the ending balance that was due to an FY 2021 audit adjustment.

Mid-Year Adjustments **($1,555)**

As part of the *FY 2022 Mid-Year Review*, the Board of Supervisors approved a decrease of $1,555 due to an FY 2021 audit adjustment.

Position Detail

The FY 2023 Advertised Budget Plan includes the following positions:

STORMWATER SERVICES – 208 Positions			
MSMD Administration (10 positions)			
1	Director, Maintenance and SW	1	Safety Analyst I
1	HR Generalist II	1	Administrative Assistant IV
1	HR Generalist I	4	Administrative Assistants III
1	Safety Analyst II		
IT – Director's Office/Stormwater (1 position)			
1	Network/Telecom. Analyst I		
Finance – Wastewater and Stormwater (4 positions)			
1	Financial Specialist IV	1	Financial Specialist I
1	Financial Specialist II	1	Administrative Assistant III
Contracting Services/Material Support (5 positions)			
1	Material Mgmt. Specialist III	1	Financial Specialist II
2	Contract Analysts I	1	Inventory Manager
Dam Safety and Maintenance Projects/Projects and LID/Inspection and Maintenance (19 positions)			
1	Public Works-Env. Serv. Manager	5	Engineering Technicians III [+1]
1	Engineer IV	2	Engineering Technicians II
1	Senior Engineer III	1	Project Manager II
3	Engineers III	2	Project Managers I
1	Ecologist III	1	Assistant Project Manager
1	Ecologist II		
Field Operations (74 positions)			
2	Env. Services Supervisors	3	Masons
1	Public Works-Env. Serv. Manager	1	Vehicle Maintenance Coordinator
2	Public Works-Env. Bus. Operations	5	Engineering Technicians III
2	Public Works-Env. Serv. Specialists	2	Engineering Technicians II
8	Senior Maintenance Supervisors	1	Carpenter II
5	Maintenance Supervisors	2	Equipment Repairers

Field Operations			
2	Maintenance Crew Chiefs	1	Welder II
15	Senior Maintenance Workers [+3]	1	Welder I
10	Heavy Equipment Operators	1	Trades Supervisor
10	Motor Equipment Operators		
Stormwater Infrastructure Branch (16 positions)			
1	Public Works-Env. Serv. Manager	1	Senior Engineering Inspector [+1]
3	Engineers IV	2	Engineering Technicians II
2	Senior Engineers III [+1]	2	Engineering Technicians I
4	Engineers III	1	Project Manager I
Transportation Infrastructure Branch (7 positions)			
1	Engineer V	3	Project Managers I
1	Engineer IV	1	Engineering Technician II
1	Project Manager II		
Stormwater Planning Division (56 positions)			
1	Director, Stormwater Planning	1	Emergency Mgmt. Specialist III
1	Engineer V	1	Planner IV
4	Engineers IV	1	Planner III [+1]
1	Senior Engineer III	2	Landscape Architects III
8	Engineers III	1	Engineering Technician III
5	Project Managers II	1	Management Analyst II
2	Project Managers I	2	Code Specialists II
4	Ecologists IV	1	Financial Specialist II
5	Ecologists III	1	Financial Specialist I
3	Ecologists II	1	Contract Specialist II
2	Ecologists I	1	Assistant Contract Specialist
3	Project Coordinators	3	Administrative Assistants III
1	Public Works-Env. Serv. Manager		
Urban Forestry (16 positions)			
1	Director, Urban Forestry Division	3	Urban Foresters I
1	Urban Forester IV	1	Project Manager I [+1]
4	Urban Foresters III	1	Administrative Assistant II
5	Urban Foresters II		
+	**Denotes New Position(s)**		

Performance Measurement Results

The objective to receive no MS4 Permit violations related to inspection and maintenance of public and private stormwater management facilities was met in FY 2019, FY 2020, and FY 2021. It is expected that this objective will also be met in FY 2022 and FY 2023. The objective to update 100 percent of the Stormwater emergency action plans was met in prior years. It is expected that this trend will continue in both FY 2022 and FY 2023. Lastly, the objective to keep 100 percent of the commuter facilities operational for 365 days was met in prior years. It is expected that this goal will be met in FY 2022 and FY 2023.

Indicator	FY 2019 Actual	FY 2020 Actual	FY 2021 Estimate	FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
MS4 permit violations received	0	0	0	0	0	0
Percent of Emergency Action Plans current	100%	100%	100%	100%	100%	100%
Percent of commuter facilities available 365 days per year	100%	100%	100%	100%	100%	100%

A complete list of performance measures can be viewed at
https://www.fairfaxcounty.gov/budget/fy-2023-advertised-performance-measures-pm

FUND STATEMENT

Category	FY 2021 Actual	FY 2022 Adopted Budget Plan	FY 2022 Revised Budget Plan	FY 2023 Advertised Budget Plan
Beginning Balance	**$78,402,156**	**$6,939**	**$90,244,247**	**$0**
Revenue:				
Stormwater Service District Levy	$85,394,610	$87,175,738	$87,175,738	$94,393,055
Sale of Bonds[1]	0	0	88,000,000	0
Stormwater Local Assistance Fund (SLAF) Grant[2]	1,876,476	0	3,596,793	0
Tree Preservation/Planting Fund[3]	203,600	0	0	0
Miscellaneous	90,493	0	81,000	0
Total Revenue	**$87,565,179**	**$87,175,738**	**$178,853,531**	**$94,393,055**
Total Available	**$165,967,335**	**$87,182,677**	**$269,097,778**	**$94,393,055**
Expenditures:				
Personnel Services[4]	$20,448,442	$22,615,643	$22,813,269	$24,580,634
Operating Expenses	3,919,893	3,182,636	3,389,603	4,010,636
Recovered Costs	(1,832,157)	(2,129,955)	(2,129,955)	(2,129,955)
Capital Equipment	1,077,511	782,000	1,887,143	652,000
Capital Projects[4]	50,984,399	61,600,414	242,012,718	65,879,740
Total Expenditures	**$74,598,088**	**$86,050,738**	**$267,972,778**	**$92,993,055**
Transfers Out:				
General Fund (10001)[5]	$1,125,000	$1,125,000	$1,125,000	$1,400,000
Total Transfers Out	**$1,125,000**	**$1,125,000**	**$1,125,000**	**$1,400,000**
Total Disbursements	**$75,723,088**	**$87,175,738**	**$269,097,778**	**$94,393,055**
Ending Balance[6,7]	**$90,244,247**	**$6,939**	**$0**	**$0**
Tax Rate Per $100 of Assessed Value	**$0.0325**	**$0.0325**	**$0.0325**	**$0.0325**

[1] In FY 2022, Economic Development Authority (EDA) Bonds were issued to support the construction of a Stormwater/Wastewater facility to consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions.

[2] Represents Virginia Department of Environmental Quality (VDEQ) Stormwater Local Assistance Fund (SLAF) grants which support stream and water quality improvement projects. An amount of $1,876,476 was received in FY 2021 and an amount of $3,596,793 is anticipated in FY 2022 and beyond.

[3] Reflects revenues collected through the land development process that will support tree preservation and planting projects in FY 2022.

[4] In order to account for revenues and expenditures in the proper fiscal year, audit adjustments were reflected as an increase of $1,555.35 to FY 2021 Personnel Services expenditures to record expenditure accruals and an increase of $389,278.17 to FY 2021 Capital Projects expenditures to record expenditure accruals. This impacted the amount carried forward resulting in a decrease of $389,278.17 to the *FY 2022 Revised Budget Plan*. The projects affected by this adjustment were 2G25-006-000, Stormwater Regulatory Program, SD-000031, Stream & Water Quality Improvements, and SD-000033, Dam Safety and Facility Rehabilitation. The Annual Comprehensive Financial Report (ACFR) reflects all audit adjustments in FY 2021. Details of the audit adjustments were found in Attachment VI of the *FY 2022 Mid-Year Review*.

[5] Funding in the amount of $1,400,000 is transferred to the General Fund to partially offset central support services supported by the General Fund, which benefit Fund 40100. These indirect costs include support services such as Human Resources, Purchasing, Budget and other administrative services.

[6] Capital projects are budgeted based on the total project costs. Most projects span multiple years, from design to construction completion. Therefore, funding for capital projects is carried forward each fiscal year, and ending balances fluctuate, reflecting the carryover of these funds.

[7] The FY 2022 Adopted Budget Plan ending balance of $6,939 was due to an adjustment made to FY 2020, and it was adjusted as part of the *FY 2021 Carryover Review*.

SUMMARY OF CAPITAL PROJECTS

Project	Total Project Estimate	FY 2021 Actual Expenditures	FY 2022 Revised Budget	FY 2023 Advertised Budget Plan
Conveyance System Inspection/Development (2G25-028-000)	$13,725,000	$1,547,185.84	$4,734,379.98	$2,000,000
Conveyance System Rehabilitation (SD-000034)	65,034,135	6,858,021.91	10,922,648.48	7,000,000
Dam & Facility Maintenance (2G25-031-000)	30,194,841	5,511,833.19	7,422,312.42	5,000,000
Dam Safety and Facility Rehabilitation (SD-000033)	62,576,104	5,838,539.60	12,227,774.80	10,000,000
Debt Service for SW/WW Facility (2G25-117-000)	9,179,000	0.00	5,000,000.00	4,179,000
Emergency and Flood Response Projects (SD-000032)	36,686,091	1,432,074.25	14,457,916.30	7,000,000
Enterprise Asset Management-Work Order System (SD-000044)	2,400,000	0.00	1,000,000.00	1,400,000
Flood Prevention-Huntington Area-2012 (SD-000037)	41,350,000	204,250.20	2,260,024.24	0
Lake Accotink Dredging (SD-000041)	5,000,000	576,187.62	4,423,812.38	0
Laurel Hill Adaptive Reuse Infrastructure (SD-000038)	1,925,000	8,306.59	0.00	0
NVSWCD Contributory (2G25-007-000)	6,530,042	554,811.00	554,811.00	609,346
Occoquan Monitoring Contributory (2G25-008-000)	1,750,641	172,138.00	177,799.00	183,437
Scotts Run Stream Restoration (SD-000043)	151,358	151,357.99	0.00	0
Stormwater Allocation to Towns (2G25-027-000)	7,644,829	816,434.14	1,294,119.92	1,000,000
Stormwater Civil Penalties Fees (2G25-119-000)	185,750	0.00	185,750.00	0
Stormwater Facility (SD-000039)	96,515,000	1,985,385.95	88,412,475.41	0
Stormwater Proffers (2G25-032-000)	56,500	0.00	56,500.01	0
Stormwater Regulatory Program (2G25-006-000)	64,014,584	2,588,925.98	7,420,778.36	4,000,000
Stream & Water Quality Improvements (SD-000031)	255,588,016	22,533,970.99	80,322,038.93	23,507,957
Towns Grant Contribution (2G25-029-000)	4,805,976	176,548.01	906,583.17	0
Tree Preservation and Plantings (2G25-030-000)	308,916	28,427.87	232,993.36	0
Total	**$705,621,783**	**$50,984,399.13**	**$242,012,717.76**	**$65,879,740**

U.S. Department of Homeland Security
500 C Street, SW
Washington, DC 20472

FEMA

October 21, 2020

Mr. Bryan Hill
Fairfax County Executive
12000 Government Center Parkway, Suite 552
Fairfax, Virginia 22035-0066

Dear Mr. Hill:

The purpose of this letter is to provide you with the results of the National Flood Insurance Program (NFIP) Community Rating System (CRS) field verification findings based on your 5-year cycle verification. The field verification report is enclosed for your records.

I am pleased to inform you that the Department of Homeland Security, Federal Emergency Management Agency (FEMA), has determined that Fairfax County will retain its current rating as a Class 6 in the NFIP CRS. The floodplain management activities implemented by your community qualify it for a 20 percent discount on flood insurance premiums for NFIP policies issued or renewed in Special Flood Hazard Areas on or after April 1, 2021. This savings is a tangible result of the flood mitigation activities your community implements to protect lives and reduce property damage.

Please note that Preferred Risk Policies, applicable in Zones B, C, and X on your community's NFIP Flood Insurance Rate Map, are not eligible for the CRS discount. Standard rated flood insurance policies in Zones B, C, X, D, AR, and A99 are limited to a CRS discount of 10 percent in Class 1–6 communities and 5 percent in Class 7–9 communities. The rates for the above-mentioned policies already reflect significant premium reductions.

The CRS rating for your community will automatically be renewed annually as long as there are no NFIP noncompliance actions, so a notification letter will not be sent every year. This annual renewal will take place as long as your community continues to implement the CRS activities you certify in your annual recertification documentation. If no additional modifications or new CRS activities are added, the next verification visit for your community will be in accordance with its established 5-year cycle. In the interim, FEMA will periodically send the *NFIP/CRS Update* newsletter and other notices to your CRS Coordinator to keep your community informed.

I commend you on your community actions and your determination to lead your community to be more disaster resistant. This commitment enhances public safety, property protection, and protects the natural functions of floodplains, and reduces flood insurance premiums.

If you have any questions or need additional information, please contact the FEMA Region III Office, CRS Coordinator Richard Sobota, by telephone at (215) 931-5514.

Sincerely,

William H Lesser

William H. Lesser, CRS Coordinator
Federal Insurance and Mitigation Administration

Enclosure
cc: Craig Carinci, CRS Coordinator

NFIP/CRS

COMMUNITY
RATING
SYSTEM

VERIFICATION REPORT

Fairfax County, VA **Verified Class 6**

NFIP Number: 515525 Cycle

Date of Verification Visit: December 18, 2019

This Verification Report is provided to explain the recommendations of Insurance Services Office, Inc. (ISO) to DHS/FEMA concerning credits under the Community Rating System (CRS) for the above named community.

A total of 2456 credit points are verified which results in a recommendation that the community remain classified as a CRS Class 6. The community has met the Class 6 prerequisite with a Building Code Effectiveness Grading Schedule (BCEGS) Classification of 2/1. The following is a summary of our findings with the total CRS credit points for each activity listed in parenthesis:

Activity 310 – Elevation Certificates: The Environmental Services Division maintains elevation certificates for new and substantially improved buildings. Copies of elevation certificates are made available upon request. (0 points)

Activity 320 – Map Information Service: Credit is provided for furnishing inquirers with basic flood zone information from the community's latest Flood Insurance Rate Map (FIRM). Credit is also provided for the community furnishing flood depth data, historical flood information, and natural floodplain functions. The service is publicized annually, and records are maintained. (90 points)

Activity 330 – Outreach Projects: Credit is provided for informational outreach projects (general outreach projects) and targeted outreach projects. These projects are disseminated annually. Credit is also provided for having a pre-flood plan for public information. (164 points)

Activity 350 – Flood Protection Information: Documents relating to floodplain management are available in the reference section of the Fairfax County Public Library. Credit is also provided for floodplain information displayed on the community's website. (51 points)

Activity 360 – Flood Protection Assistance: Credit is provided for offering one-on-one advice regarding property protection. (25 points)

Activity 410 – Floodplain Mapping: Credit is provided for conducting and adopting flood studies for areas not included on the FIRM and that exceed minimum mapping standards. (90 points)

Activity 420 – Open Space Preservation: Credit is provided for preserving approximately 63 percent of the Special Flood Hazard Area (SFHA) as open space and preserving open space land in a natural state. Credit is also provided for regulations that minimize development in the SFHA. (1036 points)

Activity 430 – Higher Regulatory Standards: Credit is provided for enforcing regulations that require development limitations, freeboard for new and substantial improvement construction, foundation protection, and local drainage protection. Credit is also provided for the enforcement of building codes, a BCEGS Classification of 2/1, state mandated regulatory standards, and regulations administration. (246 points)

Activity 440 – Flood Data Maintenance: Credit is provided for maintaining and using additional map data in the day to day management of the floodplain. Credit is also provided for establishing and maintaining a system of benchmarks and maintaining copies of all previous FIRMs and Flood Insurance Study Reports. (179 points)

Activity 450 – Stormwater Management: The community enforces regulations for stormwater management, soil and erosion control, and water quality. (137 points)

Section 502 – Repetitive Loss Category: Based on the updates made to the NFIP Report of Repetitive Losses as of December 18, 2017, Fairfax County, VA has 76 repetitive loss properties and is a Category C community for CRS purposes. The community is required to submit either a Repetitive Loss Area Analysis or Floodplain Management Plan. (No credit points are applicable to this section)

Activity 510 – Floodplain Management Planning: Credit is provided for the adoption and implementation of the NOVA Hazard Mitigation Plan adopted April 4, 2017. A progress report must be submitted on an annual basis. (50 points)

Activity 520 – Acquisition and Relocation: Credit is provided for acquiring 2 buildings from the community's regulatory floodplain. (12 points)

Activity 540 – Drainage System Maintenance: Credit is provided for listing problem sites that are inspected more frequently and for implementing an ongoing Capital Improvements Program. (80 points)

Activity 610 – Flood Warning and Response: Credit is provided for a program that provides timely identification of impending flood threats, disseminates warnings to appropriate floodplain residents, and coordinates flood response activities. Credit is also provided for the designation as a Storm Ready Community by the National Weather Service. (259 points)

Activity 630 – Dams: Credit is provided for a State Dam Safety Program. (37 points)

Activity 710 – County Growth Adjustment: A credit in the 400 series is multiplied by the growth rate of the county to account for growth pressures. The growth rate for Fairfax County, VA is 1.04.

Attached is the Community Calculations Worksheet that lists the verified credit points for the Community Rating System.

CEO Name / Address:	**CRS Coordinator Name / Address:**
Bryan Hill County Executive of Fairfax County 12000 Government Center Parkway Fairfax, Virginia 22035	Craig Carinci Director, Stormwater Planning Division 12000 Government Center Parkway Fairfax, Virginia 22035 (703) 324-5500

Date Report Prepared: July 14, 2020

Community : Fairfax County, VA **NFIP Number :** 515525

---

720 COMMUNITY CREDIT CALCULATIONS (Cycle):

CALCULATION SECTION :

Verified Activity Calculations:					Credit
c310					
c320	90				90
c330	164				164
c340					
c350	51				51
c360	25				25
c370					
c410	87	x CEA	1.04	=	90
c420	996	x CEA	1.04	=	1036
c430	237	x CEA	1.04	=	246
c440	172	x CEA	1.04	=	179
c450	132	x CEA	1.04	=	137
c510	50				50
c520	12				12
c530					
c540	80				80
c610	259				259
c620					
c630	37				37

Community Classification Calculation:

cT = total of above cT = 2456

Community Classification (from Table 110-1): Class = 6

CEO Name/Address:

Bryan Hill
County Executive of Fairfax County
12000 Government Center Parkway
Fairfax, Virginia 22035

CRS Coordinator Name/Address:

Craig Carinci
Director, Stormwater Planning Division
12000 Government Center Parkway
Fairfax, Virginia 22035
(703) 324-5500

Date Report Prepared: July 14, 2020

Attachment 3

Tucker Avenue Project Area

February 24, 2022

Social Vulnerability Classification

🟥 High Social Vulnerability

🟧 Moderate Social Vulnerability

🟩 Not Socially Vulnerable

▨ Not included in the analysis

Social Vulnerability Index Score

🟨 Very Low Social Vulnerability

🟨 Low Social Vulnerability

🟧 Moderate Social Vulnerability

🟫 High Social Vulnerability

🟥 Very High Social Vulnerability

▨ Not inlcuded in the analysis

1:36,112

0 0.175 0.35 0.7 mi

0 0.275 0.55 1.1 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPT VA

Attachment 4

Ann Jennings
Secretary of Natural and Historic Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH *of* VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

January 10, 2022

Joni Calmbacher, PE, CFM
Project Manager II
DPWES, Stormwater Planning Division
Watershed Projects Implementation Branch – South
12000 Government Center Parkway Fairfax, VA 22035

RE: Fairfax County Resilience Plan Submission - CFPF

Dear Ms. Calmbacher,

Thank you for providing an overview of your Resilience Plan, and informing DCR of the various plans that Fairfax County will be utilizing to fulfill the Resilience Plan submission requirements. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on January 11, 2025.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

   Meets criteria as written.

   a. Project-based: Fairfax County is divided into 30 watersheds which have been addressed in 11 major watershed management plans. Each of the watershed management plans contains projects and watershed management area restoration strategies. The 2017 *Northern Virginia Hazard Mitigation Plan* was a regional effort involving nineteen counties, including Fairfax County, and outlines specific mitigation projects for each participating community in order to reduce vulnerability and exposure to future hazards, including flooding events. The *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management* contains projects at various locations throughout Fairfax County. The projects included and described in the *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management* align with the established *Comprehensive Plan* objectives. The *Resilient Critical*

600 East Main Street, 24th Floor | Richmond, Virginia 23219 | 804-786-6124

State Parks • Soil and Water Conservation • Outdoor Recreation Planning
Natural Heritage • Dam Safety and Floodplain Management • Land Conservation

Infrastructure Roadmap for Northern Virginia contains a database of resilience projects throughout northern Virginia, including Fairfax County.

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

   Meets criteria as written.

   a. The 2020 R*egional Collaboration to Build Community Resilience in Northern Virginia* expanded upon *The Roadmap*, to include maximization of green infrastructure. Nature-based solutions are also presented in the *Fairfax County Watershed Management Plan* and the *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management*.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**

   Meets criteria as written.

   a. All parts of a locality: The *Northern Virginia Hazard Mitigation Plan* discusses the demographic and economic trends throughout the entirety of Fairfax County.

   b. Social vulnerability: The R*egional Collaboration to Build Community Resilience in Northern Virginia* presents a more comprehensive approach that includes an assessment of the socioeconomic impacts of infrastructure disruptions on vulnerable populations that will be taken into account as well as the socioeconomic benefits of infrastructure investment. This expanded upon objectives contained within *The Roadmap*, to ensure equitable access to resilient critical infrastructure.

   c. Demographic Analysis: Population and demographic characteristics outlined within the *Northern Virginia Hazard Mitigation Plan*. The *Fairfax County Comprehensive Plan* also looks at demographics and social factors and utilizes this information to support the Human Services section of the *Comprehensive Plan*.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**

   Meets criteria as written.

   a. Coordination with other local and inter-jurisdictional projects, plans and activities: Objective 4: Strengthen Regional Resilience Through Innovative Partnerships, Programs, and Pilots contained within *Resilient Critical Infrastructure Roadmap for Northern Virginia* focuses on coordination with local and inter-jurisdictional agencies and aligning strategies and programs. The *Comprehensive Plan for Fairfax County, Virginia* was adopted by the Board of Supervisors, Planning Commision, The Department of Planning and Zoning, and the Department of Transportation, and guides all of the plans presented in the Resilience Plan

submission for Fairfax County. The *Northern Virginia Hazard Mitigation Plan* was a collaborative effort that was adopted by all impacted localities.

   b. Clearly articulated timeline or phasing plan for implementation: Timeline for deliverables is presented within the R*egional Collaboration to Build Community Resilience in Northern Virginia*. Timeline presented within the F*airfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management*. Phased implementation plans presented in the *Fairfax County Watershed Management Plans*.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

   Meets criteria as written.

   a. The 2018 *Resilient Critical Infrastructure Roadmap for Northern Virginia (Roadmap)* incorporates best available science and identifies actions to potentially decrease the severity of future consequences emanating from climate and extreme weather, to include sea level rise and storm surge. *Sea Level Rise: Impact on Northern Virginia* is an interactive story map and dashboard that was created in 2019 to convey the impact of sea level rise scenarios. The *Northern Virginia Hazard Mitigation Plan* includes analyses of natural hazards based on best available science to include flooding, sea level rise and land subsidence, tropical and coastal storms, and shoreline erosion.

VA DCR looks forward to working with you as you work to make Fairfax County a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl Glover, DCR

Attachment 5

THIS DOCUMENT SHOWS PROPOSED STORMWATER INFRASTRUCTURE IMPROVEMENTS ALONG TUCKER AVENUE AND THROUGHOUT THE ADJACENT NEIGHBORHOOD.

LEGEND

- PROPOSED STORM INFRASTRUCTURE
- PROPOSED GREEN INFRASTRUCTURE
- PROPOSED CURB
- PROPOSED INLET DRAINAGE AREA
- EFFECTIVE BASE FLOOD ELEVATION PER FEMA DFIRM
- OVERALL WATERSHED BOUNDARY
- SERVICE COMPLAINTS
- × PROPOSED TREE REMOVAL
- 4"G EXISTING GAS
- 6"W EXISTING WATER
- EXISTING ELECTRIC/COMM

NOTE: STREET ADDRESSES PROVIDED BY FAIRFAX COUNTY GIS

Stantec

5209 Center Street
Williamsburg, Virginia 23188
(757) 220-6869

1011 Boulder Springs Drive, Suite 225
Richmond, Virginia 23225
(804) 267-3474

150 Riverside Parkway, Suite 301
Fredericksburg, Virginia 22406
(540) 785-5544

Δ#	BY	DATE
QUALITY CHECK		

REVISIONS

Δ#	DESCRIPTION	BY	APPROVED	DATE
APPROVED BY THE STORMWATER PLANNING DIVISION				

EMERGENCY POLICE – FIRE – RESCUE 911

MARCH 2022

FAIRFAX COUNTY, VIRGINIA
DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL SERVICES
12000 GOVERNMENT CENTER PARKWAY, SUITE 449 FAIRFAX, VA 22035–0052

STORMWATER PLANNING DIVISION
703–324–5500

CONSTRUCTION PLAN
OVERALL PLAN PALMER MAP

PROJECT NO.
SD-000031-224

SCALE
1"=80'

DESIGNED BY: S.CATHEY
DRAFTED BY: S.CATHEY
CHECKED BY: G.RHODES

SHEET
1

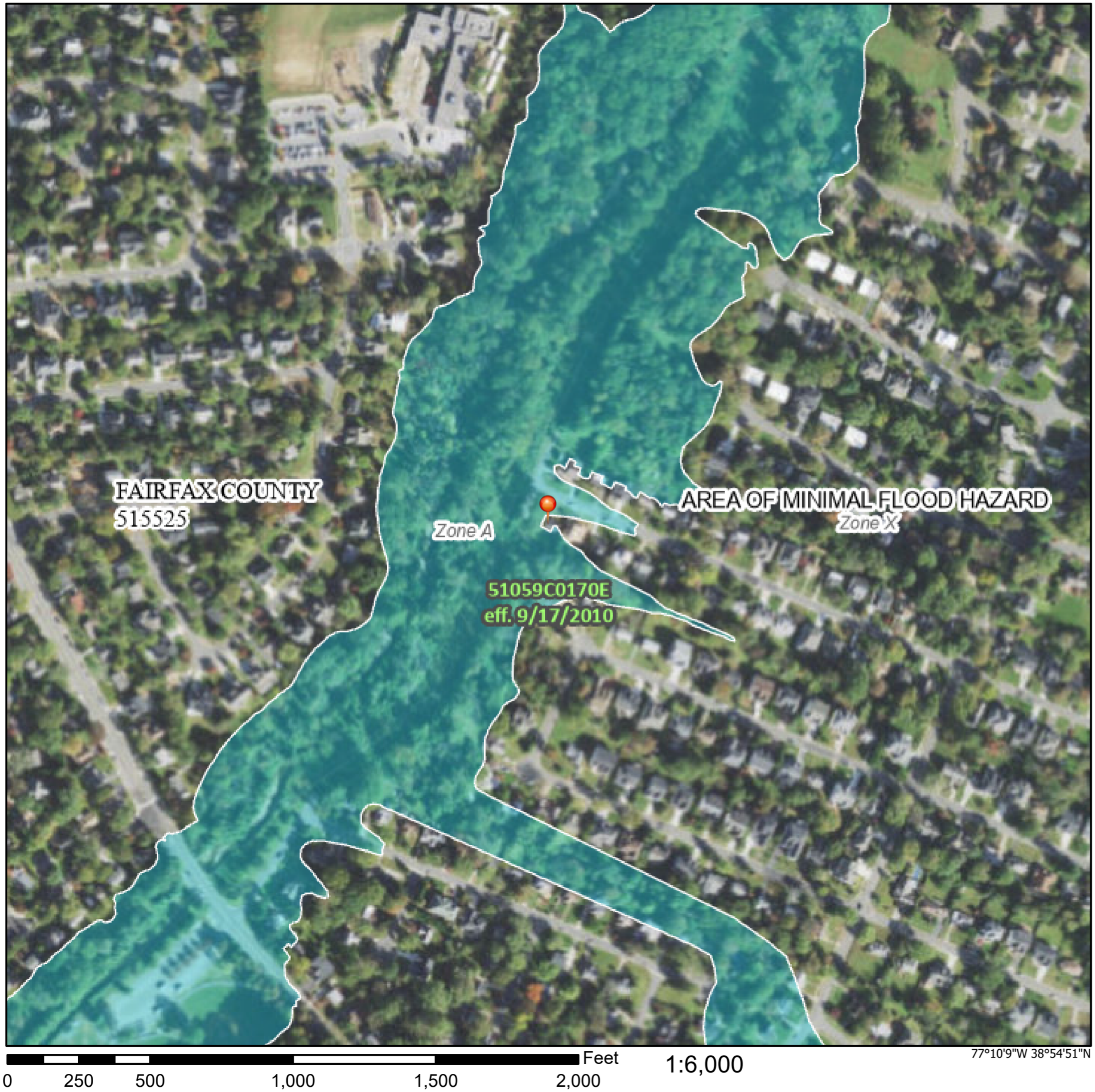
FUND# 400–C40101

Attachment 6

National Flood Hazard Layer FIRMette

FEMA

77°10'46"W 38°55'19"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	▭	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	ı ı ı ı ı ı ı	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	— - — -	Coastal Transect Baseline
	- —	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/24/2022 at 8:58 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 7

SD-000031-234 Encumbrances

Posting Date	Earmarked Funds	Text	Original Amount (LC)	Amount Total (TC)	Amount Total (LC)	Funds Center	Fund	G/L Account	Vendor
6/7/2019	1000065523	AE19125941-01,TuckerAveNeighSTW,Stantec,TOY3-11	179,108.93	199,998.68	199,998.68	G252901001	400-C401(	563040	1000026227
6/7/2019	1000065523	AE19125941-02,TuckerAveNeighSTW,Stantec,TOY3-11	20,891.07	1.32	1.32	G252901001	400-C401(	563040	1000026227
9/23/2019	1000068021	SD-31-224,TuckerAve,MacLeodTitle	15,000.00	15,000.00	15,000.00	G252901001	400-C401(	561050	1500077440
1/9/2020	1000069987	SD-31-224 TUCKER AVE SURVEYING & MAPPING TO#02-024	94,665.22	94,665.22	94,665.22	G252901001	400-C401(	563010	1000038175
4/20/2020	1000071504	SD-31-224, TUCKER AVE IMPROVE, STANTEC, Y4-10	22,307.64	24,635.21	24,635.21	G252901001	400-C401(	563010	1000026227
4/20/2020	1000071504	SD-31-224, TUCKER AVE, STANTEC, Y4-10 CONTINGENCY	2,692.36	364.79	364.79	G252901001	400-C401(	563010	1000026227
7/7/2020	1000072435	SD-31-224 TUCKER AVE STW IMPROV. STANTEC TO#Y5-1	43,940.54	45,566.75	45,566.75	G252901001	400-C401(	563040	1000026227
7/7/2020	1000072435	SD-31-224 TUCKER AVE STANTEC TO#Y5-1 CONTINGENCY	3,059.46	1,433.25	1,433.25	G252901001	400-C401(	563040	1000026227
9/16/2020	1000073013	SD-31-224,TUCKER AVE, JUNJI CHEN, PERMANENT	12,720.00	12,720.00	12,720.00	G252901001	400-C401(	561090	1000044998
9/16/2020	1000073013	SD-31-224,TUCKER AVE, JUNJI CHEN,TEMPORARY	2,410.00	2,410.00	2,410.00	G252901001	400-C401(	561100	1000044998
9/25/2020	1000073057	SD-31-224,TUCKER AVE, SAM03-002,SAM	80,000.00	80,000.00	80,000.00	G252901001	400-C401(	563010	1000038175
10/7/2020	1000073123	SD-31-224 TUCKER AVE PERM. EASEMENT HODA FATEEM	2,760.00	2,760.00	2,760.00	G252901001	400-C401(	561090	1000045124
10/7/2020	1000073123	SD-31-224 TUCKER AVE TEMP. EASEMENT HODA FATEEM	1,540.00	1,540.00	1,540.00	G252901001	400-C401(	561100	1000045124
10/7/2020	1000073124	SD-31-224 TUCKER AVE. PERM. EASEMENT DAVID RULEY	7,070.00	7,070.00	7,070.00	G252901001	400-C401(	561090	1000045092
10/28/2020	1000073225	SD-31-224,TUCKER AVE, HUI WANG,PERMANENT EASEMENT	12,720.00	12,720.00	12,720.00	G252901001	400-C401(	561090	1000045186
10/28/2020	1000073225	SD-31-224,TUCKER AVE, HUI WANG, TEMPORARY EASEMENT	2,410.00	2,410.00	2,410.00	G252901001	400-C401(	561100	1000045186
12/3/2020	1000073408	SD-31-224, TUCKER AVE., PERM EASEMENT, TERESA SHAW	7,890.00	7,890.00	7,890.00	G252901001	400-C401(	561090	1000045422
12/3/2020	1000073408	SD-31-224, TUCKER AVE., TEMP EASEMENT, TERESA SHAW	2,650.00	2,650.00	2,650.00	G252901001	400-C401(	561100	1000045422
12/3/2020	1000073408	SD-31-224, TUCKER AVE., ADMIN STTLMNT, TERESA SHAW	3,950.00	3,950.00	3,950.00	G252901001	400-C401(	561030	1000045422
5/3/2021	1000074265	SD-31-224, TUCKER AVE, ROBERT LOH, PERM EASEMENT	5,480.00	5,480.00	5,480.00	G252901001	400-C401(	561090	1000046246
5/3/2021	1000074265	SD-31-224, TUCKER AVE, ROBERT LOH, TEMP EASEMENT	910.00	910.00	910.00	G252901001	400-C401(	561100	1000046246
5/5/2021	1000074287	SD-31-224, TUCKER AVE, MICHAEL JOHNSHOY, PERM EASE	2,210.00	2,210.00	2,210.00	G252901001	400-C401(	561090	1000046272
8/16/2021	1000075671	SD-31-224, TUCKER AVE, ROBERT LEE, PERM EASEMENT	27,425.00	27,425.00	27,425.00	G252901001	400-C401(	561090	1000046939
9/14/2021	1000075845	SD-31-224, TUCKER AVE, MITZY WHITE, PERM EASEMENT	15,040.00	15,040.00	15,040.00	G252901001	400-C401(	561090	1000047121
			$ 568,850.22	$ 568,850.22					

SD-000032-074 Encumbrances

Posting Date	Earmarked Funds	Text	Original Amount (LC)	Amount Total (TC)	Amount Total (LC)	Funds Center	Fund	G/L Account	Vendor
11/5/2020	1000073267	SD-32-074,TUCKER AVENUE NEIGH,0304-08-03-0007,PERM	14,310.00	14,310.00	14,310.00	G252901001	400-C401(	561090	1000045269
11/5/2020	1000073267	SD-32-074,TUCKER AVENUE NEIGH,0304-08-03-0007,TEMP	4,850.00	4,850.00	4,850.00	G252901001	400-C401(	561100	1000045269
11/9/2020	1000073278	SD-32-74 TUCKER AVE. PERM EASEMENT JEANNE INCE	6,980.00	6,980.00	6,980.00	G252901001	400-C401(	561090	1000045280
11/19/2020	1000073351	SD-32-74, TUCKER AVENUE, STANTEC, Y5-07	1,098,274.78	1,113,077.87	1,113,077.87	G252901001	400-C401(	563040	1000026227
11/19/2020	1000073351	SD-32-74, TUCKER AVENUE, STANTEC, Y5-07, CONTIN	111,725.22	96,922.13	96,922.13	G252901001	400-C401(	563040	1000026227
12/16/2020	1000073487	SD-32-074, TUCKER AVENUE NEIGH,040-2-14-0058A,PERM	300.00	300.00	300.00	G252901001	400-C401(	561090	1000040773
3/2/2021	1000073835	SD-32-074, TUCKER AVE,PERM EASEMENT,BARBARA SEMEDO	17,040.00	17,040.00	17,040.00	G252901001	400-C401(	561090	1000045903
3/2/2021	1000073835	SD-32-074, TUCKER AVE,ADMIN STTLMNT,BARBARA SEMEDO	11,360.00	11,360.00	11,360.00	G252901001	400-C401(	561030	1000045903
3/4/2021	1000073873	SD-32-074, TUCKER AVE,PERM EASEMENT,BARBARA SEMEDO	28,400.00	28,400.00	28,400.00	G252901001	400-C401(	561090	1000045903
7/28/2021	1000075491	SD-32-74, TUCKER AVE, LAWYER REV, DINSMORE & SHOHL	1,200.00	1,200.00	1,200.00	G252901001	400-C401(	561030	1000046837
8/16/2021	1000075672	SD-32-074, TUCKER AVE, RAJAN NAIK, PERM EASEMENT	4,840.00	4,840.00	4,840.00	G252901001	400-C401(	561090	1000045990
12/17/2021	1000076545	SD-32-074, TUCKER AVE NEIGHBORHOOD, SAM04-036	29,833.52	29,833.52	29,833.52	G252901001	400-C401(	563030	1000038175
			$ 1,329,113.52	$ 1,329,113.52					

Attachment 8

Stantec

OPINION OF PROBABLE COST

10/29/2021
Construction Plan
Tucker Avenue Neighborhood
Stormwater Improvements

ITEM NO	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	BID EXT.
1	MOBILIZATION PER SECTION 1025-2.1 (5%)	1	LS	$272,480.00	$272,480.00
2	SURVEY STAKEOUT AND BENCHMARKS	1	LS	$50,000.00	$50,000.00
3	TRAFFIC CONTROL PER SECTION 1025-2.2	1	LS	$236,000.00	$236,000.00
4	MODERATE CLEARING AND GRUBBING	1	LS	$15,000.00	$15,000.00
5	REMOVE TREES, 6"-12" DIAMETER	29	EA	$570.00	$16,530.00
6	REMOVE TREES, 13"-24" DIAMETER	27	EA	$1,215.00	$32,805.00
7	REMOVE TREES, 25"-36" DIAMETER	4	EA	$2,535.00	$10,140.00
8	REMOVE TREES, 37"-45" DIAMETER	1	EA	$3,000.00	$3,000.00
9	REMOVE AND DISPOSE OF ASPHALT PAVEMENT	4,700	SY	$35.00	$164,500.00
10	REMOVE AND DISPOSE OF CURB AND GUTTER	4,500	LF	$21.00	$94,500.00
11	REMOVE AND DISPOSE OF CONCRETE DITCH	500	SY	$30.00	$15,000.00
12	PRIVATE LOT RESTORATION[1]	42	EA	$3,000.00	$126,000.00
13	REMOVE AND DISPOSE OF STORM STRUCTURE	17	EA	$2,450.00	$41,650.00
14	REMOVE AND DISPOSE 15" - 30" DIAMETER PIPES UP TO 8' DEPTH (ALL TYPES)	920	LF	$50.00	$46,000.00
15	PLUG STORM SEWER PIPE	10	EA	$410.00	$4,059.00
16	WATER SERVICE CONNECTION	54	EA	$1,500.00	$81,000.00
17	GAS SERVICE CONNECTION	52	EA	$2,200.00	$114,400.00
18	PRE AND POST CONSTRUCTION VIDEO INSPECTION OF STORM SEWER PIPES	3,520	LF	$5.00	$17,600.00
19	PAVEMENT TRENCH PATCHING	4,700	SY	$70.00	$329,000.00
20	MILL AND OVERLAY	10,500	SY	$20.00	$210,000.00
21	REMOVE AND REPLACE VDOT SIGNAGE IN ROW	1	LS	$5,000.00	$5,000.00
22	INSTALLATION OF CURB AND GUTTER	4,500	LF	$29.00	$130,500.00
23	FURNISH AND INSTALL CONTROLLED FILL ADJACENT TO STORM STRUCTURES	7,900	CY	$58.00	$458,200.00
24	PIPE BEDDING MATERIAL (VDOT NO.25/26)	360	CY	$75.00	$27,023.33
25	RCP CLASS III TO V, 18"	990	LF	$42.00	$41,580.00
26	RCP CLASS III TO V, 24"	1,060	LF	$78.00	$82,680.00
27	RCP CLASS III TO V, 30"	1,150	LF	$93.00	$106,950.00
28	RCP CLASS III TO V, 36"	1,290	LF	$124.00	$159,960.00
29	RCP CLASS III TO V, 42"	300	LF	$246.00	$73,800.00
30	RCP CLASS III TO V, 54"	530	LF	$514.00	$272,420.00
31	CONCRETE BOX CULVERT, 60" X 48"	970	LF	$750.00	$727,500.00
32	ELLIPTICAL, RCP CLASS III, 18 TO 30" EQV	140	LF	$93.00	$13,020.00
33	CURB INLET TOP, 8' THROAT LENGTH	2	EA	$2,500.00	$5,000.00
34	CURB INLET TOP, 12' THROAT LENGTH	1	EA	$2,500.00	$2,500.00
35	CURB INLET TOP, 20' THROAT LENGTH	38	EA	$2,500.00	$95,000.00
36	DROP INLET	1	EA	$5,500.00	$5,500.00
37	STORM SEWER MANHOLE, 48" DIA	43	EA	$5,750.00	$247,250.00
38	STORM SEWER MANHOLE, 60" DIA	11	EA	$7,500.00	$82,500.00
39	STORM SEWER MANHOLE, 72" DIA	4	EA	$8,500.00	$34,000.00
40	STORM SEWER MANHOLE, 96" DIA	2	EA	$11,400.00	$22,800.00
41	DI-1A OR DI-2A INLET FOR GI	3	EA	$6,500.00	$19,500.00
42	MH-1A FOR GI	3	EA	$6,500.00	$19,500.00

43	JUNCTION BOX (JB-1)	9	EA	$15,000.00	$135,000.00
44	FAIRFAX STD YI-1	4	EA	$7,305.00	$29,220.00
45	FAIRFAX STD YI-3	2	EA	$7,305.00	$14,610.00
46	INSTALL VDOT STANDARD BCW-11	1	EA	$6,000.00	$6,000.00
47	ROADWAY REPROFILING	610	SY	$70.00	$42,700.00
48	ENGINEERED SOIL MEDIA	370	CY	$125.00	$46,250.00
49	VDOT#57 STONE SUMP LAYER	580	CY	$114.00	$66,120.00
50	PEA GRAVEL	80	CY	$122.00	$9,760.00
51	8" HDPE PIPING WITH CLEANOUT AND FITTINGS	640	LF	$70.00	$44,800.00
52	8" DUCTILE IRON PIPE WITH FITTINGS	30	LF	$177.00	$5,310.00
53	12" HDPE PIPING WITH FITTINGS	30	LF	$80.00	$2,400.00
54	24" HDPE PIPING WITH FITTINGS	50	LF	$150.00	$7,500.00
55	ADS-310 CHAMBER	12	EA	$150.00	$1,800.00
56	ADS-740 CHAMBER	34	EA	$295.00	$10,030.00
57	ADS-310 END CAP	4	EA	$75.00	$300.00
58	ADS-740 END CAP	14	EA	$250.00	$3,500.00
59	ADS 10" INSPECTION PORT	8	EA	$1,000.00	$8,000.00
60	CURB CUT WITH ENERGY DISSIPATER	3	EA	$3,500.00	$10,500.00
61	OBSERVATION WELL AND CLEANOUT	3	EA	$1,000.00	$3,000.00
62	UNDERDRAIN CONNECTION	8	EA	$1,500.00	$11,250.00
63	NON-WOVEN GEOTEXTILE FABRIC	1,030	SY	$4.00	$4,120.00
64	IMBRICATED STONE FOR OUTFALL BASIN, CHECK DAMS, AND FLOW SPREADER	230	TON	$155.00	$35,650.00
65	VDOT #21 COARSE GRAVEL FOR OUTFALL BASIN ACCESS	170	CY	$95.00	$16,150.00
66	INSTALL REMOVABLE LOCKING BOLLARDS	4	EA	$1,065.00	$4,260.00
67	REGULAR EXCAVATION (CUT TO HAUL)	15,000	CY	$45.00	$675,000.00
68	TEMPORARY CONSTRUCTION ENTRANCE	2	EA	$2,600.00	$5,200.00
69	TEMPORARY SAFETY FENCE AND TREE PROTECTION	14,015	LF	$4.00	$56,060.00
70	SUPER SILT FENCE	2,250	LF	$10.00	$22,500.00
71	INLET PROTECTION	72	EA	$160.00	$11,520.00
72	CULVERT INLET PROTECTION	4	EA	$160.00	$640.00
73	ACCESS (TIMBER MATS)	220	SY	$45.00	$9,900.00
74	OUTLET PROTECTION (CLASS I RIPRAP)	20	SY	$120.00	$2,400.00
75	GOOSE PROTECTION FENCE	400	LF	$4.00	$1,600.00
76	HARDWOOD MULCH - 3" DEPTH	180	SY	$6.00	$1,080.00
77	SOILMATE COMPOST OR EQUAL	1,800	CY	$57.00	$102,600.00
78	TURF STABILIZATION SEED MIX	10,800	SY	$3.00	$32,400.00
79	TEMPORARY STABILIZATION SEED MIX	2,700	SY	$2.50	$6,750.00
80	HERBACEOUS SEEDING, NATIVE SEEDING WITH SUNNY UPLAND AND SHADY MIXES	1,800	SY	$3.00	$5,400.00
81	1.5"-2" CALIPER CANOPY TREE	18	EA	$370.00	$6,660.00
82	1"-1.5" CALIPER UNDERSTORY TREE	74	EA	$130.00	$9,620.00
83	3/4" CALIPER UNDERSTORY TREE	58	EA	$100.00	$5,800.00
84	24" SHRUB	34	EA	$50.00	$1,700.00
85	18" SHRUB	248	EA	$22.00	$5,456.00
86	#1 CONTAINER	116	EA	$19.00	$2,204.00
87	QUART CONTAINERS (NATIVE GRASS, PERENNIALS, FERNS)	2,233	EA	$6.00	$13,398.00
88	STEEL PLATE (FOR GI-MH-1)	1	EA	$3,500.00	$3,500.00
89	LANDSCAPE BLOCK WALL	120	SF	$85.00	$10,200.00
90	SANITARY SEWER RELOCATION[2]	1	LS	$700,500.00	$700,500.00
	TOTAL AMOUNT WITHOUT MATERIALS MANAGEMENT				$6,722,165.33
91	MATERIALS MANAGEMENT (10% Contingency)[3]	1	LS	$ 673,000.00	$673,000.00

	TOTAL AMOUNT				$7,395,165.33

[1] Private Lot Restoration represents an average cost per disturbed private property for the removal and replacement of items including, but not limited to, driveway, sidewalk, mailbox, irrigation, landscaping, and lighting features.

[2] Lump sum is reflected in overall cost estimate, see attached Construction Plan design sanitary sewer relocation estimate for detailed estimate.

[3] Materials Management includes a 10% contingency for the estimated project cost to account for unforeseen project costs as well as line items that have not been accounted for at the 95% design phase.

Stantec Consulting Services Inc. does not guarantee the accuracy of this opinion of probable cost.
The actual final cost of the project will be determined through the bidding and construction process.

COMMONWEALTH OF VIRGINIA
MEGAN MCCOLLOUGH
Lic. No. 48541
10/29/2021
PROFESSIONAL ENGINEER

Stantec

TUCKER AVE SANITARY SEWER REALIGNMENT
STANTEC ENGINEERS OPINION OF PROBABLE COST

ITEM NO. (from District Average Unit Cost Data, if applicable)	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM TOTAL
BASE BID - SEWER PIPE INSTALLED					
42044	4-INCH SANITARY SERVICE LATERAL CONNECTION W CLEANOUTS	EA	15	$ 750.00	$ 11,250.00
40081	8-INCH PVC C900, GREEN	LF	1338	$ 110.00	$ 147,180.00
120	EXCAVATION	LF	1338	$ 36.00	$ 48,168.00
69014	BACKFILL	LF	1338	$ 229.00	$ 306,402.00
42755	4' ID PRE-CAST CONCRETE SEWER MANHOLE (APPROX 8-FT DEPTH, MH COMPLETE IN PLACE)	EA	8	$ 4,500.00	$ 36,000.00
	ABANDON 8-INCH SANITARY SEWERLINE	LF	100	$ 15.00	$ 1,500.00
	WASTEWATER BYPASS PUMPING	LS	1	$ 10,000.00	$ 10,000.00
				SUBTOTAL	**$ 560,500.00**
	CLASS VI OPCC CONTINGENCY		25%		$ 140,000.00

SUMMARY

	PROJECT TOTAL
TOTAL BASE BID - TUCKER AVE SANITARY SEWER REALIGNMENT	**$ 700,500.00**

NOTES: - Possible construction easements not evaluated

EXCLUSIONS:
- Erosion and sediment control
- Asphalt/driveway restoration
- Tree/grass/etc removal and restoration
- MOT/Traffic management
- OH utility relocation

Disclaimer: This Engineers Estimate reflects the opinion of Stantec of probable construction costs utilizing information available at the time the estimate was prepared. The unit costs are based on 2019 dollars. The unit cost estimates were developed from information provided by material suppliers, previous projects, and standard industry guidelines for construction cost estimating and assumes standard construction practices are utilized. Stantec has no control over future costs of construction labor, materials, equipment, nor of contractors' methods of determining prices, nor of competitive construction industry market conditions. The accuracy of the estimates is not guaranteed, and they are not intended to predict the outcome of the construction bidding.

FAIRFAX WATER
PLANNING AND ENGINEERING DIVISION
COST ESTIMATE

Cost Estimate For **P2711-001 Tucker Avenue Stormwater Improvements (SD-000032-0074)**
Water System Adjustments

Computed By **TJG** Checked By **RCC**
Approved By **RCC** Date **2/18/22**

416 LF - 6" DIP W/M @ $400/LF		$166,400	
285 LF - 8" DIP W/M @ $450/LF		$128,250	
8 - 6" Gate Valve & Valve Box @ $2,000/EA		$16,000	
2 - 8" Gate Valve & Valve Box @ $2,500/EA		$5,000	
3 - Fire Hydrant Installation @ $7,500/EA		$22,500	
6 - Relocate Existing Water Meter & Box @ $1,500/EA		$9,000	
660 LF - 1" Water Service Line @ $100/LF		$66,000	
Subtotal Construction Cost		$413,150	
Contingencies @	15%	$61,973	
Total Construction Cost		$475,123	
Fairfax Water Administration, Engineering, Inspection (includes 104% Overhead)		$65,000	
Total		$540,123	
USE			$550,000

Attachment 9

County of Fairfax, Virginia

MEMORANDUM

DATE: april 5, 2022

TO: Board of Supervisors

FROM: Bryan J. Hill
County Executive

SUBJECT: Department of Conservation and Recreation, Virginia Community Flood Preparedness Fund

The Virginia Community Flood Preparedness Fund (CFPF) was "established to provide support for regions and localities across Virginia, to reduce the impacts of flooding, including flooding driven by climate change." The Department of Conservation and Recreation (DCR) administers loans and grants from the CFPF to local governments. DCR has advertised that approximately $40,000,000 in matching CFPF funds is available this grant cycle. The minimum grant amount is $50,000 for project grants and $1,000 for study grants. Project grants will not be capped and final awards will be determined based on available funds following review by DCR. The grant amount per application will be determined based on scoring, amount requests from eligible applications, and available funds.

DCR is soliciting applications for flood prevention and protection project types including, but not limited to: i) nature-based solutions; ii) flood control solutions; and iii) preservation and creation of open space. DCR is also soliciting applications for the following study types including, but not limited to: i) floodplain ordinance revisions; ii) hydrologic and hydraulic floodplain studies with historic and predicted floods; iii) hydrologic and hydraulic floodplain studies to clarify or update FEMA Flood Insurance Rate Maps; and iv) studies and data collection of statewide and regional significance. Applications must be for discrete projects to be completed after the beginning of the application period and not later than three years from the date of an executed grant agreement or by an extension date approved by DCR. Applications for this grant cycle are due on April 8, 2022.

DCR will review applications and award grant assistance by category (project, study, and capacity building and planning) on a competitive scoring basis. Priority is given to applications that are in concert with local, state, and federal floodplain management standards, local resilience plans, and the Virginia Coastal Resilience Master Plan. Based on that ranking process, DCR will select and approve applications. The approved applications will be

Office of the County Executive
12000 Government Center Parkway, Suite 552
Fairfax, VA 22035-0066
703-324-2531, TTY 711, Fax 703-324-3956
www.fairfaxcounty.gov

forwarded to the Virginia Resources Authority for the execution of a grant agreement and funding.

For this grant cycle, Fairfax County (County) proposes submitting the following five applications:

Project/Study Title	**Project/Study Estimate**	**Grant Amount Requested**
1. Tucker Avenue Neighborhood Stormwater Improvements	$9,834,000	$5,900,000
2. Chowan Avenue Flood Mitigation	$2,000,000	$1,200,000
3. Little Pimmit Run Tributary at Woodland Terrace	$4,279,000	$2,567,000
4. Tripps Run at Barrett Road Flood Mitigation	$12,836,000	$8,985,200
5. County Regulated Floodplain Map Updates	$1,200,000	$600,000
Total	$30,149,000	$19,252,200

The County is under no financial obligation to apply for CFPF grants. If DCR selects one or more of these applications, the grant(s) will be presented to the Board of Supervisors for approval.

cc: Rachel Flynn, Deputy, County Executive
Christopher Herrington, Director, Department of Public Works and Environmental Services (DPWES)
Eleanor Ku Codding, Deputy Director DPWES, Stormwater and Wastewater Divisions

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID515525_FairfaxCounty_CFPF Applications

2 messages

Torgersen, Catherine S <Catherine.Torgersen@fairfaxcounty.gov> Tue, Apr 5, 2022 at 4:31 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Pokharel, Sajan" <Sajan.Pokharel@fairfaxcounty.gov>, "Habete, Daniel" <Daniel.Habete@fairfaxcounty.gov>, "Calmbacher, Joni" <Joni.Calmbacher@fairfaxcounty.gov>, "Wilkins, Fred H." <Fred.Wilkins@fairfaxcounty.gov>, "Carinci, Craig A." <Craig.Carinci@fairfaxcounty.gov>, "Ambrose, Heather" <Heather.Ambrose@fairfaxcounty.gov>, "Gutzler, Emma B." <Emma.Gutzler@fairfaxcounty.gov>

Good afternoon,

Fairfax County is pleased to submit the following five applications for grant round 3 of the Virginia Community Flood Preparedness Fund:

1. CID515525_FairfaxCounty_CFPF-1 Tucker Avenue Neighborhood Stormwater Improvement Project Application
2. CID515525_FairfaxCounty_CFPF-2 Chowan Avenue Stormwater Improvement Project Application
3. CID515525_FairfaxCounty_CFPF-3 Little Pimmit Run Tributary at Woodland Terrace Project Application
4. CID515525_FairfaxCounty_CFPF-4 Tripps Run at Barrett Road Flood Mitigation Project Application
5. CID515525_FairfaxCounty_CFPF-5 Regulated Floodplain Map Updates Study Application

The applications are available for download at the following Sharefile link: https://fairfaxcounty-ent.sharefile.com/d-s52b8f9fb46c444d8a5ecbe1f4ad3dd45

Please let me know if you are unable to download the applications or if you have any questions.

Thank you,

Catie Torgersen

Planner

Stormwater Planning Division, SWPD
Fairfax County DPWES

12000 Government Center Parkway
Fairfax, VA 22035
703-639-7664 (cell)

CFPF, rr <cfpf@dcr.virginia.gov> Wed, Apr 6, 2022 at 10:00 AM
To: "Torgersen, Catherine S" <Catherine.Torgersen@fairfaxcounty.gov>
Cc: "Pokharel, Sajan" <Sajan.Pokharel@fairfaxcounty.gov>, "Habete, Daniel" <Daniel.Habete@fairfaxcounty.gov>, "Calmbacher, Joni" <Joni.Calmbacher@fairfaxcounty.gov>, "Wilkins, Fred H." <Fred.Wilkins@fairfaxcounty.gov>, "Carinci,

Craig A." <Craig.Carinci@fairfaxcounty.gov>, "Ambrose, Heather" <Heather.Ambrose@fairfaxcounty.gov>, "Gutzler, Emma B." <Emma.Gutzler@fairfaxcounty.gov>

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FAIRFAX COUNTY

Chowan Avenue Stormwater Improvement

Virginia Community Flood Preparedness Fund

FY 2022 Round 3 Grant Application
April 8, 2022

Overtopping at 8th Street (May 16, 2014) (image from VDOT)

Overtopping at Chowan Avenue (September 08, 2011) (image from VDOT)

Attachment 2
CID515525_FairfaxCounty_CFPF-2 (Chowan)

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Fairfax County

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

X **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 515525

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bryan J. Hill,County Executive

Signature of Authorized Official: ____________________

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 552

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-2531 **Cell Phone Number:** (____) N/A

Email Address: cexbryanhill@fairfaxcounty.gov

Contact Person (If different from authorized official): Craig Carinci

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 449

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-5500 **Cell Phone Number:** (____) N/A

Email Address: craig.carinci@fairfaxcounty.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☒ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☒ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): Near the intersection of Chowan Avenue and 8th Street, Fairfax County

NFIP Community Identification Number (CID#):(See appendix F 515525

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☒ No

Flood Zone(s) (If Applicable): Discharged to Zone A

Flood Insurance Rate Map Number(s) (If Applicable): 51059C0285E

Total Cost of Project: $2,000,000

Total Amount Requested $1,200,000

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Fairfax County	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☐ **Yes** ☐ **No**
Applicant Name:	Fairfax County

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	X
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	X
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	X
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	X
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	X
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	X
No	**0**	
Total Points		**60**

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies) Attachment 1	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies) Attachment 2	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies) Attachment 3	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance Attachment 4	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close See Maintenance Plan Section	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan Attachment 5	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan Attachment 6	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer Attachment 7	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D Attachment 8	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government Attachment 9	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

FAIRFAX COUNTY

Chowan Avenue Stormwater Improvement

Virginia Community Flood Preparedness Fund

FY 2022 Round 3 Grant Application
April 8, 2022

Overtopping at 8th Street (May 16, 2014) (image from VDOT)

Overtopping at Chowan Avenue (September 08, 2011) (image from VDOT)

Contents

A. Executive Summary

Fairfax County is pleased to submit the Chowan Avenue Stormwater Improvement project, here after referred to as the Project, for consideration under Community Flood Preparedness Fund (CFPF) Round 3 'Project' category to help mitigate flooding in the Chowan Avenue Neighborhood in Mason Magisterial District. The Project is focused on implementing a conveyance system and a channel stabilization using natural channel design method to convey runoff that currently overwhelms existing roads and culverts.

Virginia Department of Conservation and Recreation (DCR) approved the County's Resilience Plan on January 10, 2022. The County has integrated flood mitigation and resilience goals across areas of the local government, with flood resilience a priority addressed holistically through watershed and countywide comprehensive planning. The County has established requirements for development controls in the floodplain through zoning and the local floodplain ordinance. In order to address recent repetitive floodings, the County is in the process of preparing a draft flood risk reduction plan. The County is also developing a comprehensive regulated floodplain map to assess and implement future projects.

The Project will address the community concerns and supports resilience goals by designing and constructing a conveyance system to contain the 100-year storm and integrating stream restoration through natural channel design.

B. Scope of Work Narrative

1. Project Information

The Project is located in the Cameron Run watershed (Figure 1) and conveys runoff from approximately 185 acres of land and enters the Turkeycock Run. The Project is near the intersection of Chowan Avenue and 8th Street (Figure 2a or attachment 1). Residents of Fairfax County, Virginia, living near the Project area, experience frequent flooding due to the overtopping of Chowan Avenue and 8th Street during storm events. These are public streets and avenues that residents frequently use; therefore, flooding can significantly impact society and the economy. As a result, Fairfax County's Capital Improvement Projects (CIP) included the Project to mitigate flooding in the neighborhood. The existing stormwater conveyance system in the neighborhood is inadequate. Therefore, the County plans to implement a hybrid solution (Figure 2a &2b or attachment 1). The Project will contain an additional conveyance system to convey up to 100-year in a non-erosive manner to the existing floodplain, enhance existing infrastructure, stabilize stream channel based on natural channel design methodology. The proposed project will mitigate residential flooding, improve stream ecology, address public safety, and improve resiliency.

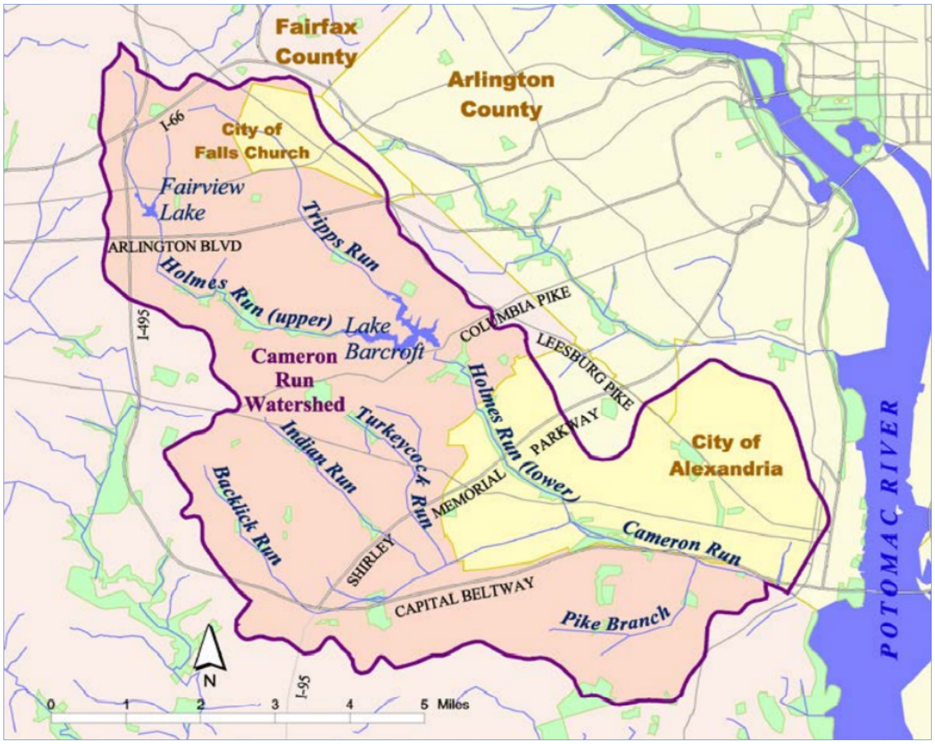


Figure 1. Cameron Run Watershed

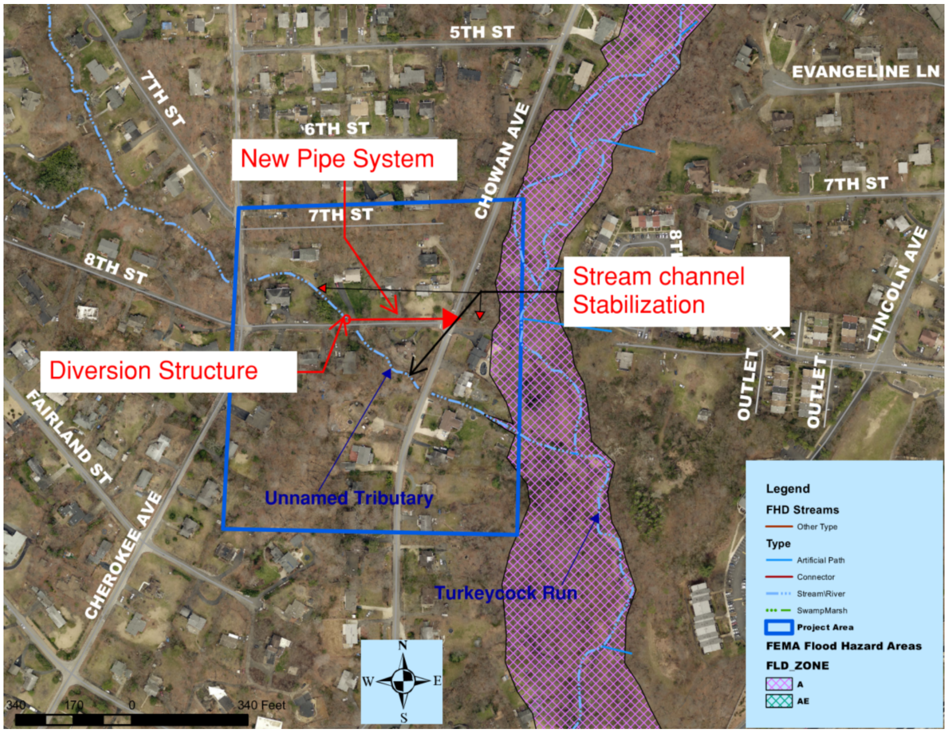


Figure 2a. Location of the Project

Figure 2b. Photo looking downstream toward the 8th street culvert

Population

Fairfax County has a population of about 1.17 million as of 2021. The Project is located in census blocks 1000,1002, and 1006 (Census Block group 1), as shown in Figure 3. The Project is located in Mason District and directly impacts 15 residential homes in addition to other residents who use Chowan Avenue and 8th Street for daily activities.

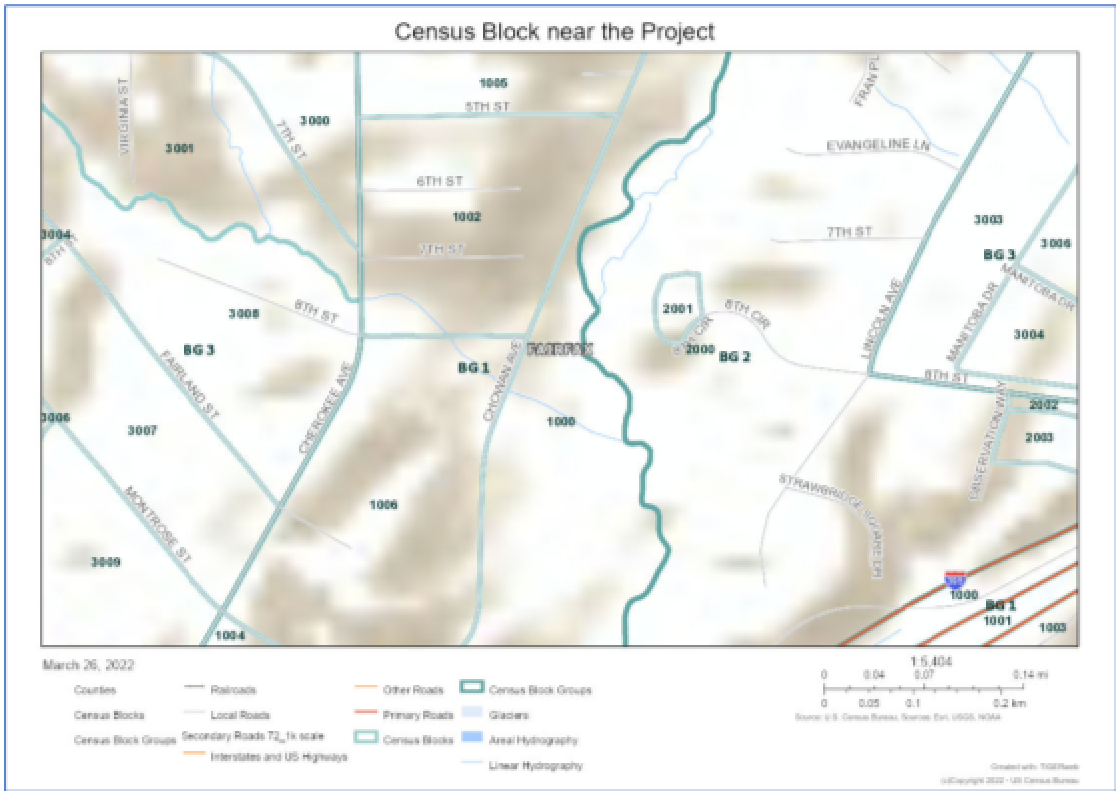


Figure 3. Census Block near the Project

Historic Flooding Data and Hydrologic Studies

Flooding along Chowan Avenue is a long-standing concern. As shown in Figure 4, the 1977 Cameron Run Watershed Immediate Action Plan recommended the construction of a floodwall to address flooding at 5103 and 5105 Chowan Avenue. The floodwall was not constructed.

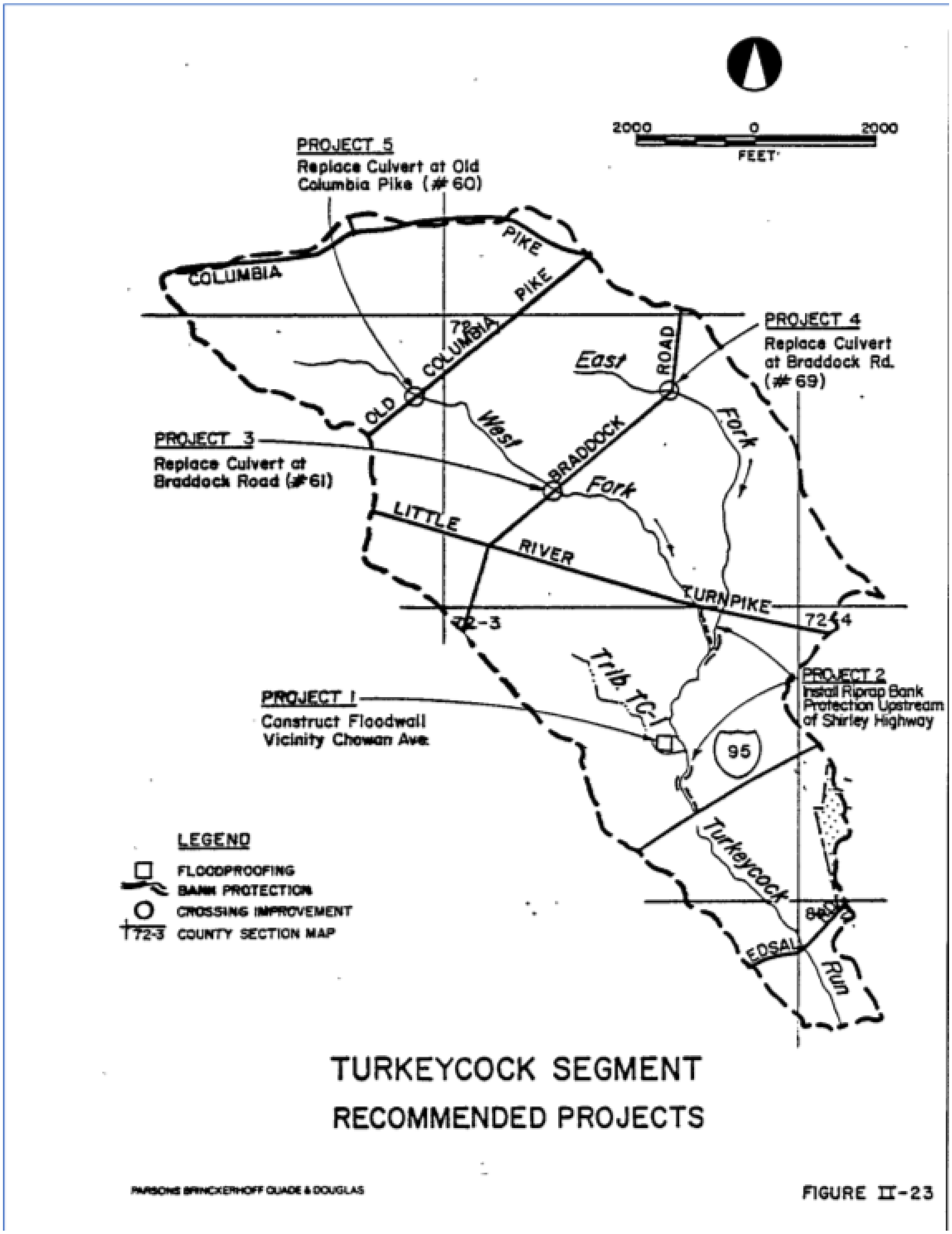


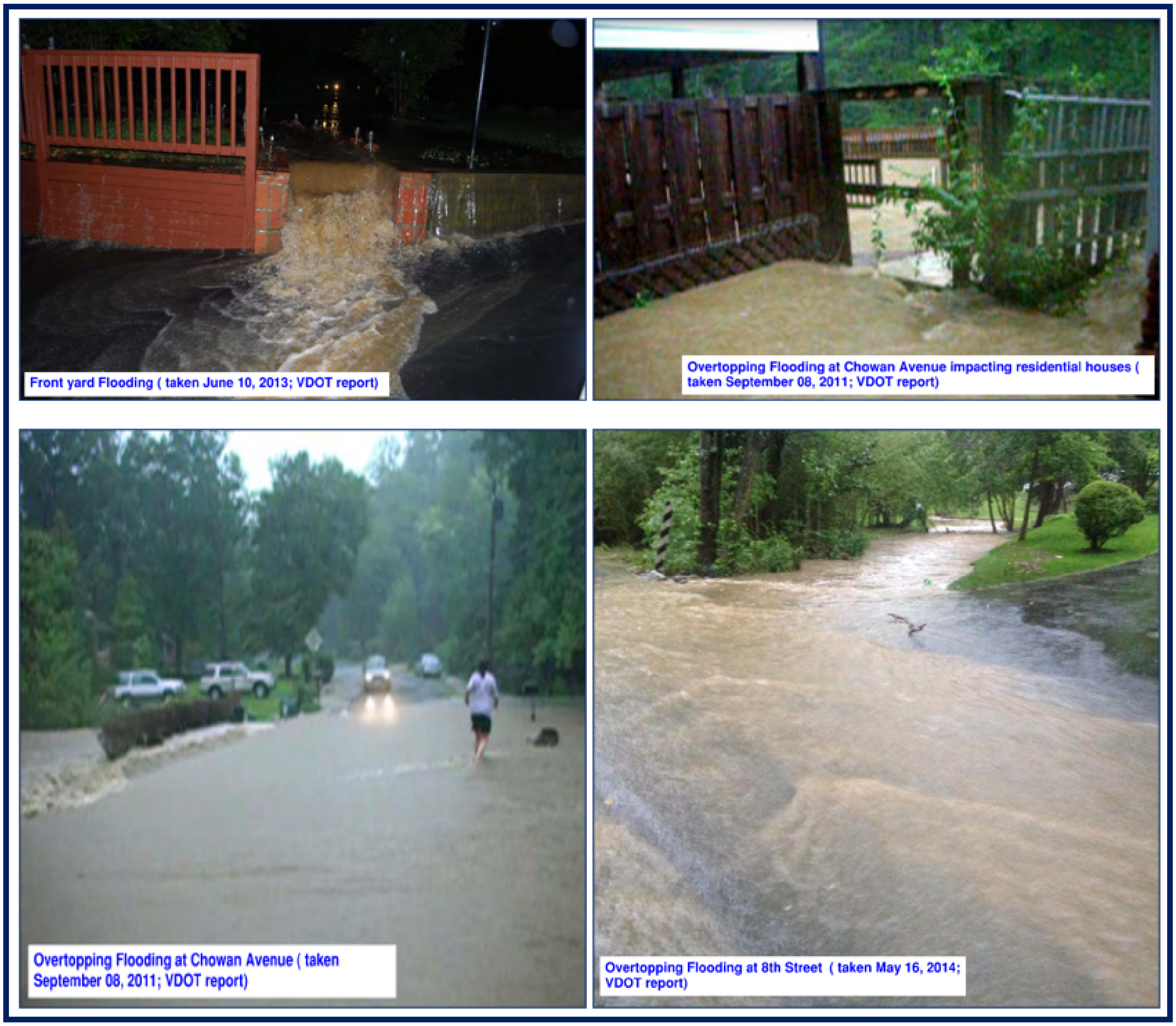
Figure 4. Cameron Run Watershed Immediate Action Plan recommended projects (December 1977)

The Fairfax County Maintenance and Stormwater Management Division (MSMD) maintains records of complaints and has several reports of frequent flooding and erosion problems in the Project area (see Table 1). The project area is located near the Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA) Zone A. The effective date of the Flood Insurance Rate Map (FIRM) is September 17, 2010. A copy of the FIRMette is included as Attachment 2.

Table 1. Complaints near the Project area

ADDRESS	Complaint Type	Complaint Date
at CHEROKEE AV	EROSION	9/28/1999
at CHOWAN AV	EROSION	6/26/2006
at 8TH ST	EROSION	7/5/2006
at 8TH ST	EROSION	8/29/2006
at CHEROKEE AVE	EROSION	10/1/2018
at 8TH ST	EROSION	4/2/2020
at CHOWAN AV	FLOODING	8/13/2004
at CHOWAN AV	FLOODING	7/27/2005
at CHOWAN AV	FLOODING	6/26/2006
at 8TH ST	FLOODING	7/27/2006
at CHOWAN AVE	FLOODING	6/14/2013
at CHOWAN AV	INFRASTRUCTURE	4/9/1991
at CHOWAN AV	INFRASTRUCTURE	3/19/2001
at 8TH ST	INFRASTRUCTURE	12/7/2006
at CHOWAN AVE	INFRASTRUCTURE	6/17/2013
at 8TH ST	EROSION	3/18/2016
at 8TH ST	BLOCKAGE/CLOG TREE FALLING	11/18/2003
at 8TH ST	TREE/VEGETATION	3/25/2016
at 8TH ST	TREE/VEGETATION	9/12/2018
at 8TH ST	TREE/VEGETATION	8/11/2021

Residents near Chowan Avenue and 8th Street have reported that the unnamed tributary to Turkeycock Run overtops the roads and floods adjacent properties with multiple storm events. Examples of the previous flooding in the neighborhood are shown in Figure 5, and more pictures with the dates of past flood events are included in Attachment 3.



Front yard Flooding (taken June 10, 2013; VDOT report)

Overtopping Flooding at Chowan Avenue impacting residential houses (taken September 08, 2011; VDOT report)

Overtopping Flooding at Chowan Avenue (taken September 08, 2011; VDOT report)

Overtopping Flooding at 8th Street (taken May 16, 2014; VDOT report)

Figure 5. Examples of past flooding

In 2015 Virginia Department of Transportation (VDOT) conducted preliminary hydrologic and hydraulic analyses of the unnamed Tributary to Turkeycock Run and discussed a potential solution. The report also identified the adverse conditions of the neighborhood:

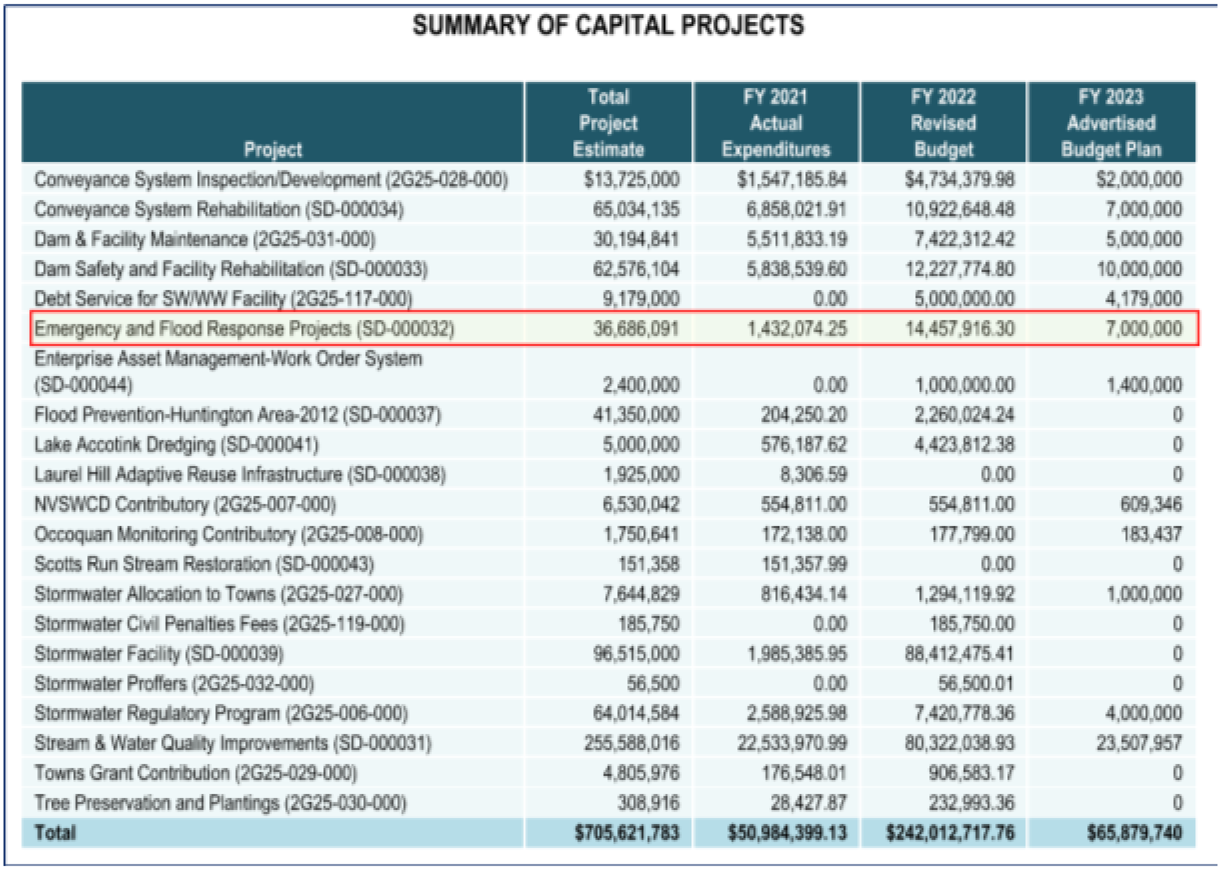
- Overtopping of 8th Street and Chowan Avenue at the existing culvert crossing;
- Backflow through private driveway culvert during high water conditions;
- Overflow from 8th Street channelizing and flowing over the private property driveway;
- Overflow from 8th Street increases the flow to the culvert crossing north of the intersection of Chowan Avenue and 8th Street;
- Flow from the culvert traveling across the private property driveway and through the open segment of the garage;
- Ponding at the private property driveway grate inlet;
- Overflow from Chowan Avenue traveling across the private property front yards, driveway, and through the open segment of the garage;
- Eroded slopes along the stream.

Local Government Cost Share

The total project cost for design and construction is estimated to be $2,000,000. The Project will be completed under the framework established by the Flood Mitigation and Monitoring & Dam Safety Program Services, Basic Ordering Agreement, Contract Award Basic Ordering Agreement (BOA). The County's cost share would be provided from the stormwater capital improvement program fund through the Emergency and Flood Response Project (SD-000032) under Fund 40100 Stormwater Services. A summary of Stormwater Services Capital Projects under Fund 40100 is shown in Table 2. The County's Stormwater Services Adopted Budget Plan can be accessed at:

Fund 40100: Stormwater Services - FY 2023 Advertised Budget Plan (fairfaxCounty.gov)

Table 2. Summary of Capital Project under Fund 40100 Stormwater Services



SUMMARY OF CAPITAL PROJECTS

Project	Total Project Estimate	FY 2021 Actual Expenditures	FY 2022 Revised Budget	FY 2023 Advertised Budget Plan
Conveyance System Inspection/Development (2G25-028-000)	$13,725,000	$1,547,185.84	$4,734,379.98	$2,000,000
Conveyance System Rehabilitation (SD-000034)	65,034,135	6,858,021.91	10,922,648.48	7,000,000
Dam & Facility Maintenance (2G25-031-000)	30,194,841	5,511,833.19	7,422,312.42	5,000,000
Dam Safety and Facility Rehabilitation (SD-000033)	62,576,104	5,838,539.60	12,227,774.80	10,000,000
Debt Service for SW/WW Facility (2G25-117-000)	9,179,000	0.00	5,000,000.00	4,179,000
Emergency and Flood Response Projects (SD-000032)	36,686,091	1,432,074.25	14,457,916.30	7,000,000
Enterprise Asset Management-Work Order System (SD-000044)	2,400,000	0.00	1,000,000.00	1,400,000
Flood Prevention-Huntington Area-2012 (SD-000037)	41,350,000	204,250.20	2,260,024.24	0
Lake Accotink Dredging (SD-000041)	5,000,000	576,187.62	4,423,812.38	0
Laurel Hill Adaptive Reuse Infrastructure (SD-000038)	1,925,000	8,306.59	0.00	0
NVSWCD Contributory (2G25-007-000)	6,530,042	554,811.00	554,811.00	609,346
Occoquan Monitoring Contributory (2G25-008-000)	1,750,641	172,138.00	177,799.00	183,437
Scotts Run Stream Restoration (SD-000043)	151,358	151,357.99	0.00	0
Stormwater Allocation to Towns (2G25-027-000)	7,644,829	816,434.14	1,294,119.92	1,000,000
Stormwater Civil Penalties Fees (2G25-119-000)	185,750	0.00	185,750.00	0
Stormwater Facility (SD-000039)	96,515,000	1,985,385.95	88,412,475.41	0
Stormwater Proffers (2G25-032-000)	56,500	0.00	56,500.01	0
Stormwater Regulatory Program (2G25-006-000)	64,014,584	2,588,925.98	7,420,778.36	4,000,000
Stream & Water Quality Improvements (SD-000031)	255,588,016	22,533,970.99	80,322,038.93	23,507,957
Towns Grant Contribution (2G25-029-000)	4,805,976	176,548.01	906,583.17	0
Tree Preservation and Plantings (2G25-030-000)	308,916	28,427.87	232,993.36	0
Total	**$705,621,783**	**$50,984,399.13**	**$242,012,717.76**	**$65,879,740**

County Floodplain Management Regulations

Fairfax County participates in the National Flood Insurance Program (NFIP) and in the Community Rating System (CRS) administrated by Federal Emergency Management Agency (FEMA). Currently, Fairfax County maintains a class 6 CRS rating by demonstrating to FEMA that the County goes beyond the minimum requirements of the NFIP requirements. In addition, FEMA conducted a Community Assistance Visit (CAV) and determined the County is in good standing with NFIP.

Construction in a floodplain is not allowed under most circumstances. Therefore, before building, filling, or excavating in a floodplain, it is advised to get more information on the floodplain management requirements. Below are some of the important links regarding floodplain developments/permits:

- The Fairfax County Land Development Services web page: https://www.fairfaxcounty.gov/landdevelopment/

Section 5105 Floodplain Regulations of the Fairfax County Zoning Ordinance: https://online.encodeplus.com/regs/fairfaxcounty-va/doc-viewer.aspx#secid-251

- Fairfax County's Flood Information webpage: https://www.fairfaxcounty.gov/publicworks/stormwater/flood-information

- Fairfax County's Digital Flood Insurance Rate Map webpage: https://www.fairfaxcounty.gov/publicworks/dfirm

Project Priority

The project was prioritized in the district as a result of several neighborhood resident reports of flooding issues. Fairfax County participated in the development of the Northern Virginia Hazard Mitigation Plan, and this plan identified flooding as one of the highest-ranked hazards for the County. Table 3 shows the hazard rankings for Fairfax County from the current 2017 Northern Virginia Hazard Mitigation Plan. A copy of the hazard mitigation plan is included as Attachment 5 or can be found at https://www.fairfaxcounty.gov/emergencymanagement/sites/emergencymanagement/files/assets/documents/pdf/hazard%20mitigation%20plan%2010.22.19.pdf

Table 3. Hazard ranking for Fairfax County from Northern Virginia Hazard Mitigation Plan

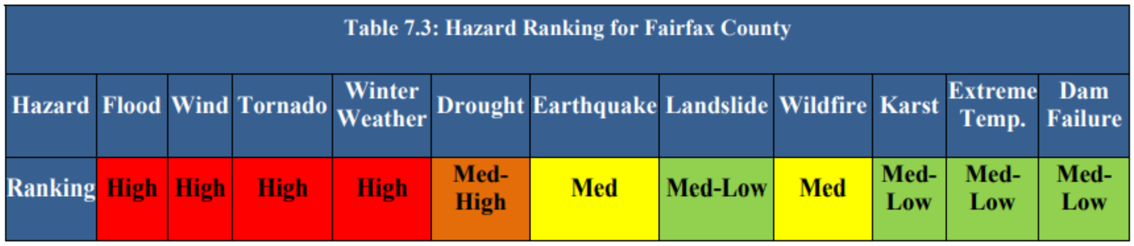


Table 7.3: Hazard Ranking for Fairfax County

Hazard	Flood	Wind	Tornado	Winter Weather	Drought	Earthquake	Landslide	Wildfire	Karst	Extreme Temp.	Dam Failure
Ranking	High	High	High	High	Med-High	Med	Med-Low	Med	Med-Low	Med-Low	Med-Low

The Project is located in Mason District and directly impacts 15 residential homes and several residents who use these roads for daily activities. The residents report that Chowan Avenue and 8th Street are frequently overtopped during rainfall events, which means it impacts anyone who uses these roads for access.

There is no repetitive loss property, severe repetitive loss property, or critical facility located within the vicinity of the project area.

2. Need for Assistance

Financial and Staff Resources

The Stormwater Services Emergency and Flood Response Projects program supports flood control projects for unanticipated flooding events that impact storm systems and structural flooding. The program provides annual funding for scoping, design, and construction activities related to flood mitigation projects. Fairfax County's advertised Fiscal Year 2023 Stormwater Services budget includes $7.0 million for emergency and flood response projects, but there is an estimated total cost of $36.7 million for active flood mitigation projects (see Table 2). With the increase in the frequency and intensity of storms due to climate change, we expect the number of flood mitigation projects to grow, and the associated project design and construction costs will extend well beyond what the County's current emergency and flood response program can support.

Low Income Geographic Areas

The project does not fall in a low-income geographic area.

Vulnerability Index

Based on the Vulnerability Index Mapping (Attachment 7), the project is not in a socially vulnerable area.

Alternatives

The project is a hybrid solution.

3. Goals and Objectives

The objective of the Project is to mitigate the flooding and erosion problems discussed in the previous sections of this application. Therefore, the primary goals of the Project are to:

- Improve the drainage system and reduce localized flooding and erosion by designing adequate drainage systems in accordance with Fairfax County code, Fairfax County Public Facilities Manual (PFM), and VDOT requirements.
- Convey the peak flow for the 100-year, 24-hour storm within the conveyance system, if possible, and provide adequate overland relief.
- Stabilize the eroded natural channel and improve the stream ecology.
- Address public safety concerns.
- Partner with the community to develop sound, cost-effective solutions that can be collaboratively implemented and maintained.
- Use innovative, sustainable, and functional designs.

The expected results of the completed project are to reduce the risk of structural and road flooding problems in the neighborhood, reduce the flood damage repair cost, and improve water quality.

4. Approach, Milestones, and Deliverables

The County submitted a request for proposal (RFP) to the design consultant firm on February 15, 2022. The County anticipates a proposal for the design services by April 15, 2022. Upon grant approval, the County would issue Notice to Proceed (NIP) and the consultant would immediately begin project activities. The design plan is expected to be completed within 12 to 15 months from NTP. While the design plans are being developed, the County would concurrently conduct the property acquisition process. The County anticipates that the construction of the Project will take from 12 months to 15 months. Table 4 summarizes the approach deliverables. The milestones for the Project include the completion of final design plans and completion of the construction work. See Table 4 for a more detailed summary of the Project approach and deliverables.

Table 4. Project Deliverables

Activity	Description	Deliverables
Design		
Survey	The consultant will provide a field run topographic survey	CAD file of field survey and mapping data; survey information needed to perform the hydrologic & hydraulic analyses, and other data for the design & construction purposes
Soil characterization	The consultant will provide geotechnical services	A report of findings
Assessment of adequate drainage and capacity analysis	The consultant will perform hydrologic and hydraulic (H&H) analyses of the existing and proposed conditions to determine whether the project goals are feasible	A drainage report in the form of a PDF to include drainage area map and model links used for the hydrologic analysis; Storm pipe and channel capacity and max hydraulic grade line (HGL) tables for existing and proposed conditions; HGL profiles in pipe and channel segments for the 100-year, 24-hour storm events for the existing and proposed conditions; Top 3 rated design recommendations to convey the peak flow rate for the 100 year, 24-hour storm; H&H files
Concepts design & analysis (35%)	The consultant will evaluate the three (3) approaches within the project area to achieve the project goals	A concept layout plan will be provided including several information such as: existing conditions; proposed improvements; preliminary grading; limits of disturbance; staging Area; access entrances; etc.

65% design plan	Based upon concept design decision review and comments, the consultant will prepare a 65% design plan	65% design report will include information such as: design narrative, all computations, preliminary engineer’s cost estimate; overall site plan of proposed improvements; H&H models; stormwater narrative; adequate outfall narrative; tree condition and preservation plan; and preliminary erosion and sediment control plan
95% final design	Based on the 65% design review comments and meeting, the consultant will prepare the 95% final design	A complete package for construction such as: 95% final design plans; final design report; and engineer’s cost estimate
Final design plan	Based on the 95% design review meeting and input provided, the consultant will develop final design plan	Final Design plan. All copies of final plans shall be signed and sealed by a professional engineer registered in the Commonwealth of Virginia
Construction		
Construction	Construction consultant firm selection	Substantial completion of the project

5. Relationship to Other Projects

The Project is located in the Cameron Run Watershed. Fairfax County has developed comprehensive watershed management plans for each of the County's 30 watersheds. The plans identify issues affecting our environment and guide protecting and restoring the County's stream corridors. The Cameron Run watershed management plan identified two neighborhood projects along Turkeycock Creek (Turkeycock Creek @ Fran PL (CA82-0018) and Turkeycock Creek @ 8th St (CA82-0015)). Though the Project is not identified in the Cameron Run watershed management plan, it will address the most frequent flooding situations near the Chowan Avenue neighborhood. Detailed information about the Cameron Run watershed management plan can be found at Cameron Run Watershed | Public Works and Environmental Services (fairfaxCounty.gov)

6. Maintenance Plan

The Fairfax County MSMD inspects stormwater management facilities and infrastructure assets to ensure proper maintenance is performed and facilities are functioning according to the approved design plan. Since the owner of the Project will be Fairfax County, the Project will be added to the MSMD’s maintenance inventory and MSMD will perform maintenance inspections to meet regulatory requirements and practice good environmental stewardship.

Additional information about the Fairfax County MSMD can be accessed at: https://www.fairfaxcounty.gov/publicworks/stormwater/maintenance-and-inspections

C. Scoring Criteria

Through this application and Table 5 below, Fairfax County has demonstrated that the grant criteria for the Project are met.

Appendix B is completed and included in the Supporting Document Section Attachment 8.

Table 5. Summary of criterion

Number	Criterion	Meet?
1	Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?	**Yes**. Fairfax County is the applicant and is a local government.
2	Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached, or a link provided?	**Yes**. It was approved on **January 10, 2022**. A copy of the DCR approval in included in Attachment 10.
3	For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?	Not Applicable
4	Has the applicant provided evidence of an ability to provide the required match funds?	**Yes.** Please refer to Section “The ability of the local government to provide its share of the cost” of this document.
5	Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?	**Yes,** please refer to Section A of this document "Scope of Work Narrative – Project"

D. Budget Narrative

Table 6 shows the budget narratives and the estimated project expenditures.
The estimated total project cost is **$2,000,000.**

Estimated total project cost:

Table 6 summarizes the estimated detailed breakdown of the Project cost. The cost is based on the pre-design concept level estimate.

Table 6. Summary of Expenditures

Number	Item	Estimated Cost
1	Land Acquisition	$ 43,000
2	Design	$ 304,000
3	Construction	$ 1,257,730
4	Construction Contingency (25%)	$ 395,270
Total Project Cost		**$ 2,000,000**

Amount of funds requested from the Fund

The total amount of the grant assistance sought from the Fund is **$1,200,000** (60% of the total project cost). The County will use the grant funding the design of the proposed project and construction as appropriate.

Amount of cash funds available

The Project is included in the five-year stormwater workplan with grant matching funds available for the Project in the Emergency and Flood Response Project under Fund 40100 Stormwater Services (Table 2). The County has $800,000 contained within the Emergency and Flood Response Project fund. With the potential grant funding, the County will have the necessary funds to complete the design and construction of the Project.

Authorization to request for funding

The signed documentation authorizing the request for funding is included in the Supporting Document Section. Please refer to Attachment 9.

E. Supporting Documents/Attachments

Attachment 1: Project area map

Attachment 2: FEMA FIRMette

Attachment 3: Historic flood damage Pictures (from VDOT report)

Attachment 4: Floodplain Zoning Ordinance

Attachment 5: Northern Virginia Hazard Mitigation Plan

Attachment 6: Fairfax County Comprehensive Plan

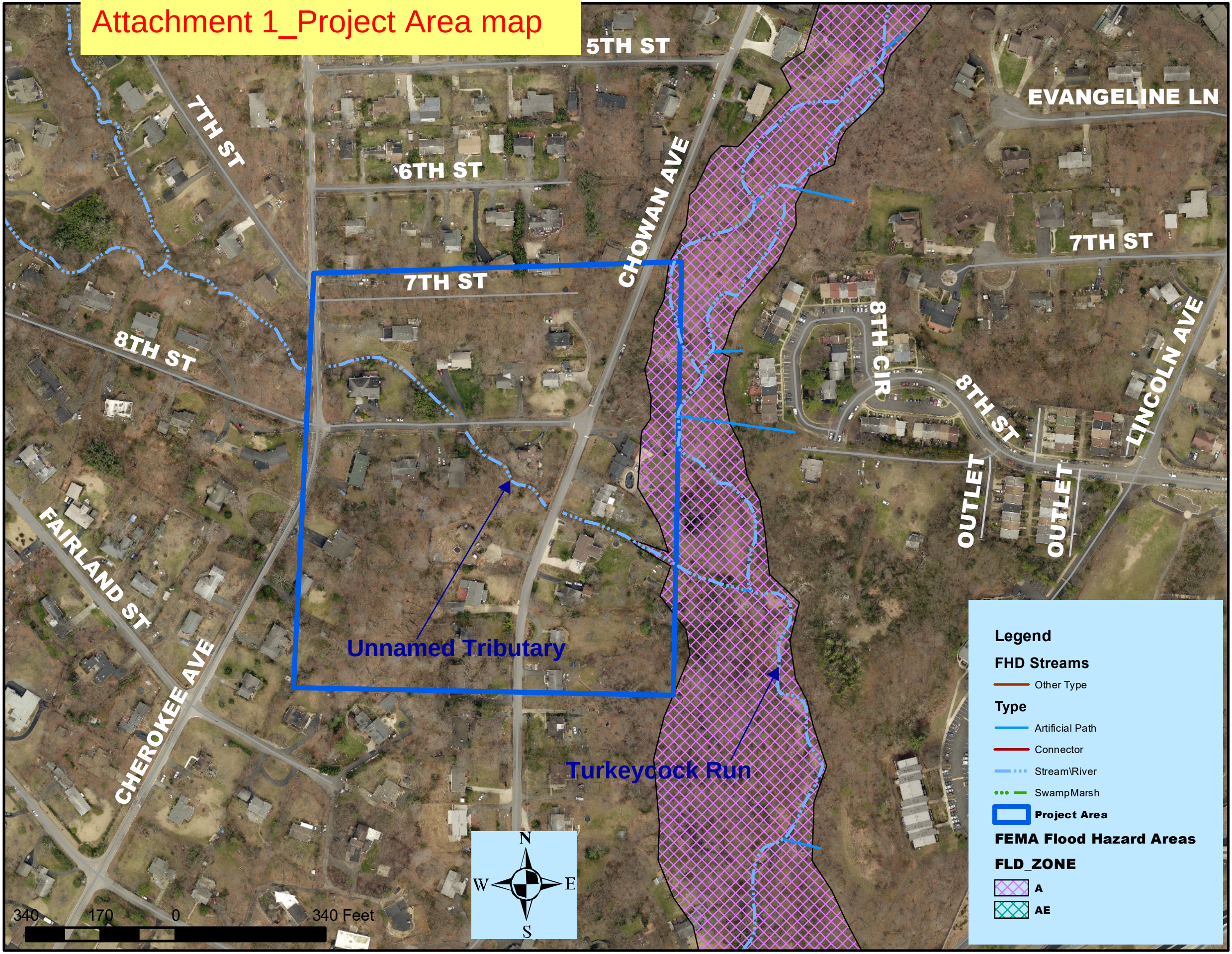
Attachment 7: Social Vulnerability Index score

Attachment 8: Appendices A, B, & D

Attachment 9: Authorization to request Funding

Attachment 10: Fairfax County Resilience Plan

Attachment 1_Project Area map



Attachment 2_FEMA FIRMette

National Flood Hazard Layer FIRMette

FEMA

77°9'33"W 38°49'6"N

77°8'56"W 38°48'38"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- — - -	Channel, Culvert, or Storm Sewer
	ııııııı	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	-- ---	Coastal Transect Baseline
	- —	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

📍 The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

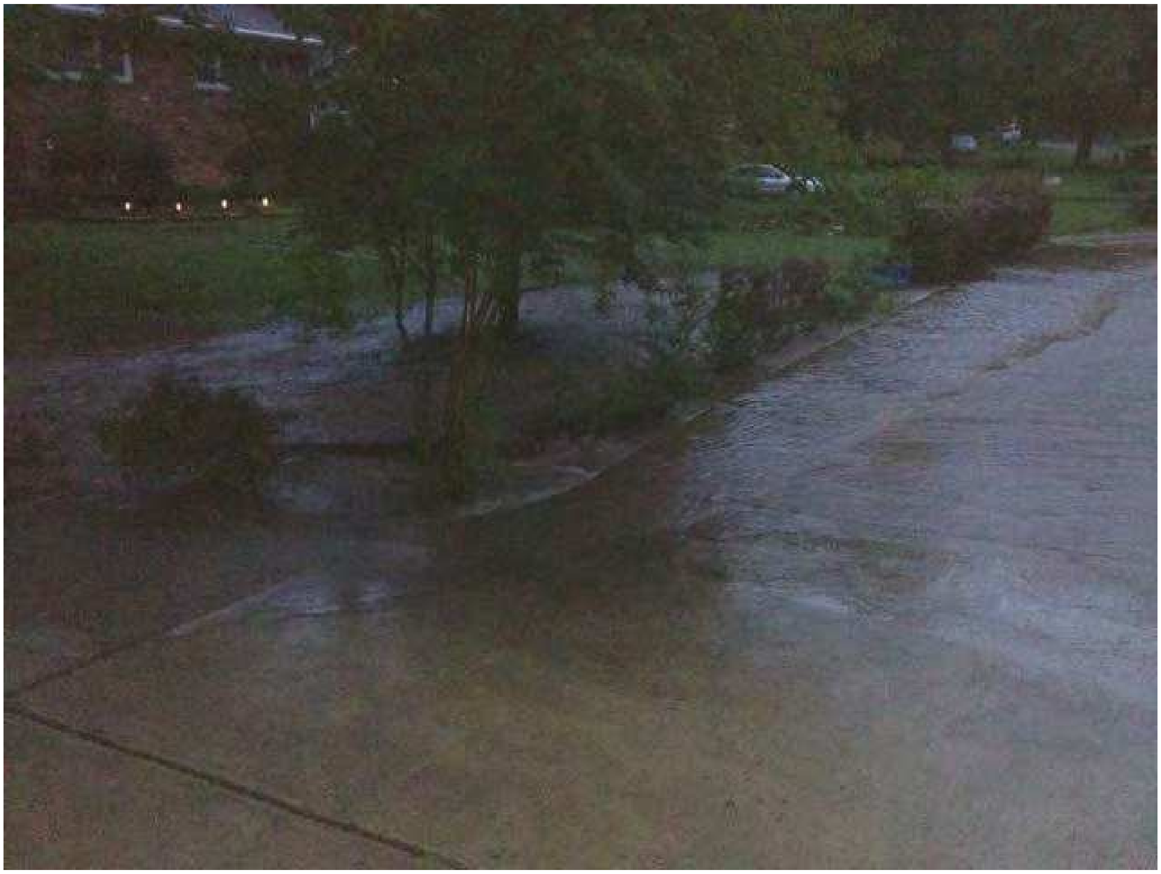
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/5/2022 at 2:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

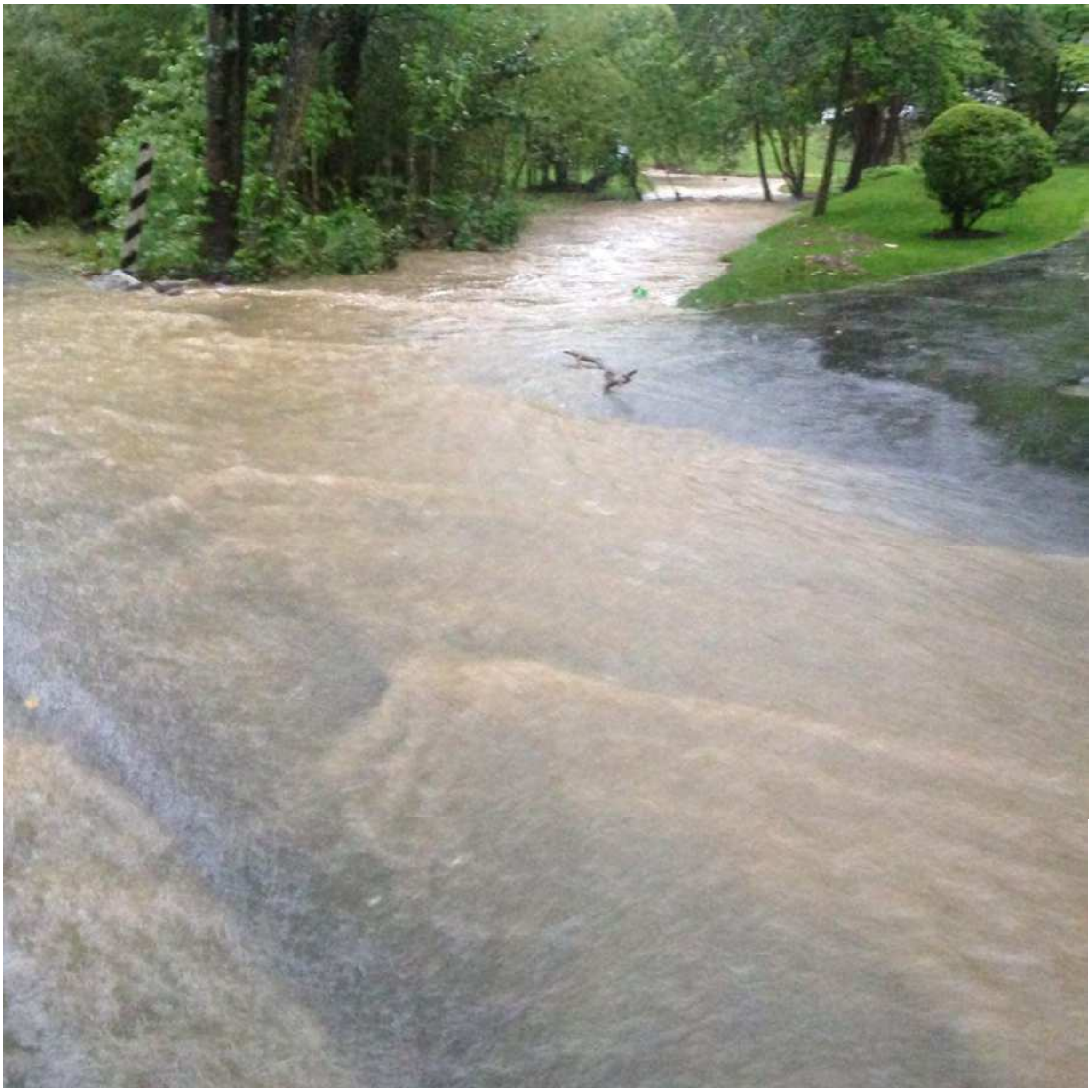
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 3_ Historic flood damage Pictures

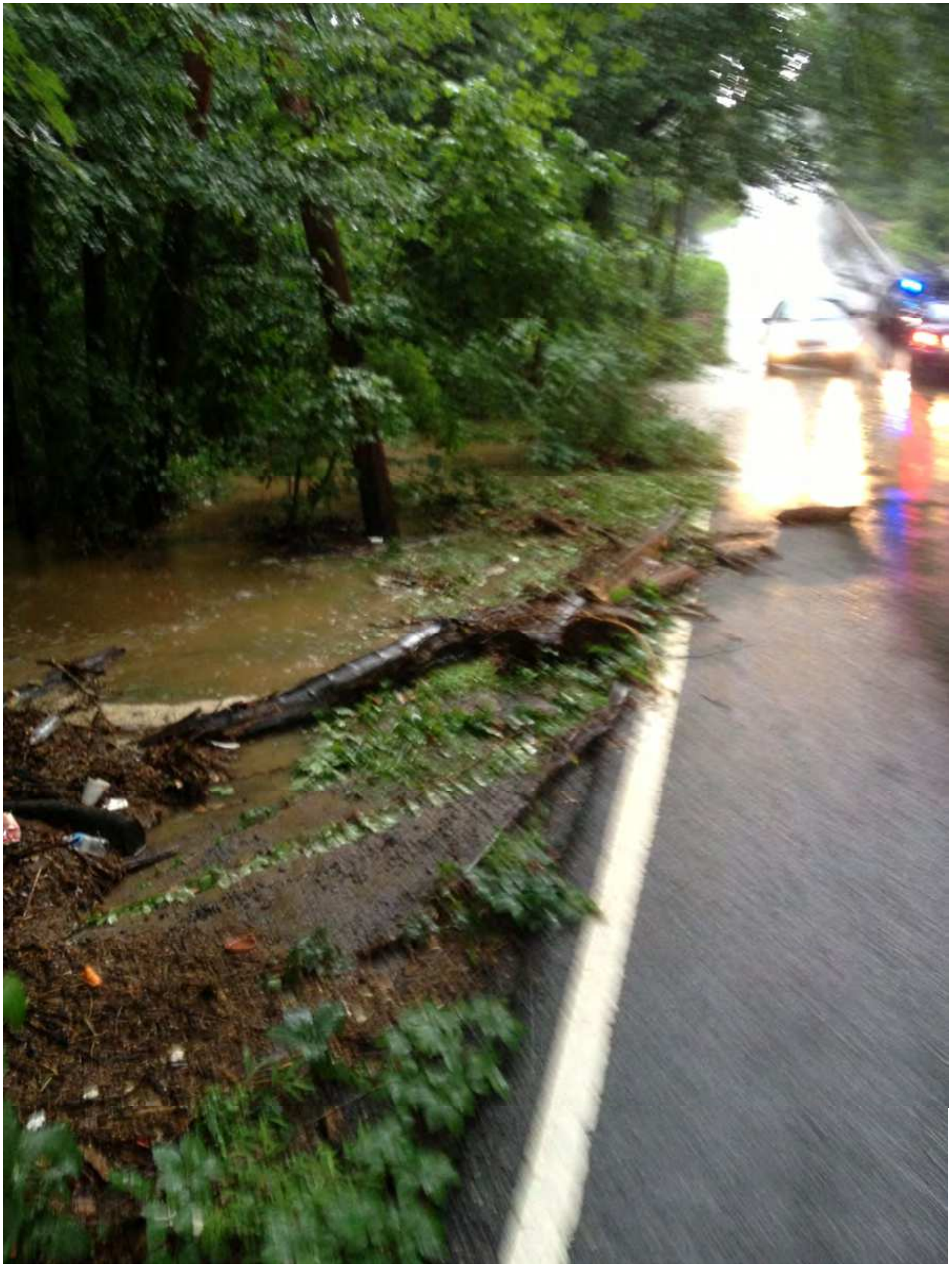
(images from VDOT)


Chowan Avenue overtopping and flooding Askaryar property. (taken 2013-06-10)

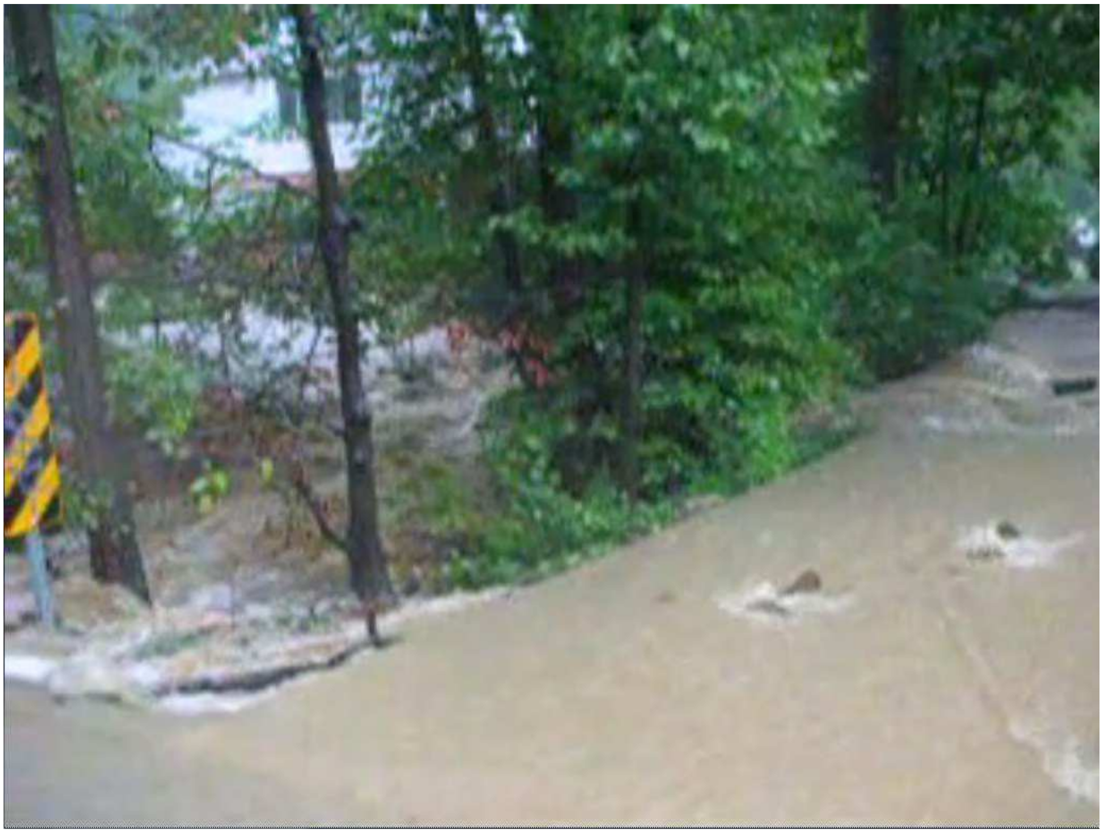

Flooding in Cheatham property front yard. (taken 2013-06-10)



Overtopping at 8th Street. (taken 2014-05-16)



Overtopping at Cherokee Avenue. (taken 2013-06-28)



Overtopping at Chowan Avenue. Note that downstream channel is not at capacity. (taken 2011-09-08)

Overtopping at Chowan Avenue, looking upstream. (taken 2011-09-08)

Overtopping at Chowan Avenue, impacting private properties (taken 2011-09-08)

Overtopping at Chowan Avenue, impacting private properties (taken 2011-09-08)

Overflow from Chowan Avenue, channelized between private properties (taken 2011-09-08)

Flooding at private property (taken 2013-06-10)

All following photographs were taken during the field visit on 2014-10-15.

Channel downstream of Chowan Avenue.

Chowan Avenue crossing outlet.

Chowan Avenue crossing inlet.

Channel upstream of Chowan Avenue.

Channel slope erosion

Channel flow

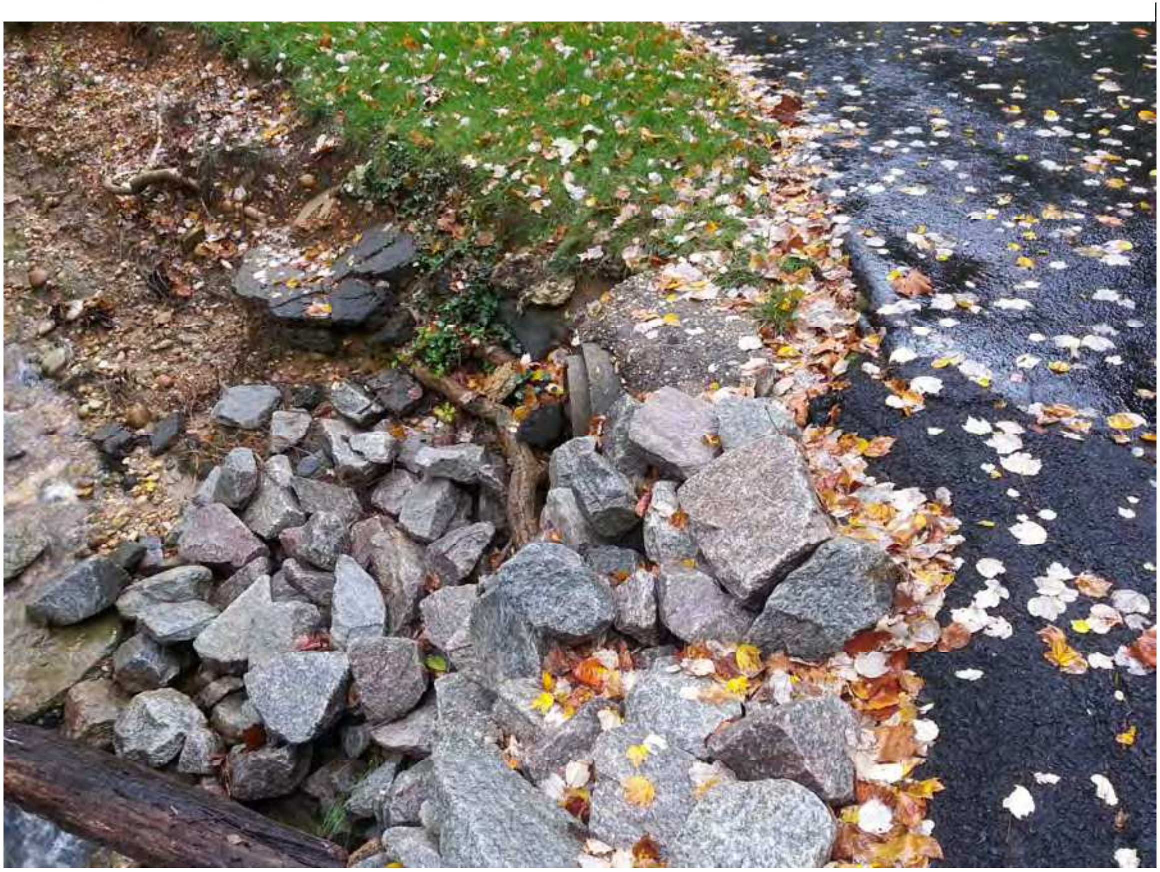
Channel downstream of 8th Street.

8th Street crossing outlet.

8th Street crossing inlet.

Channel upstream of 8th Street.

Drive way culvert



Drive way culvert

Private property driveway damage

Private property driveway damage

Channel downstream of Cherokee Avenue.

Cherokee Avenue crossing outlet.


Cherokee Avenue crossing inlet.


Channel upstream of Cherokee Avenue.

Ditch upstream of 8th Street and Chowan Avenue.

8th Street and Chowan Avenue crossing inlet.

8th Street and Chowan avenue crossing outlet.

Channel downstream of 8th Street and Chowan Avenue.

Junction of Tributary and Turkeycock Run

Access to channel from private property

Attachment 4_ Floodplain Zoning Ordinance

5105. Floodplain Regulations

These regulations are intended to further the County's participation in the National Flood Insurance Program authorized under the National Flood Insurance Act of 1968, as amended (42 U.S.C. § 4001 et seq.); provide for safety from flood and other dangers; protect against loss of life, health, or property from flood or other dangers; and preserve and protect floodplains in as natural a state as possible to preserve wildlife habitats, to maintain the natural integrity and function of the streams, to protect water quality, and to promote ground water recharge.

1. Applicability and Disclaimer

A. The floodplain regulations apply to all land within a floodplain as defined in Article 9. In addition, in accordance with subsections 5105.5 and 5105.6.B, these regulations apply to land outside the floodplain on lots that contain floodplain and on lots that abut a lot containing floodplain.

B. The degree of flood protection required by these regulations, the USBC, and the Public Facilities Manual is considered reasonable for regulatory purposes. Larger floods may occur on rare occasions or flood heights may be increased by man-made or natural causes, such as bridge openings restricted by debris. These regulations do not imply that areas outside the floodplain, or land uses permitted within such areas, will be free from flooding and flood damages under all conditions. The granting of a permit or approval of a site, subdivision, or land development plan in an identified floodplain area does not constitute a representation, guarantee, or warranty of any kind by any official or employee of the County of the practicability or safety of the proposed use, and does not create any liability upon the County, its officials, or employees.

2. Administration of the Floodplain Regulations

A. Director Determination

The Director is responsible for the administration of the floodplain regulations. The Director must review all proposed uses and development to determine whether the land on which the proposed use or development is located is within a floodplain. The Director may require additional information from the applicant, including an engineering study of the floodplain. The Director will determine whether the proposed use or development may be permitted in accordance with subsection 3 or if it requires the approval of a special exception in accordance with subsection 4 below. Any approval by the Director must be in writing and must specify conditions deemed necessary to ensure that the proposed construction and use conform to these regulations.

B. Review Criteria

Any decision of the Director or Board regarding a use in a floodplain must be based on consideration of the following:

(1) Type and location of proposed structure and use;

(2) Site access;

(3) Frequency and nature of flooding;

(4) Nature and extent of any proposed grading or fill;

(5) Impact of proposal on the floodplain on properties upstream and downstream;

(6) Potential of proposal to cause or increase flooding or to jeopardize human life;

(7) Impact of the proposed use on the natural environment and on water quality; and

(8) Other site-specific factors deemed relevant for consideration by the Director or the Board.

C. Compliance with National Flood Insurance Program

The Director of the Department of Public Works and Environmental Services (DPWES) must collect and maintain records necessary for the County's participation in the National Flood Insurance Program. Base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the Director of DPWES or designee must notify the Federal Insurance Administrator or require the applicant to notify the Federal Insurance Administrator of any change in base flood elevation in any Special Flood Hazard Area (SFHA) depicted on the County's Flood Insurance Rate Map (FIRM) by submitting technical and scientific data to the Federal Emergency Management Agency (FEMA) for a Letter of Map Revision.

3. Permitted Uses

A. Except as provided in subsection (10) below for cluster subdivisions, the uses and changes to topography identified below may be permitted in a floodplain upon a determination by the Director that the use is permitted in the zoning district in which it is located, and the use or change to topography is in accordance with these floodplain regulations and the Public Facilities Manual. Any use or change to topography not meeting the qualifications below may be permitted by the Board with the approval of a special exception.

(1) Changes to topography that do not require major fill. For the purpose of this subsection, major fill includes any fill, regardless of amount, in an area greater than 5,000 square feet, or any fill in excess of 278 cubic yards below the existing 100-year flood elevation in an area of 5,000 square feet or less. The cumulative area of any fill and pavement permitted under (1) through (6) may not exceed an area of 5,000 square feet for all uses on a lot.

(2) Any use or change to topography within a minor floodplain. A minor floodplain, as established in the floodplain definition in Article 9, is a floodplain with a drainage area greater than 70 acres but less than 360 acres.

(3) Agricultural operations if the use does not require the approval of a building permit or require major fill. Such uses must be operated in accordance with a conservation plan prepared in accordance with the standards of the Northern Virginia Soil and Water Conservation District.

(4) Uses and structures accessory to single-family detached, attached, and stacked townhouse dwellings and manufactured homes, such as play areas, lawns, paved tennis or play courts, trails, gardens, patios, decks, and docks, that do not require major fill; and accessory structures such as children's playhouses, doghouses, storage structures, and other similar structures that do not require approval of a building permit or require major fill. All structures must be anchored to prevent flotation.

(5) Community, commercial, and public recreational uses such as golf courses, driving ranges, picnic grounds, boat launching ramps, parks, wildlife and nature preserves, hunting and fishing areas, and hiking, bicycle, and equestrian trails. This provision does not permit a paved tennis or play court exceeding 5,000 square feet in area, swimming pool, or any use requiring the approval of a building permit or requiring major fill.

(6) Off-street parking and loading areas including aisles and driveways that do not exceed 5,000 square feet in area, that will have one foot or less depth of flooding and that will not require major fill.

(7) Metrorail, railroad track, and roadway floodplain crossings meeting applicable WMATA, VDOT, and Fairfax County design requirements and where any additional rise in water surface will not have an adverse effect upon the floodplain or will be set aside in an easement. A stream channel relocation proposed in conjunction with a crossing is subject to the provisions of the Public Facilities Manual.

(8) Public and private utility lines, and all public uses and public improvements performed by or at the direction of the County, including channel improvements and erosion control, reservoirs, storm water management, and best management practice facilities and similar uses. The installation of such facilities must be accomplished with appropriate easements or agreements and with the minimum necessary disruption to the floodplain. Ponds, reservoirs, storm water management, and best management practice (BMP) facilities in floodplains with a drainage area of 360 acres or greater that are designed to serve a specific private development may be permitted only with Board approval of a special exception in accordance with these floodplain regulations.

(9) Permitted accessory structures, other than those specified in subsection (4) above, and additions to single-family detached and attached dwellings constructed before August 14, 1978, subject to the following conditions:

- **(a)** The estimated cost of the addition or accessory structure is less than 50 percent of the market value as determined by the Department of Tax Administration of the existing structure.
- **(b)** The lowest part (i.e., the bottom of the floor joists or top of a concrete slab on grade) of the lowest floor including the basement of any such structure may be constructed less than 18 inches above the 100-year flood level if it is determined that there is less than one percent chance of flooding the structure in any given year, i.e., the structure is higher than the 100-year flood level.
- **(c)** The lowest part of the lowest floor of any accessory structure not meeting the requirements of subsection (9)(b) above may be constructed below the base flood elevation provided the following standards are met:
  - ***1.*** The size of the accessory structure does not exceed 1,000 square feet of gross floor area.
  - ***2.*** The accessory structure will only be used for parking or storage purposes.
  - ***3.*** The accessory structure will be constructed using flood-damage resistant materials and all interior walls and floors constructed using unfinished material.
  - ***4.*** The accessory structure will be anchored and floodproofed in accordance with the USBC.
  - ***5.*** Any mechanical, electrical, and utility equipment in the accessory structure must be elevated to or above the base flood elevation.
- **(d)** The Director may require the applicant and owners to sign an agreement holding Fairfax County harmless from all adverse effects that may arise from the construction and establishment of the proposed use within the floodplain. Such hold harmless agreement must be recorded with the land records of Fairfax County.

(10) For all cluster subdivisions in the R-2 District, and cluster subdivisions in the R-3 and R-4 Districts with a minimum district size of three and one-half acres or greater, only the following uses and improvements may be permitted by the Director, if the encroachments for those uses and improvements are the minimum necessary and minimize disturbance to the floodplain to the greatest practical extent:

- **(a)** No residential lot may extend into a floodplain and adjacent slopes in excess of 15 percent grade or Resource Protection Area, except to accommodate driveways when it is determined by the Director that there is no other option available to provide driveway access to the lot. The fill and pavement for driveway access may not exceed 5,000 square feet in area and may not be major fill;
- **(b)** Extension of or connection to existing public and private utilities;
- **(c)** Trails depicted on the Comprehensive Plan trails map or trails connecting to trails depicted on the Comprehensive Plan trails map;
- **(d)** Channel improvements and erosion control measures performed by or at the direction of, or as required by the County;
- **(e)** Regional stormwater management facilities included in the regional stormwater management plan; or
- **(f)** Roadway floodplain crossings, as qualified by (7) above.

B. The provisions above that exclude uses requiring a building permit do not apply when a building permit is required for structures such as retaining walls, fences, ramps, or trail bridges.

4. Special Exception Uses

A. All uses permitted by right, special exception, or special permit that are not approved by the Director under subsection 3 above may be permitted in the floodplain with the approval of a special exception by the Board. The special exception is subject to conformance with the provisions of these floodplain regulations, the applicable special exception or special permit standards, and the standards and criteria set forth in the Public Facilities Manual.

B. In addition to the submission requirements for all special exception uses set forth in Section 8101, the following information must be submitted for all special exception applications for uses in a floodplain:

- **(1)** The following must be shown and certified on the plat provided with the application:
  - **(a)** Delineation of the floodplain and the source of floodplain information, such as Federal Emergency Management Agency, United States Geological Survey, Fairfax County, or other;
  - **(b)** Existing and proposed topography with a maximum contour interval of two feet;
  - **(c)** Both normal and emergency ingress and egress from highway or street;
  - **(d)** Nature and extent of any proposed fill and any proposed compensatory cut areas with quantities;
  - **(e)** The location and dimensions of any structure or part of any structure that is proposed to be located in the floodplain;
  - **(f)** Elevation of the nearest 100-year floodplain, and the exact distance from the structure to the floodplain line at the nearest point; and
  - **(g)** Lowest floor elevation, including basement, of all existing and proposed buildings, and information relative to compliance with Federal and State floodproofing requirements.
- **(2)** A written statement providing the following information:
  - **(a)** Any existing or anticipated problems of flooding or erosion in the area of the application, including upstream and downstream from the application property; and
  - **(b)** Whether additional Federal or State permits are required.
- **(3)** When structures are proposed, the following information must be provided:
  - **(a)** The proposed use of the structure;
  - **(b)** A statement certifying all floodproofing proposed and indicating compliance with all County, State, and Federal requirements. This certification must be signed, sealed, and indicate the address of the certifying professional and it must cover all structural, electrical, mechanical, plumbing, water, and sanitary facilities connected with the use; and
  - **(c)** A signed affidavit acknowledging that the applicant is aware that flood insurance may be required by the applicant's lending institution and that the flood insurance rates may increase because of increases in risks to life and property.
- **(4)** Any additional information as may be deemed necessary by the Director, including engineering studies or detailed calculations for any proposed drainage improvement.

C. The BZA may approve a special permit or the Board may approve, only in conjunction with the approval of a rezoning or special exception for another use, a special exception for the modification of grade as it applies to the height measurement of a single-family detached dwelling that is located within or in proximity to a floodplain and when that structure must be elevated to meet all applicable floodplain regulations. In those cases the Board may approve a special exception that allows a grade elevation to be established that permits a dwelling to be constructed in compliance with all applicable floodplain regulations. Any applicant seeking grade modification approval must demonstrate that the requested increase in grade is the minimum amount required to meet the floodplain regulations.

5. Setbacks from the Floodplain

A. No dwelling or portion of a dwelling may be located within 15 feet of the edge of a floodplain, unless it is allowed under subsection 5100.2.D(5). The location of a property line between the floodplain and a dwelling does not eliminate the need to meet this minimum 15-foot setback. The Director may approve the following additional exceptions:

- **(1)** The location of dwellings within 15 feet of a permanent water surface of any appropriately designed impoundment; or
- **(2)** The location of additions within 15 feet of the edge of a floodplain for single-family detached and attached dwellings constructed before August 14, 1978, based on consideration of the following factors:
    - **(a)** Type and location of proposed structure;
    - **(b)** Nature and extent of any proposed grading or fill;
    - **(c)** Impact of proposal on the floodplain on properties upstream and downstream;
    - **(d)** Potential of proposal to cause or increase flooding or to jeopardize human life;
    - **(e)** Impact of the proposed use on the natural environment and on water quality; and
    - **(f)** Other site-specific factors deemed relevant for consideration by the Director.

B. For the purpose of this section, 15 feet is considered the minimum setback from the floodplain. However, dwellings and additions proposed within a floodplain under subsections 5105.3.A(9) and 5105.4 may be permitted without this 15-foot setback.

6. Use Limitations

All permitted and special exception uses in a floodplain must comply with the following use limitations:

A. Any new construction, substantial improvements, or other development, including fill, when combined with all other existing, anticipated, and planned development, may not increase the water surface elevation above the 100-year flood level upstream and downstream, calculated in accordance with the Public Facilities Manual, unless it is permitted under subsections 5105.3.A(7) and 5105.3.A(8) above.

B. The lowest part (i.e., the bottom of the floor joists or top of a concrete slab on grade) of the lowest floor, including any basement must be at least 18 inches above the water-surface elevation of the 100-year flood level calculated in accordance with the Public Facilities Manual. This requirement for an 18-inch vertical separation applies to development within a floodplain, any lot where a floodplain is located, or on any lot that abuts a lot where a floodplain is located, for the following:

- **(1)** Any new or substantially improved dwelling or manufactured home.
- **(2)** Any proposed addition to an existing dwelling, unless it is permitted under subsection 3.A(9)(b) above.

For development on land outside the floodplain, this subsection B may be modified by the Director in accordance with the standards set forth in the Public Facilities Manual.

C. No structure or substantial improvement to any existing structure may be allowed unless adequate floodproofing is provided in accordance with this section or under the USBC.

D. Stable vegetation must be protected and maintained in the floodplain to the extent possible.

E. Storage of herbicides, pesticides, or toxic or hazardous substances as set forth in Title 40, Code of Federal Regulations, Parts 116.4 and 261.30 et seq., is prohibited in a floodplain.

F. For uses located in a floodplain, other than those specified in subsections 3.A(3) and 3.A(4) above, the applicant must demonstrate the extent to which:

(1) There are no other feasible options available to achieve the proposed use;

(2) The proposal is the option that is least disruptive to the floodplain; and

(3) The proposal meets the environmental goals and objectives of the Comprehensive Plan for the property.

G. Nothing in these floodplain regulations is deemed to prohibit the refurbishing, refinishing, repair, reconstruction, or other similar improvements of the structure for an existing use provided such improvements are done in conformance with the USBC, Section 8104 of this Ordinance, and the requirements of subsection 5105.6.F above.

H. All uses and activities are subject to the provisions of Chapter 118 of the County Code.

I. As-built floor elevations must be submitted to the Land Development Services Department on a standard Federal Emergency Management Agency (FEMA) Elevation Certificate upon placement of the lowest floor, including basement, and before further vertical construction if they are required by federal regulations or the USBC. A FEMA Floodproofing Certificate must be completed in addition to the Elevation Certificate for a nonresidential building that is being floodproofed. In the case of special exception uses, the Elevation Certificate must demonstrate compliance with the approved special exception elevations.

J. The construction of all buildings and structures are subject to the requirements of the USBC.

K. All recreational vehicles within a floodplain must either:

(1) Be on-site for fewer than 180 consecutive days;

(2) Meet the requirements of this section and the USBC for anchoring and elevation of manufactured homes; or

(3) Be fully licensed and ready for highway use. A recreational vehicle is deemed ready for highway use if it is on wheels or a jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions.

L. All necessary permits required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, as amended, 33 U.S.C. § 1334, must be obtained.

M. Areas designated as floodplains by FEMA must not have their base flood elevations altered without approval from FEMA. If any new construction, substantial improvements, or other development, including fill, when combined with all other existing, anticipated, and planned development, results in change in the base flood elevation in any Special Flood Hazard Area (SFHA) depicted on the County's Flood Insurance Rate Map (FIRM), the applicant must notify the Federal Insurance Administrator of the changes by submitting technical or scientific data to FEMA for a Letter of Map Revision, as soon as practicable but, not later than 6 months after the date such information becomes available or the placement of fill, whichever comes first. If the projected increase in the base flood elevation is greater than one foot, the applicant must also obtain approval of a Conditional Letter of Map Revision from the Federal Insurance Administrator before the approval of construction.

N. In riverine situations, adjacent communities and the Virginia Department of Conservation and Recreation must be notified before any alteration or relocation of a watercourse depicted on the Flood Insurance Rate Map (FIRM) and copies of such notifications must be submitted to the Federal Insurance Administrator. The flood carrying capacity within the altered or relocated portion of any watercourse must be maintained.

7. Definitions

Definitions pertaining to the interpretation and administration of these floodplain regulations are in Section 9104.

Attachment 5: Northern Virginia Hazard Mitigation Plan

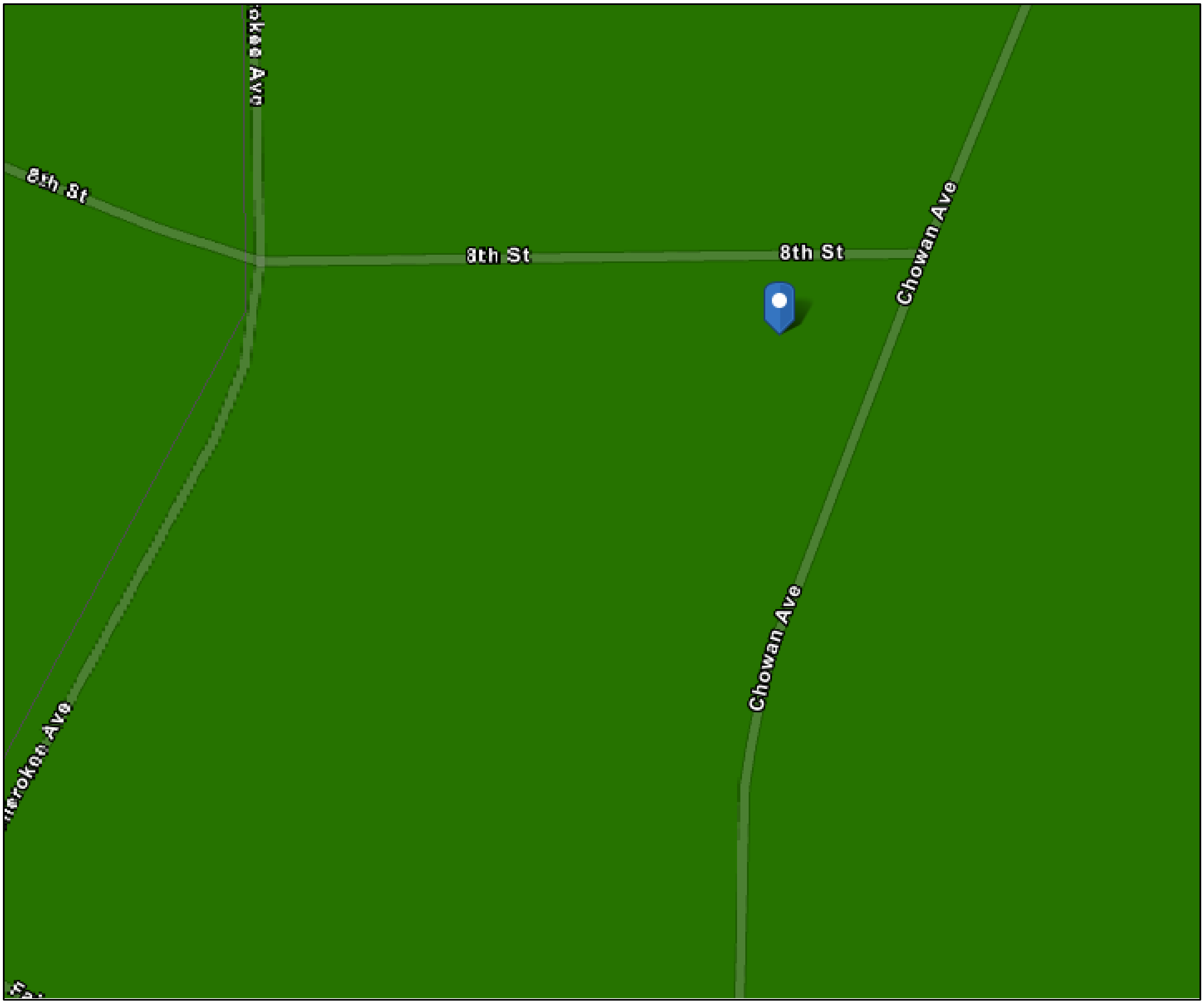
https://www.fairfaxcounty.gov/emergencymanagement/sites/emergencymanagement/files/assets/documents/pdf/hazard%20mitigation%20plan%2010.22.19.pdf

Attachment 6

: A link to the Fairfax County Comprehensive Plan:

https://www.fairfaxcounty.gov/planning-development/fairfax-county-comprehensive-plan

Attachment 7 _ Social Vulnerable Index Score



March 5, 2022

Social Vulnerability Classification

- 🟥 High Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟩 Not Socially Vulnerable
- ▨ Not included in the analysis

1:2,257

0 0.01 0.02 0.04 mi

0 0.0175 0.035 0.07 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPTVA

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Fairfax County

Category of Grant Being Applied for (check one):

____ **Capacity Building/Planning**

X **Project**

____ **Study**

NFIP/DCR Community Identification Number (CID) 515525

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bryan J. Hill,County Executive

Signature of Authorized Official: J Hill

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 552

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-2531 **Cell Phone Number:** (____) N/A

Email Address: cexbryanhill@fairfaxcounty.gov

Contact Person (If different from authorized official): Craig Carinci

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 449

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-5500 **Cell Phone Number:** (____) N/A

Email Address: craig.carinci@fairfaxcounty.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☒ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☒ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Near the intersection of Chowan Avenue and 8th Street, Fairfax County

NFIP Community Identification Number (CID#):(See appendix F 515525

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☒ No

Flood Zone(s) (If Applicable): Discharged to Zone A

Flood Insurance Rate Map Number(s) (If Applicable): 51059C0285E

Total Cost of Project: $2,000,000

Total Amount Requested $1,200,000

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Fairfax County	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☐ **Yes** ☐ **No**
Applicant Name:	Fairfax County

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	X
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	X
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	10	
No	0	X
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	10	
No	0	X
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	5	X
No	0	
11. Does this project provide “community scale” benefits?		
Yes	20	X
No	0	
Total Points		60

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies) Attachment 1_Project Area map	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies) Attachment 2_FEMA FIRMette	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies) Attachment 3_Historic flood damage Pictures	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance Attachment 4_ Floodplain zoning ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close See Maintenance Plan Section	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan Attachment 5_ Hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan Attachment 6_Comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer Attachment 7 _ Social vulnerable index	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D Attachment 8_ Appendices B & D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government Attachment 9_ Authorization to request fund	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Attachment 9_ Authorization to request Funding

1742

County of Fairfax, Virginia

MEMORANDUM

DATE: april 5, 2022

TO: Board of Supervisors

FROM: Bryan J. Hill
County Executive

SUBJECT: Department of Conservation and Recreation, Virginia Community Flood Preparedness Fund

The Virginia Community Flood Preparedness Fund (CFPF) was “established to provide support for regions and localities across Virginia, to reduce the impacts of flooding, including flooding driven by climate change.” The Department of Conservation and Recreation (DCR) administers loans and grants from the CFPF to local governments. DCR has advertised that approximately $40,000,000 in matching CFPF funds is available this grant cycle. The minimum grant amount is $50,000 for project grants and $1,000 for study grants. Project grants will not be capped and final awards will be determined based on available funds following review by DCR. The grant amount per application will be determined based on scoring, amount requests from eligible applications, and available funds.

DCR is soliciting applications for flood prevention and protection project types including, but not limited to: i) nature-based solutions; ii) flood control solutions; and iii) preservation and creation of open space. DCR is also soliciting applications for the following study types including, but not limited to: i) floodplain ordinance revisions; ii) hydrologic and hydraulic floodplain studies with historic and predicted floods; iii) hydrologic and hydraulic floodplain studies to clarify or update FEMA Flood Insurance Rate Maps; and iv) studies and data collection of statewide and regional significance. Applications must be for discrete projects to be completed after the beginning of the application period and not later than three years from the date of an executed grant agreement or by an extension date approved by DCR. Applications for this grant cycle are due on April 8, 2022.

DCR will review applications and award grant assistance by category (project, study, and capacity building and planning) on a competitive scoring basis. Priority is given to applications that are in concert with local, state, and federal floodplain management standards, local resilience plans, and the Virginia Coastal Resilience Master Plan. Based on that ranking process, DCR will select and approve applications. The approved applications will be

Office of the County Executive
12000 Government Center Parkway, Suite 552
Fairfax, VA 22035-0066
703-324-2531, TTY 711, Fax 703-324-3956
www.fairfaxcounty.gov

forwarded to the Virginia Resources Authority for the execution of a grant agreement and funding.

For this grant cycle, Fairfax County (County) proposes submitting the following five applications:

Project/Study Title	Project/Study Estimate	Grant Amount Requested
1. Tucker Avenue Neighborhood Stormwater Improvements	$9,834,000	$5,900,000
2. Chowan Avenue Flood Mitigation	$2,000,000	$1,200,000
3. Little Pimmit Run Tributary at Woodland Terrace	$4,279,000	$2,567,000
4. Tripps Run at Barrett Road Flood Mitigation	$12,836,000	$8,985,200
5. County Regulated Floodplain Map Updates	$1,200,000	$600,000
Total	$30,149,000	$19,252,200

The County is under no financial obligation to apply for CFPF grants. If DCR selects one or more of these applications, the grant(s) will be presented to the Board of Supervisors for approval.

cc: Rachel Flynn, Deputy, County Executive
Christopher Herrington, Director, Department of Public Works and Environmental Services (DPWES)
Eleanor Ku Codding, Deputy Director DPWES, Stormwater and Wastewater Divisions

Attachment 10_Fairfax County Resilience Plan

Ann Jennings
Secretary of Natural and Historic
Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

January 10, 2022

Joni Calmbacher, PE, CFM
Project Manager II
DPWES, Stormwater Planning Division
Watershed Projects Implementation Branch – South
12000 Government Center Parkway Fairfax, VA 22035

RE: Fairfax County Resilience Plan Submission - CFPF

Dear Ms. Calmbacher,

Thank you for providing an overview of your Resilience Plan, and informing DCR of the various plans that Fairfax County will be utilizing to fulfill the Resilience Plan submission requirements. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on January 11, 2025.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

   Meets criteria as written.

   a. Project-based: Fairfax County is divided into 30 watersheds which have been addressed in 11 major watershed management plans. Each of the watershed management plans contains projects and watershed management area restoration strategies. The 2017 *Northern Virginia Hazard Mitigation Plan* was a regional effort involving nineteen counties, including Fairfax County, and outlines specific mitigation projects for each participating community in order to reduce vulnerability and exposure to future hazards, including flooding events. The *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management* contains projects at various locations throughout Fairfax County. The projects included and described in the *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management* align with the established *Comprehensive Plan* objectives. The *Resilient Critical*

Infrastructure Roadmap for Northern Virginia contains a database of resilience projects throughout northern Virginia, including Fairfax County.

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

   Meets criteria as written.

   a. The 2020 R*egional Collaboration to Build Community Resilience in Northern Virginia* expanded upon *The Roadmap*, to include maximization of green infrastructure. Nature-based solutions are also presented in the *Fairfax County Watershed Management Plan* and the *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management*.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**

   Meets criteria as written.

   a. All parts of a locality: The *Northern Virginia Hazard Mitigation Plan* discusses the demographic and economic trends throughout the entirety of Fairfax County.

   b. Social vulnerability: The R*egional Collaboration to Build Community Resilience in Northern Virginia* presents a more comprehensive approach that includes an assessment of the socioeconomic impacts of infrastructure disruptions on vulnerable populations that will be taken into account as well as the socioeconomic benefits of infrastructure investment. This expanded upon objectives contained within *The Roadmap*, to ensure equitable access to resilient critical infrastructure.

   c. Demographic Analysis: Population and demographic characteristics outlined within the *Northern Virginia Hazard Mitigation Plan*. The *Fairfax County Comprehensive Plan* also looks at demographics and social factors and utilizes this information to support the Human Services section of the *Comprehensive Plan*.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**

   Meets criteria as written.

   a. Coordination with other local and inter-jurisdictional projects, plans and activities: Objective 4: Strengthen Regional Resilience Through Innovative Partnerships, Programs, and Pilots contained within *Resilient Critical Infrastructure Roadmap for Northern Virginia* focuses on coordination with local and inter-jurisdictional agencies and aligning strategies and programs. The *Comprehensive Plan for Fairfax County, Virginia* was adopted by the Board of Supervisors, Planning Commision, The Department of Planning and Zoning, and the Department of Transportation, and guides all of the plans presented in the Resilience Plan

submission for Fairfax County. The *Northern Virginia Hazard Mitigation Plan* was a collaborative effort that was adopted by all impacted localities.

b. Clearly articulated timeline or phasing plan for implementation: Timeline for deliverables is presented within the R*egional Collaboration to Build Community Resilience in Northern Virginia*. Timeline presented within the F*airfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management*. Phased implementation plans presented in the *Fairfax County Watershed Management Plans*.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

   Meets criteria as written.

   a. The 2018 *Resilient Critical Infrastructure Roadmap for Northern Virginia (Roadmap)* incorporates best available science and identifies actions to potentially decrease the severity of future consequences emanating from climate and extreme weather, to include sea level rise and storm surge. *Sea Level Rise: Impact on Northern Virginia* is an interactive story map and dashboard that was created in 2019 to convey the impact of sea level rise scenarios. The *Northern Virginia Hazard Mitigation Plan* includes analyses of natural hazards based on best available science to include flooding, sea level rise and land subsidence, tropical and coastal storms, and shoreline erosion.

VA DCR looks forward to working with you as you work to make Fairfax County a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl Glover, DCR

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID515525_FairfaxCounty_CFPF Applications

2 messages

Torgersen, Catherine S <Catherine.Torgersen@fairfaxcounty.gov> Tue, Apr 5, 2022 at 4:31 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Pokharel, Sajan" <Sajan.Pokharel@fairfaxcounty.gov>, "Habete, Daniel" <Daniel.Habete@fairfaxcounty.gov>, "Calmbacher, Joni" <Joni.Calmbacher@fairfaxcounty.gov>, "Wilkins, Fred H." <Fred.Wilkins@fairfaxcounty.gov>, "Carinci, Craig A." <Craig.Carinci@fairfaxcounty.gov>, "Ambrose, Heather" <Heather.Ambrose@fairfaxcounty.gov>, "Gutzler, Emma B." <Emma.Gutzler@fairfaxcounty.gov>

Good afternoon,

Fairfax County is pleased to submit the following five applications for grant round 3 of the Virginia Community Flood Preparedness Fund:

1. CID515525_FairfaxCounty_CFPF-1 Tucker Avenue Neighborhood Stormwater Improvement Project Application
2. CID515525_FairfaxCounty_CFPF-2 Chowan Avenue Stormwater Improvement Project Application
3. CID515525_FairfaxCounty_CFPF-3 Little Pimmit Run Tributary at Woodland Terrace Project Application
4. CID515525_FairfaxCounty_CFPF-4 Tripps Run at Barrett Road Flood Mitigation Project Application
5. CID515525_FairfaxCounty_CFPF-5 Regulated Floodplain Map Updates Study Application

The applications are available for download at the following Sharefile link: https://fairfaxcounty-ent.sharefile.com/d-s52b8f9fb46c444d8a5ecbe1f4ad3dd45

Please let me know if you are unable to download the applications or if you have any questions.

Thank you,

Catie Torgersen

Planner

Stormwater Planning Division, SWPD
Fairfax County DPWES

12000 Government Center Parkway
Fairfax, VA 22035
703-639-7664 (cell)

CFPF, rr <cfpf@dcr.virginia.gov> Wed, Apr 6, 2022 at 10:00 AM
To: "Torgersen, Catherine S" <Catherine.Torgersen@fairfaxcounty.gov>
Cc: "Pokharel, Sajan" <Sajan.Pokharel@fairfaxcounty.gov>, "Habete, Daniel" <Daniel.Habete@fairfaxcounty.gov>, "Calmbacher, Joni" <Joni.Calmbacher@fairfaxcounty.gov>, "Wilkins, Fred H." <Fred.Wilkins@fairfaxcounty.gov>, "Carinci,

Craig A." <Craig.Carinci@fairfaxcounty.gov>, "Ambrose, Heather" <Heather.Ambrose@fairfaxcounty.gov>, "Gutzler, Emma B." <Emma.Gutzler@fairfaxcounty.gov>

Received

On Tue, Apr 5, 2022 at 4:31 PM Torgersen, Catherine S <Catherine.Torgersen@fairfaxcounty.gov> wrote:

> Good afternoon,
>
> Fairfax County is pleased to submit the following five applications for grant round 3 of the Virginia Community Flood Preparedness Fund:
>
> 1. CID515525_FairfaxCounty_CFPF-1 Tucker Avenue Neighborhood Stormwater Improvement Project Application
> 2. CID515525_FairfaxCounty_CFPF-2 Chowan Avenue Stormwater Improvement Project Application
> 3. CID515525_FairfaxCounty_CFPF-3 Little Pimmit Run Tributary at Woodland Terrace Project Application
> 4. CID515525_FairfaxCounty_CFPF-4 Tripps Run at Barrett Road Flood Mitigation Project Application
> 5. CID515525_FairfaxCounty_CFPF-5 Regulated Floodplain Map Updates Study Application
>
> The applications are available for download at the following Sharefile link: https://fairfaxcounty-ent.sharefile.com/d-s52b8f9fb46c444d8a5ecbe1f4ad3dd45
>
> Please let me know if you are unable to download the applications or if you have any questions.
>
> Thank you,
>
> Catie Torgersen
>
> Planner
>
> Stormwater Planning Division, SWPD
> Fairfax County DPWES
>
> 12000 Government Center Parkway
> Fairfax, VA 22035
> 703-639-7664 (cell)

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Fairfax County

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_X_ **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 515525

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bryan J. Hill, County Executive

Signature of Authorized Official: J Hill

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 552

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-2531 **Cell Phone Number:** (___) N/A

Email Address: CEXBryanHill@fairfaxcounty.gov

Contact Person (If different from authorized official): Craig Carinci

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 449

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-5500 **Cell Phone Number:** (____) N/A

Email Address: Craig.Carinci@fairfaxcounty.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☒ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☒ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☒ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☒ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Fairfax County Pimmit Run Watershed - North Albemarle St./Chesterbrook Rd. intersection

NFIP Community Identification Number (CID#):(See appendix F 515525

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Project adjacent to Zone A

Flood Insurance Rate Map Number(s) (If Applicable): 51059C0170E

Total Cost of Project: $4,279,000

Total Amount Requested $2,567,000

FAIRFAX COUNTY

Little Pimmit Run Tributary at Woodland Terrace

Virginia Community Flood Preparedness Fund

FY 2022 ROUND 3 GRANT APPLICATION

CID515525_FairfaxCounty_CFPF-3 (Woodland Terr)

Contents

Attachments

Attachment 1. Advertised Fairfax County Fiscal Year 2023 budget

Attachment 2. County Resilience Plan

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Attachment 4. Total project cost estimate

Attachment 5. Request for funding authorization

Attachment 6. Detailed map of the project area

Attachment 7. FIRMette of the project area

Attachment 8. Social vulnerability map

Appendices

Appendix A

Appendix B

Appendix D

Executive Summary

Fairfax County is applying for grant assistance under the Virginia Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF) Round 3 'Project' category to help mitigate flooding at the North Albemarle Street and Chesterbrook Road intersection in McLean within the Dranesville Magisterial District. The project, *Little Pimmit Run Tributary at Woodland Terrace*, is focused on upgrading the inadequate storm drainage system at the intersection and stabilizing the eroding stream channel immediately upstream.

DCR approved the County's Resilience Plan on January 10, 2022. The County has integrated flood mitigation and resilience goals across areas of the local government, with flood resilience a priority addressed holistically through watershed and countywide comprehensive planning. The County has established requirements for development controls in the floodplain through zoning and the local floodplain ordinance. In order to address recent repetitive floodings, the County is in the process of preparing a draft flood risk reduction plan. The County is also developing a comprehensive regulated floodplain map to assess and implement future projects.

The proposed project addresses the community concerns and supports resilience goals by addressing the entire watershed drainage problem within the project area.

A. Scope of Work Narrative

1. Project Information

Little Pimmit Run Tributary at Woodland Terrace stream restoration project is located near the Chesterbrook Woods, Chesterbrook Hills, and the Chesterbrook Mews neighborhoods in Fairfax County. These neighborhoods were built prior to many stormwater management requirements and contain little infrastructure to adequately convey runoff from numerous residential lots and roadways. Cumulative stormwater management impacts from lot-by-lot residential infill development continue to impact the drainage area. Flow in the project area drains through an eroded stream channel into an undersized single culvert at the North Albemarle Street and Chesterbrook Road intersection (Map 1 and Map 2). Sediment from the unstable stream channel enters the drainage system and partially blocks the culvert, thereby further reducing the capacity of the system.

Population

Fairfax County has a population of about 1.17 million. The proposed project is in the Dranesville Magisterial District in McLean. The project impacts approximately 25 single family homes and thousands of people that pass through the Chesterbrook Road and North Albemarle Street intersection daily.

Historic Flooding Data and Hydrologic Studies

The project area has recorded multiple events of flooding in the past, most recently on July 8, 2019. Figure 1 below shows the reported storm drainage issues in the project drainage shed. One home has reported at least two instances of structural flooding including the July 8, 2019, event.

Local Government Cost Share

Construction of the project is identified in the County's FY24 stormwater capital improvement plan (CIP). It is currently anticipated that the County's cost-share would be provided through Regulatory Program Support under Fund 40100 Stormwater Services in the Fairfax County Fiscal Year 2024 budget (see Attachment 1 for the County's stormwater CIP plan and County budget document).

County Floodplain Management Regulations

Fairfax County, CID #515525, is listed in FEMA's Community Status Book Report as a community participating in the National Flood Insurance Program (NFIP). In addition, Fairfax County participates in the Community Rating System (CRS) and received a Class 6 rating in the most recent verification process (Figure 2). Floodplains are regulated under article 5104 of the county's Zoning Ordinance. The Zoning Ordinance is included in the link below:
https://online.encodeplus.com/regs/fairfaxcounty-va/doc-viewer.aspx#secid-462

Fairfax County regulates proposed uses and disturbances in the 100-year flood inundation area associated with all channels or conveyance systems that have a contributing drainage area of 70 acres or more. Currently, existing floodplain boundaries and water surface elevations are available from several sources and a significant portion of regulated floodplain is not mapped. A separate effort to develop a comprehensive regulated floodplain map is currently underway.

Based on the 2010 mapping of the Special Flood Hazard Areas (SFHAs) by FEMA, the floodplain immediately downstream of the project area is classified as SFHA Zone-A.

Project Priority

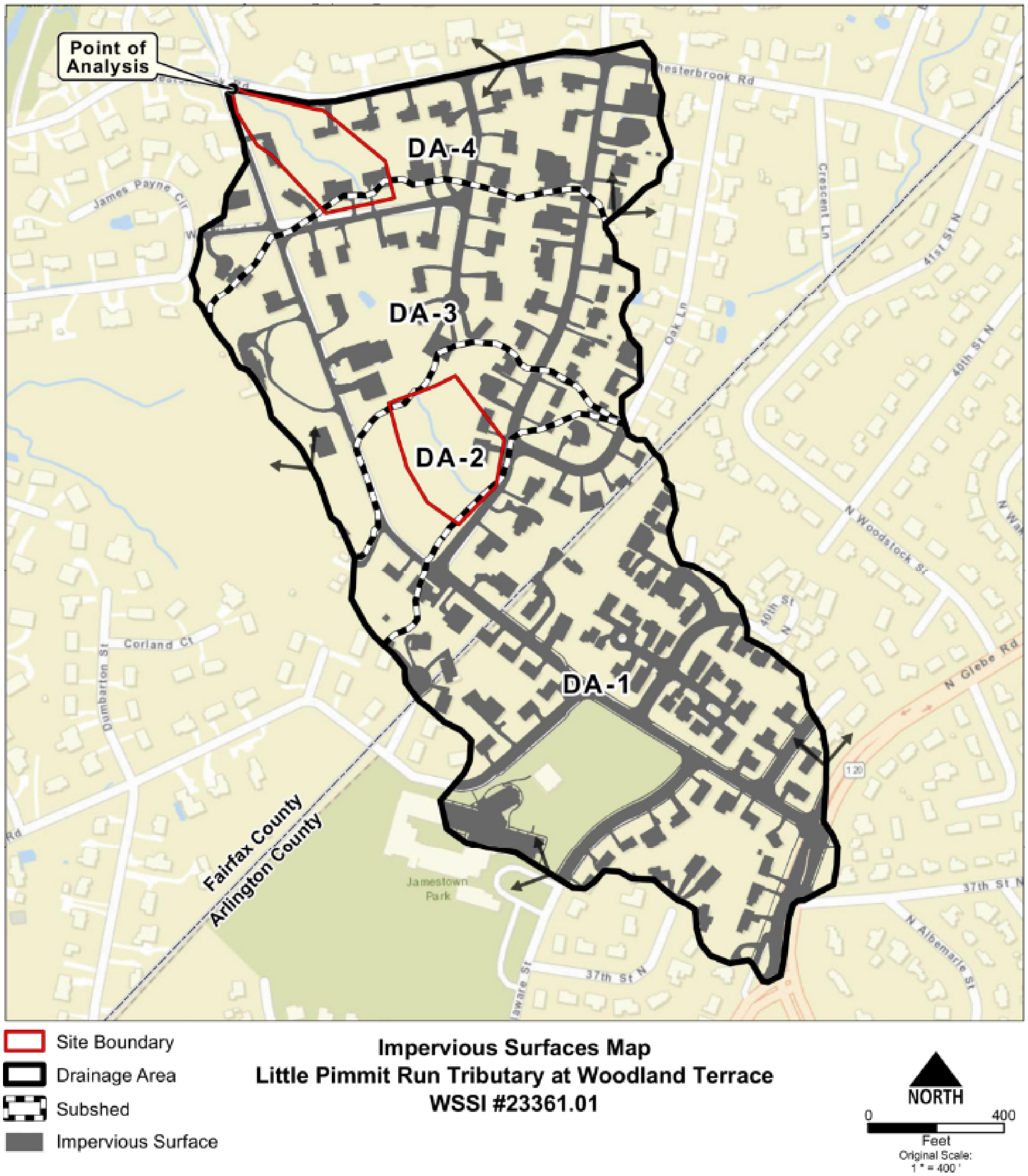
Flood Damage and Repetitive Loss Properties

This project was prioritized in the district due to numerous structural and yard flooding complaints, as well as channel erosion complaints. Residences in the project area were constructed in the 1950s prior to floodplain and stormwater management regulations. There is one property in this area outside of the FEMA mapped floodplain that has reported two instances of structural flooding and multiple homes that report erosion of the stream channel just upstream of the storm drain at the North Albemarle Street and Chesterbrook Road intersection. Photos of recent flooding are shown in Figure 1 below.

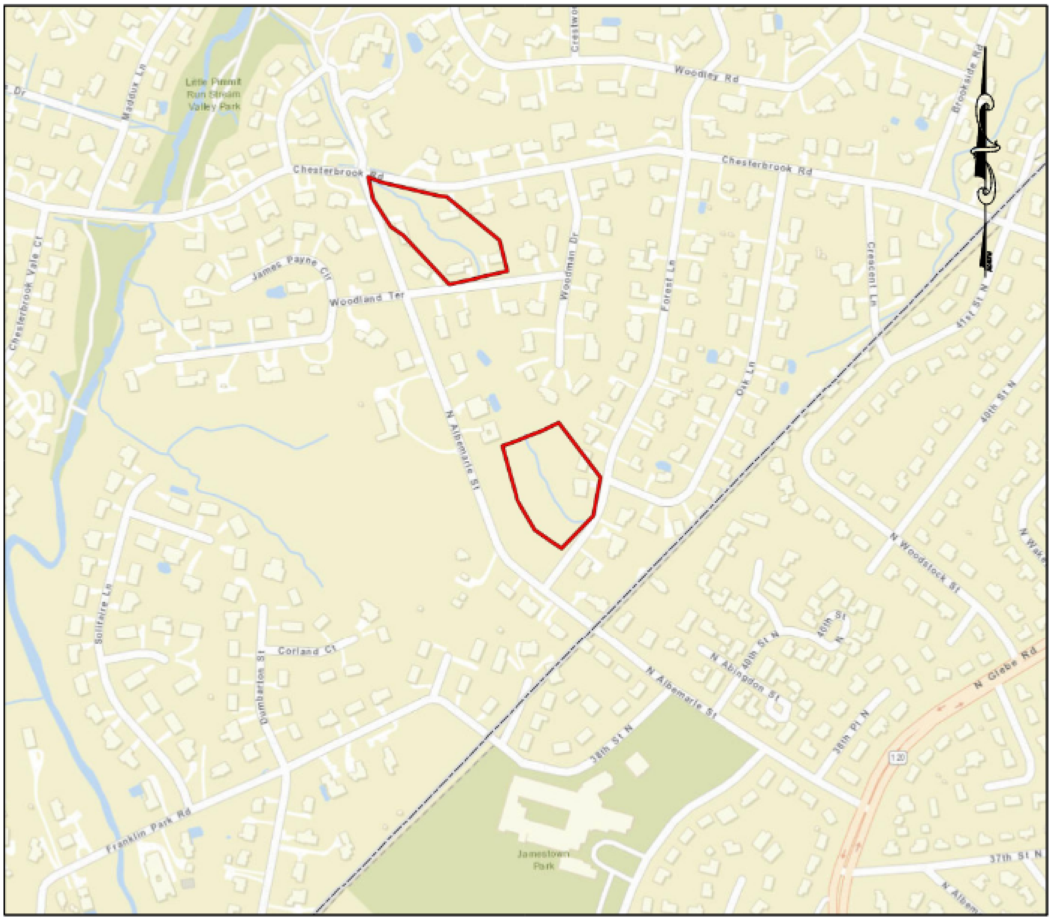
Project Area Structures and Critical Facilities

Chesterbrook Road is identified by the Virginia Department of Transportation (VDOT) as a "Major Collector" road that has an annual average daily traffic volume estimate of 5,700 vehicles. The Chesterbrook Road and North Albemarle Street intersection regularly floods during rainstorms. During the July 8, 2019, event, the intersection was inundated with approximately 5 feet of water due to the drainage system being overwhelmed.

Map 1: Project Drainage



Map 2: Little Pimmit Run Tributary at Woodland Terrace location



ESRI WORLD STREET MAP
TAX MAP: 0314 01 0029, 0314 01 0030, 0314 05 0034, 0314 05 0033, 0314 05 0029, 0314 05 0030
ADDRESS: LITTLE PIMMIT RUN AT WOODLAND TERRACE, MCCLEAN, VA 22101

Figure 1: Community flooding on July 8, 2019

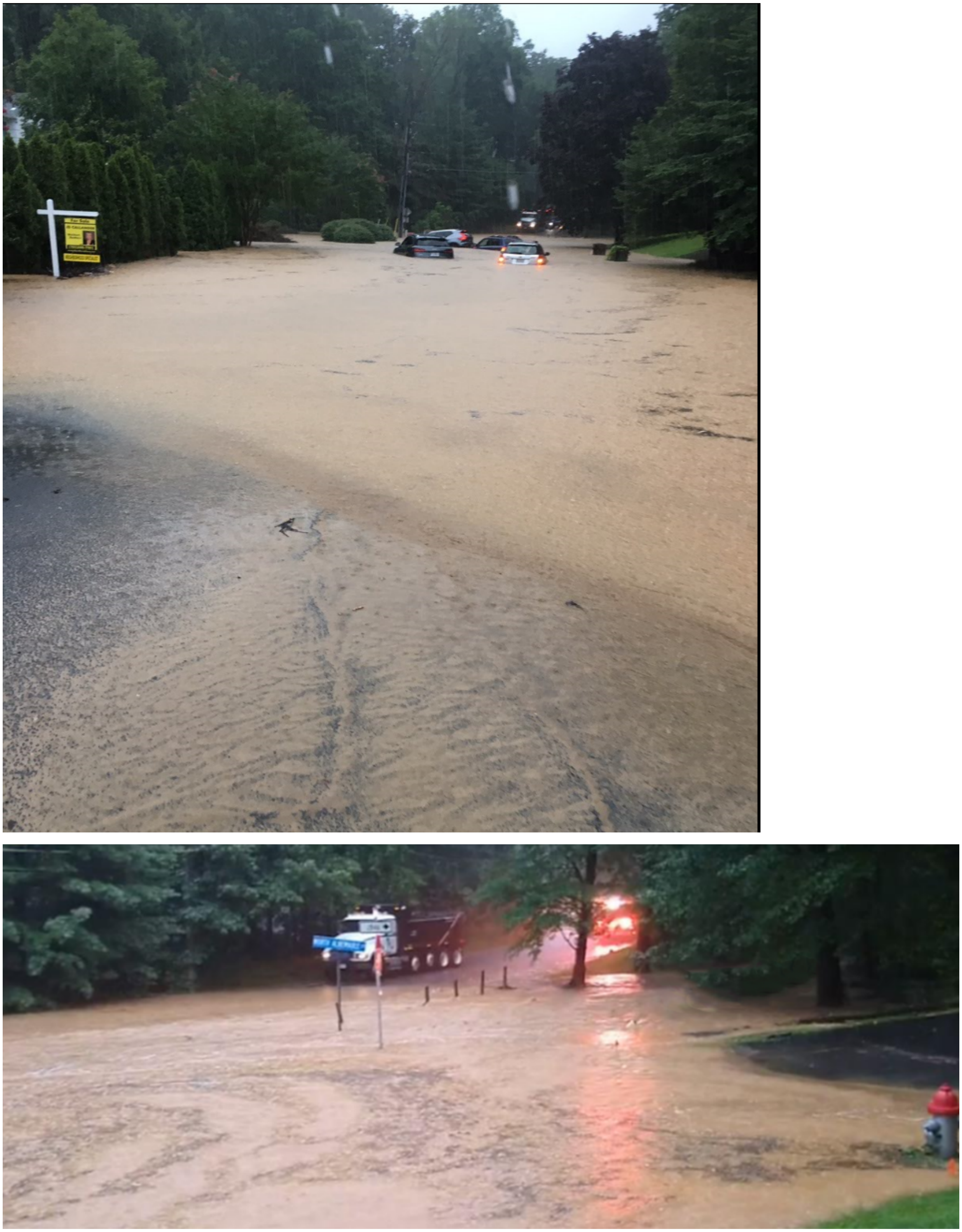


Figure 2: NFIP and CRS participation

FEMA

Fairfax County

successfully participates in the

National Flood Insurance Program
Community Rating System

The community has undertaken a series of meaningful activities to protect its citizens from losses caused by flooding and has significantly exceeded the requirements for NFIP participation and effective floodplain management.

6
CLASS

October 1, 2014

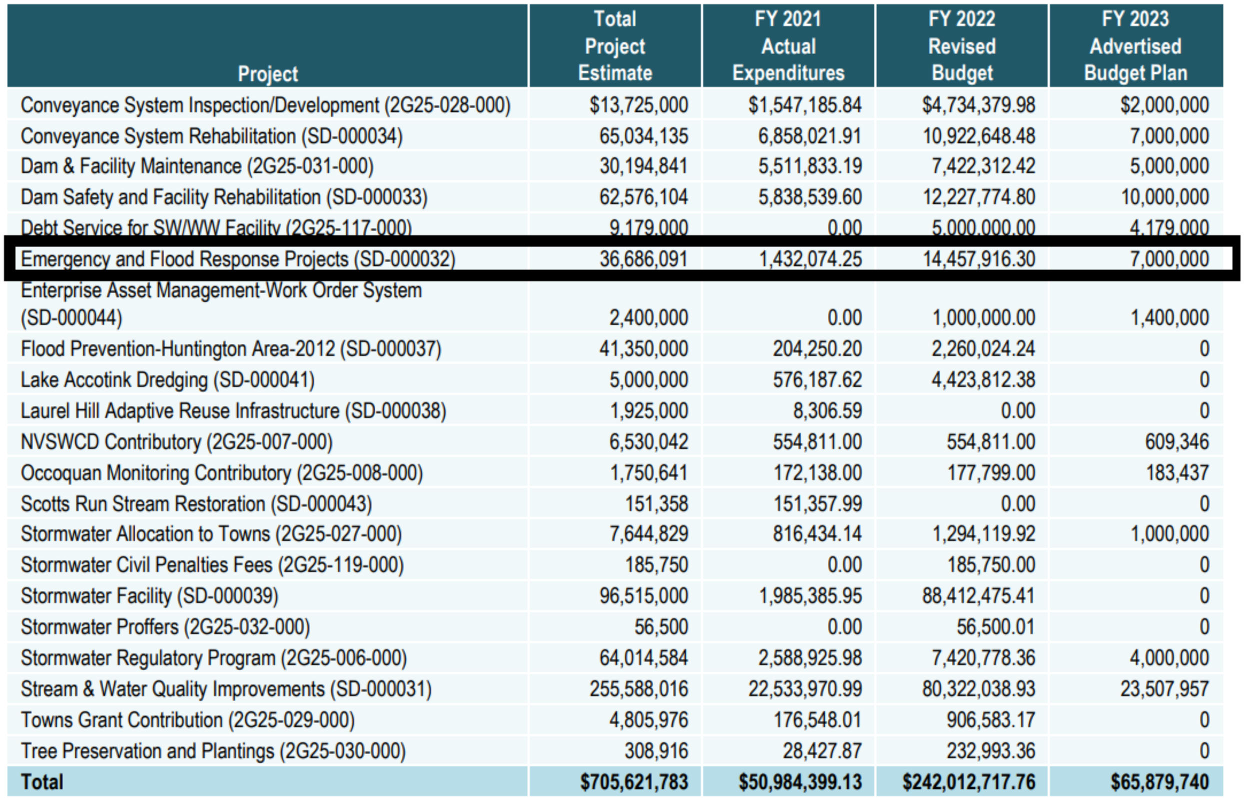
David I. Miller
Associate Administrator for Federal Insurance and Mitigation
Federal Insurance and Mitigation Administration
Federal Emergency Management Agency

2. Need for Assistance

Financial and Staff Resources

The Stormwater Services Emergency and Flood Response Projects program supports flood control projects for unanticipated flooding events that impact storm systems and structural flooding. The program provides annual funding for scoping, design, and construction activities related to flood mitigation projects. Fairfax County's advertised Fiscal Year 2023 Stormwater Services budget includes $7.0 million for emergency and flood response projects, but there is an estimated total cost of $36.7 million for active flood mitigation projects (see Figure 3). With the increase in the frequency and intensity of storms due to climate change, we expect the number of flood mitigation projects to grow, and the associated project design and construction costs will extend well beyond what the county's current emergency and flood response program can support.

Figure 3. Fiscal Year 2023 Advertised Budget- Stormwater Services Summary of Capital Projects



Project	Total Project Estimate	FY 2021 Actual Expenditures	FY 2022 Revised Budget	FY 2023 Advertised Budget Plan
Conveyance System Inspection/Development (2G25-028-000)	$13,725,000	$1,547,185.84	$4,734,379.98	$2,000,000
Conveyance System Rehabilitation (SD-000034)	65,034,135	6,858,021.91	10,922,648.48	7,000,000
Dam & Facility Maintenance (2G25-031-000)	30,194,841	5,511,833.19	7,422,312.42	5,000,000
Dam Safety and Facility Rehabilitation (SD-000033)	62,576,104	5,838,539.60	12,227,774.80	10,000,000
Debt Service for SW/WW Facility (2G25-117-000)	9,179,000	0.00	5,000,000.00	4,179,000
Emergency and Flood Response Projects (SD-000032)	36,686,091	1,432,074.25	14,457,916.30	7,000,000
Enterprise Asset Management-Work Order System (SD-000044)	2,400,000	0.00	1,000,000.00	1,400,000
Flood Prevention-Huntington Area-2012 (SD-000037)	41,350,000	204,250.20	2,260,024.24	0
Lake Accotink Dredging (SD-000041)	5,000,000	576,187.62	4,423,812.38	0
Laurel Hill Adaptive Reuse Infrastructure (SD-000038)	1,925,000	8,306.59	0.00	0
NVSWCD Contributory (2G25-007-000)	6,530,042	554,811.00	554,811.00	609,346
Occoquan Monitoring Contributory (2G25-008-000)	1,750,641	172,138.00	177,799.00	183,437
Scotts Run Stream Restoration (SD-000043)	151,358	151,357.99	0.00	0
Stormwater Allocation to Towns (2G25-027-000)	7,644,829	816,434.14	1,294,119.92	1,000,000
Stormwater Civil Penalties Fees (2G25-119-000)	185,750	0.00	185,750.00	0
Stormwater Facility (SD-000039)	96,515,000	1,985,385.95	88,412,475.41	0
Stormwater Proffers (2G25-032-000)	56,500	0.00	56,500.01	0
Stormwater Regulatory Program (2G25-006-000)	64,014,584	2,588,925.98	7,420,778.36	4,000,000
Stream & Water Quality Improvements (SD-000031)	255,588,016	22,533,970.99	80,322,038.93	23,507,957
Towns Grant Contribution (2G25-029-000)	4,805,976	176,548.01	906,583.17	0
Tree Preservation and Plantings (2G25-030-000)	308,916	28,427.87	232,993.36	0
Total	**$705,621,783**	**$50,984,399.13**	**$242,012,717.76**	**$65,879,740**

Low Income Geographic Areas

The project does not fall in a low-income geographic area.

Vulnerability Index

Based on the Vulnerability Index Map (Attachment 8), the project is not in a socially vulnerable area.

Alternatives

The project is a hybrid solution.

3. Goals and Objectives

The following are the primary goals and objectives of the project:

- Improve the drainage system and reduce localized flooding and erosion by designing an adequate drainage system as defined in the County codes and Public Facilities Manual. The design will evaluate the cumulative increases in runoff from infill development based on existing and future buildout conditions.
- Address public safety concerns.
- Improve water quality and stream protection. Stormwater runoff from the drainage area to this unnamed tributary to Little Pimmit Run is causing the stream to erode and incise. Sediment

from the channel is settling in the downstream storm drainage system, thereby reducing the system's overall capacity. Pimmit Run is listed as impaired (does not meet water quality standards) by Virginia Department of Environmental Quality (DEQ).

- Use innovative, sustainable, and functional designs.
- Partner with VDOT and Fairfax County Department of Transportation to develop a sound, cost effective solution that can be collaboratively implemented and maintained.

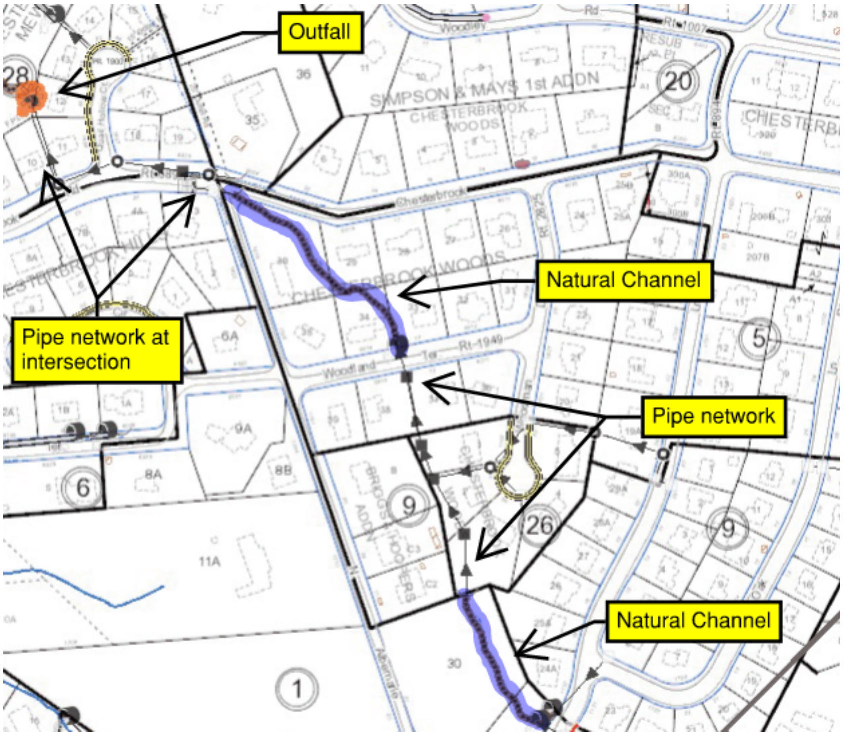
Project details, goals and objectives, and activities are also included in the following project website: https://www.fairfaxcounty.gov/publicworks/stormwater/plans-projects/little-pimmit-run-tributary-woodland-terrace-stream-restoration

4. Approach, Milestones, and Deliverables

The existing conveyance system in the project area, which serves a drainage area of approximately 63 acres, is limited (Map 3 below). This project will design a more resilient stormwater management conveyance system in the neighborhood. The existing storm drainage system at the intersection will be replaced with a significantly larger box culvert. The project will also restore up to 900 feet of eroded stream channel upstream of the intersection.

Typically, closed stormwater conveyance systems are designed to carry the 10-year flow. Due to repeated flooding in the intersection and the County's desire to integrate resiliency into the design, the closed conveyance system will be designed to accommodate up to the 100-year flow capacity within the system.

Map 3: Existing conveyance system



A final design for the project is currently in development. Coordination with utility companies is underway to relocate service lines within areas of conflicts. Upon grant approval, the project is anticipated to go to construction in Fiscal Year 2024. The construction is estimated to be completed in two years once the contractor has mobilized.

5. Relationship to Other Projects

Fairfax County's Pimmit Run Watershed Management Plan identified the area immediately downstream of this project for stream restoration. The Little Pimmit Run Tributary at Woodland Terrace project site was chosen due to the severe flooding that occurs at the intersection, but the project will also benefit the downstream stream restoration project (identified as PM9203). PM9203, located inside a FEMA Special Flood Hazard Area Zone A, is currently in design and will restore over 7,000 feet of degraded stream channel.

The Pimmit Run Watershed Management Plan can be found in the following link for the Middle Potomac Watershed Management Plan:
https://www.fairfaxcounty.gov/publicworks/stormwater/middle-potomac-watersheds

6. Maintenance Plan

Fairfax County has a dedicated maintenance program. The Maintenance and Stormwater Management Division (MSMD) maintains all public stormwater infrastructure and facilities, including stream restoration projects. Since this project will be constructed by the county, it will be maintained by MSMD. An official post construction maintenance plan will be developed during the final design phase of the project.

Scoring Criteria

Appendix B is completed and included in the Appendix section at the end of this application.

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?
   The applicant (Fairfax County) is a local jurisdiction in the Commonwealth of Virginia

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?
   The County has an approved resilience plan (see Attachment 2)

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?
   This criterion is not applicable. The applicant is a local jurisdiction.

4. Has the applicant provided evidence of an ability to provide the required match funds?
   The project is included in the advertised Fiscal Year 2023 CIP for construction (see Attachment 1).

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?
   The main objective of this project is to reduce the flooding in the neighborhood. The project has been designed to provide resiliency in the closed system to handle the 100-year storm event. Green stormwater infrastructure has been proposed to provide water quality benefits and detention.

SUPPORTING DOCUMENTATION

Scope of Work Narrative	
Documents	**Link or Attachment**
Detailed map of the project area	Attachment 6
FIRMette of the project area	Attachment 7
Historic flood damage data/image	Figure 1 above
Link to the current floodplain ordinance	https://online.encodeplus.com/regs/fairfaxcounty-va/doc-viewer.aspx#secid-251
No-fund maintenance and management plan	Described in maintenance plan above
Copy of the current hazard mitigation plan	https://www.fairfaxcounty.gov/emergencymanagement/sites/emergencymanagement/files/assets/documents/pdf/hazard%20mitigation%20plan%2010.22.19.pdf
Copy of the current comprehensive plan	https://www.fairfaxcounty.gov/planning-development/fairfax-county-comprehensive-plan
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	Attachment 8
Completed Scoring Criteria Sheet Appendix B, C, D	Included in Appendices at the end of the application

B. Budget Narrative

1. Estimated Total Project Cost

The total project cost for design and construction is $4,279,000. The County has already funded $979,400 for the design, utilities relocation (except for water), and construction administration. $3,299,600 for the water line relocation and project construction remain unfunded.

Estimated total project cost: $4,279,000

Encumbered: $979,400
Design & Construction Administration: $689,000
Land Acquisition: $266,400
Utilities: $24,000

Un-encumbered: $3,299,600
FFX Water relocation: $200,000
Construction: $3,099,600

See Attachment 3 for the project encumbrances and Attachment 4 for the total project estimate.

2. Funds Requested

The County requests $2,567,000 from the Fund (60% of the total project cost). This is the total amount of any grant assistance sought from the Fund. 100% of this grant will be applied to the construction of the project.

3. Available Funds

Fairfax County already encumbered $979,400 for the design task order, land acquisition and utilities designation. The County currently has $732,600 available for the remaining construction and water line relocation cost. Additional funds for the cost-share are available in Regulatory Program Support under Fund 40100 Stormwater Services in the advertised Fairfax County Fiscal Year 2023 budget (Attachment 1).

See Attachment 5 for the Not In Package (NIP) item to the Board of Supervisors authorizing a request for funding through the grant program.

C. Conclusion

Fairfax County has many older neighborhoods which were built prior to current floodplain regulations. Due to the global influence of climate change, rainfall intensity has changed over time resulting in the flooding of more and more neighborhoods and roadways. The implementation of this project, where limited conveyance exists, will provide the greatest relief to the neighborhood. The project not only provides a resilient conveyance system, but also improves water quality for the drainage shed. Fairfax County is therefore requesting funding support for the implementation of the project to reduce flooding threats to the neighborhood.

Attachment 1

Fund 40100: Stormwater Services

Mission

To develop and maintain a comprehensive watershed and infrastructure management program to protect property, health, and safety; to enhance the quality of life; and to preserve and improve the environment for the benefit of the public. To plan, design, construct, operate, maintain, and inspect stormwater infrastructure; perform environmental assessments through coordinated stormwater and maintenance programs in compliance with all government regulations utilizing innovative techniques, customer feedback and program review; and to be responsive and sensitive to the needs of the residents, customers, and public partners.

Focus

Stormwater Services are essential to protect public safety, preserve property values and support environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local jurisdictional waterways. Projects in this fund include repairs to stormwater infrastructure, measures to improve water quality such as stream stabilization, rehabilitation, safety upgrades of state regulated dams, repair and rehabilitation of underground pipe systems, surface channels, flood mitigation, site retrofits and best management practices (BMP), and other stormwater improvements.

The Board of Supervisors approved a special service district to support the Stormwater Management Program as part of the FY 2010 Adopted Budget Plan. This service district provides a dedicated funding source for both operating and capital project requirements by levying a service rate per $100 of assessed real estate value, as authorized by Code of Virginia Ann. Sections 15.2-2400. Since FY 2010, staff has made significant progress in the implementation of watershed master plans, public outreach efforts, stormwater monitoring activities, water quality and flood mitigation project implementation and operational maintenance programs related to existing storm drainage infrastructure including stormwater conveyance, and regulatory requirements.

A rate of $0.0400 per $100 of assessed value has been estimated to be required to fully support the stormwater program in the future; however, staff is currently evaluating the long-term requirements for the program to address the growth in inventory and other community needs. Some of the additional community needs under evaluation include debt service to support the Board's approval of the dredging of Lake Accotink, the anticipation of additional flood mitigation requirements, and strengthening the role and financial support for the implementation of stormwater requirements associated with Fairfax County Public Schools sites under renovation. This enhanced program may require incremental changes to the rate over time and may result in a higher rate to fully support the program. Staff continues to evaluate these requirements, as well as the staffing to support them, and analyze the impact of increased real estate values and revenue projections.

One of the recent initiatives being funded by the Stormwater Fund is the new Public Works complex which will consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions. Stormwater operations are currently conducted from various locations throughout the County, and a new colocation of both Stormwater and Wastewater staff will provide efficiencies and sharing of resources. Another initiative in progress is the planned dredging of Lake Accotink. Lake Accotink is a 55-acre lake surrounded by managed conservation areas, wetlands, deciduous and evergreen forests, and historic and prehistoric sites. Over 300,000 patrons visit the park annually to enjoy a variety of facilities and activities that vary with the season. Sediment from the upstream areas of the watershed has continued to be deposited in Lake Accotink over the years filling in the lake and limiting recreational use. Estimates for the cost of dredging including sediment disposal are still under review. Staff has identified the option of a low interest loan via the Virginia Clean Water Revolving Loan Fund (VCWRLF) as the preferred funding mechanism to fund the dredging project costs. The Stormwater fund will pay the future debt costs.

While staff continues to further evaluate the impact of recent initiatives and the long-term requirements for the Stormwater Program, the FY 2023 rate will remain the same as the FY 2022 Adopted Budget Plan level of $0.0325 per $100 of assessed value. However, based on capital project costs and projected revenues, it is anticipated that in the next several years, incremental rate increases will be required based on continued growth of stormwater facilities and infrastructure that must be inspected and maintained by the County, the implementation of flood mitigation projects, and additional requirements in the forthcoming Municipal Separate Storm Sewer System (MS4) Permit. On an annual basis, staff will continue to evaluate the program, analyze future requirements, and develop Stormwater operational and capital resource needs.

The FY 2023 levy of $0.0325 will generate $94,393,055, supporting $27,113,315 for staff and operational costs; $65,879,740 for capital project implementation including, infrastructure reinvestment, regulatory requirements, dam safety, and contributory funding requirements; and $1,400,000 transferred to the General Fund to partially offset central support services such as Human Resources, Purchasing, Budget and other administrative services supported by the General Fund, which benefit this fund.

Stormwater Services Operational Support

Stormwater Services operational support includes funding for staff salaries, Fringe Benefits, and Operating Expenses for all stormwater operations. In addition, Fund 40100 includes positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. Beginning in FY 2023, all funding for the transportation related salary expenses and equipment previously supported by Agency 87, Unclassified Administrative Expenses - Public Works Programs will be supported by capital projects in Fund 30010, General Construction and Contributions, as they do not qualify for expenses related to the stormwater service district. The transfer of funding to Fund 30010, General Construction and Contributions, will provide more transparency and the carryforward of balances at year-end.

Fund 40100 also supports the Urban Forestry Management Division (UFMD). The UFMD was established to mitigate tree loss and maximize tree planting during land development, enforce tree conservation requirements and monitor and suppress populations of Gypsy Moth, Emerald Ash Borer, and other forest pests. The division also implements programs needed to sustain the rich level of environmental, ecological, and socio-economic services provided by the County's tree canopy. The UFMD is aligned with the mission of Stormwater Services as it strives to "improve water quality and stormwater management through tree conservation." Tree canopy and forest soils function to mitigate significant levels of water pollution and stormwater runoff.

FY 2023 Stormwater Capital Project Support

Conveyance System Inspections, Development and Rehabilitation

The County owns and operates approximately 1,500 miles of underground stormwater pipes and improved channels with an estimated replacement value of over one billion dollars. The County

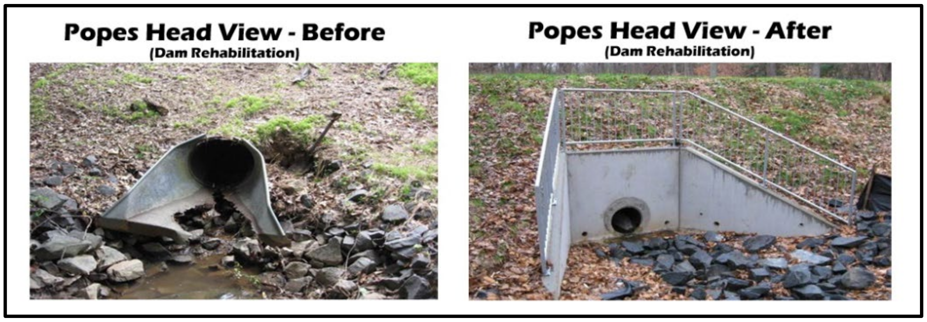
Barnack Drive – Before
(Outfall Restoration)

Barnack Drive – After
(Outfall Restoration)

began performing internal inspections of the pipes in FY 2006. The initial results showed that approximately 5 percent of the pipes exhibit conditions of failure, and an additional 5 percent required maintenance or repair. MS4 Permit regulations require inspection and maintenance of these 1,500 miles of existing conveyance systems, 69,000 stormwater structures, and a portion of the immediate downstream channel at the 7,000 regulated pipe outlets. Acceptable industry standards indicate that one dollar reinvested in infrastructure saves seven dollars in the asset's life and 70 dollars if asset failure occurs. Once the initial internal inspections are complete, the goal of this program is to inspect pipes on a 20-year cycle and rehabilitate pipes and improve outfall channels before total failure occurs. Total funding in the amount of $9.0 million is included for Conveyance System Inspections, Development and Rehabilitation in FY 2023, including $2.0 million for inspections and development and $7.0 million for rehabilitation and outfall restoration.

Dam Safety and Facility Rehabilitation

There are approximately 7,900 stormwater management facilities in service that range in size from small rain gardens to large state regulated flood control dams. The County is responsible for inspecting approximately 5,500 privately-owned facilities and maintaining over 2,400 County owned facilities. This inventory increases annually and is projected to continually increase as new development and redevelopment sites occur in the County. This initiative also includes the removal of sediment that occurs in both wet and dry stormwater management facilities to ensure that adequate capacity is maintained to treat the stormwater. The program results in approximately 50 projects annually that require design and construction management activities as well as contract management and maintenance responsibilities. This program maintains the structures and dams that control and treat the water flowing through County owned facilities. This program improves dam safety by supporting annual inspections of 20 state-regulated dams and the Huntington Levee and by developing Emergency Action Plans required by the state. The Emergency Action Plans are updated annually. In addition, these plans include annual emergency drills and exercises, and flood monitoring for each dam. Total funding in the amount of $15.0 million is included in FY 2023, including $5.0 million for maintenance and $10.0 million for rehabilitation.


Popes Head View - Before
(Dam Rehabilitation)

Popes Head View - After
(Dam Rehabilitation)

Stormwater/Wastewater Facility

This project will provide funding for a Stormwater/Wastewater Facility which will consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions. Currently, Stormwater operations are conducted from various locations throughout the County, with the majority of staff located at the West Drive facility. Facilities for field maintenance operations and for field/office-based staff are inadequate and outdated for the increased scope of the stormwater program, and inadequate to accommodate future operations. This project is currently in design with construction anticipated to begin in early 2022. The facility is financed by EDA bonds with the Stormwater Services Fund and Wastewater Fund supporting the debt service. Funding in the amount of $4.2 million is included in FY 2023 to support the second year of debt service for the Stormwater/Wastewater Facility.

Emergency and Flood Response Projects
This program supports flood control projects for unanticipated flooding events that impact storm systems and structural flooding. The program provides annual funding for scoping, design, and construction activities related to flood mitigation projects. Funding in the amount of $7.0 million is included for the Emergency and Flood Response Projects in FY 2023.

Enterprise Asset Management-Work Order System
This project will provide funding for the transition from an Enterprise Asset Management (EAM) system to a more functional Asset Management Program (AMP). This funding will support the acquisition of software, servers and consultant services to migrate asset management and related work order management into the new system. The current system tracks assets, inspections, daily work management and associated contractor costs. Features of the replacement system include geographic information system (GIS) integration and field mobility. The Department of Public Works and Environmental Services (DPWES) Information Technology staff have collaborated with the Stormwater Management and the Wastewater Management staff to promote interagency capabilities, optimize performance, and improve system lifecycle management for the new system. This new system will meet the future expectations for both divisions and optimize service delivery for DPWES. Funding in the amount of $1.4 million is included in Capital Projects and an amount of $800,000 is included in Operating Expenses for this project in FY 2023.

Stormwater-Related Contributory Program
Contributory funds are provided to the Northern Virginia Soil and Water Conservation District (NVSWCD) and the Occoquan Watershed Monitoring Program (OWMP). The NVSWCD is an independent subdivision of the Commonwealth of Virginia that provides leadership in the conservation and protection of Fairfax County's soil and water resources. It is governed by a five-member Board of Directors - three members are elected every four years by the voters of Fairfax County and two members are appointed by the Virginia Soil and Water Conservation Board. Accordingly, the work of NVSWCD supports many of the environmental goals established by the Board of Supervisors. The goal of the NVSWCD is to continue to improve the quality of the environment and general welfare of the citizens of Fairfax County by providing them with a means of dealing with soil, water conservation and related natural resource problems. It provides County agencies with comprehensive environmental evaluations for proposed land use changes with particular attention to the properties of soils, erosion potential, drainage, and the impact on the surrounding environment. NVSWCD has consistently been able to create partnerships and leverage state, federal and private resources to benefit natural resources protection in Fairfax County. FY 2023 funding of $0.6 million is included in Fund 40100 for the County contribution to the NVSWCD.

The OWMP and the Occoquan Watershed Monitoring Laboratory (OWML) were established to ensure that water quality is monitored and protected in the Occoquan Watershed. Given the many diverse uses of the land and water resources in the Occoquan Watershed (agriculture, urban residential development, commercial and industrial activity, water supply, and wastewater disposal), the OWMP plays a critical role as the unbiased interpreter of basin water quality information. FY 2023 funding of $0.2 million is included in Fund 40100 for the County contribution to the OWMP.

Stormwater Allocation to Towns
On April 18, 2012, the State Legislature passed SB 227, which entitles the Towns of Herndon and Vienna to all revenues collected within their boundaries by Fairfax County’s stormwater service district. An agreement was developed for a coordinated program whereby the Towns remain part of the County’s service district and the County returns 25 percent of the revenue collected from properties within each town. This allows for the Towns to provide services independently such as

maintenance and operation of stormwater pipes, manholes, and catch basins. The remaining 75 percent remains with the County and the County takes on the responsibility for the Towns' Chesapeake Bay Total Maximum Daily Load (TMDL) requirements as well as other TMDL and MS4 requirements. This provides for an approach that is based on watersheds rather than on jurisdictional lines. Funding in the amount of $1.0 million is included for the Stormwater Allocations to Towns project in FY 2023.

Regulatory Program

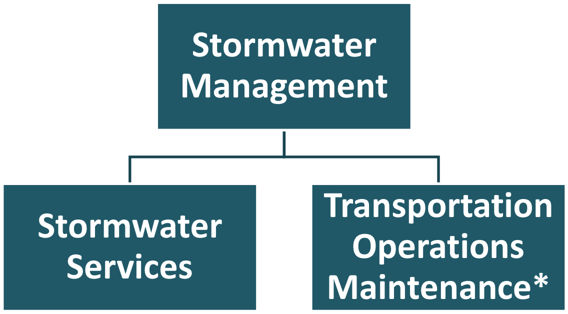
The County is required by federal law to operate under the conditions of a state issued MS4 Permit. Stormwater staff annually evaluates funding required to meet the increasing federal and state regulatory requirements pertaining to the MS4 Permit, and State and Federal mandates associated with controlling water pollution delivered to local streams and the Chesapeake Bay. The MS4 Permit allows the County to discharge stormwater from its stormwater systems into state and federal waters. The County currently owns and/or operates approximately 15,000 outfalls, and 7,000 of these outfalls are regulated outfalls governed by the permit. The current permit was issued to the County in April 2015 and expired in April 2020. The County is operating under an administrative continuance until a new permit is issued. The permit requires the County to document the stormwater management facility inventory, enhance public outreach and education efforts, increase water quality monitoring efforts, provide stormwater management and stormwater control training to all appropriate County employees. The permit requires the County to implement sufficient stormwater projects that will reduce the nutrients and sediment to comply with the Chesapeake Bay and local stream TMDL requirements. Funding in the amount of $4.0 million is included for the Stormwater Regulatory Program in FY 2023.

Stream and Water Quality Improvements

This program funds water quality improvement projects necessary to mitigate the impacts to local streams and the Chesapeake Bay resulting from urban stormwater runoff. This includes water quality projects such as construction and retrofit of stormwater management ponds, implementation of green stormwater infrastructure facilities, stream restoration, and water quality projects identified in the completed Countywide Watershed Management Plans. These projects will aid in the reduction of pollutants and improve water quality in county streams that are considered to be in fair to very poor condition and likely do not meet CWA water quality standards. In addition, Total Maximum Daily Load (TMDL) requirements for local streams and the Chesapeake Bay are the regulatory drivers by which pollutants entering impaired water bodies must be reduced. The Chesapeake Bay TMDL was established by the EPA and requires that MS4 communities as well as other dischargers implement measures to significantly reduce the nitrogen, phosphorous and sediment loads in waters that drain to the Chesapeake Bay by 2025. MS4 Permit holders must achieve 35 percent of the required reductions within the current five-year permit cycle and 60 percent of the required reductions in the

next five-year permit cycle. In addition, compliance with the Chesapeake Bay TMDL requires that the County undertake construction of new stormwater facilities and retrofit existing facilities and properties. The EPA continually updates the Chesapeake Bay compliance targets and credits. It is anticipated that the changes to the assigned targets as well as how projects are credited will likely impact future compliance requirements. In addition to being required to meet the Chesapeake Bay TMDL targets, the current MS4 Permit requires the County to develop and implement action plans to address local impairments. Most of the 1,900 watershed management plan projects contribute toward achieving the Chesapeake Bay and local stream TMDL requirements. Funding in the amount of $23.5 million is included for Stream and Water Quality Improvements in FY 2023.

Organizational Chart



*Denotes functions that are included in both Fund 30010, General Construction and Contributions, and Fund 40100, Stormwater Services.

Budget and Staff Resources

Category	FY 2021 Actual	FY 2022 Adopted	FY 2022 Revised	FY 2023 Advertised
FUNDING				
Expenditures:				
Personnel Services	$20,448,442	$22,615,643	$22,813,269	$24,580,634
Operating Expenses	3,919,893	3,182,636	3,389,603	4,010,636
Capital Equipment	1,077,511	782,000	1,887,143	652,000
Capital Projects	50,984,399	61,600,414	242,012,718	65,879,740
Subtotal	**$76,430,245**	**$88,180,693**	**$270,102,733**	**$95,123,010**
Less:				
Recovered Costs	($1,832,157)	($2,129,955)	($2,129,955)	($2,129,955)
Total Expenditures	**$74,598,088**	**$86,050,738**	**$267,972,778**	**$92,993,055**
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)				
Regular	202 / 202	200 / 200	200 / 200	208 / 208

FY 2023 Funding Adjustments

The following funding adjustments from the FY 2022 Adopted Budget Plan are necessary to support the FY 2023 program:

Employee Compensation **$1,214,199**

An increase of $ 1,214,199 in Personnel Services includes $850,684 for a 4.01 percent market rate adjustment (MRA) for all employees and $363,515 for performance-based and longevity increases for non-uniformed merit employees, both effective July 2022.

Other Post-Employment Benefits	**($106,403)**

A decrease of $106,403 in Personnel Services reflects required adjustments associated with providing Other Post-Employment Benefits (OPEBs) to retirees, including the Retiree Health Benefits Subsidy. For more information on Other Post-Employment Benefits, please refer to Fund 73030, OPEB Trust, in Volume 2 of the FY 2023 Advertised Budget Plan.

New Positions	**$885,195**

An increase of $885,195 including Personnel Services of $857,195 and Operating Expenses of $28,000 is necessary to fund requirements associated with 8/8.0 FTE new positions, including 1/1.0 Engineering Technician III, 1/1.0 FTE Planner III, 1/1.0 FTE Project Manager I, 1/1.0 FTE Senior Engineering Inspector, 1/1.0 FTE Senior Engineer III, and 3/3.0 FTE Senior Maintenance Workers. The Engineering Technician III position will support address the increased workload of permit required pond inspections and maintenance. The Planner III position will review and provide needed stormwater expertise, advanced technical analysis, support and recommendations on planning and development efforts during planning, pre-zoning and rezoning processes. The Project Manager I position will support the Tree Preservation and Planting Program and manage projects that support the tree planting goals of Virginia's Final Phase III Watershed Implementation Plan. The projects will be geared towards increasing tree canopy through street and landscape tree plantings, afforestation and reforestation, and assisting with outreach and education programs. The Senior Engineering Inspector position will be responsible for reviewing erosion and sediment control plans, reviewing project designs, understanding job specifications, inspecting County stormwater infrastructure, updating work orders and keeping a daily log of work performed on construction sites. The Senior Engineer III position will initiate flood mitigation projects, coordinate with property owners to address their flooding concerns, and execute flood mitigation project design and implementation services. The three Senior Maintenance Worker positions will form an additional crew that will be deployed into the field to perform maintenance on the storm drainage system throughout the County.

Asset Management Program	**$800,000**

An increase of $800,000 in Operating Expenses will support a new Asset Management Program (AMP). Funding will support the acquisition of software, servers, and consultant services to migrate asset management and related work order management into the new system. This new system will meet the future expectations for both Stormwater and Wastewater divisions and optimize service delivery for the Department of Public Works and Environmental Services.

Capital Equipment	**($130,000)**

Funding of $652,000 in Capital Equipment, a decrease of $130,000 from the FY 2022 Adopted Budget Plan, is included primarily associated with replacement equipment that has outlived its useful life and is critical to stormwater services activities. Replacement equipment includes: $390,000 to replace two dump trucks that support all maintenance and emergency response programs and $40,000 to replace three equipment trailers that support all maintenance and emergency response programs in transporting construction materials, light duty and snow removal equipment. New equipment includes $222,000 for the purchase of three new pickup trucks and one new utility truck to support the new positions in FY 2023.

Capital Projects	**$4,279,326**

Funding of $65,879,740 in Capital Projects, an increase of $4,279,326 from the FY 2022 Adopted Budget Plan, has been included in FY 2023 for priority stormwater capital projects.

Changes to FY 2022 Adopted Budget Plan

The following funding adjustments reflect all approved changes in the FY 2022 Revised Budget Plan since passage of the FY 2022 Adopted Budget Plan. Included are all adjustments made as part of the FY 2021 Carryover Review, FY 2022 Mid-Year Review, and all other approved changes through December 31, 2021:

Carryover Adjustments **$182,312,873**

As part of the *FY 2021 Carryover Review*, the Board of Supervisors approved funding of $182,312,873 based on the carryover of unexpended project balances in the amount of $179,413,809 and a net adjustment of $2,899,064. This adjustment includes the carryover of $1,312,110 in operating and capital equipment encumbrances, an increase of $197,626 to Personnel Services to support a one-time compensation adjustment of $1,000 for merit employees and $500 for non-merit employees to be paid no later than November 2021, and an increase to capital projects of $1,389,328. The adjustment to capital projects is based on the appropriation of the remaining operational savings of $783,662, higher than anticipated revenues of $304,634, revenues of $203,600 collected through the land development process that will support tree preservation and planting projects in FY 2022, revenues of $44,841 associated with dam and facility maintenance projects, miscellaneous revenues in the amount of $45,652, and the appropriation of $6,939 from the ending balance that was due to an FY 2021 audit adjustment.

Mid-Year Adjustments **($1,555)**

As part of the *FY 2022 Mid-Year Review*, the Board of Supervisors approved a decrease of $1,555 due to an FY 2021 audit adjustment.

Position Detail

The FY 2023 Advertised Budget Plan includes the following positions:

STORMWATER SERVICES – 208 Positions			
MSMD Administration (10 positions)			
1	Director, Maintenance and SW	1	Safety Analyst I
1	HR Generalist II	1	Administrative Assistant IV
1	HR Generalist I	4	Administrative Assistants III
1	Safety Analyst II		
IT – Director's Office/Stormwater (1 position)			
1	Network/Telecom. Analyst I		
Finance – Wastewater and Stormwater (4 positions)			
1	Financial Specialist IV	1	Financial Specialist I
1	Financial Specialist II	1	Administrative Assistant III
Contracting Services/Material Support (5 positions)			
1	Material Mgmt. Specialist III	1	Financial Specialist II
2	Contract Analysts I	1	Inventory Manager
Dam Safety and Maintenance Projects/Projects and LID/Inspection and Maintenance (19 positions)			
1	Public Works-Env. Serv. Manager	5	Engineering Technicians III [+1]
1	Engineer IV	2	Engineering Technicians II
1	Senior Engineer III	1	Project Manager II
3	Engineers III	2	Project Managers I
1	Ecologist III	1	Assistant Project Manager
1	Ecologist II		
Field Operations (74 positions)			
2	Env. Services Supervisors	3	Masons
1	Public Works-Env. Serv. Manager	1	Vehicle Maintenance Coordinator
2	Public Works-Env. Bus. Operations	5	Engineering Technicians III
2	Public Works-Env. Serv. Specialists	2	Engineering Technicians II
8	Senior Maintenance Supervisors	1	Carpenter II
5	Maintenance Supervisors	2	Equipment Repairers

Field Operations			
2	Maintenance Crew Chiefs	1	Welder II
15	Senior Maintenance Workers [+3]	1	Welder I
10	Heavy Equipment Operators	1	Trades Supervisor
10	Motor Equipment Operators		
Stormwater Infrastructure Branch (16 positions)			
1	Public Works-Env. Serv. Manager	1	Senior Engineering Inspector [+1]
3	Engineers IV	2	Engineering Technicians II
2	Senior Engineers III [+1]	2	Engineering Technicians I
4	Engineers III	1	Project Manager I
Transportation Infrastructure Branch (7 positions)			
1	Engineer V	3	Project Managers I
1	Engineer IV	1	Engineering Technician II
1	Project Manager II		
Stormwater Planning Division (56 positions)			
1	Director, Stormwater Planning	1	Emergency Mgmt. Specialist III
1	Engineer V	1	Planner IV
4	Engineers IV	1	Planner III [+1]
1	Senior Engineer III	2	Landscape Architects III
8	Engineers III	1	Engineering Technician III
5	Project Managers II	1	Management Analyst II
2	Project Managers I	2	Code Specialists II
4	Ecologists IV	1	Financial Specialist II
5	Ecologists III	1	Financial Specialist I
3	Ecologists II	1	Contract Specialist II
2	Ecologists I	1	Assistant Contract Specialist
3	Project Coordinators	3	Administrative Assistants III
1	Public Works-Env. Serv. Manager		
Urban Forestry (16 positions)			
1	Director, Urban Forestry Division	3	Urban Foresters I
1	Urban Forester IV	1	Project Manager I [+1]
4	Urban Foresters III	1	Administrative Assistant II
5	Urban Foresters II		
+	**Denotes New Position(s)**		

Performance Measurement Results

The objective to receive no MS4 Permit violations related to inspection and maintenance of public and private stormwater management facilities was met in FY 2019, FY 2020, and FY 2021. It is expected that this objective will also be met in FY 2022 and FY 2023. The objective to update 100 percent of the Stormwater emergency action plans was met in prior years. It is expected that this trend will continue in both FY 2022 and FY 2023. Lastly, the objective to keep 100 percent of the commuter facilities operational for 365 days was met in prior years. It is expected that this goal will be met in FY 2022 and FY 2023.

Indicator	FY 2019 Actual	FY 2020 Actual	FY 2021 Estimate	FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
MS4 permit violations received	0	0	0	0	0	0
Percent of Emergency Action Plans current	100%	100%	100%	100%	100%	100%
Percent of commuter facilities available 365 days per year	100%	100%	100%	100%	100%	100%

A complete list of performance measures can be viewed at
https://www.fairfaxcounty.gov/budget/fy-2023-advertised-performance-measures-pm

Attachment 1

Fund 40100: Stormwater Services

FUND STATEMENT

Category	FY 2021 Actual	FY 2022 Adopted Budget Plan	FY 2022 Revised Budget Plan	FY 2023 Advertised Budget Plan
Beginning Balance	**$78,402,156**	**$6,939**	**$90,244,247**	**$0**
Revenue:				
Stormwater Service District Levy	$85,394,610	$87,175,738	$87,175,738	$94,393,055
Sale of Bonds[1]	0	0	88,000,000	0
Stormwater Local Assistance Fund (SLAF) Grant[2]	1,876,476	0	3,596,793	0
Tree Preservation/Planting Fund[3]	203,600	0	0	0
Miscellaneous	90,493	0	81,000	0
Total Revenue	**$87,565,179**	**$87,175,738**	**$178,853,531**	**$94,393,055**
Total Available	**$165,967,335**	**$87,182,677**	**$269,097,778**	**$94,393,055**
Expenditures:				
Personnel Services[4]	$20,448,442	$22,615,643	$22,813,269	$24,580,634
Operating Expenses	3,919,893	3,182,636	3,389,603	4,010,636
Recovered Costs	(1,832,157)	(2,129,955)	(2,129,955)	(2,129,955)
Capital Equipment	1,077,511	782,000	1,887,143	652,000
Capital Projects[4]	50,984,399	61,600,414	242,012,718	65,879,740
Total Expenditures	**$74,598,088**	**$86,050,738**	**$267,972,778**	**$92,993,055**
Transfers Out:				
General Fund (10001)[5]	$1,125,000	$1,125,000	$1,125,000	$1,400,000
Total Transfers Out	**$1,125,000**	**$1,125,000**	**$1,125,000**	**$1,400,000**
Total Disbursements	**$75,723,088**	**$87,175,738**	**$269,097,778**	**$94,393,055**
Ending Balance[6,7]	**$90,244,247**	**$6,939**	**$0**	**$0**
Tax Rate Per $100 of Assessed Value	**$0.0325**	**$0.0325**	**$0.0325**	**$0.0325**

[1] In FY 2022, Economic Development Authority (EDA) Bonds were issued to support the construction of a Stormwater/Wastewater facility to consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions.

[2] Represents Virginia Department of Environmental Quality (VDEQ) Stormwater Local Assistance Fund (SLAF) grants which support stream and water quality improvement projects. An amount of $1,876,476 was received in FY 2021 and an amount of $3,596,793 is anticipated in FY 2022 and beyond.

[3] Reflects revenues collected through the land development process that will support tree preservation and planting projects in FY 2022.

[4] In order to account for revenues and expenditures in the proper fiscal year, audit adjustments were reflected as an increase of $1,555.35 to FY 2021 Personnel Services expenditures to record expenditure accruals and an increase of $389,278.17 to FY 2021 Capital Projects expenditures to record expenditure accruals. This impacted the amount carried forward resulting in a decrease of $389,278.17 to the *FY 2022 Revised Budget Plan*. The projects affected by this adjustment were 2G25-006-000, Stormwater Regulatory Program, SD-000031, Stream & Water Quality Improvements, and SD-000033, Dam Safety and Facility Rehabilitation. The Annual Comprehensive Financial Report (ACFR) reflects all audit adjustments in FY 2021. Details of the audit adjustments were found in Attachment VI of the *FY 2022 Mid-Year Review*.

[5] Funding in the amount of $1,400,000 is transferred to the General Fund to partially offset central support services supported by the General Fund, which benefit Fund 40100. These indirect costs include support services such as Human Resources, Purchasing, Budget and other administrative services.

[6] Capital projects are budgeted based on the total project costs. Most projects span multiple years, from design to construction completion. Therefore, funding for capital projects is carried forward each fiscal year, and ending balances fluctuate, reflecting the carryover of these funds.

[7] The FY 2022 Adopted Budget Plan ending balance of $6,939 was due to an adjustment made to FY 2020, and it was adjusted as part of the *FY 2021 Carryover Review*.

Attachment 1

Fund 40100: Stormwater Services

SUMMARY OF CAPITAL PROJECTS

Project	Total Project Estimate	FY 2021 Actual Expenditures	FY 2022 Revised Budget	FY 2023 Advertised Budget Plan
Conveyance System Inspection/Development (2G25-028-000)	$13,725,000	$1,547,185.84	$4,734,379.98	$2,000,000
Conveyance System Rehabilitation (SD-000034)	65,034,135	6,858,021.91	10,922,648.48	7,000,000
Dam & Facility Maintenance (2G25-031-000)	30,194,841	5,511,833.19	7,422,312.42	5,000,000
Dam Safety and Facility Rehabilitation (SD-000033)	62,576,104	5,838,539.60	12,227,774.80	10,000,000
Debt Service for SW/WW Facility (2G25-117-000)	9,179,000	0.00	5,000,000.00	4,179,000
Emergency and Flood Response Projects (SD-000032)	36,686,091	1,432,074.25	14,457,916.30	7,000,000
Enterprise Asset Management-Work Order System (SD-000044)	2,400,000	0.00	1,000,000.00	1,400,000
Flood Prevention-Huntington Area-2012 (SD-000037)	41,350,000	204,250.20	2,260,024.24	0
Lake Accotink Dredging (SD-000041)	5,000,000	576,187.62	4,423,812.38	0
Laurel Hill Adaptive Reuse Infrastructure (SD-000038)	1,925,000	8,306.59	0.00	0
NVSWCD Contributory (2G25-007-000)	6,530,042	554,811.00	554,811.00	609,346
Occoquan Monitoring Contributory (2G25-008-000)	1,750,641	172,138.00	177,799.00	183,437
Scotts Run Stream Restoration (SD-000043)	151,358	151,357.99	0.00	0
Stormwater Allocation to Towns (2G25-027-000)	7,644,829	816,434.14	1,294,119.92	1,000,000
Stormwater Civil Penalties Fees (2G25-119-000)	185,750	0.00	185,750.00	0
Stormwater Facility (SD-000039)	96,515,000	1,985,385.95	88,412,475.41	0
Stormwater Proffers (2G25-032-000)	56,500	0.00	56,500.01	0
Stormwater Regulatory Program (2G25-006-000)	64,014,584	2,588,925.98	7,420,778.36	4,000,000
Stream & Water Quality Improvements (SD-000031)	255,588,016	22,533,970.99	80,322,038.93	23,507,957
Towns Grant Contribution (2G25-029-000)	4,805,976	176,548.01	906,583.17	0
Tree Preservation and Plantings (2G25-030-000)	308,916	28,427.87	232,993.36	0
Total	**$705,621,783**	**$50,984,399.13**	**$242,012,717.76**	**$65,879,740**

Ann Jennings
Secretary of Natural and Historic Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

January 10, 2022

Joni Calmbacher, PE, CFM
Project Manager II
DPWES, Stormwater Planning Division
Watershed Projects Implementation Branch – South
12000 Government Center Parkway Fairfax, VA 22035

RE: Fairfax County Resilience Plan Submission - CFPF

Dear Ms. Calmbacher,

Thank you for providing an overview of your Resilience Plan, and informing DCR of the various plans that Fairfax County will be utilizing to fulfill the Resilience Plan submission requirements. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on January 11, 2025.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

   Meets criteria as written.

   a. Project-based: Fairfax County is divided into 30 watersheds which have been addressed in 11 major watershed management plans. Each of the watershed management plans contains projects and watershed management area restoration strategies. The 2017 *Northern Virginia Hazard Mitigation Plan* was a regional effort involving nineteen counties, including Fairfax County, and outlines specific mitigation projects for each participating community in order to reduce vulnerability and exposure to future hazards, including flooding events. The *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management* contains projects at various locations throughout Fairfax County. The projects included and described in the *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management* align with the established *Comprehensive Plan* objectives. The *Resilient Critical*

Infrastructure Roadmap for Northern Virginia contains a database of resilience projects throughout northern Virginia, including Fairfax County.

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

   Meets criteria as written.

   a. The 2020 R*egional Collaboration to Build Community Resilience in Northern Virginia* expanded upon *The Roadmap*, to include maximization of green infrastructure. Nature-based solutions are also presented in the *Fairfax County Watershed Management Plan* and the *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management*.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**

   Meets criteria as written.

   a. All parts of a locality: The *Northern Virginia Hazard Mitigation Plan* discusses the demographic and economic trends throughout the entirety of Fairfax County.

   b. Social vulnerability: The R*egional Collaboration to Build Community Resilience in Northern Virginia* presents a more comprehensive approach that includes an assessment of the socioeconomic impacts of infrastructure disruptions on vulnerable populations that will be taken into account as well as the socioeconomic benefits of infrastructure investment. This expanded upon objectives contained within *The Roadmap*, to ensure equitable access to resilient critical infrastructure.

   c. Demographic Analysis: Population and demographic characteristics outlined within the *Northern Virginia Hazard Mitigation Plan*. The *Fairfax County Comprehensive Plan* also looks at demographics and social factors and utilizes this information to support the Human Services section of the *Comprehensive Plan*.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**

   Meets criteria as written.

   a. Coordination with other local and inter-jurisdictional projects, plans and activities: <u>Objective 4: Strengthen Regional Resilience Through Innovative Partnerships, Programs, and Pilots</u> contained within *Resilient Critical Infrastructure Roadmap for Northern Virginia* focuses on coordination with local and inter-jurisdictional agencies and aligning strategies and programs. The *Comprehensive Plan for Fairfax County, Virginia* was adopted by the Board of Supervisors, Planning Commision, The Department of Planning and Zoning, and the Department of Transportation, and guides all of the plans presented in the Resilience Plan

Attachment 2

submission for Fairfax County. The *Northern Virginia Hazard Mitigation Plan* was a collaborative effort that was adopted by all impacted localities.

b. Clearly articulated timeline or phasing plan for implementation: Timeline for deliverables is presented within the R*egional Collaboration to Build Community Resilience in Northern Virginia*. Timeline presented within the F*airfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management*. Phased implementation plans presented in the *Fairfax County Watershed Management Plans*.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

   Meets criteria as written.

   a. The 2018 *Resilient Critical Infrastructure Roadmap for Northern Virginia (Roadmap)* incorporates best available science and identifies actions to potentially decrease the severity of future consequences emanating from climate and extreme weather, to include sea level rise and storm surge. *Sea Level Rise: Impact on Northern Virginia* is an interactive story map and dashboard that was created in 2019 to convey the impact of sea level rise scenarios. The *Northern Virginia Hazard Mitigation Plan* includes analyses of natural hazards based on best available science to include flooding, sea level rise and land subsidence, tropical and coastal storms, and shoreline erosion.

VA DCR looks forward to working with you as you work to make Fairfax County a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl Glover, DCR

Attachment 3

Posting Date	Earmarked Funds	Text	Original Amount (LC)	Amount Total (TC)	Amount Total (LC)	Funds Center	Fund	G/L Account	Vendor
10/16/2019	1000068559	SD-31-234,LilPimmit@WoodlandTer,WSSI,Y4-07	529,880.28	552,198.40	552,198.40	G252901001	400-C40101	563040	1000009805
10/16/2019	1000068559	SD-31-234,LilPimmit@WoodlandTer,WSSI,Y4-07	53,119.72	30,801.60	30,801.60	G252901001	400-C40101	563040	1000009805
02/26/2020	1000070967	SD-31-234 Littl. Pimmit Run Emerg. Bank EQR	48,781.87	52,988.35	52,988.35	G252901001	400-C40101	564080	1000008766
02/26/2020	1000070967	Contingency SD-31-234 Littl. Pimmit Run EQR	7,317.28	3,110.80	3,110.80	G252901001	400-C40101	564080	1000008766
05/20/2020	1000071679	SD-31-234,LITTLE PIMMIT RUN, SAM TO#02-61	16,000.00	16,000.00	16,000.00	G252901001	400-C40101	563010	1000038175
05/22/2020	1000071833	SD-31-234,LITTLE PIMMIT RUN,SAM03-006, SAM	8,000.00	8,000.00	8,000.00	G252901001	400-C40101	563010	1000038175
01/05/2021	1000073557	SD-31-234, LilPimmit@WoodlandTer, WSSI, Y5-12	95,832.32	105,991.86	105,991.86	G252901001	400-C40101	563010	1000009805
01/05/2021	1000073557	SD-31-234, LilPimmit@WoodlandTer, WSSI, Y5-12	10,167.68	8.14	8.14	G252901001	400-C40101	563010	1000009805
02/03/2021	1000073709	SD-31-234, LilPimmit@WoodlandTer, SAM03-012	20,000.00	20,000.00	20,000.00	G252901001	400-C40101	563030	1000038175
03/17/2021	1000073949	SD-31-234,LIL PIMMIT,PERM EASEMENT	91,500.00	91,500.00	91,500.00	G252901001	400-C40101	561090	1000045974
03/17/2021	1000073949	SD-31-234,LIL PIMMIT,TEMP EASEMENT	19,400.00	19,400.00	19,400.00	G252901001	400-C40101	561100	1000045974
03/31/2021	1000074035	SD-31-234,LIL PIMMIT,PERM EASEMENT	44,300.00	44,300.00	44,300.00	G252901001	400-C40101	561090	1000046093
03/31/2021	1000074035	SD-31-234,LIL PIMMIT,TEMP EASEMENT	5,800.00	5,800.00	5,800.00	G252901001	400-C40101	561100	1000046093
05/26/2021	1000074749	SD-31-234, LIL PIMMIT	500	500	500	G252901001	400-C40101	561030	1000033841
05/26/2021	1000074763	SD-31-234,LIL PIMMIT,PERM EASEMENT	42,205.00	42,205.00	42,205.00	G252901001	400-C40101	561090	1000046409
05/26/2021	1000074763	SD-31-234,LIL PIMMIT,TEMP EASEMENT	13,095.00	13,095.00	13,095.00	G252901001	400-C40101	561100	1000046409
06/30/2021	1000075181	SD-31-234,LIL PIMMIT,PERM EASEMENT,	33,200.00	33,200.00	33,200.00	G252901001	400-C40101	561090	7200018555
06/30/2021	1000075181	SD-31-234,LIL PIMMIT,TEMP EASEMENT	21,300.00	21,300.00	21,300.00	G252901001	400-C40101	561100	7200018555
07/01/2021	1000075214	SD-31-234,LIL PIMMIT,PERM EASEMENT	33,200.00	33,200.00	33,200.00	G252901001	400-C40101	561090	1000046660
07/01/2021	1000075214	SD-31-234,LIL PIMMIT,TEMP EASEMENT	21,300.00	21,300.00	21,300.00	G252901001	400-C40101	561100	1000046660
				1,114,899.15					

Attachment 4

DEPARTMENT OF PUBLIC WORKS

		Type of Estimate (Check One)	
Date:	3/31/2022	Order of Mag/Inception = 25% ±	
Project Name:	Little Pimmit at Woodland Ter	Preliminary/schematic = 15% ±	X
Project Number:	SD-000031	Design-plans & Land acq. = 10% ±	
Sub PN:	234	Const. after bid = 5%	
Fund:	400-C40101	Mid Const. 50% complete = 2%	
		Project complete	

		Cost Estimate				
		All Prior	FY 2022	Future	TOTAL	
Land Acquistion:						
Number of parcels:						
Land Costs:		$ 266,400	$ -	$ -		
Damages:						
Appraisals: No.		$ 12,000	$ -	$ -		
Title Exams: No.		$ 10,400	$ -	$ -		
Staff Hours:		$ 10,400	$ 5,200	$ -		
Outside Counsel		$ -	$ -	$ -		
		$ 299,200	**$ 5,200**	**$ -**	***$ 304,400***	
Stormwater Planning Design Engr.:						
Design Engr.		$ -	$ -	$ -		
Drafting		$ -	$ -	$ -		
Engr. Support		$ -	$ -	$ -		
		$ -	$ -	$ -	***$ -***	
County Inspections, Plan Review and Permiting Fees:						
		$ -	$ -	$ -	***$ -***	
County Engineering and Construction Management						
Proj. Engr.		$ -	$ 7,800	$ 15,600		
Plans: (per set)		$ -	$ -	$ -		
Advertisement:		$ -	$ -	$ -		
Specifications:		$ -	$ -	$ -		
Location Survey:		$ -	$ -	$ -		
Construction						
Survey S/O		$ -	$ -	$ -		
As-Built Survey		$ -	$ -	$ -		
Proj. Engr.[1]		$ -	$ -	$ 22,100		
Proj. Insp.[2]		$ -	$ -	$ 24,910		
		$ -	**$ 7,800**	**$ 62,610**	***$ 70,410***	
Design Consultant	**Firm Name: Wetland Studies**					
Topo		$ -	$ -	$ -		
Design		$ 404,000	$ -	$ -		
Geotechnical/Contamination/Soil Testing		$ -	$ -	$ -		
Construction		$ -	$ -	$ -		
Stakeout		$ -	$ -	$ -		
Geotechnical		$ -	$ -	$ -		
Oversight *(including as-built)*		$ 285,000	$ -	$ -		
~~As-builts~~		$ -	$ -	$ -		
Total Cost Outside Engineering		**$ 689,000**	**$ -**	**$ -**	***$ 689,000***	
Outside Construction (i.e. by the contractor)						
Stakeout		$ -	$ -	$ 30,000		
Construction[3]		$ -	$ -	$ 2,304,252		
As-builts		$ -	$ -	$ -		
Total Cost Outside Construction		**$ -**	**$ -**	**$ 2,334,252**	***$ 2,334,252***	
Utilities						
Designation		$ 16,000	$ -	$ -		
Test Pits		$ 8,000	$ -	$ -		
Relocations	Overhead Electric (Assumed)	$ -	$ -	$ 100,000		
Relocations	Overhead Gas (Assumed)	$ -	$ -	$ 100,000		
Relocations	Water (Assumed)	$ -	$ -	$ 100,000		
Total Cost Utilities		**$ 24,000**	**$ -**	**$ 300,000**	***$ 324,000***	
Permit Fees (Other)						
	VDOT	$ -	$ 120	$ -		
	Other	$ -	$ -	$ 2,711		
Total Cost Permits		$ -	$ 120	$ 2,711	***$ 2,831***	
PROJECT TOTALS:		**$ 1,012,200**	**$ 13,120**	**$ 2,699,574**	***$ 3,724,894***	
			Preliminary/schematic = 15% ±			**$ 558,734**
			TOTAL PROJECT ESTIMATE:			***$ 4,284,000***

1. Estimate based on 2 hour daily involvement for 26 week duration + 80 hours
2. Estimate based on 3 hour daily involvement for 26 week duration + 80 hours
3. WSSI Engineer's concept estimate

Attachment 5

1742

County of Fairfax, Virginia

MEMORANDUM

DATE: april 5, 2022

TO: Board of Supervisors

FROM: Bryan J. Hill
County Executive

SUBJECT: Department of Conservation and Recreation, Virginia Community Flood Preparedness Fund

The Virginia Community Flood Preparedness Fund (CFPF) was "established to provide support for regions and localities across Virginia, to reduce the impacts of flooding, including flooding driven by climate change." The Department of Conservation and Recreation (DCR) administers loans and grants from the CFPF to local governments. DCR has advertised that approximately $40,000,000 in matching CFPF funds is available this grant cycle. The minimum grant amount is $50,000 for project grants and $1,000 for study grants. Project grants will not be capped and final awards will be determined based on available funds following review by DCR. The grant amount per application will be determined based on scoring, amount requests from eligible applications, and available funds.

DCR is soliciting applications for flood prevention and protection project types including, but not limited to: i) nature-based solutions; ii) flood control solutions; and iii) preservation and creation of open space. DCR is also soliciting applications for the following study types including, but not limited to: i) floodplain ordinance revisions; ii) hydrologic and hydraulic floodplain studies with historic and predicted floods; iii) hydrologic and hydraulic floodplain studies to clarify or update FEMA Flood Insurance Rate Maps; and iv) studies and data collection of statewide and regional significance. Applications must be for discrete projects to be completed after the beginning of the application period and not later than three years from the date of an executed grant agreement or by an extension date approved by DCR. Applications for this grant cycle are due on April 8, 2022.

DCR will review applications and award grant assistance by category (project, study, and capacity building and planning) on a competitive scoring basis. Priority is given to applications that are in concert with local, state, and federal floodplain management standards, local resilience plans, and the Virginia Coastal Resilience Master Plan. Based on that ranking process, DCR will select and approve applications. The approved applications will be

Office of the County Executive
12000 Government Center Parkway, Suite 552
Fairfax, VA 22035-0066
703-324-2531, TTY 711, Fax 703-324-3956
www.fairfaxcounty.gov

forwarded to the Virginia Resources Authority for the execution of a grant agreement and funding.

For this grant cycle, Fairfax County (County) proposes submitting the following five applications:

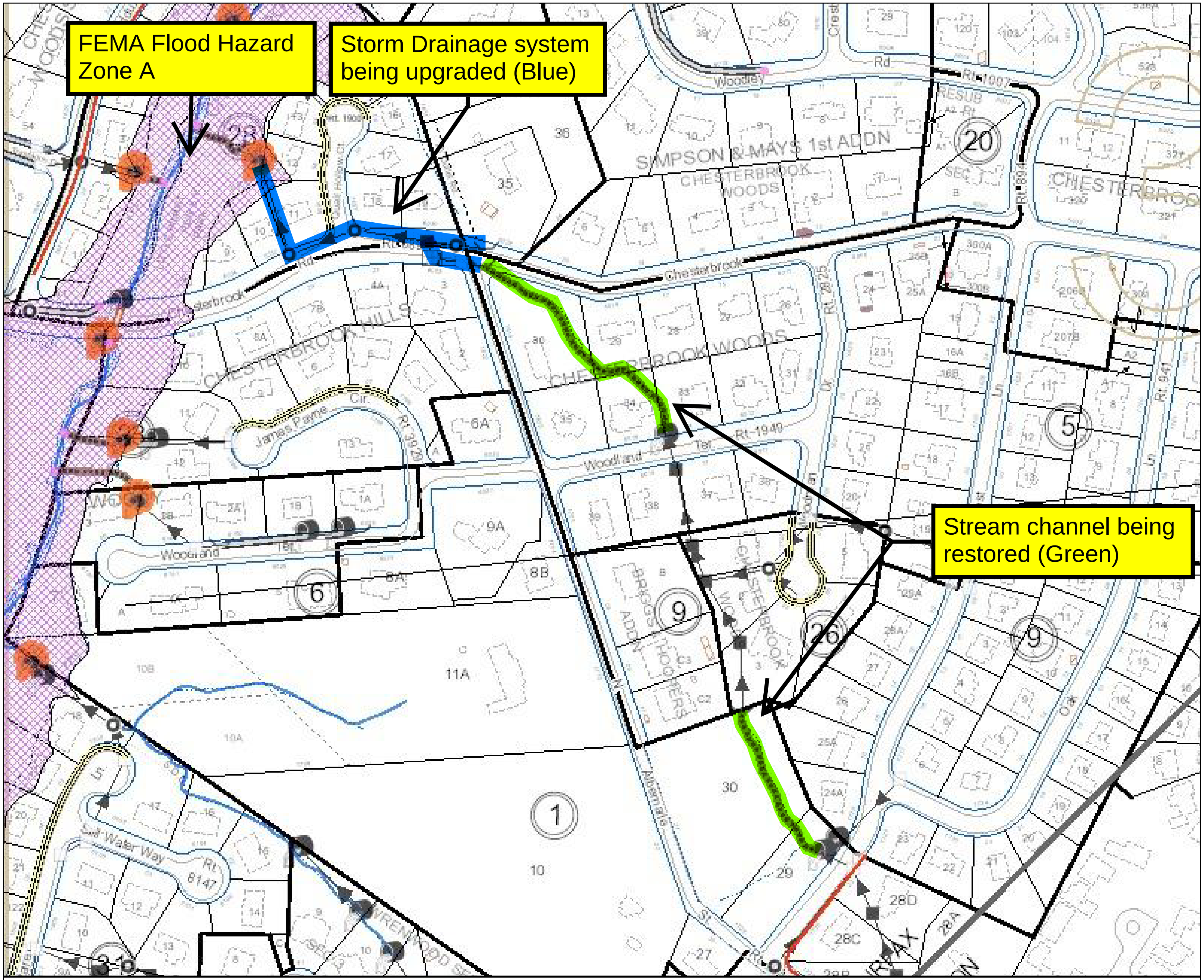
Project/Study Title	Project/Study Estimate	Grant Amount Requested
1. Tucker Avenue Neighborhood Stormwater Improvements	$9,834,000	$5,900,000
2. Chowan Avenue Flood Mitigation	$2,000,000	$1,200,000
3. Little Pimmit Run Tributary at Woodland Terrace	$4,279,000	$2,567,000
4. Tripps Run at Barrett Road Flood Mitigation	$12,836,000	$8,985,200
5. County Regulated Floodplain Map Updates	$1,200,000	$600,000
Total	$30,149,000	$19,252,200

The County is under no financial obligation to apply for CFPF grants. If DCR selects one or more of these applications, the grant(s) will be presented to the Board of Supervisors for approval.

cc: Rachel Flynn, Deputy, County Executive
Christopher Herrington, Director, Department of Public Works and Environmental Services (DPWES)
Eleanor Ku Codding, Deputy Director DPWES, Stormwater and Wastewater Divisions

ATTACHMENT 6

Little Pimmit Run Tributary at Woodland Terrace



This map is intended for reference purposes only. Fairfax County does not provide any guarantee of the accuracy or completeness regarding the map information.

Legend

Major Roadways
- Interstates; Toll Roads
- Parkways; Major Arterials

Walkway Maintenance Respor
- Dept of Public Works & Environmer
- Fairfax County Facilities Manageme
- Fairfax County Public Schools
- Northern Virginia Regional Park Au
- Private
- Reston Association
- Unknown
- Virginia Department of Transportati

☐ Fairfax County Border

Stormwater Structures
- Other Type
- Bilco Door
- Bioretention
- Control Structure
- Curb Inlet
- Dry Pond
- Farm Pond
- Grate Inlet
- Inlet
- Junction Box

Notes:

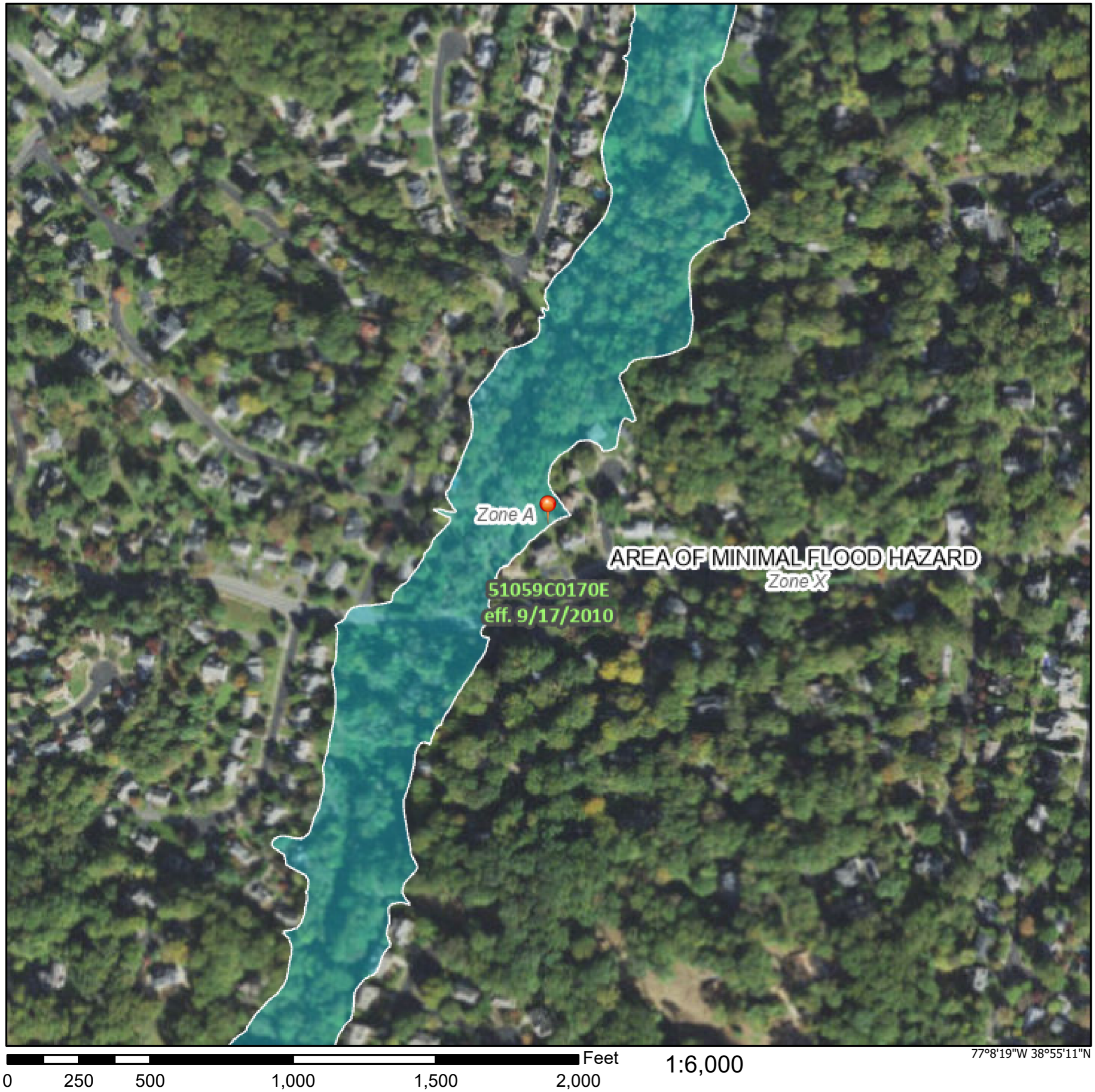
Map produced: 3/31/2022

Attachment 7

National Flood Hazard Layer FIRMette

FEMA

77°8'56"W 38°55'39"N



77°8'19"W 38°55'11"N

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	▭	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	❘❘❘❘❘❘❘	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

📍 The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/31/2022 at 1:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 8

Little Pimmit Run Tributary at Woodland Terrace

March 31, 2022

Social Vulnerability Classification

🟥 High Social Vulnerability

🟧 Moderate Social Vulnerability

🟩 Not Socially Vulnerable

▨ Not included in the analysis

1:18,056

0 0.075 0.15 0.3 mi

0 0.125 0.25 0.5 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPT VA

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Fairfax County

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

X **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 515525

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bryan J. Hill, County Executive

Signature of Authorized Official:

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 552

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-2531 **Cell Phone Number:** (____) N/A

Email Address: CEXBryanHill@fairfaxcounty.gov

Contact Person (If different from authorized official): Craig Carinci

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 449

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-5500 **Cell Phone Number:** (____) N/A

Email Address: Craig.Carinci@fairfaxcounty.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☒ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☒ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☒ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☒ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Fairfax County Pimmit Run Watershed - North Albemarle St./Chesterbrook Rd. intersection

NFIP Community Identification Number (CID#):(See appendix F 515525

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Project adjacent to Zone A

Flood Insurance Rate Map Number(s) (If Applicable): 51059C0170E

Total Cost of Project: $4,279,000

Total Amount Requested $2,567,000

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name: Fairfax County

Eligibility Information

Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☒ **Yes** ☐ **No**
Applicant Name:	Fairfax County

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☒ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	X
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	X
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	X
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	X
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	X
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	X
No	**0**	
Total Points		70

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative

Supporting Documentation	Included
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative

Supporting Documentation	Included
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID515525_FairfaxCounty_CFPF Applications

2 messages

Torgersen, Catherine S <Catherine.Torgersen@fairfaxcounty.gov> Tue, Apr 5, 2022 at 4:31 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Pokharel, Sajan" <Sajan.Pokharel@fairfaxcounty.gov>, "Habete, Daniel" <Daniel.Habete@fairfaxcounty.gov>, "Calmbacher, Joni" <Joni.Calmbacher@fairfaxcounty.gov>, "Wilkins, Fred H." <Fred.Wilkins@fairfaxcounty.gov>, "Carinci, Craig A." <Craig.Carinci@fairfaxcounty.gov>, "Ambrose, Heather" <Heather.Ambrose@fairfaxcounty.gov>, "Gutzler, Emma B." <Emma.Gutzler@fairfaxcounty.gov>

Good afternoon,

Fairfax County is pleased to submit the following five applications for grant round 3 of the Virginia Community Flood Preparedness Fund:

1. CID515525_FairfaxCounty_CFPF-1 Tucker Avenue Neighborhood Stormwater Improvement Project Application
2. CID515525_FairfaxCounty_CFPF-2 Chowan Avenue Stormwater Improvement Project Application
3. CID515525_FairfaxCounty_CFPF-3 Little Pimmit Run Tributary at Woodland Terrace Project Application
4. CID515525_FairfaxCounty_CFPF-4 Tripps Run at Barrett Road Flood Mitigation Project Application
5. CID515525_FairfaxCounty_CFPF-5 Regulated Floodplain Map Updates Study Application

The applications are available for download at the following Sharefile link: https://fairfaxcounty-ent.sharefile.com/d-s52b8f9fb46c444d8a5ecbe1f4ad3dd45

Please let me know if you are unable to download the applications or if you have any questions.

Thank you,

Catie Torgersen

Planner

Stormwater Planning Division, SWPD
Fairfax County DPWES

12000 Government Center Parkway
Fairfax, VA 22035
703-639-7664 (cell)

CFPF, rr <cfpf@dcr.virginia.gov> Wed, Apr 6, 2022 at 10:00 AM
To: "Torgersen, Catherine S" <Catherine.Torgersen@fairfaxcounty.gov>
Cc: "Pokharel, Sajan" <Sajan.Pokharel@fairfaxcounty.gov>, "Habete, Daniel" <Daniel.Habete@fairfaxcounty.gov>, "Calmbacher, Joni" <Joni.Calmbacher@fairfaxcounty.gov>, "Wilkins, Fred H." <Fred.Wilkins@fairfaxcounty.gov>, "Carinci,

Craig A." <Craig.Carinci@fairfaxcounty.gov>, "Ambrose, Heather" <Heather.Ambrose@fairfaxcounty.gov>, "Gutzler, Emma B." <Emma.Gutzler@fairfaxcounty.gov>

Received

On Tue, Apr 5, 2022 at 4:31 PM Torgersen, Catherine S <Catherine.Torgersen@fairfaxcounty.gov> wrote:

> Good afternoon,
>
> Fairfax County is pleased to submit the following five applications for grant round 3 of the Virginia Community Flood Preparedness Fund:
>
> 1. CID515525_FairfaxCounty_CFPF-1 Tucker Avenue Neighborhood Stormwater Improvement Project Application
> 2. CID515525_FairfaxCounty_CFPF-2 Chowan Avenue Stormwater Improvement Project Application
> 3. CID515525_FairfaxCounty_CFPF-3 Little Pimmit Run Tributary at Woodland Terrace Project Application
> 4. CID515525_FairfaxCounty_CFPF-4 Tripps Run at Barrett Road Flood Mitigation Project Application
> 5. CID515525_FairfaxCounty_CFPF-5 Regulated Floodplain Map Updates Study Application
>
> The applications are available for download at the following Sharefile link: https://fairfaxcounty-ent.sharefile.com/d-s52b8f9fb46c444d8a5ecbe1f4ad3dd45
>
> Please let me know if you are unable to download the applications or if you have any questions.
>
> Thank you,
>
> Catie Torgersen
>
> Planner
>
> Stormwater Planning Division, SWPD
> Fairfax County DPWES
>
> 12000 Government Center Parkway
> Fairfax, VA 22035
> 703-639-7664 (cell)

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Fairfax County

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

X **Study**

NFIP/DCR Community Identification Number (CID) 515525

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bryan J. Hill, County Excutive

Signature of Authorized Official:

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 552

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-2531 **Cell Phone Number:** (____) N/A

Email Address: cexbryanhill@fairfaxcounty.gov

Contact Person (If different from authorized official): Craig Carinci

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 449

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-5500 **Cell Phone Number:** ( ) N/A

Email Address: Craig.Carinci@fairfaxcounty.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☒ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☒ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): 27 Fairfax County Watersheds

NFIP Community Identification Number (CID#):(See appendix F 515525

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): SFHA Zones A and AE

Flood Insurance Rate Map Number(s) (If Applicable): See spreadsheet

Total Cost of Project: $1,200,000

Total Amount Requested $600,000

FAIRFAX COUNTY

REGULATED FLOODPLAIN MAP UPDATES

Virginia Community Flood Preparedness Fund

FY 2022 ROUND 3 GRANT APPLICATION

CID515525_FairfaxCounty_CFPF-5 (Map Updates)

April 8, 2022

Contents

Attachments

Attachment A- Detailed map of the study area

Attachment B- FIRMs of the study area

Attachment C- Historic flood damage images

Attachment D- Social vulnerability index score from ADAPT VA's Virginia Vulnerability Viewer

Attachment E- Approved Resilience Plan

Appendices

Appendix A – Application Form for Grant Requests for All Categories
Appendix B – Scoring Criteria for Studies Form
Appendix D – Checklist for all Categories

Executive Summary

The Fairfax County regulated floodplain mapping study will consolidate multiple flood hazard data sources into one comprehensive map for regulatory use, increase community flood risk awareness, and allow the County to integrate the impacts of climate change into its floodplain management program. To be able to complete the first phase of the study, the County is requesting 50% of the total cost of the project ($1,200,000) or $600,000. If the grant is awarded and the study moves forward, the County can develop preliminary HEC-RAS hydraulic models for 27 watersheds, approximately 757 stream miles (excluding the 56 stream miles that are currently being completed as part of the pilot), and advance the mapping of all floodplains 70 acres or greater in the County.

A. Scope of Work Narrative

Fairfax County regulates proposed uses and disturbances in the 100-year flood inundation area associated with open channel conveyance systems that have a contributing drainage area of 70 acres or more. The location of the base flood elevation (BFE) is required for demonstrating compliance with all applicable Federal, State, and County floodplain regulations.

There are three distinct types of regulated floodplains in Fairfax County:

- Minor floodplains include drainage areas between 70 acres and 360 acres.
- Major floodplains consist of drainage areas 360 acres or greater.
- Areas that are designated as floodplain by the National Flood Insurance Program (NFIP) are shown on the Flood Insurance Rate Maps (FIRMs) issued by the Federal Emergency Management Agency (FEMA) – generally, for areas 1 square mile (640 acres) or greater.

Currently, existing floodplain boundaries and water surface elevations are available from several sources and a significant portion of County regulated floodplain is not mapped. This missing or conflicting flood hazard data creates confusion during floodplain study development, review, and enforcement. Rather than having multiple sources for flood hazard data, the County plans to develop a comprehensive regulated floodplain map. The updated map and water surface elevations will be used to provide clear and consistent BFEs for proposed development in or adjacent to all regulated floodplains, increase community flood risk awareness, and allow for the incorporation of future climate projection conditions.

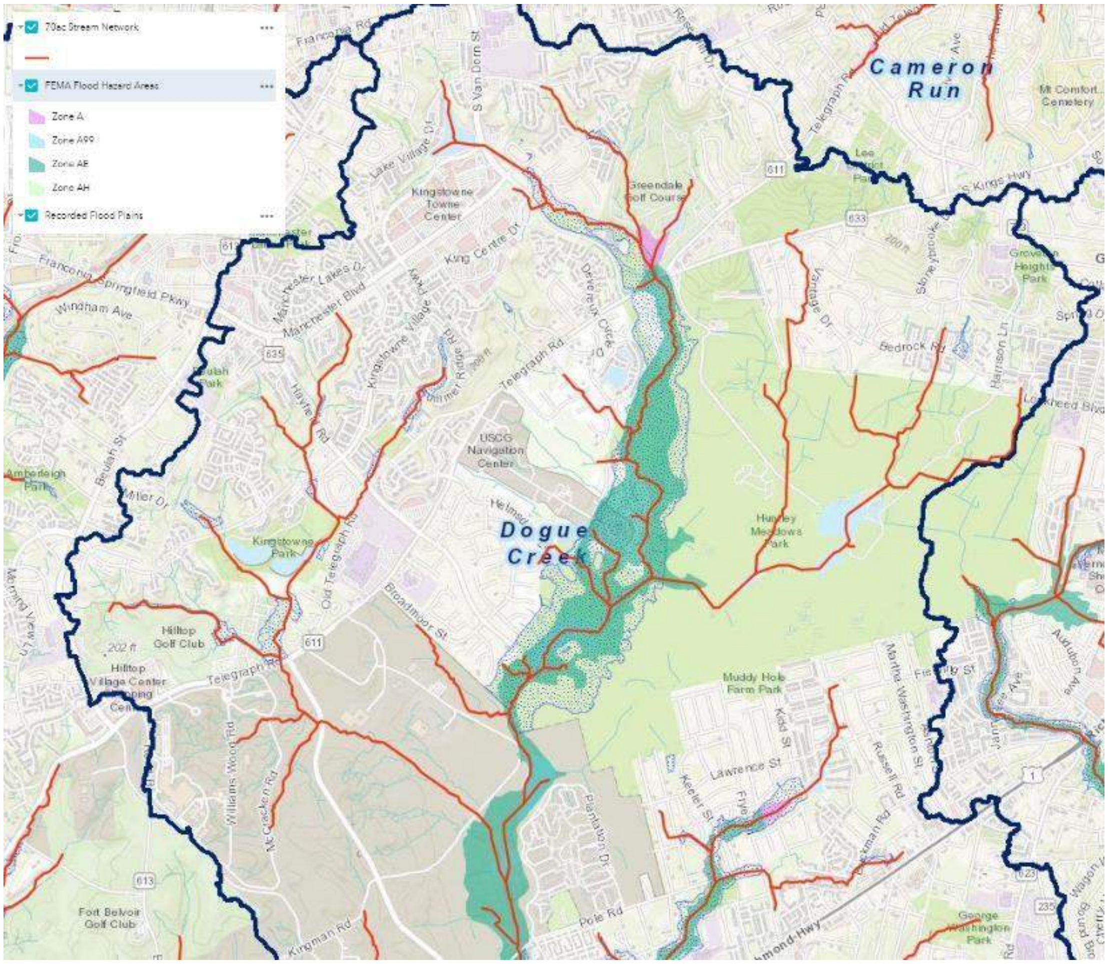
<u>Background</u>

Unlike FIRMs which are developed using existing land use conditions, major and minor floodplains developed by the County reflect ultimate (future) conditions. The County's floodplain ordinance requires that new and substantially improved existing dwellings located on parcels with floodplain must elevate the lowest part of the lowest floor of all living space, including basements, at least 18 inches above the applicable BFE for the property, and the dwellings must be at least 15 feet from the floodplain boundary. For development in the regulated floodplain, the floodplain water surface elevation must be computed to establish the actual floodplain boundary and a floodplain easement must typically be dedicated to the County.

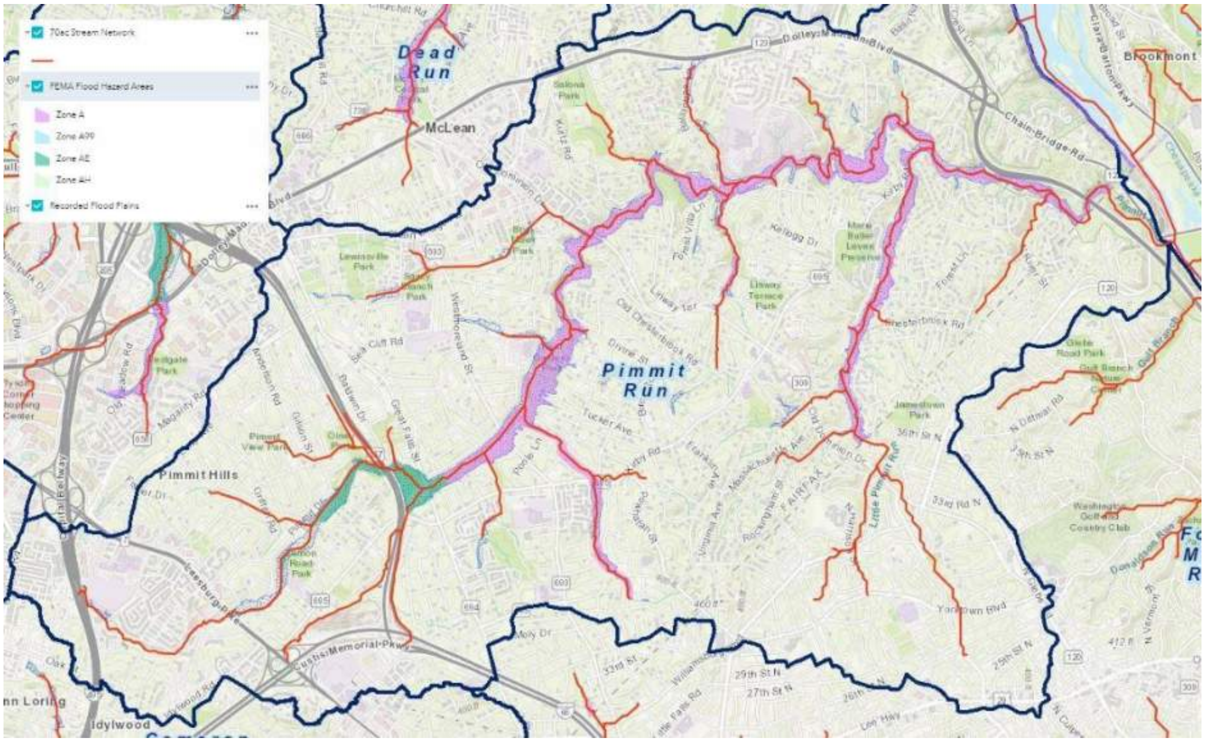
There are multiple County Geographic Information System (GIS) floodplain layers that each have their own history and uses; however, they are all referred to as floodplain and are used in the County's plan review process to flag potential construction in these areas. Available floodplain boundaries and water surface elevations come from several sources, including floodplain studies performed by the United States Geological Survey and FEMA and approved floodplain studies that have been performed by engineers in conjunction with prior land development. Floodplain information is available on the publicly accessible County Floodplain Viewer (https://fairfaxCountygis.maps.arcgis.com/apps/webappviewer/index.html?id=c62ab5b0d13a49c990480e456e70e45f&mobileBreakPoint=300).

Not all County regulated floodplain is mapped. For instance, Fairfax County has older neighborhoods that developed in the 1950s and 1960s prior to modern floodplain regulations. These communities may include piped or channelized streams in minor floodplains that lack mapped floodplain boundaries and BFEs. See examples in Maps 1 and 2 below. The red 70-acre stream network line represents potential County regulated floodplain. As shown on the maps, many sections of the regulated floodplain lack recorded floodplain boundaries.

Map 1. Unmapped regulated floodplain within Dogue Creek watershed



Map 2. Unmapped regulated floodplain within Pimmit Run watershed



As the County reaches buildout conditions and large tracts of green space are no longer available for new subdivisions, much of the residential development in these older neighborhoods has shifted to lot-by-lot infill redevelopment. For residential infill development in and adjacent to unmapped regulated floodplain, the County must rely on very limited floodplain studies completed as a part of the infill plan to review and enforce floodplain regulations.

Additionally, FEMA completed a multi-year project to reexamine Fairfax County's flood zones and produce detailed digital flood hazard maps. The preliminary updated FIRMs, which reflect the flood risk based on the latest data, have been released for public review. The County held a series of virtual public meetings to provide more information on the proposed changes and respond to questions from residents.

Study Description

Fairfax County will complete modeling and mapping of the remaining 757 stream miles with County regulated floodplains in the remaining 27 designated watersheds. This study includes both updates to prior mapped floodplains and new floodplain models and mapping. Given the size and complexity of this effort, the study will be split into a pilot and two phases.

The County is in the process of completing a pilot study on three watersheds- Dogue Creek, Pimmit Run, and Little Hunting Creek (total of 56 stream miles)- to establish standard means and methods to develop the regulated floodplain map updates. The pilot study will prepare the most current terrain data for the County and develop appropriate hydrologic and hydraulic modeling of all streams with drainage areas of 70 acres or greater. The pilot study scope includes obtaining and preparing terrain data for use in the hydrologic and hydraulic (H&H) analyses, identifying data for bridges and culverts, establishing 100-year elevations using steady-state one-dimensional modeling, and mapping the results for the three watersheds.

This grant application is for Phase I of the study to develop a preliminary HEC-RAS hydraulic model for the remaining 27 watersheds. The HEC-RAS models for each watershed will establish preliminary floodplain mapping (within RAS Mapper), flow velocities, profiles, and rating tables. Phase II of the study, which includes the final HEC-RAS model with bridges and culverts incorporated and final floodplain mapping, will be submitted as a separate study application under a future grant round.

The Phase I of the study will be completed by Atkins. The firm is a consultant with a County Basic Ordering Agreement (BOA) for Flood Mitigation and Monitoring and Dam Safety Program Services. Attachment 1 is the Request for Qualifications that the firm had to meet to be awarded this BOA.

Study Benefits

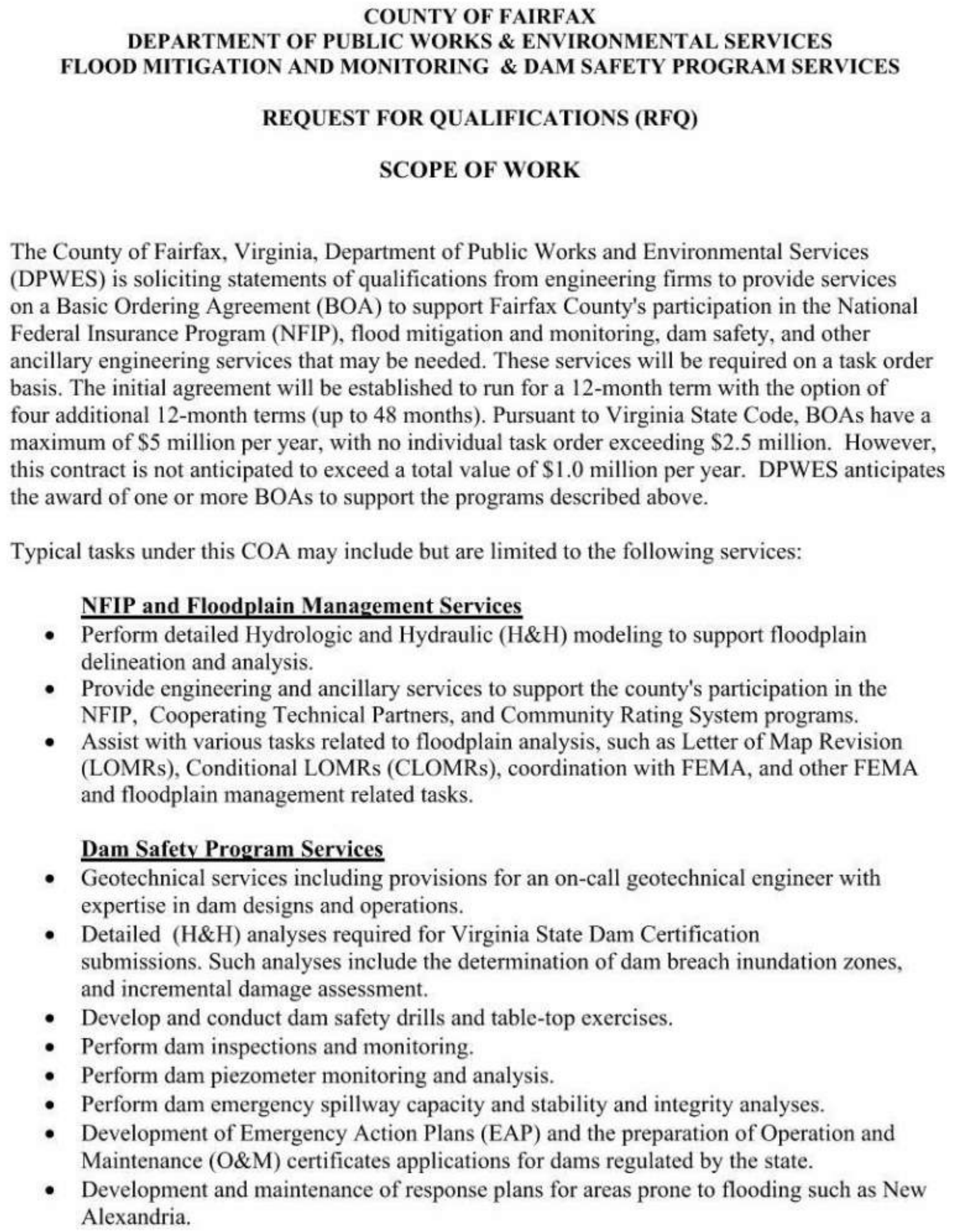
The County regulated floodplain updates will consolidate multiple flood hazard data sources into one comprehensive map for regulatory use, eliminating conflicting water surface boundaries and generating BFEs for unmapped regulated floodplains. The study will also revise and clarify various references to floodplain mapping studies in the Floodplain Ordinance, County Public Facilities Manual (PFM), and the County Code of Ordinances. Fairfax County floodplain management regulations are codified in Section 5105 of the Zoning Ordinance. The PFM details the appropriate methods and guidelines for water surface calculations and floodplain easements. Appendix A of the County code describes some of the maps and studies used to depict the areas designated as floodplain by Fairfax County. These three regulatory documents will be revised to reflect the new comprehensive County regulated floodplain map.

The study allows the County to integrate climate change into the regulated floodplains. The County is embarking on Resilient Fairfax, a formal and holistic effort to address climate adaption and resilience. The Resilient Fairfax plan will develop a climate projections report with future predicted climate conditions (https://www.fairfaxcounty.gov/environment-energy-coordination/resilient-fairfax). Data from this report can be integrated into the new or updated floodplain models to reflect anticipated future precipitation trends.

The study will also increase community flood risk awareness by mapping previously unmapped floodplain. Later phases of the study will encompass a significant public outreach program to notify residents that they are in a newly mapped floodplain, advise them on how to prepare for flooding, and share resources related to flood protection and insurance.

With 1,167,000 residents, Fairfax County is more populous than six states (Alaska, Montana, North Dakota, Rhode Island, South Dakota, Vermont, and the District of Columbia) and accounts for about 13% of the total population of Virginia. Providing comprehensive, accurate, and consistent regulated floodplain maps will benefit not only the County, but also more than a tenth of Virginia residents. The maps will help increase flood risk awareness for residents located in and adjacent to previously unmapped floodplains, developers to better incorporate flood prevention and protection techniques into their construction plans, and the County to better review and enforce its robust floodplain management regulations.

Attachment 1. Flood mitigation and monitoring and dam safety program services request for qualifications



COUNTY OF FAIRFAX
DEPARTMENT OF PUBLIC WORKS & ENVIRONMENTAL SERVICES
FLOOD MITIGATION AND MONITORING & DAM SAFETY PROGRAM SERVICES

REQUEST FOR QUALIFICATIONS (RFQ)

SCOPE OF WORK

The County of Fairfax, Virginia, Department of Public Works and Environmental Services (DPWES) is soliciting statements of qualifications from engineering firms to provide services on a Basic Ordering Agreement (BOA) to support Fairfax County's participation in the National Federal Insurance Program (NFIP), flood mitigation and monitoring, dam safety, and other ancillary engineering services that may be needed. These services will be required on a task order basis. The initial agreement will be established to run for a 12-month term with the option of four additional 12-month terms (up to 48 months). Pursuant to Virginia State Code, BOAs have a maximum of $5 million per year, with no individual task order exceeding $2.5 million. However, this contract is not anticipated to exceed a total value of $1.0 million per year. DPWES anticipates the award of one or more BOAs to support the programs described above.

Typical tasks under this COA may include but are limited to the following services:

NFIP and Floodplain Management Services

- Perform detailed Hydrologic and Hydraulic (H&H) modeling to support floodplain delineation and analysis.
- Provide engineering and ancillary services to support the county's participation in the NFIP, Cooperating Technical Partners, and Community Rating System programs.
- Assist with various tasks related to floodplain analysis, such as Letter of Map Revision (LOMRs), Conditional LOMRs (CLOMRs), coordination with FEMA, and other FEMA and floodplain management related tasks.

Dam Safety Program Services

- Geotechnical services including provisions for an on-call geotechnical engineer with expertise in dam designs and operations.
- Detailed (H&H) analyses required for Virginia State Dam Certification submissions. Such analyses include the determination of dam breach inundation zones, and incremental damage assessment.
- Develop and conduct dam safety drills and table-top exercises.
- Perform dam inspections and monitoring.
- Perform dam piezometer monitoring and analysis.
- Perform dam emergency spillway capacity and stability and integrity analyses.
- Development of Emergency Action Plans (EAP) and the preparation of Operation and Maintenance (O&M) certificates applications for dams regulated by the state.
- Development and maintenance of response plans for areas prone to flooding such as New Alexandria.

Project implementation Support and General Engineering Services

- Performance of detailed land surveys, bathymetric surveys, and the preparation of elevation certificates and plats.
- Delineation of wetlands.
- Support for the acquisition of hydrologic data, geotechnical. investigations, or other purposes.
- AutoCAD drafting and plan preparation services.
- Modeling green infrastructure and Stormwater management facility rehabilitation and retrofit designs.
- Acquire federal, state, and local permits required for construction.
- Preparing and conducting presentations at public meetings during non-business hours
- Other related ancillary services.

Consultants who wish to be considered for this work must submit eight (8) hard copies copies, as well as a PDF copy on a CD of their statements of qualifications to Roz Knox, Contract Specialist, Stormwater Planning Division, Department of Public Works and Environmental Services, 12000 Government Center Parkway, Suite 449, Fairfax, Virginia 22035-0052.

The submittal must include:

- Statements of Interest;
- GSA Standard Form 330 Part I and Part II for the primary firm and all major sub-consultants; and
- List of references with current addresses and telephone numbers for recently completed projects of a similar nature.

All submissions must be complete and clearly demonstrate the capability to provide the required services. The following weighted criteria and evaluation factors will be utilized by a Selection Advisory Committee to evaluate the statement of qualifications:

Criteria No.	Criteria Description	Weight
1.	The ability and experience of firm/team to deliver work as described	25%
2.	Project teams' personnel qualifications and experience	20%
3.	Past performance history	15%
4.	Ability to meet time and budget requirements	15%
5.	Location of key project staff	10%
6.	Volume of work previously awarded by the County within the last 3	5%
7.	Recent, current, and projected workload	5%
8.	Public presentations and community coordination	5%

All statements of qualifications shall be delivered no later than 4:00 p.m., local prevailing time on Wednesday April 8, 2020. Statements of qualifications received after the submission deadline will not be considered. The statement of qualifications, including GSA 330 forms, shall not exceed the equivalent of thirty-five (35) pages of content (printed double-sided copies). The cover letter and binding are not included in the 35 pages.

Fairfax County is committed to paying a living wage to all qualified County employees and encourages contractors and sub-contractors involved in all County programs, services, and activities to pay a living wage to their employees.

All questions related to this solicitation should be directed to Roz Knox, Contract Specialist , of Stormwater Planning Division at rosalind.knox@fairfaxcounty.gov or 703-324-5500, TTY 711.

♿ To request this information in an alternate format, please call Roz Knox, Contract Specialist, Stormwater Planning Division, Department of Public Works and Environmental Services at 703-324-5500, TTY 711.

B. Budget Narrative

The sections below outline the anticipated expenditures for the study including the estimated total study cost, the grant funds requested, and the corresponding match to be provided by the County.

1. Estimated Total Project Cost

The estimated total study cost is $1,200,000. In Fairfax County, there are 812 stream miles of regulatory floodplain. The pilot studies completed in Dogue Creek, Little Hunting Creek, and Pimmit Run covered 56 stream miles. Based on these pilot studies, the estimated cost to complete the preliminary hydraulic models for the remaining stream miles is $1,450 per mile. The total cost to complete the preliminary hydraulic models for the remaining 27 watershed (756 miles) is:

($1450/mile * 756 miles) = $1,096,200 + 10% contingency = ~$1,200,000

2. Funds Requested

The amount of funds requested from the Fund is $600,000. This is the total amount of any grant assistance sought from the Fund. 100% of this grant will be applied to the Atkins task order to complete Phase I of the Fairfax County regulated floodplain map updates. Attachment 2 includes the task order draft proposal scopes of work describing how this funding will be used.

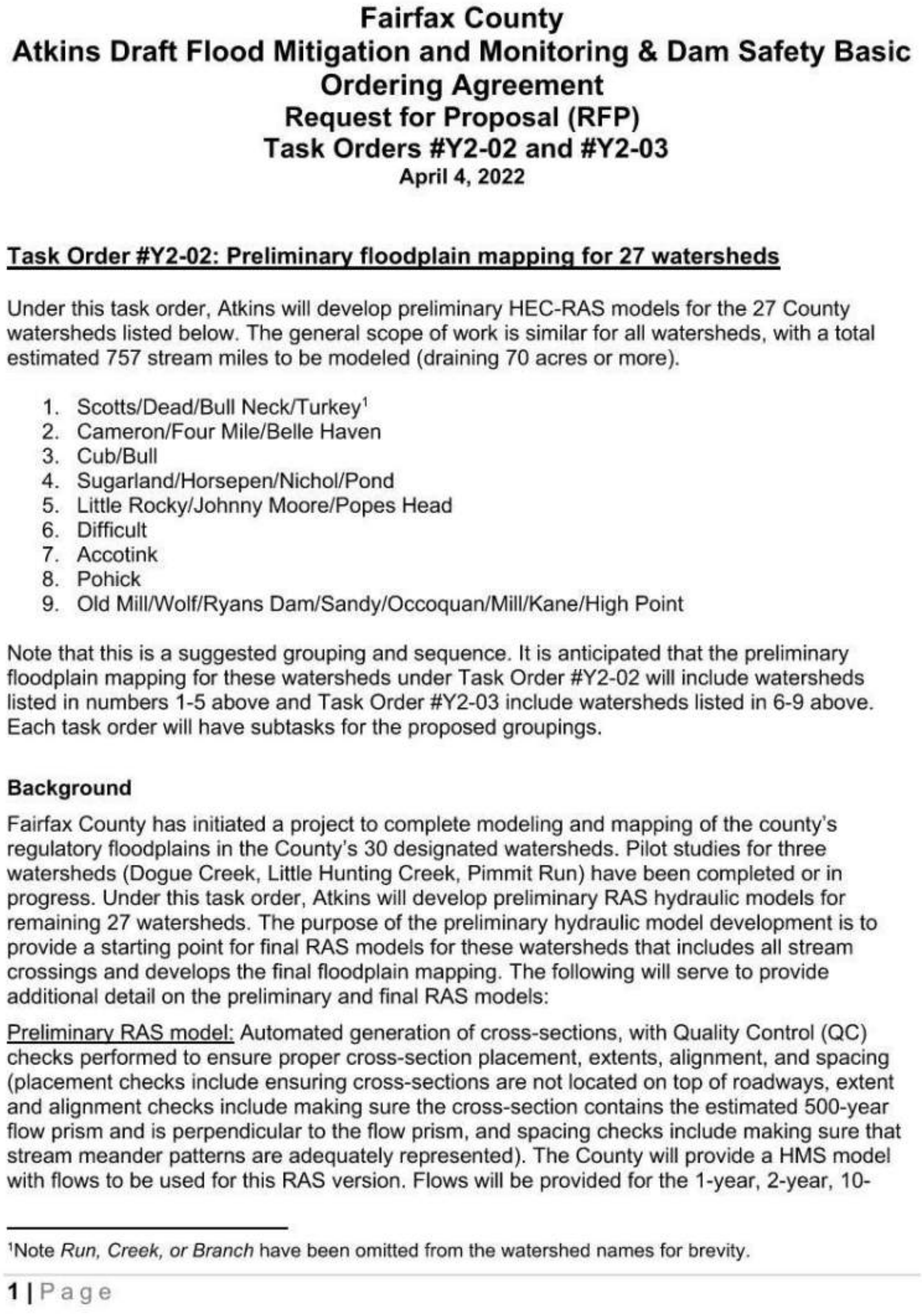
3. Available Funds

$600,000 of cash funds is available in *Regulatory Program Support* under Fund 40100 Stormwater Services in the proposed Fairfax County Fiscal Year 2023 budget. See Attachment 3 for the proposed Fiscal Year 2023 County budget plan document.

4. Authorization to Request for Funding

See Attachment 4 for the Not in Package (NIP) item to the Board of Supervisors authorizing a request for funding through the grant program.

Attachment 2. Regulated floodplain map updates draft task order scope of work



Fairfax County
Atkins Draft Flood Mitigation and Monitoring & Dam Safety Basic Ordering Agreement
Request for Proposal (RFP)
Task Orders #Y2-02 and #Y2-03
April 4, 2022

Task Order #Y2-02: Preliminary floodplain mapping for 27 watersheds

Under this task order, Atkins will develop preliminary HEC-RAS models for the 27 County watersheds listed below. The general scope of work is similar for all watersheds, with a total estimated 757 stream miles to be modeled (draining 70 acres or more).

1. Scotts/Dead/Bull Neck/Turkey[1]
2. Cameron/Four Mile/Belle Haven
3. Cub/Bull
4. Sugarland/Horsepen/Nichol/Pond
5. Little Rocky/Johnny Moore/Popes Head
6. Difficult
7. Accotink
8. Pohick
9. Old Mill/Wolf/Ryans Dam/Sandy/Occoquan/Mill/Kane/High Point

Note that this is a suggested grouping and sequence. It is anticipated that the preliminary floodplain mapping for these watersheds under Task Order #Y2-02 will include watersheds listed in numbers 1-5 above and Task Order #Y2-03 include watersheds listed in 6-9 above. Each task order will have subtasks for the proposed groupings.

Background

Fairfax County has initiated a project to complete modeling and mapping of the county's regulatory floodplains in the County's 30 designated watersheds. Pilot studies for three watersheds (Dogue Creek, Little Hunting Creek, Pimmit Run) have been completed or in progress. Under this task order, Atkins will develop preliminary RAS hydraulic models for remaining 27 watersheds. The purpose of the preliminary hydraulic model development is to provide a starting point for final RAS models for these watersheds that includes all stream crossings and develops the final floodplain mapping. The following will serve to provide additional detail on the preliminary and final RAS models:

<u>Preliminary RAS model:</u> Automated generation of cross-sections, with Quality Control (QC) checks performed to ensure proper cross-section placement, extents, alignment, and spacing (placement checks include ensuring cross-sections are not located on top of roadways, extent and alignment checks include making sure the cross-section contains the estimated 500-year flow prism and is perpendicular to the flow prism, and spacing checks include making sure that stream meander patterns are adequately represented). The County will provide a HMS model with flows to be used for this RAS version. Flows will be provided for the 1-year, 2-year, 10-

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[1] Note *Run, Creek, or Branch* have been omitted from the watershed names for brevity.

year, 100-year, and 500-year events and used to establish water-surface elevation profiles and preliminary floodplain mapping (within RAS Mapper) for these events.

Final RAS model: This version will incorporate all stream crossings into preliminary RAS models previously reviewed and approved by the County. Additionally, for areas where there piped systems within the floodplain, the model will utilize headwater elevations obtained from an analysis of the piped system where the open channel system enters and exits the piped system. The final RAS version will be used be used to create final 100-year, 500-year floodplain mapping and associated products for the watershed.

Note: This RFP is only for preliminary RAS models, information on final RAS models is only provided for reference.

Subtasks

1. The County will provide the following data to enable the development and testing of the preliminary version of HEC-RAS models:

    a. Clipped 2018 Terrain data (Lidar raster layers) for all watersheds.

    b. GIS layers derived from Arc Hydro to be used in configuring the geometric data for the RAS Model. This includes 70-acre stream centerlines, confluence nodes, stream crossing point layer along with any other data needed.

    c. Final version of the configured HMS Models.

Atkins will review data provided for the County to ensure it is complete and will allow development of the preliminary RAS models detailed previously.

2. Atkins will utilize reach and river naming conventions in RAS developed as part of Task Order #Y1-05 (Little Hunting Creek preliminary floodplain mapping) to ensure consistency between the reach identifiers used in HMS and Arc Hydro. Naming conventions should allow users to efficiently locate flows used in RAS in the HMS models and then determine the relevant Arc Hydro elements to establish how hydrologic parameters in HMS were estimated.

3. Atkins will develop preliminary RAS models for the watersheds as detailed previously.

4. Atkins will use the HMS model provided by the county to assign flows in the RAS flow editor and impose normal depth as downstream boundary conditions.

5. Atkins will produce preliminary flood inundation maps and velocity maps in RAS Mapper for all profiles to ensure that the overall results are reasonable, and the cross-sections used in modeling the reach are extended sufficiently to capture the 500-year floodplain limits.

The final deliverables from this task would be a hydraulic model for the each watershed with brief documentation of the reaches modeled and naming convention.

Schedule

Atkins will provide a schedule for each task order showing when work will be initiated and completed for each watershed.

Attachment 3. Advertised Fiscal Year 2023 Stormwater Services County budget document

Fund 40100: Stormwater Services

Mission

To develop and maintain a comprehensive watershed and infrastructure management program to protect property, health, and safety; to enhance the quality of life; and to preserve and improve the environment for the benefit of the public. To plan, design, construct, operate, maintain, and inspect stormwater infrastructure; perform environmental assessments through coordinated stormwater and maintenance programs in compliance with all government regulations utilizing innovative techniques, customer feedback and program review; and to be responsive and sensitive to the needs of the residents, customers, and public partners.

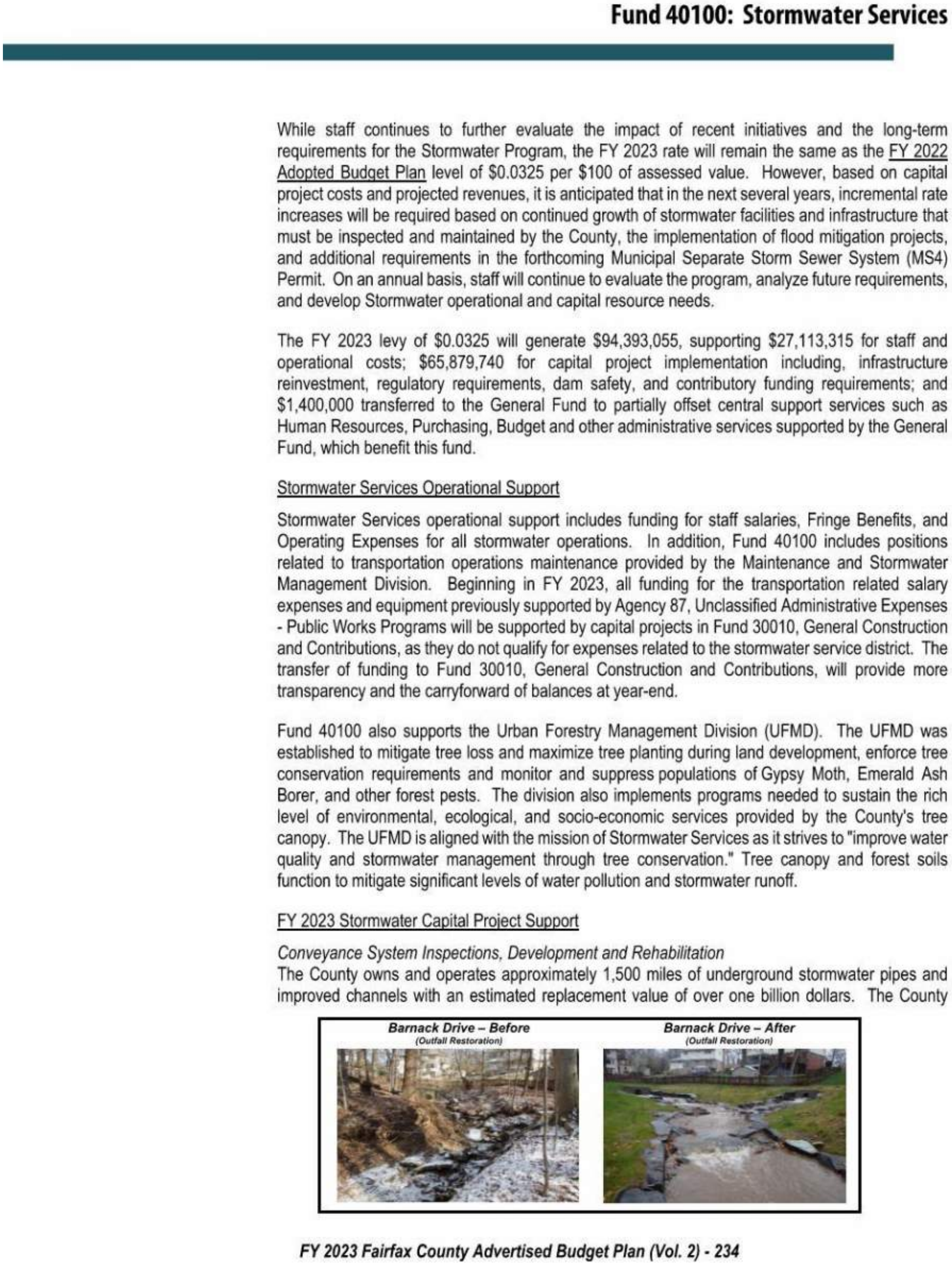
Focus

Stormwater Services are essential to protect public safety, preserve property values and support environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local jurisdictional waterways. Projects in this fund include repairs to stormwater infrastructure, measures to improve water quality such as stream stabilization, rehabilitation, safety upgrades of state regulated dams, repair and rehabilitation of underground pipe systems, surface channels, flood mitigation, site retrofits and best management practices (BMP), and other stormwater improvements.

The Board of Supervisors approved a special service district to support the Stormwater Management Program as part of the FY 2010 Adopted Budget Plan. This service district provides a dedicated funding source for both operating and capital project requirements by levying a service rate per $100 of assessed real estate value, as authorized by Code of Virginia Ann. Sections 15.2-2400. Since FY 2010, staff has made significant progress in the implementation of watershed master plans, public outreach efforts, stormwater monitoring activities, water quality and flood mitigation project implementation and operational maintenance programs related to existing storm drainage infrastructure including stormwater conveyance, and regulatory requirements.

A rate of $0.0400 per $100 of assessed value has been estimated to be required to fully support the stormwater program in the future; however, staff is currently evaluating the long-term requirements for the program to address the growth in inventory and other community needs. Some of the additional community needs under evaluation include debt service to support the Board's approval of the dredging of Lake Accotink, the anticipation of additional flood mitigation requirements, and strengthening the role and financial support for the implementation of stormwater requirements associated with Fairfax County Public Schools sites under renovation. This enhanced program may require incremental changes to the rate over time and may result in a higher rate to fully support the program. Staff continues to evaluate these requirements, as well as the staffing to support them, and analyze the impact of increased real estate values and revenue projections.

One of the recent initiatives being funded by the Stormwater Fund is the new Public Works complex which will consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions. Stormwater operations are currently conducted from various locations throughout the County, and a new colocation of both Stormwater and Wastewater staff will provide efficiencies and sharing of resources. Another initiative in progress is the planned dredging of Lake Accotink. Lake Accotink is a 55-acre lake surrounded by managed conservation areas, wetlands, deciduous and evergreen forests, and historic and prehistoric sites. Over 300,000 patrons visit the park annually to enjoy a variety of facilities and activities that vary with the season. Sediment from the upstream areas of the watershed has continued to be deposited in Lake Accotink over the years filling in the lake and limiting recreational use. Estimates for the cost of dredging including sediment disposal are still under review. Staff has identified the option of a low interest loan via the Virginia Clean Water Revolving Loan Fund (VCWRLF) as the preferred funding mechanism to fund the dredging project costs. The Stormwater fund will pay the future debt costs.



While staff continues to further evaluate the impact of recent initiatives and the long-term requirements for the Stormwater Program, the FY 2023 rate will remain the same as the FY 2022 Adopted Budget Plan level of $0.0325 per $100 of assessed value. However, based on capital project costs and projected revenues, it is anticipated that in the next several years, incremental rate increases will be required based on continued growth of stormwater facilities and infrastructure that must be inspected and maintained by the County, the implementation of flood mitigation projects, and additional requirements in the forthcoming Municipal Separate Storm Sewer System (MS4) Permit. On an annual basis, staff will continue to evaluate the program, analyze future requirements, and develop Stormwater operational and capital resource needs.

The FY 2023 levy of $0.0325 will generate $94,393,055, supporting $27,113,315 for staff and operational costs; $65,879,740 for capital project implementation including, infrastructure reinvestment, regulatory requirements, dam safety, and contributory funding requirements; and $1,400,000 transferred to the General Fund to partially offset central support services such as Human Resources, Purchasing, Budget and other administrative services supported by the General Fund, which benefit this fund.

Stormwater Services Operational Support

Stormwater Services operational support includes funding for staff salaries, Fringe Benefits, and Operating Expenses for all stormwater operations. In addition, Fund 40100 includes positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. Beginning in FY 2023, all funding for the transportation related salary expenses and equipment previously supported by Agency 87, Unclassified Administrative Expenses - Public Works Programs will be supported by capital projects in Fund 30010, General Construction and Contributions, as they do not qualify for expenses related to the stormwater service district. The transfer of funding to Fund 30010, General Construction and Contributions, will provide more transparency and the carryforward of balances at year-end.

Fund 40100 also supports the Urban Forestry Management Division (UFMD). The UFMD was established to mitigate tree loss and maximize tree planting during land development, enforce tree conservation requirements and monitor and suppress populations of Gypsy Moth, Emerald Ash Borer, and other forest pests. The division also implements programs needed to sustain the rich level of environmental, ecological, and socio-economic services provided by the County's tree canopy. The UFMD is aligned with the mission of Stormwater Services as it strives to "improve water quality and stormwater management through tree conservation." Tree canopy and forest soils function to mitigate significant levels of water pollution and stormwater runoff.

FY 2023 Stormwater Capital Project Support

Conveyance System Inspections, Development and Rehabilitation
The County owns and operates approximately 1,500 miles of underground stormwater pipes and improved channels with an estimated replacement value of over one billion dollars. The County

Barnack Drive – Before
(Outfall Restoration)

Barnack Drive – After
(Outfall Restoration)

began performing internal inspections of the pipes in FY 2006. The initial results showed that approximately 5 percent of the pipes exhibit conditions of failure, and an additional 5 percent required maintenance or repair. MS4 Permit regulations require inspection and maintenance of these 1,500 miles of existing conveyance systems, 69,000 stormwater structures, and a portion of the immediate downstream channel at the 7,000 regulated pipe outlets. Acceptable industry standards indicate that one dollar reinvested in infrastructure saves seven dollars in the asset's life and 70 dollars if asset failure occurs. Once the initial internal inspections are complete, the goal of this program is to inspect pipes on a 20-year cycle and rehabilitate pipes and improve outfall channels before total failure occurs. Total funding in the amount of $9.0 million is included for Conveyance System Inspections, Development and Rehabilitation in FY 2023, including $2.0 million for inspections and development and $7.0 million for rehabilitation and outfall restoration.

Dam Safety and Facility Rehabilitation

There are approximately 7,900 stormwater management facilities in service that range in size from small rain gardens to large state regulated flood control dams. The County is responsible for inspecting approximately 5,500 privately-owned facilities and maintaining over 2,400 County owned facilities. This inventory increases annually and is projected to continually increase as new development and redevelopment sites occur in the County. This initiative also includes the removal of sediment that occurs in both wet and dry stormwater management facilities to ensure that adequate capacity is maintained to treat the stormwater. The program results in approximately 50 projects annually that require design and construction management activities as well as contract management and maintenance responsibilities. This program maintains the structures and dams that control and treat the water flowing through County owned facilities. This program improves dam safety by supporting annual inspections of 20 state-regulated dams and the Huntington Levee and by developing Emergency Action Plans required by the state. The Emergency Action Plans are updated annually. In addition, these plans include annual emergency drills and exercises, and flood monitoring for each dam. Total funding in the amount of $15.0 million is included in FY 2023, including $5.0 million for maintenance and $10.0 million for rehabilitation.

Popes Head View - Before
(Dam Rehabilitation)

Popes Head View - After
(Dam Rehabilitation)

Stormwater/Wastewater Facility

This project will provide funding for a Stormwater/Wastewater Facility which will consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions. Currently, Stormwater operations are conducted from various locations throughout the County, with the majority of staff located at the West Drive facility. Facilities for field maintenance operations and for field/office-based staff are inadequate and outdated for the increased scope of the stormwater program, and inadequate to accommodate future operations. This project is currently in design with construction anticipated to begin in early 2022. The facility is financed by EDA bonds with the Stormwater Services Fund and Wastewater Fund supporting the debt service. Funding in the amount of $4.2 million is included in FY 2023 to support the second year of debt service for the Stormwater/Wastewater Facility.

Emergency and Flood Response Projects

This program supports flood control projects for unanticipated flooding events that impact storm systems and structural flooding. The program provides annual funding for scoping, design, and construction activities related to flood mitigation projects. Funding in the amount of $7.0 million is included for the Emergency and Flood Response Projects in FY 2023.

Enterprise Asset Management-Work Order System

This project will provide funding for the transition from an Enterprise Asset Management (EAM) system to a more functional Asset Management Program (AMP). This funding will support the acquisition of software, servers and consultant services to migrate asset management and related work order management into the new system. The current system tracks assets, inspections, daily work management and associated contractor costs. Features of the replacement system include geographic information system (GIS) integration and field mobility. The Department of Public Works and Environmental Services (DPWES) Information Technology staff have collaborated with the Stormwater Management and the Wastewater Management staff to promote interagency capabilities, optimize performance, and improve system lifecycle management for the new system. This new system will meet the future expectations for both divisions and optimize service delivery for DPWES. Funding in the amount of $1.4 million is included in Capital Projects and an amount of $800,000 is included in Operating Expenses for this project in FY 2023.

Stormwater-Related Contributory Program

Contributory funds are provided to the Northern Virginia Soil and Water Conservation District (NVSWCD) and the Occoquan Watershed Monitoring Program (OWMP). The NVSWCD is an independent subdivision of the Commonwealth of Virginia that provides leadership in the conservation and protection of Fairfax County's soil and water resources. It is governed by a five-member Board of Directors - three members are elected every four years by the voters of Fairfax County and two members are appointed by the Virginia Soil and Water Conservation Board. Accordingly, the work of NVSWCD supports many of the environmental goals established by the Board of Supervisors. The goal of the NVSWCD is to continue to improve the quality of the environment and general welfare of the citizens of Fairfax County by providing them with a means of dealing with soil, water conservation and related natural resource problems. It provides County agencies with comprehensive environmental evaluations for proposed land use changes with particular attention to the properties of soils, erosion potential, drainage, and the impact on the surrounding environment. NVSWCD has consistently been able to create partnerships and leverage state, federal and private resources to benefit natural resources protection in Fairfax County. FY 2023 funding of $0.6 million is included in Fund 40100 for the County contribution to the NVSWCD.

The OWMP and the Occoquan Watershed Monitoring Laboratory (OWML) were established to ensure that water quality is monitored and protected in the Occoquan Watershed. Given the many diverse uses of the land and water resources in the Occoquan Watershed (agriculture, urban residential development, commercial and industrial activity, water supply, and wastewater disposal), the OWMP plays a critical role as the unbiased interpreter of basin water quality information. FY 2023 funding of $0.2 million is included in Fund 40100 for the County contribution to the OWMP.

Stormwater Allocation to Towns

On April 18, 2012, the State Legislature passed SB 227, which entitles the Towns of Herndon and Vienna to all revenues collected within their boundaries by Fairfax County's stormwater service district. An agreement was developed for a coordinated program whereby the Towns remain part of the County's service district and the County returns 25 percent of the revenue collected from properties within each town. This allows for the Towns to provide services independently such as

maintenance and operation of stormwater pipes, manholes, and catch basins. The remaining 75 percent remains with the County and the County takes on the responsibility for the Towns' Chesapeake Bay Total Maximum Daily Load (TMDL) requirements as well as other TMDL and MS4 requirements. This provides for an approach that is based on watersheds rather than on jurisdictional lines. Funding in the amount of $1.0 million is included for the Stormwater Allocations to Towns project in FY 2023.

Regulatory Program

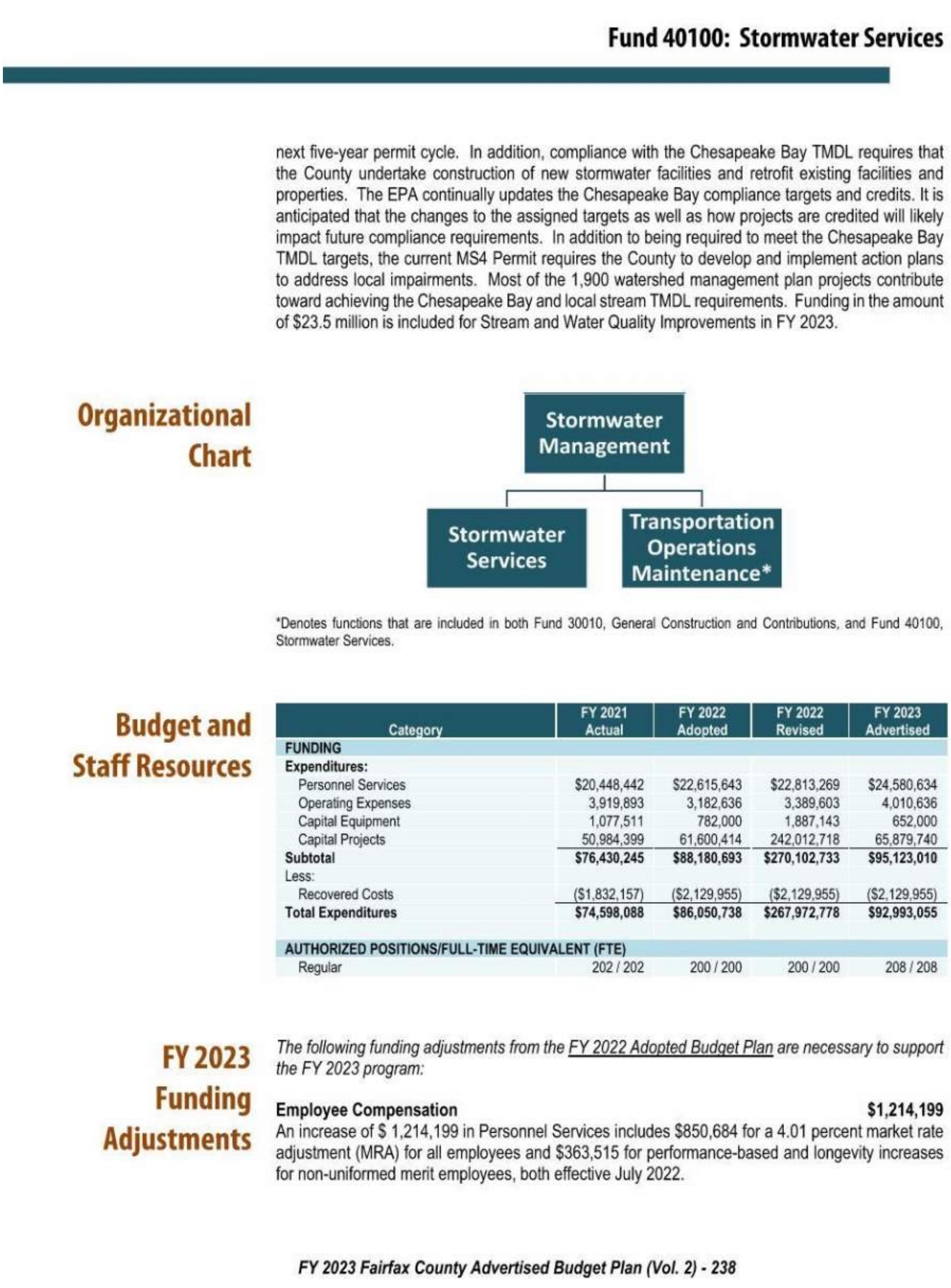
The County is required by federal law to operate under the conditions of a state issued MS4 Permit. Stormwater staff annually evaluates funding required to meet the increasing federal and state regulatory requirements pertaining to the MS4 Permit, and State and Federal mandates associated with controlling water pollution delivered to local streams and the Chesapeake Bay. The MS4 Permit allows the County to discharge stormwater from its stormwater systems into state and federal waters. The County currently owns and/or operates approximately 15,000 outfalls, and 7,000 of these outfalls are regulated outfalls governed by the permit. The current permit was issued to the County in April 2015 and expired in April 2020. The County is operating under an administrative continuance until a new permit is issued. The permit requires the County to document the stormwater management facility inventory, enhance public outreach and education efforts, increase water quality monitoring efforts, provide stormwater management and stormwater control training to all appropriate County employees. The permit requires the County to implement sufficient stormwater projects that will reduce the nutrients and sediment to comply with the Chesapeake Bay and local stream TMDL requirements. Funding in the amount of $4.0 million is included for the Stormwater Regulatory Program in FY 2023.

Stream and Water Quality Improvements

This program funds water quality improvement projects necessary to mitigate the impacts to local streams and the Chesapeake Bay resulting from urban stormwater runoff. This includes water quality projects such as construction and retrofit of stormwater management ponds, implementation of green stormwater infrastructure facilities, stream restoration, and water quality projects identified in the completed Countywide Watershed Management Plans. These projects will aid in the reduction of pollutants and improve water quality in county streams that are considered to be in fair to very poor condition and likely do not meet CWA water quality standards. In addition, Total Maximum Daily Load (TMDL) requirements for local streams and the Chesapeake Bay are the regulatory drivers by which pollutants entering impaired water bodies must be reduced. The Chesapeake Bay TMDL was established by the EPA and requires that MS4 communities as well as other dischargers implement measures to significantly reduce the nitrogen, phosphorous and sediment loads in waters that drain to the Chesapeake Bay by 2025. MS4 Permit holders must achieve 35 percent of the required reductions within the current five-year permit cycle and 60 percent of the required reductions in the

Lake Barton - Before
(Pre-Dredging)

Lake Barton - After
(Post-Dredging)



next five-year permit cycle. In addition, compliance with the Chesapeake Bay TMDL requires that the County undertake construction of new stormwater facilities and retrofit existing facilities and properties. The EPA continually updates the Chesapeake Bay compliance targets and credits. It is anticipated that the changes to the assigned targets as well as how projects are credited will likely impact future compliance requirements. In addition to being required to meet the Chesapeake Bay TMDL targets, the current MS4 Permit requires the County to develop and implement action plans to address local impairments. Most of the 1,900 watershed management plan projects contribute toward achieving the Chesapeake Bay and local stream TMDL requirements. Funding in the amount of $23.5 million is included for Stream and Water Quality Improvements in FY 2023.

Organizational Chart

Stormwater Management

Stormwater Services

Transportation Operations Maintenance*

*Denotes functions that are included in both Fund 30010, General Construction and Contributions, and Fund 40100, Stormwater Services.

Budget and Staff Resources

Category	FY 2021 Actual	FY 2022 Adopted	FY 2022 Revised	FY 2023 Advertised
FUNDING				
Expenditures:				
Personnel Services	$20,448,442	$22,615,643	$22,813,269	$24,580,634
Operating Expenses	3,919,893	3,182,636	3,389,603	4,010,636
Capital Equipment	1,077,511	782,000	1,887,143	652,000
Capital Projects	50,984,399	61,600,414	242,012,718	65,879,740
Subtotal	**$76,430,245**	**$88,180,693**	**$270,102,733**	**$95,123,010**
Less:				
Recovered Costs	($1,832,157)	($2,129,955)	($2,129,955)	($2,129,955)
Total Expenditures	**$74,598,088**	**$86,050,738**	**$267,972,778**	**$92,993,055**
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)				
Regular	202 / 202	200 / 200	200 / 200	208 / 208

FY 2023 Funding Adjustments

The following funding adjustments from the FY 2022 Adopted Budget Plan are necessary to support the FY 2023 program:

Employee Compensation **$1,214,199**

An increase of $ 1,214,199 in Personnel Services includes $850,684 for a 4.01 percent market rate adjustment (MRA) for all employees and $363,515 for performance-based and longevity increases for non-uniformed merit employees, both effective July 2022.

Other Post-Employment Benefits **($106,403)**
A decrease of $106,403 in Personnel Services reflects required adjustments associated with providing Other Post-Employment Benefits (OPEBs) to retirees, including the Retiree Health Benefits Subsidy. For more information on Other Post-Employment Benefits, please refer to Fund 73030, OPEB Trust, in Volume 2 of the FY 2023 Advertised Budget Plan.

New Positions **$885,195**
An increase of $885,195 including Personnel Services of $857,195 and Operating Expenses of $28,000 is necessary to fund requirements associated with 8/8.0 FTE new positions, including 1/1.0 Engineering Technician III, 1/1.0 FTE Planner III, 1/1.0 FTE Project Manager I, 1/1.0 FTE Senior Engineering Inspector, 1/1.0 FTE Senior Engineer III, and 3/3.0 FTE Senior Maintenance Workers. The Engineering Technician III position will support address the increased workload of permit required pond inspections and maintenance. The Planner III position will review and provide needed stormwater expertise, advanced technical analysis, support and recommendations on planning and development efforts during planning, pre-zoning and rezoning processes. The Project Manager I position will support the Tree Preservation and Planting Program and manage projects that support the tree planting goals of Virginia's Final Phase III Watershed Implementation Plan. The projects will be geared towards increasing tree canopy through street and landscape tree plantings, afforestation and reforestation, and assisting with outreach and education programs. The Senior Engineering Inspector position will be responsible for reviewing erosion and sediment control plans, reviewing project designs, understanding job specifications, inspecting County stormwater infrastructure, updating work orders and keeping a daily log of work performed on construction sites. The Senior Engineer III position will initiate flood mitigation projects, coordinate with property owners to address their flooding concerns, and execute flood mitigation project design and implementation services. The three Senior Maintenance Worker positions will form an additional crew that will be deployed into the field to perform maintenance on the storm drainage system throughout the County.

Asset Management Program **$800,000**
An increase of $800,000 in Operating Expenses will support a new Asset Management Program (AMP). Funding will support the acquisition of software, servers, and consultant services to migrate asset management and related work order management into the new system. This new system will meet the future expectations for both Stormwater and Wastewater divisions and optimize service delivery for the Department of Public Works and Environmental Services.

Capital Equipment **($130,000)**
Funding of $652,000 in Capital Equipment, a decrease of $130,000 from the FY 2022 Adopted Budget Plan, is included primarily associated with replacement equipment that has outlived its useful life and is critical to stormwater services activities. Replacement equipment includes: $390,000 to replace two dump trucks that support all maintenance and emergency response programs and $40,000 to replace three equipment trailers that support all maintenance and emergency response programs in transporting construction materials, light duty and snow removal equipment. New equipment includes $222,000 for the purchase of three new pickup trucks and one new utility truck to support the new positions in FY 2023.

Capital Projects **$4,279,326**
Funding of $65,879,740 in Capital Projects, an increase of $4,279,326 from the FY 2022 Adopted Budget Plan, has been included in FY 2023 for priority stormwater capital projects.

Changes to FY 2022 Adopted Budget Plan

The following funding adjustments reflect all approved changes in the FY 2022 Revised Budget Plan since passage of the FY 2022 Adopted Budget Plan. Included are all adjustments made as part of the FY 2021 Carryover Review, FY 2022 Mid-Year Review, and all other approved changes through December 31, 2021:

Carryover Adjustments **$182,312,873**

As part of the *FY 2021 Carryover Review*, the Board of Supervisors approved funding of $182,312,873 based on the carryover of unexpended project balances in the amount of $179,413,809 and a net adjustment of $2,899,064. This adjustment includes the carryover of $1,312,110 in operating and capital equipment encumbrances, an increase of $197,626 to Personnel Services to support a one-time compensation adjustment of $1,000 for merit employees and $500 for non-merit employees to be paid no later than November 2021, and an increase to capital projects of $1,389,328. The adjustment to capital projects is based on the appropriation of the remaining operational savings of $783,662, higher than anticipated revenues of $304,634, revenues of $203,600 collected through the land development process that will support tree preservation and planting projects in FY 2022, revenues of $44,841 associated with dam and facility maintenance projects, miscellaneous revenues in the amount of $45,652, and the appropriation of $6,939 from the ending balance that was due to an FY 2021 audit adjustment.

Mid-Year Adjustments **($1,555)**

As part of the *FY 2022 Mid-Year Review*, the Board of Supervisors approved a decrease of $1,555 due to an FY 2021 audit adjustment.

Position Detail

The FY 2023 Advertised Budget Plan includes the following positions:

STORMWATER SERVICES – 208 Positions			
MSMD Administration (10 positions)			
1	Director, Maintenance and SW	1	Safety Analyst I
1	HR Generalist II	1	Administrative Assistant IV
1	HR Generalist I	4	Administrative Assistants III
1	Safety Analyst II		
IT – Director's Office/Stormwater (1 position)			
1	Network/Telecom. Analyst I		
Finance – Wastewater and Stormwater (4 positions)			
1	Financial Specialist IV	1	Financial Specialist I
1	Financial Specialist II	1	Administrative Assistant III
Contracting Services/Material Support (5 positions)			
1	Material Mgmt. Specialist III	1	Financial Specialist II
2	Contract Analysts I	1	Inventory Manager
Dam Safety and Maintenance Projects/Projects and LID/Inspection and Maintenance (19 positions)			
1	Public Works-Env. Serv. Manager	5	Engineering Technicians III [+1]
1	Engineer IV	2	Engineering Technicians II
1	Senior Engineer III	1	Project Manager II
3	Engineers III	2	Project Managers I
1	Ecologist III	1	Assistant Project Manager
1	Ecologist II		
Field Operations (74 positions)			
2	Env. Services Supervisors	3	Masons
1	Public Works-Env. Serv. Manager	1	Vehicle Maintenance Coordinator
2	Public Works-Env. Bus. Operations	5	Engineering Technicians III
2	Public Works-Env. Serv. Specialists	2	Engineering Technicians II
8	Senior Maintenance Supervisors	1	Carpenter II
5	Maintenance Supervisors	2	Equipment Repairers

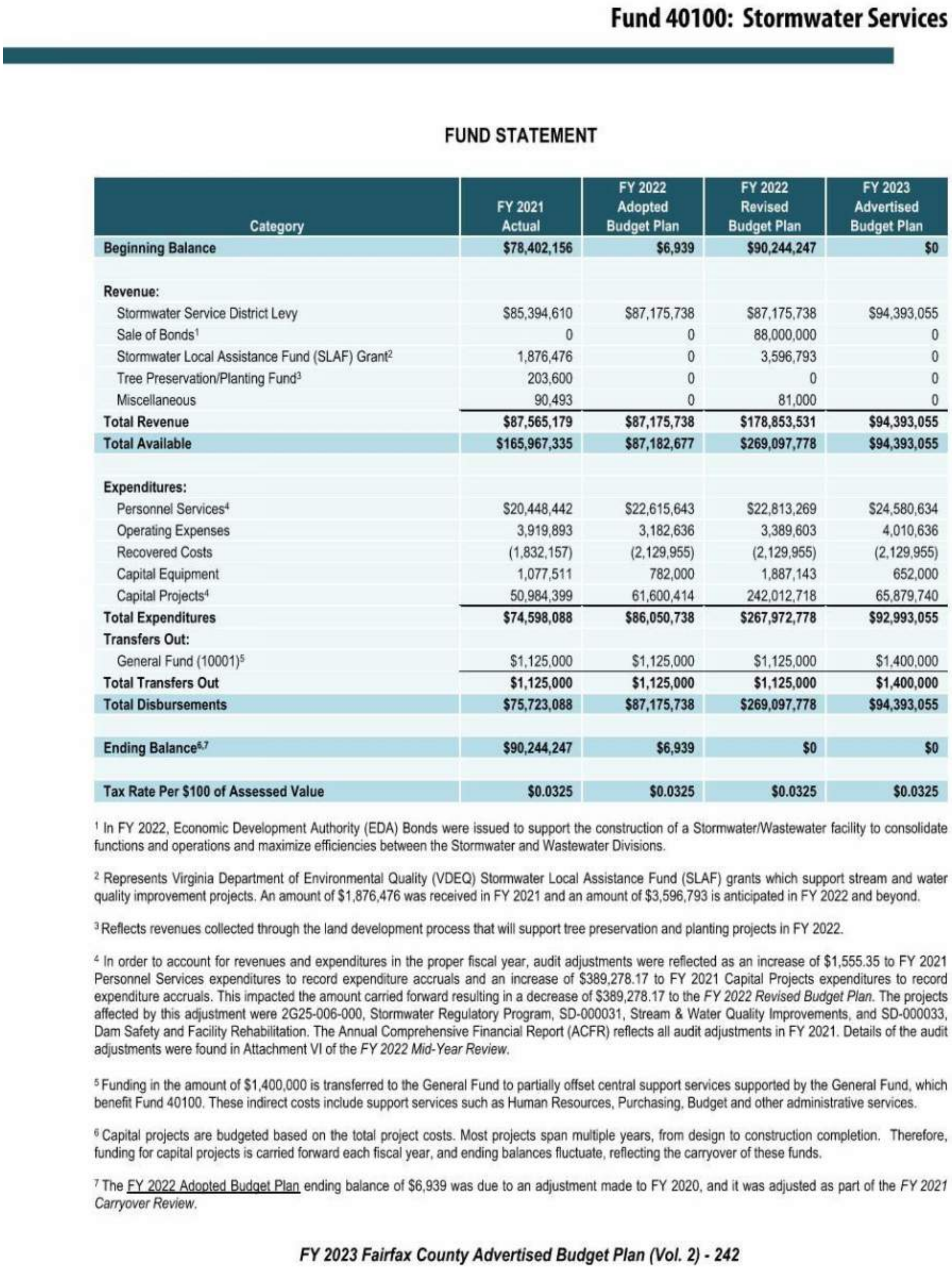
Field Operations			
2	Maintenance Crew Chiefs	1	Welder II
15	Senior Maintenance Workers [+3]	1	Welder I
10	Heavy Equipment Operators	1	Trades Supervisor
10	Motor Equipment Operators		
Stormwater Infrastructure Branch (16 positions)			
1	Public Works-Env. Serv. Manager	1	Senior Engineering Inspector [+1]
3	Engineers IV	2	Engineering Technicians II
2	Senior Engineers III [+1]	2	Engineering Technicians I
4	Engineers III	1	Project Manager I
Transportation Infrastructure Branch (7 positions)			
1	Engineer V	3	Project Managers I
1	Engineer IV	1	Engineering Technician II
1	Project Manager II		
Stormwater Planning Division (56 positions)			
1	Director, Stormwater Planning	1	Emergency Mgmt. Specialist III
1	Engineer V	1	Planner IV
4	Engineers IV	1	Planner III [+1]
1	Senior Engineer III	2	Landscape Architects III
8	Engineers III	1	Engineering Technician III
5	Project Managers II	1	Management Analyst II
2	Project Managers I	2	Code Specialists II
4	Ecologists IV	1	Financial Specialist II
5	Ecologists III	1	Financial Specialist I
3	Ecologists II	1	Contract Specialist II
2	Ecologists I	1	Assistant Contract Specialist
3	Project Coordinators	3	Administrative Assistants III
1	Public Works-Env. Serv. Manager		
Urban Forestry (16 positions)			
1	Director, Urban Forestry Division	3	Urban Foresters I
1	Urban Forester IV	1	Project Manager I [+1]
4	Urban Foresters III	1	Administrative Assistant II
5	Urban Foresters II		
+	**Denotes New Position(s)**		

Performance Measurement Results

The objective to receive no MS4 Permit violations related to inspection and maintenance of public and private stormwater management facilities was met in FY 2019, FY 2020, and FY 2021. It is expected that this objective will also be met in FY 2022 and FY 2023. The objective to update 100 percent of the Stormwater emergency action plans was met in prior years. It is expected that this trend will continue in both FY 2022 and FY 2023. Lastly, the objective to keep 100 percent of the commuter facilities operational for 365 days was met in prior years. It is expected that this goal will be met in FY 2022 and FY 2023.

Indicator	FY 2019 Actual	FY 2020 Actual	FY 2021 Estimate	FY 2021 Actual	FY 2022 Estimate	FY 2023 Estimate
MS4 permit violations received	0	0	0	0	0	0
Percent of Emergency Action Plans current	100%	100%	100%	100%	100%	100%
Percent of commuter facilities available 365 days per year	100%	100%	100%	100%	100%	100%

A complete list of performance measures can be viewed at
https://www.fairfaxcounty.gov/budget/fy-2023-advertised-performance-measures-pm



FUND STATEMENT

Category	FY 2021 Actual	FY 2022 Adopted Budget Plan	FY 2022 Revised Budget Plan	FY 2023 Advertised Budget Plan
Beginning Balance	**$78,402,156**	**$6,939**	**$90,244,247**	**$0**
Revenue:				
Stormwater Service District Levy	$85,394,610	$87,175,738	$87,175,738	$94,393,055
Sale of Bonds[1]	0	0	88,000,000	0
Stormwater Local Assistance Fund (SLAF) Grant[2]	1,876,476	0	3,596,793	0
Tree Preservation/Planting Fund[3]	203,600	0	0	0
Miscellaneous	90,493	0	81,000	0
Total Revenue	**$87,565,179**	**$87,175,738**	**$178,853,531**	**$94,393,055**
Total Available	**$165,967,335**	**$87,182,677**	**$269,097,778**	**$94,393,055**
Expenditures:				
Personnel Services[4]	$20,448,442	$22,615,643	$22,813,269	$24,580,634
Operating Expenses	3,919,893	3,182,636	3,389,603	4,010,636
Recovered Costs	(1,832,157)	(2,129,955)	(2,129,955)	(2,129,955)
Capital Equipment	1,077,511	782,000	1,887,143	652,000
Capital Projects[4]	50,984,399	61,600,414	242,012,718	65,879,740
Total Expenditures	**$74,598,088**	**$86,050,738**	**$267,972,778**	**$92,993,055**
Transfers Out:				
General Fund (10001)[5]	$1,125,000	$1,125,000	$1,125,000	$1,400,000
Total Transfers Out	**$1,125,000**	**$1,125,000**	**$1,125,000**	**$1,400,000**
Total Disbursements	**$75,723,088**	**$87,175,738**	**$269,097,778**	**$94,393,055**
Ending Balance[6,7]	**$90,244,247**	**$6,939**	**$0**	**$0**
Tax Rate Per $100 of Assessed Value	**$0.0325**	**$0.0325**	**$0.0325**	**$0.0325**

[1] In FY 2022, Economic Development Authority (EDA) Bonds were issued to support the construction of a Stormwater/Wastewater facility to consolidate functions and operations and maximize efficiencies between the Stormwater and Wastewater Divisions.

[2] Represents Virginia Department of Environmental Quality (VDEQ) Stormwater Local Assistance Fund (SLAF) grants which support stream and water quality improvement projects. An amount of $1,876,476 was received in FY 2021 and an amount of $3,596,793 is anticipated in FY 2022 and beyond.

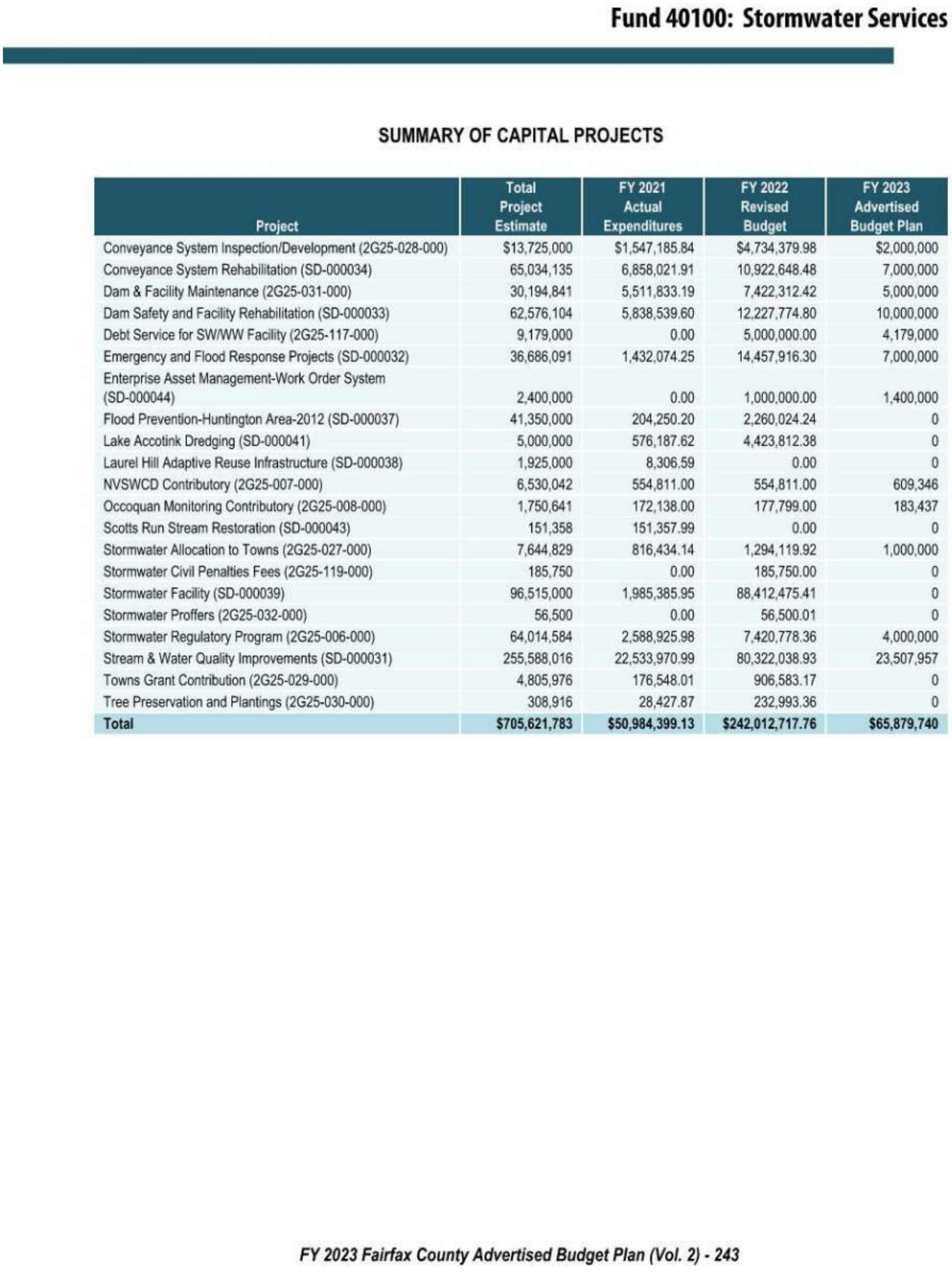
[3] Reflects revenues collected through the land development process that will support tree preservation and planting projects in FY 2022.

[4] In order to account for revenues and expenditures in the proper fiscal year, audit adjustments were reflected as an increase of $1,555.35 to FY 2021 Personnel Services expenditures to record expenditure accruals and an increase of $389,278.17 to FY 2021 Capital Projects expenditures to record expenditure accruals. This impacted the amount carried forward resulting in a decrease of $389,278.17 to the *FY 2022 Revised Budget Plan*. The projects affected by this adjustment were 2G25-006-000, Stormwater Regulatory Program, SD-000031, Stream & Water Quality Improvements, and SD-000033, Dam Safety and Facility Rehabilitation. The Annual Comprehensive Financial Report (ACFR) reflects all audit adjustments in FY 2021. Details of the audit adjustments were found in Attachment VI of the *FY 2022 Mid-Year Review*.

[5] Funding in the amount of $1,400,000 is transferred to the General Fund to partially offset central support services supported by the General Fund, which benefit Fund 40100. These indirect costs include support services such as Human Resources, Purchasing, Budget and other administrative services.

[6] Capital projects are budgeted based on the total project costs. Most projects span multiple years, from design to construction completion. Therefore, funding for capital projects is carried forward each fiscal year, and ending balances fluctuate, reflecting the carryover of these funds.

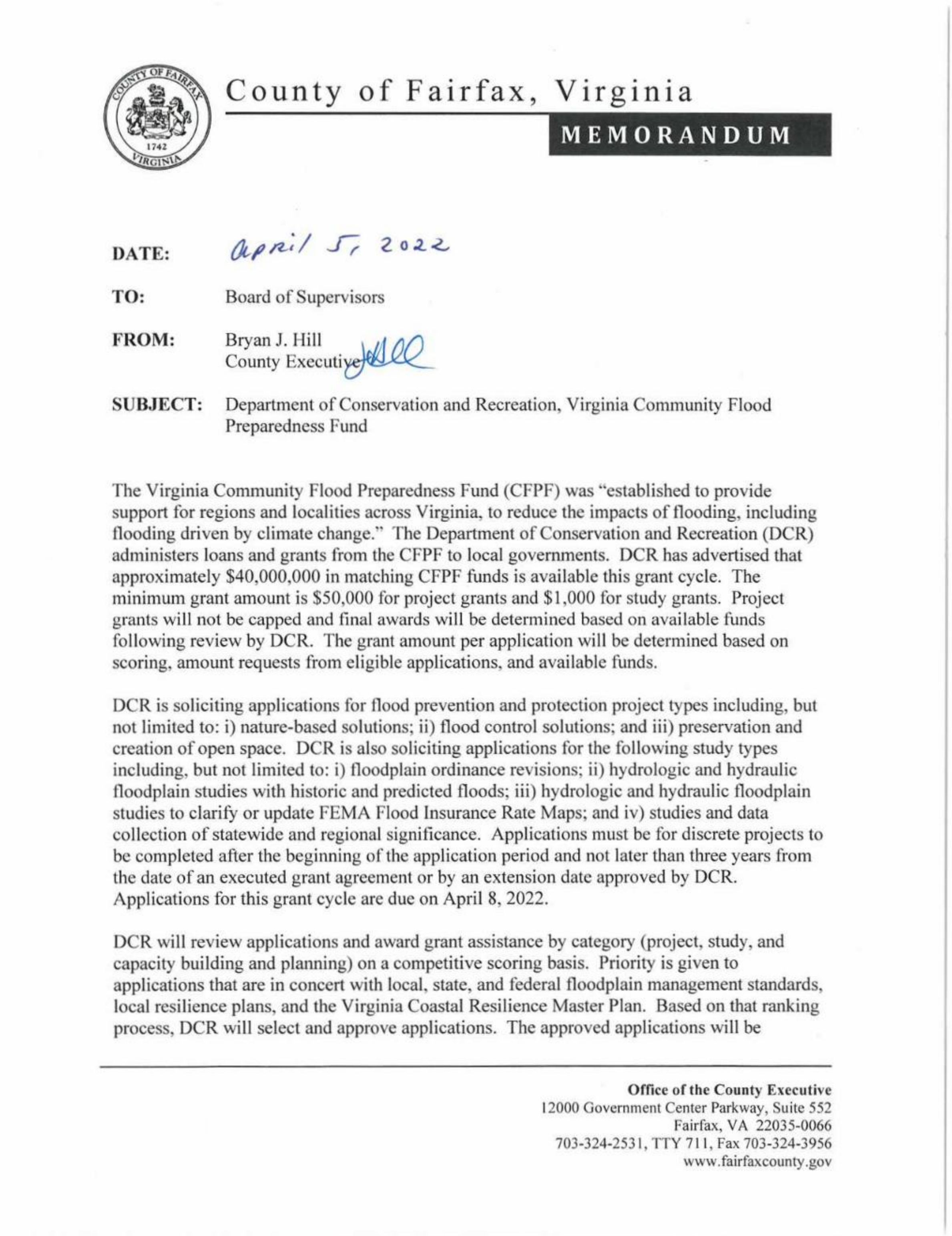
[7] The FY 2022 Adopted Budget Plan ending balance of $6,939 was due to an adjustment made to FY 2020, and it was adjusted as part of the *FY 2021 Carryover Review*.



SUMMARY OF CAPITAL PROJECTS

Project	Total Project Estimate	FY 2021 Actual Expenditures	FY 2022 Revised Budget	FY 2023 Advertised Budget Plan
Conveyance System Inspection/Development (2G25-028-000)	$13,725,000	$1,547,185.84	$4,734,379.98	$2,000,000
Conveyance System Rehabilitation (SD-000034)	65,034,135	6,858,021.91	10,922,648.48	7,000,000
Dam & Facility Maintenance (2G25-031-000)	30,194,841	5,511,833.19	7,422,312.42	5,000,000
Dam Safety and Facility Rehabilitation (SD-000033)	62,576,104	5,838,539.60	12,227,774.80	10,000,000
Debt Service for SW/WW Facility (2G25-117-000)	9,179,000	0.00	5,000,000.00	4,179,000
Emergency and Flood Response Projects (SD-000032)	36,686,091	1,432,074.25	14,457,916.30	7,000,000
Enterprise Asset Management-Work Order System (SD-000044)	2,400,000	0.00	1,000,000.00	1,400,000
Flood Prevention-Huntington Area-2012 (SD-000037)	41,350,000	204,250.20	2,260,024.24	0
Lake Accotink Dredging (SD-000041)	5,000,000	576,187.62	4,423,812.38	0
Laurel Hill Adaptive Reuse Infrastructure (SD-000038)	1,925,000	8,306.59	0.00	0
NVSWCD Contributory (2G25-007-000)	6,530,042	554,811.00	554,811.00	609,346
Occoquan Monitoring Contributory (2G25-008-000)	1,750,641	172,138.00	177,799.00	183,437
Scotts Run Stream Restoration (SD-000043)	151,358	151,357.99	0.00	0
Stormwater Allocation to Towns (2G25-027-000)	7,644,829	816,434.14	1,294,119.92	1,000,000
Stormwater Civil Penalties Fees (2G25-119-000)	185,750	0.00	185,750.00	0
Stormwater Facility (SD-000039)	96,515,000	1,985,385.95	88,412,475.41	0
Stormwater Proffers (2G25-032-000)	56,500	0.00	56,500.01	0
Stormwater Regulatory Program (2G25-006-000)	64,014,584	2,588,925.98	7,420,778.36	4,000,000
Stream & Water Quality Improvements (SD-000031)	255,588,016	22,533,970.99	80,322,038.93	23,507,957
Towns Grant Contribution (2G25-029-000)	4,805,976	176,548.01	906,583.17	0
Tree Preservation and Plantings (2G25-030-000)	308,916	28,427.87	232,993.36	0
Total	**$705,621,783**	**$50,984,399.13**	**$242,012,717.76**	**$65,879,740**

Attachment 4. Authorization to request funding



1742

County of Fairfax, Virginia

MEMORANDUM

DATE: april 5, 2022

TO: Board of Supervisors

FROM: Bryan J. Hill
County Executive

SUBJECT: Department of Conservation and Recreation, Virginia Community Flood Preparedness Fund

The Virginia Community Flood Preparedness Fund (CFPF) was "established to provide support for regions and localities across Virginia, to reduce the impacts of flooding, including flooding driven by climate change." The Department of Conservation and Recreation (DCR) administers loans and grants from the CFPF to local governments. DCR has advertised that approximately $40,000,000 in matching CFPF funds is available this grant cycle. The minimum grant amount is $50,000 for project grants and $1,000 for study grants. Project grants will not be capped and final awards will be determined based on available funds following review by DCR. The grant amount per application will be determined based on scoring, amount requests from eligible applications, and available funds.

DCR is soliciting applications for flood prevention and protection project types including, but not limited to: i) nature-based solutions; ii) flood control solutions; and iii) preservation and creation of open space. DCR is also soliciting applications for the following study types including, but not limited to: i) floodplain ordinance revisions; ii) hydrologic and hydraulic floodplain studies with historic and predicted floods; iii) hydrologic and hydraulic floodplain studies to clarify or update FEMA Flood Insurance Rate Maps; and iv) studies and data collection of statewide and regional significance. Applications must be for discrete projects to be completed after the beginning of the application period and not later than three years from the date of an executed grant agreement or by an extension date approved by DCR. Applications for this grant cycle are due on April 8, 2022.

DCR will review applications and award grant assistance by category (project, study, and capacity building and planning) on a competitive scoring basis. Priority is given to applications that are in concert with local, state, and federal floodplain management standards, local resilience plans, and the Virginia Coastal Resilience Master Plan. Based on that ranking process, DCR will select and approve applications. The approved applications will be

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Office of the County Executive
12000 Government Center Parkway, Suite 552
Fairfax, VA 22035-0066
703-324-2531, TTY 711, Fax 703-324-3956
www.fairfaxcounty.gov

forwarded to the Virginia Resources Authority for the execution of a grant agreement and funding.

For this grant cycle, Fairfax County (County) proposes submitting the following five applications:

Project/Study Title	Project/Study Estimate	Grant Amount Requested
1. Tucker Avenue Neighborhood Stormwater Improvements	$9,834,000	$5,900,000
2. Chowan Avenue Flood Mitigation	$2,000,000	$1,200,000
3. Little Pimmit Run Tributary at Woodland Terrace	$4,279,000	$2,567,000
4. Tripps Run at Barrett Road Flood Mitigation	$12,836,000	$8,985,200
5. County Regulated Floodplain Map Updates	$1,200,000	$600,000
Total	$30,149,000	$19,252,200

The County is under no financial obligation to apply for CFPF grants. If DCR selects one or more of these applications, the grant(s) will be presented to the Board of Supervisors for approval.

cc: Rachel Flynn, Deputy, County Executive
Christopher Herrington, Director, Department of Public Works and Environmental Services (DPWES)
Eleanor Ku Codding, Deputy Director DPWES, Stormwater and Wastewater Divisions

C. Supporting Documentation

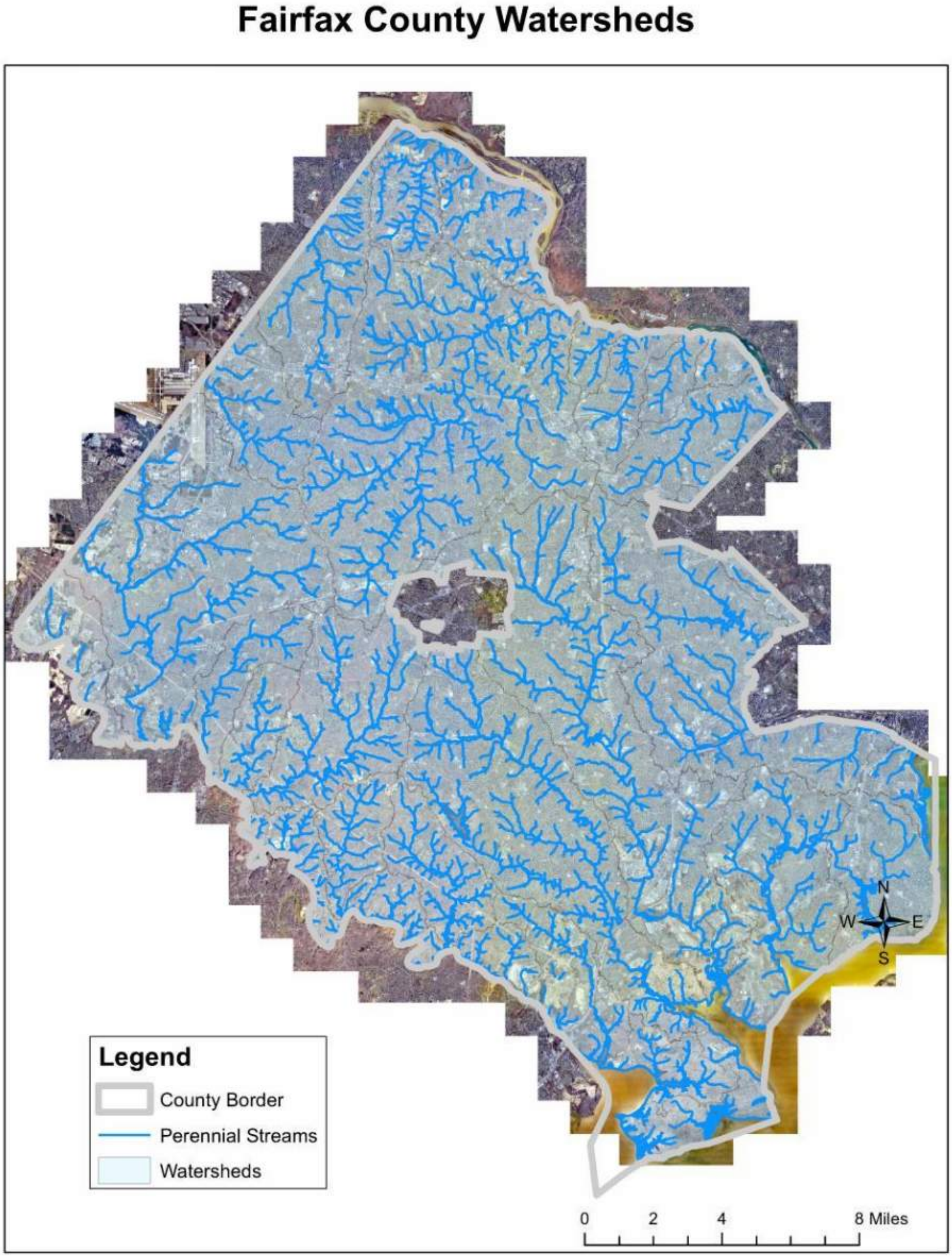
Scope of Work Narrative

Supporting Documentation	Link or Attachment
Detailed map of the project areas	Attachment A
FIRMettes of the project areas	Attachment B
Historic flood damage data and/or images	Attachment C
A link to or copy of the current floodplain ordinance	https://online.encodeplus.com/regs/fairfaxcounty-va/doc-viewer.aspx#secid-251
A link to or a copy of the current hazard mitigation plan	https://www.fairfaxcounty.gov/emergencymanagement/sites/emergencymanagement/files/assets/documents/pdf/hazard%20mitigation%20plan%2010.22.19.pdf
A link to or a copy of the current comprehensive plan	https://www.fairfaxcounty.gov/planning-development/fairfax-county-comprehensive-plan
Social vulnerability index score for the project areas from ADAPT VA's Virginia Vulnerability Viewer	Attachment D
Completed Scoring Criteria Sheet in Appendix C	See Appendices
Approved Resilience Plan	Attachment E

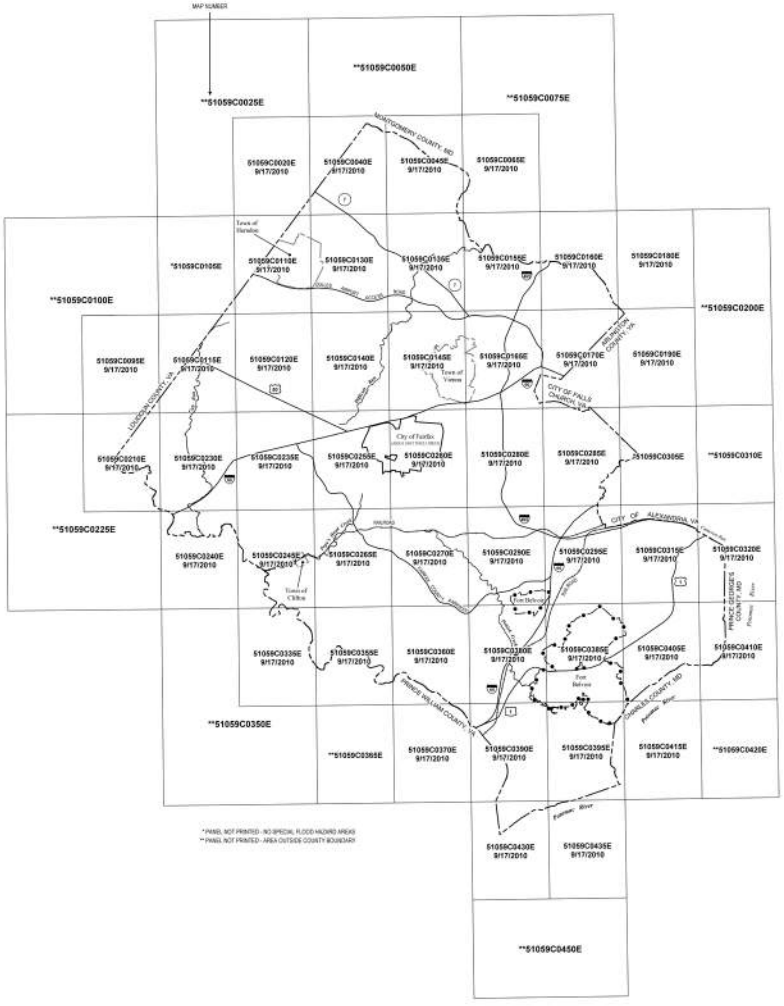
Budget Narrative

Supporting Documentation	Attachment
Authorization to request funding from the Fund from governing body or chief executive of the local government	Attachment 4

Attachment A. Detailed map of the study area



Attachment B. FIRMs of the study area



* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
** PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY

LISTING OF COMMUNITIES

COMMUNITY NAME	COMMUNITY NUMBER	LOCATED ON PANELS	INITIAL NFIP MAP DATE	INITIAL FIRM DATE	MOST RECENT FIRM PANEL DATE
CLIFTON, TOWN OF	[illegible]	245	[illegible]	MAY 2, 1977	SEPTEMBER 17, 2010
FAIRFAX COUNTY (UNINCORPORATED AREAS)	515525	[illegible]	MAY 5, 1970 JANUARY 8, 1972	JANUARY 8, 1972	SEPTEMBER 17, 2010
HERNDON, TOWN OF	[illegible]	110, 130	JUNE 14, 1974	AUGUST 1, [illegible]	SEPTEMBER 17, 2010
VIENNA, TOWN OF	[illegible]	145, 165	AUGUST 2, 1974	FEBRUARY 3, 1982	SEPTEMBER 17, 2010

*PANEL NOT PRINTED – NO SPECIAL FLOOD HAZARD AREAS

MAP REPOSITORIES
(Maps available for reference only, not for distribution.)

Clifton, Town of
Clifton Town Meeting Hall
12746 Chapel Street
Clifton, VA 20124

Fairfax County (Unincorporated Areas)
Community Map Repository/Stormwater Planning
12000 Government Center Parkway, Suite 449
Fairfax, VA 22035

Herndon, Town of
Herndon Municipal Center
777 Lynn Street
Herndon, VA 20170

Vienna, Town of
Town Hall
127 S Center Street
Vienna, VA 22180

ELEVATION DATUM

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282
(301) 713-3242

BASE MAP SOURCE

Base map data obtained by the County of Fairfax GIS Department, including hydrography and political boundaries. These files were compiled at a scale of 1:2400 based on the available 2000 DOQQ aerial photography. Additional information may have been derived from other sources.

NOTICE TO USER

Future revisions to this FIRM Index will only be issued to communities that are located on FIRM panels being revised. This FIRM Index therefore remains valid for FIRM panels dated September 17, 2010 or earlier. Please refer to the "MOST RECENT FIRM PANEL DATE" column in the Listing of Communities table to determine the most recent FIRM index date for each community.

MAP DATES

This FIRM Index displays the map date for each FIRM panel at the time this Index was printed. Because this Index may not be distributed to unaffected communities in subsequent revisions, users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website at www.fema.gov/msc or by calling the Map Service Center at 1-800-358-9616.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM
FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
(AND INCORPORATED AREAS)
(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

PANELS PRINTED: 20, 40, 45, 65, 95, 110, 115, 120, 130, 135, 140, 145, 155, 160, 165, 170, 180, 190, 210, 230, 235, 240, 245, 255, 260, 265, 270, 280, 285, 290, 295, 315, 320, 335, 355, 360, 370, 380, 385, 390, 395, 405, 410, 415, 430, 435

MAP NUMBER
51059CIND0A

EFFECTIVE DATE
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' National Geodetic Vertical Datum (NGVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

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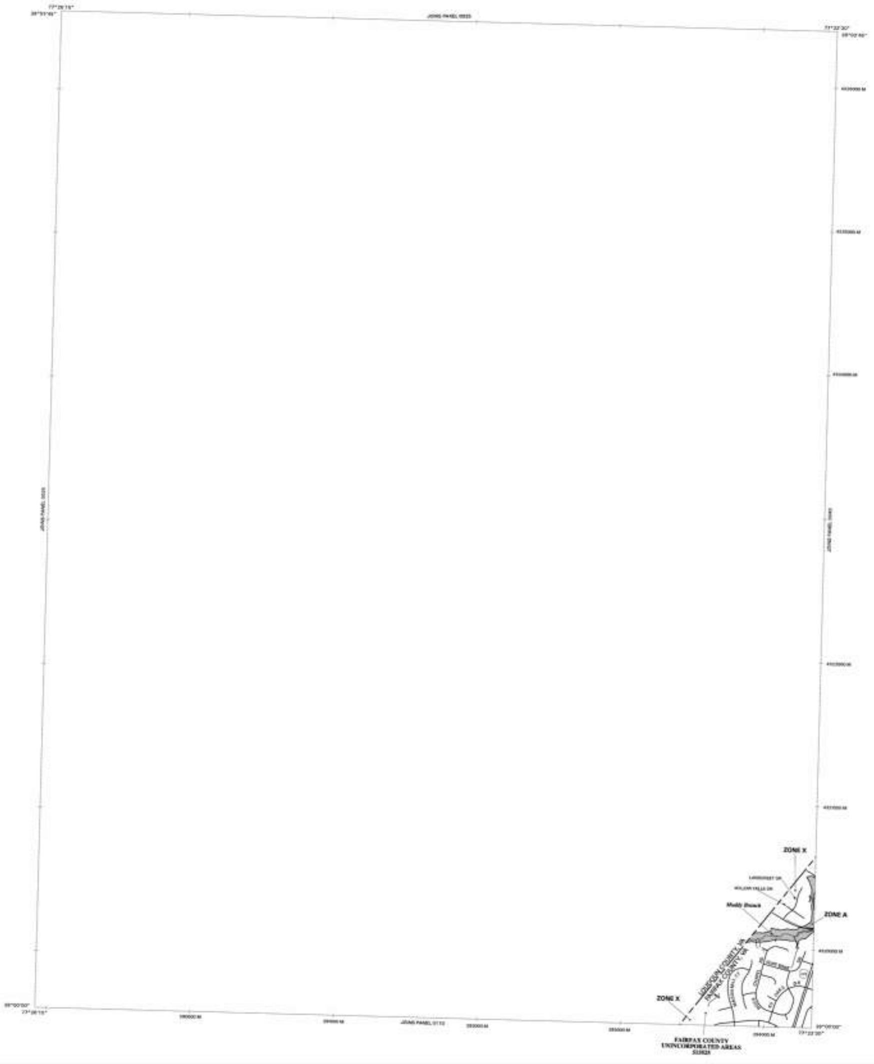
An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9616
FAX: 800-358-9620
http://msc.fema.gov/

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.



LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No base flood elevations determined.
ZONE AE Base flood elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99 Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
513 Base Flood Elevation line and value; elevation in feet*
(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ Cross Section Line
(23)- - - -(23) Transect Line
97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M 1000-meter Universal Transverse Mercator ticks values, zone 18
DX5510 × Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5 River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0020E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 20 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0020	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0020E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

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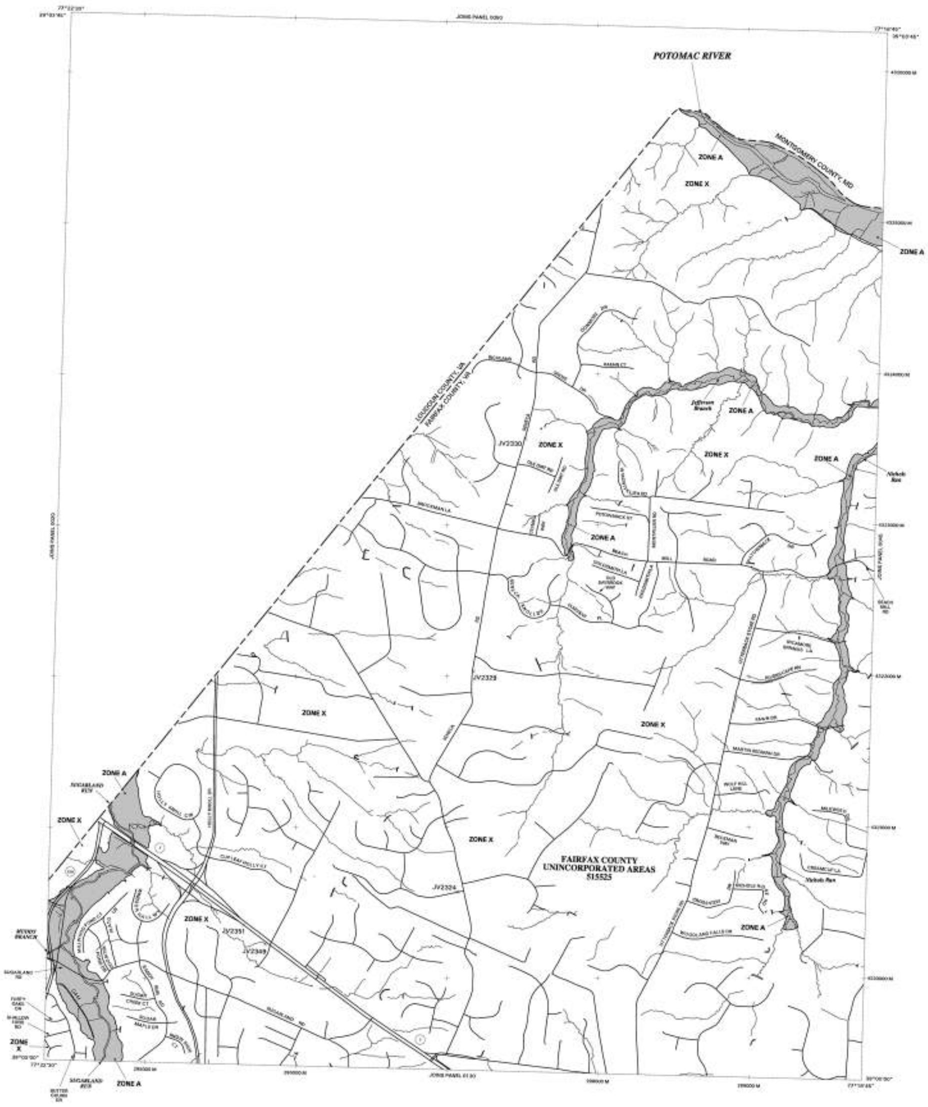

LEGEND

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ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

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Ⓐ——Ⓐ	Cross Section Line
㉓- - - -㉓	Transect Line
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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

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NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0040E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 40 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

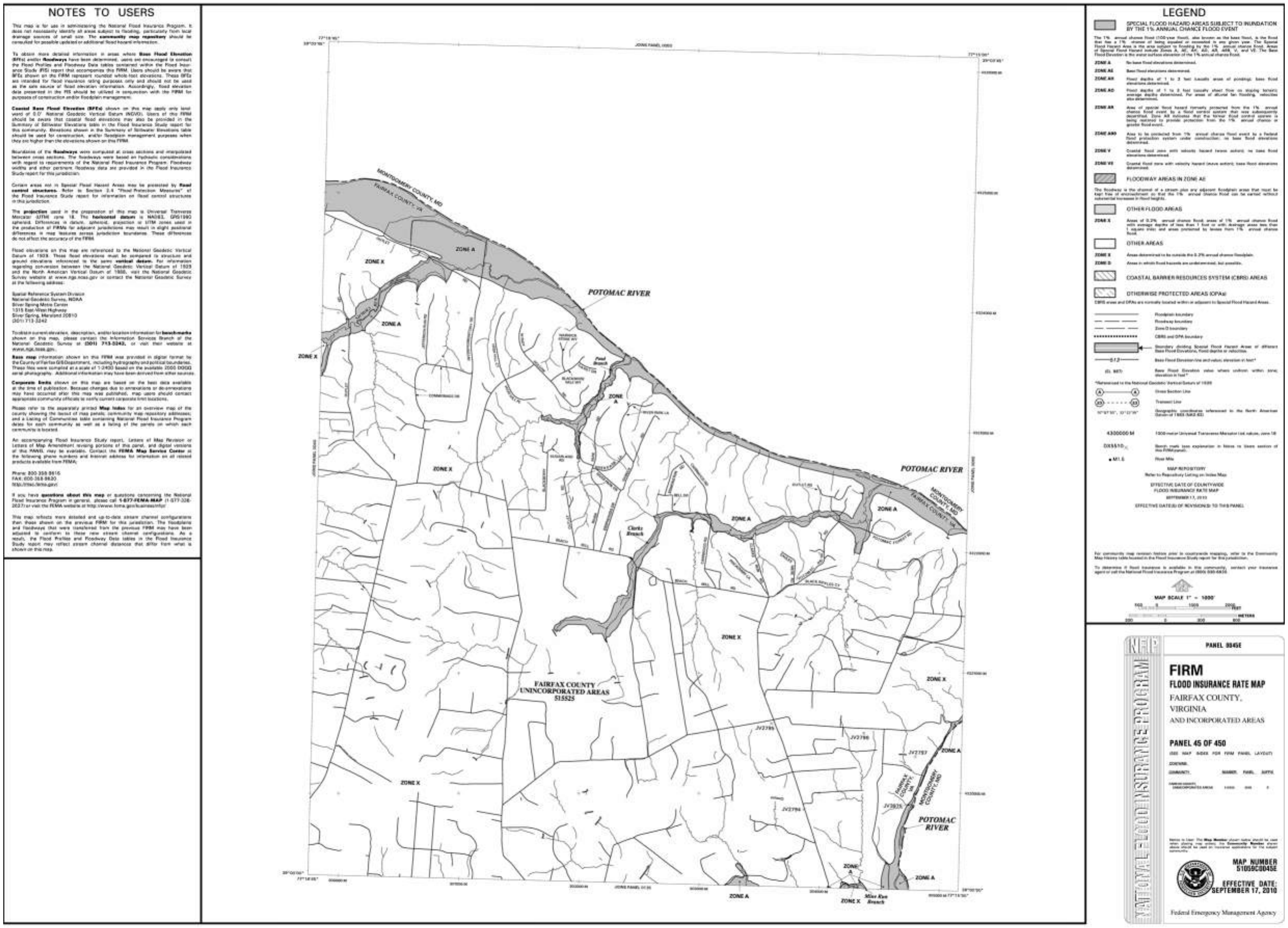
COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY UNINCORPORATED AREAS	515525	0040	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0040E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency


NOTES TO USERS
LEGEND
MONTGOMERY COUNTY, MD
FAIRFAX COUNTY, VA
POTOMAC RIVER
ZONE A
ZONE X
Pond Branch
Clarks Branch
FAIRFAX COUNTY
UNINCORPORATED AREAS
515525
JV2795
JV2796
JV2797
JV2794
JV2825
Mine Run Branch
MAP SCALE 1" = 1000'
PANEL 0045E
FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS
PANEL 45 OF 450
MAP NUMBER
51059C0045E
EFFECTIVE DATE:
SEPTEMBER 17, 2010
Federal Emergency Management Agency
NATIONAL FLOOD INSURANCE PROGRAM

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' National Geodetic Vertical Datum (NGVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

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Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

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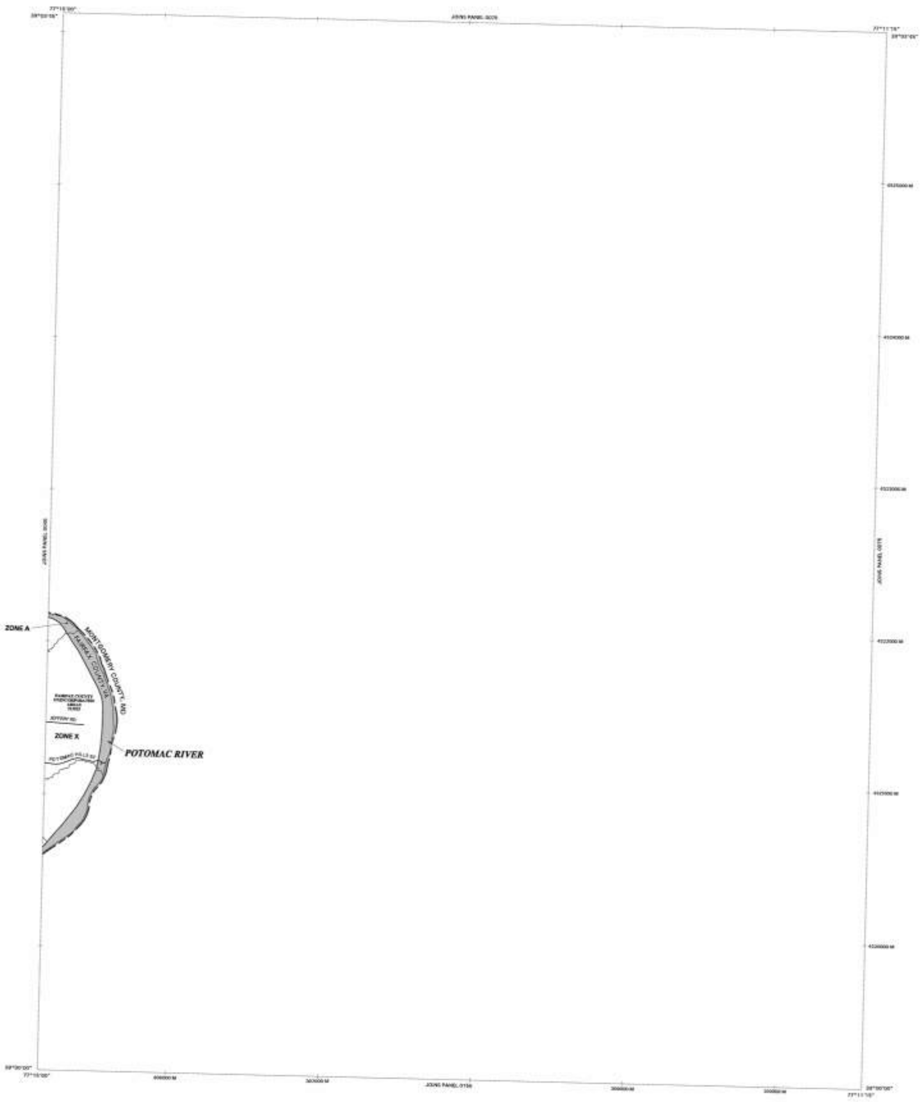


LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Areas of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— —— —	Zone D boundary
••••••••••••	CBRS and OPA boundary
▭ ◄—	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

(A)———(A)	Cross Section Line
(23)- - - -(23)	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator tick values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0065E

FIRM

FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 65 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

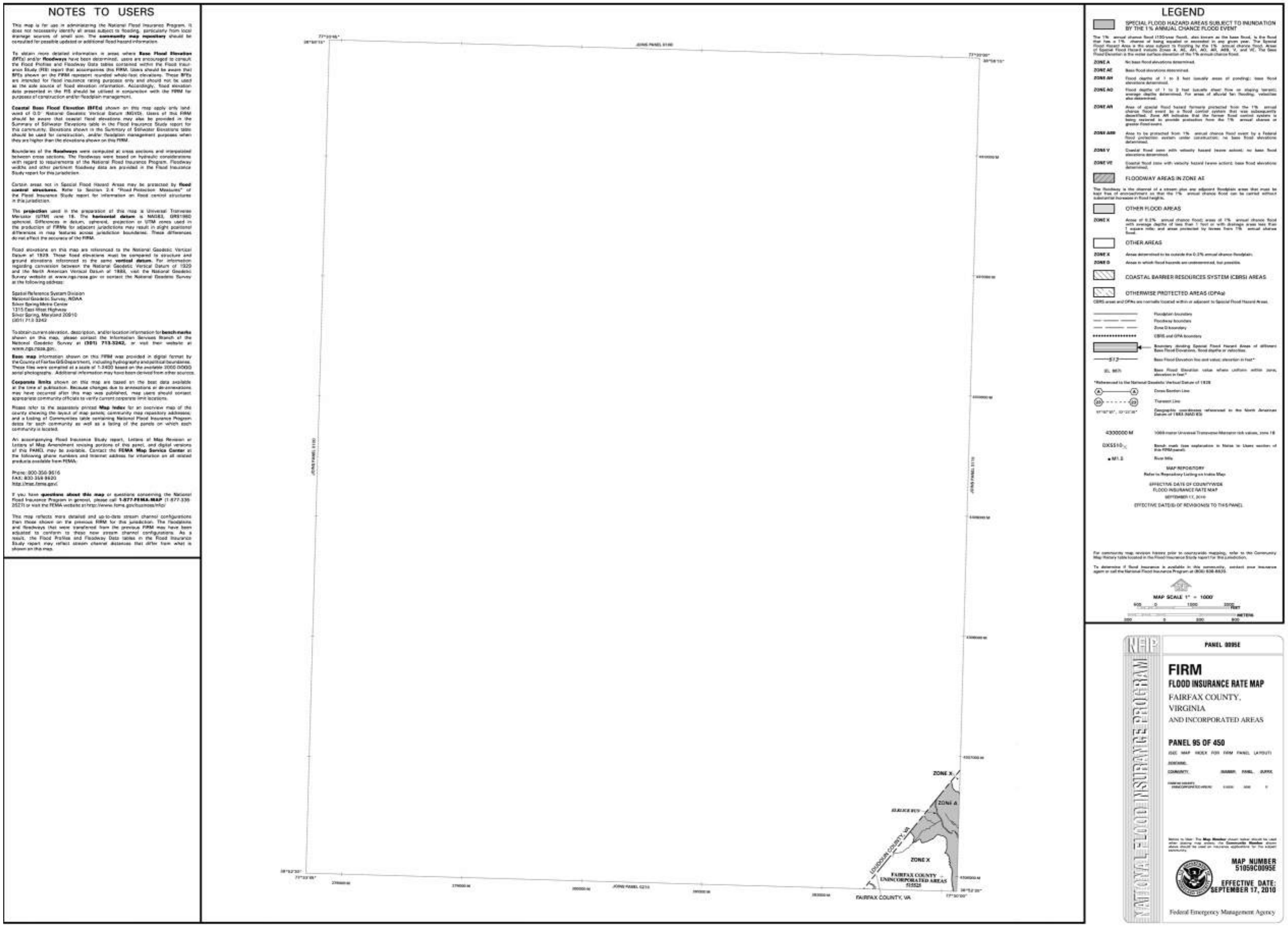
COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0065	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0065E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 95 OF 450

MAP NUMBER
51059C0095E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

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LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

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ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
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ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
•••••••••••••••	CBRS and OPA boundary
▭ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~513~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ	Cross Section Line
㉓- - - -㉓	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator grid values, zone 18
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0110E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 110 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

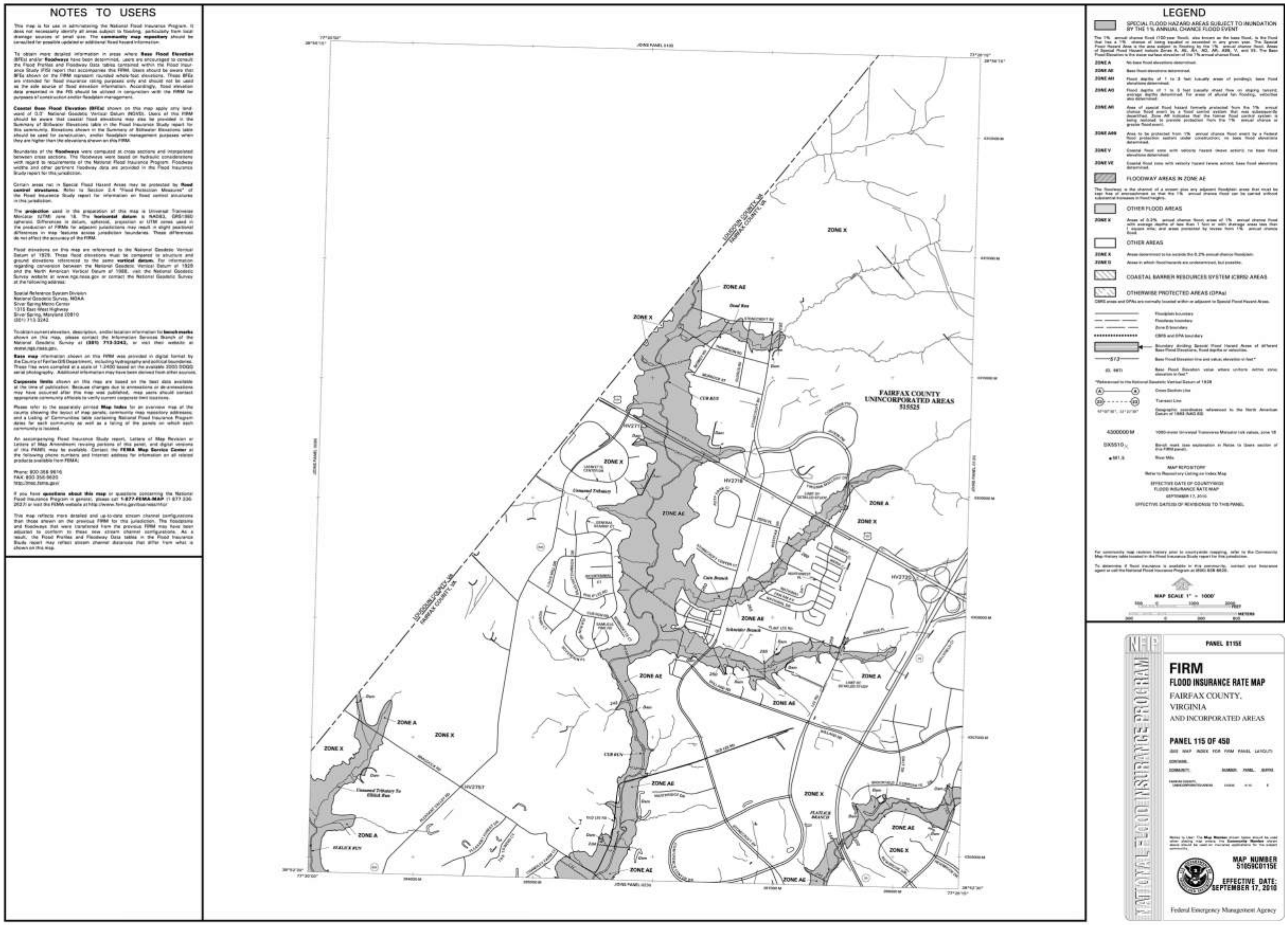
COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0110	E
HERNDON, TOWN OF	510052	0110	E

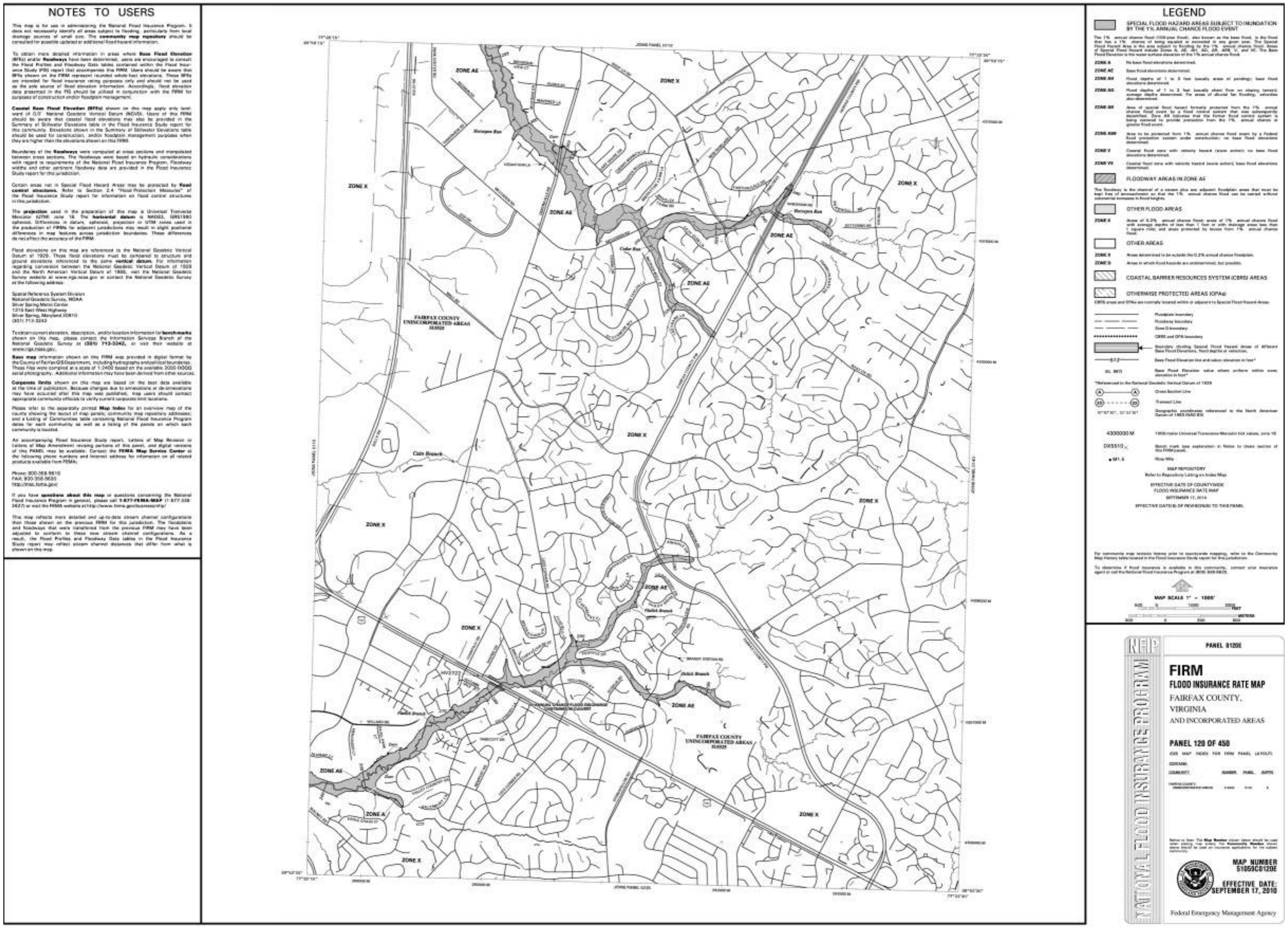
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0110E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency


NOTES TO USERS
LEGEND
ZONE X
ZONE AE
ZONE A
FAIRFAX COUNTY
UNINCORPORATED AREAS
515525
LOUDOUN COUNTY, VA
FAIRFAX COUNTY, VA
HV2717
HV2718
HV2720
HV2757
Unnamed Tributary
Cain Branch
Schneider Branch
CUB RUN
Unnamed Tributary To Elklick Run
ELKLICK RUN
FLATLICK BRANCH
MAP SCALE 1" = 1000'
NFIP
NATIONAL FLOOD INSURANCE PROGRAM
PANEL 0115E
FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS
PANEL 115 OF 450
MAP NUMBER
51059C0115E
EFFECTIVE DATE:
SEPTEMBER 17, 2010
Federal Emergency Management Agency



PANEL 0120E

FIRM

FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 120 OF 450

MAP NUMBER
51059C0120E

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LEGEND

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▨	FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

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ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
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▧	OTHERWISE PROTECTED AREAS (OPAs)

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MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0130E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 130 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0130	E
HERNDON, TOWN OF	510052	0130	E

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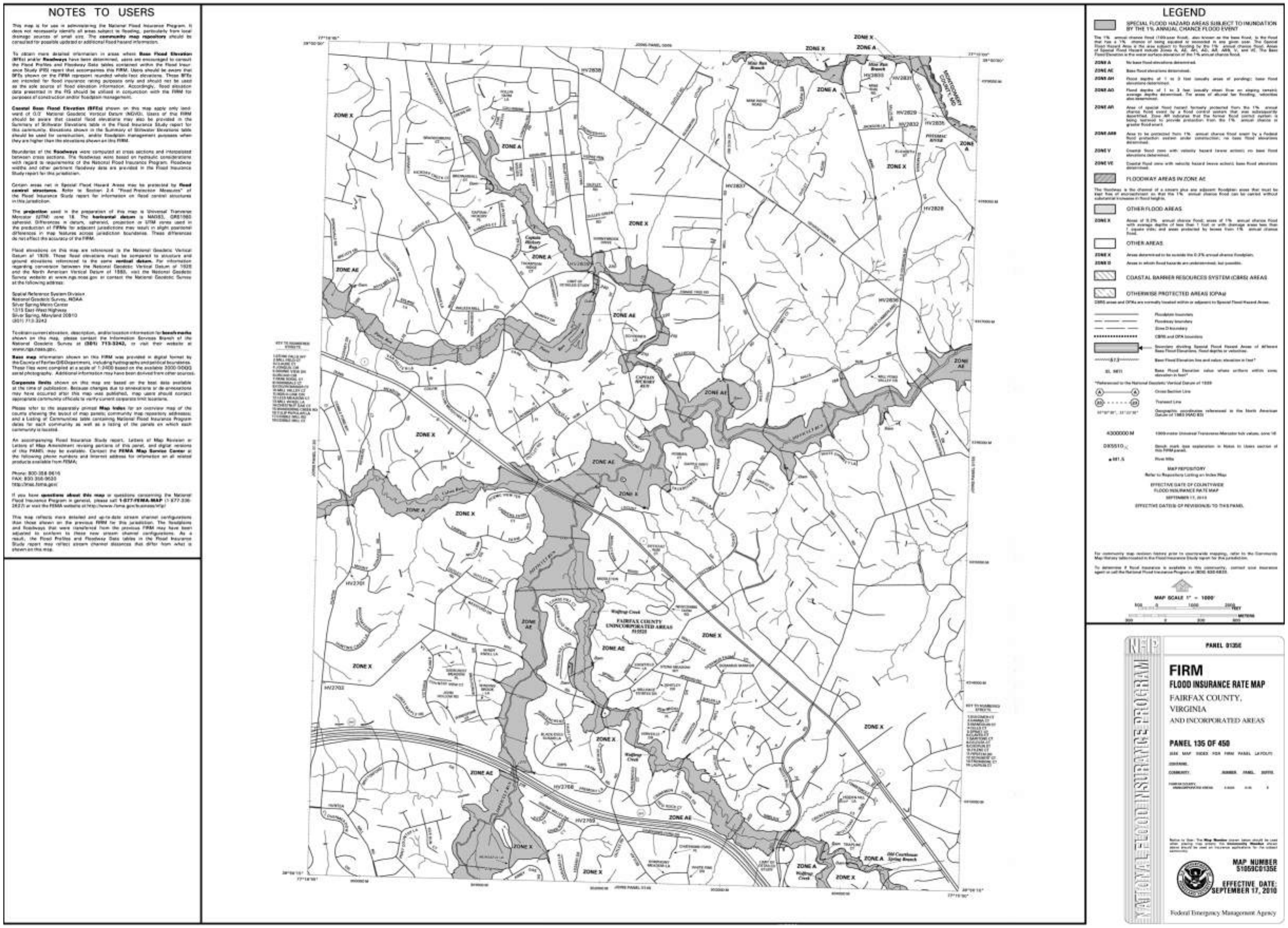
MAP NUMBER
51059C0130E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



NOTES TO USERS

LEGEND

MAP SCALE 1" = 1000'

PANEL 0135E

FIRM

FLOOD INSURANCE RATE MAP

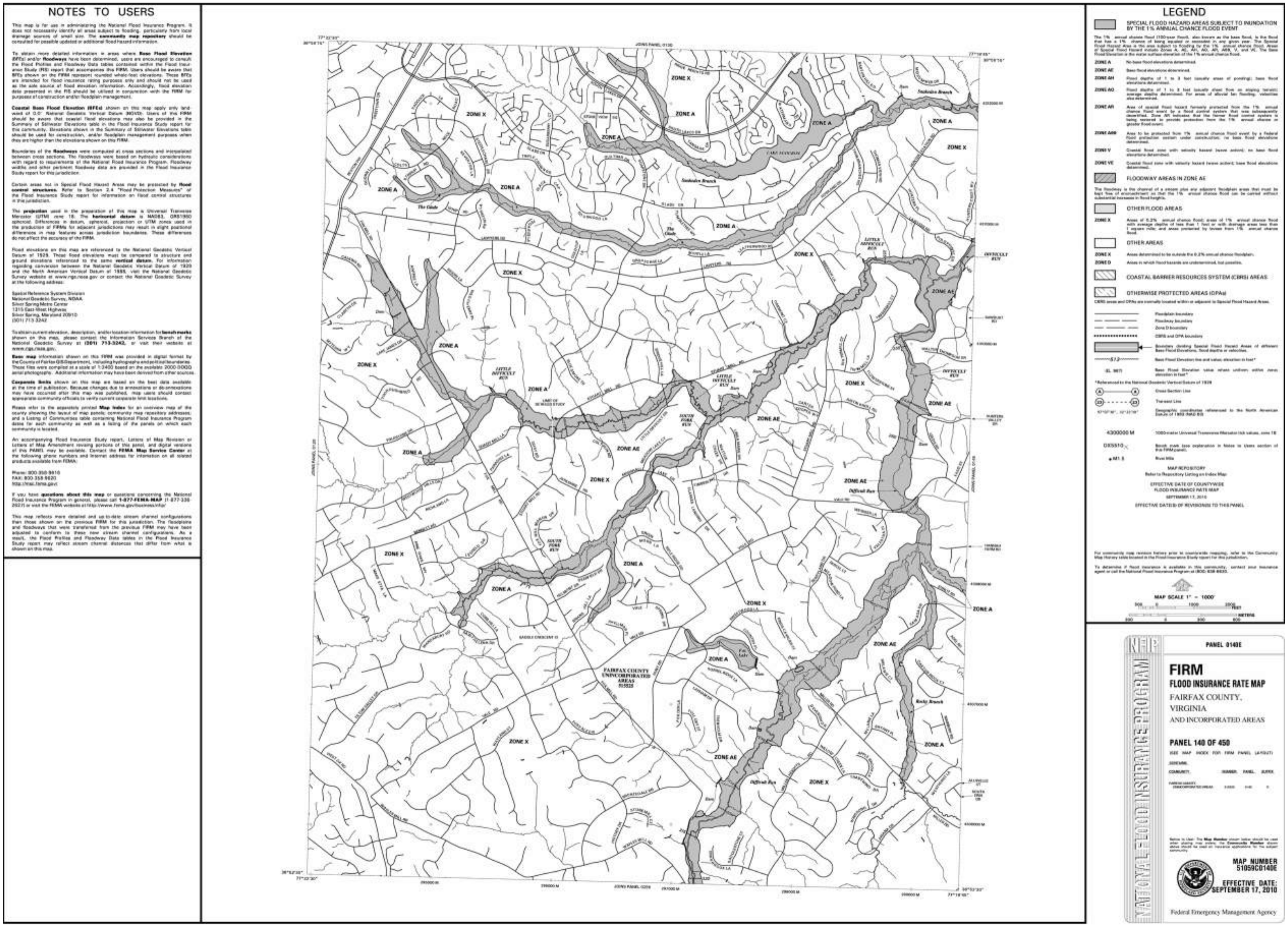
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 135 OF 450

MAP NUMBER
51059C0135E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



NOTES TO USERS

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

OTHER AREAS

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

MAP SCALE 1" = 1000'

PANEL 0140E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 140 OF 450

MAP NUMBER
51059C0140E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' National Geodetic Vertical Datum (NGVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

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Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

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http://msc.fema.gov/

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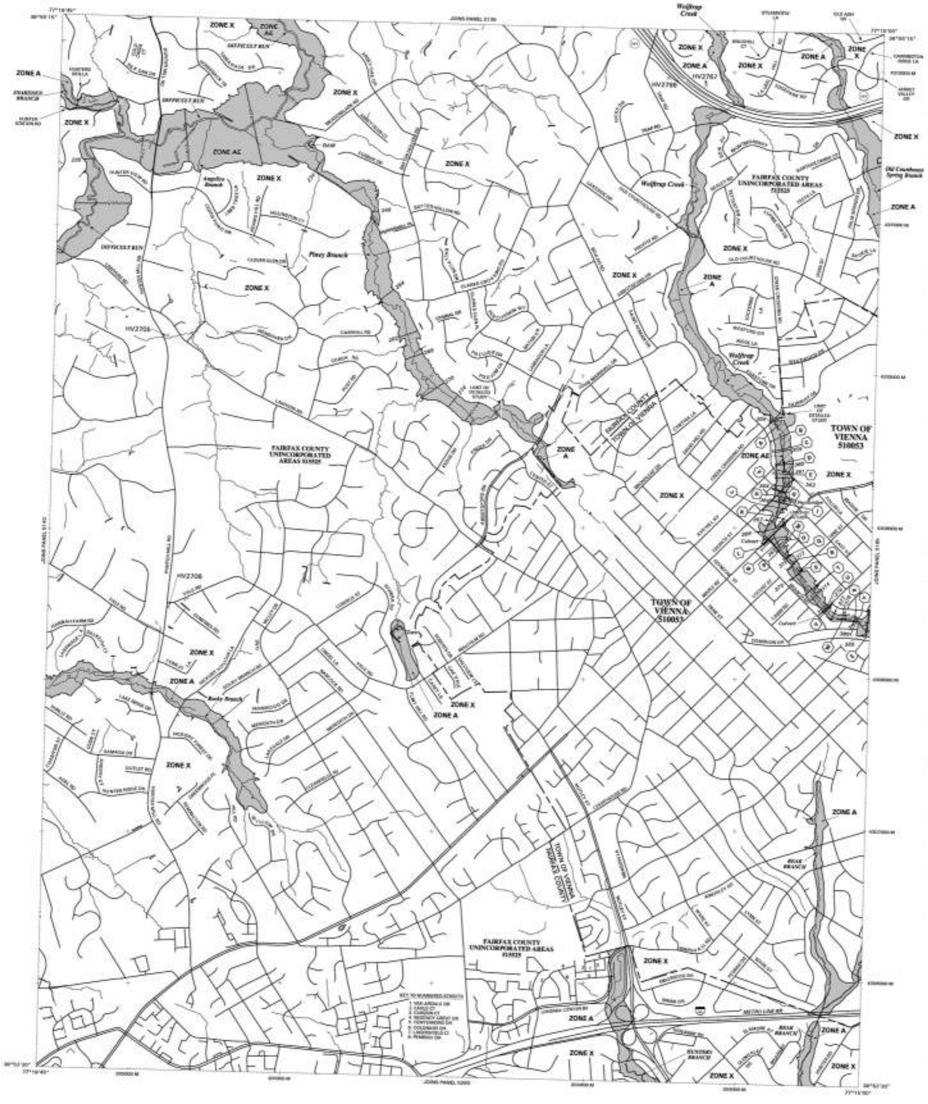

LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
••••••••••	CBRS and OPA boundary
▨ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ	Cross Section Line
㉓- - - -㉓	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator ticks values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0145E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY, VIRGINIA
AND INCORPORATED AREAS

PANEL 145 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	[illegible]	[illegible]	[illegible]
VIENNA, TOWN OF	[illegible]	[illegible]	[illegible]

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0145E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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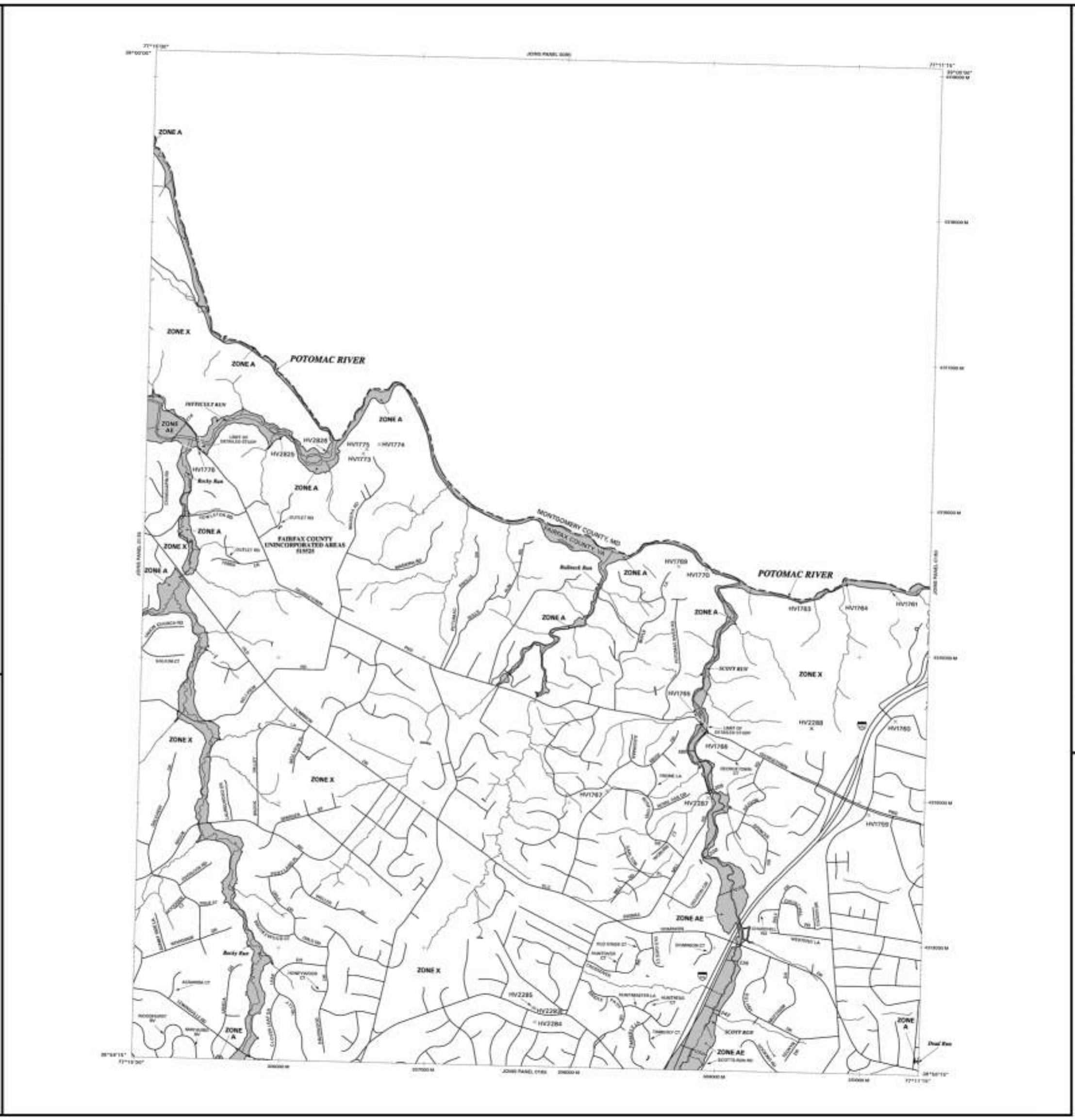

LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
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ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
•••••••••••••••	CBRS and OPA boundary
▭ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ	Cross Section Line
㉓- - - -㉓	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator grid values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0155E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 155 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	[illegible]	[illegible]	E

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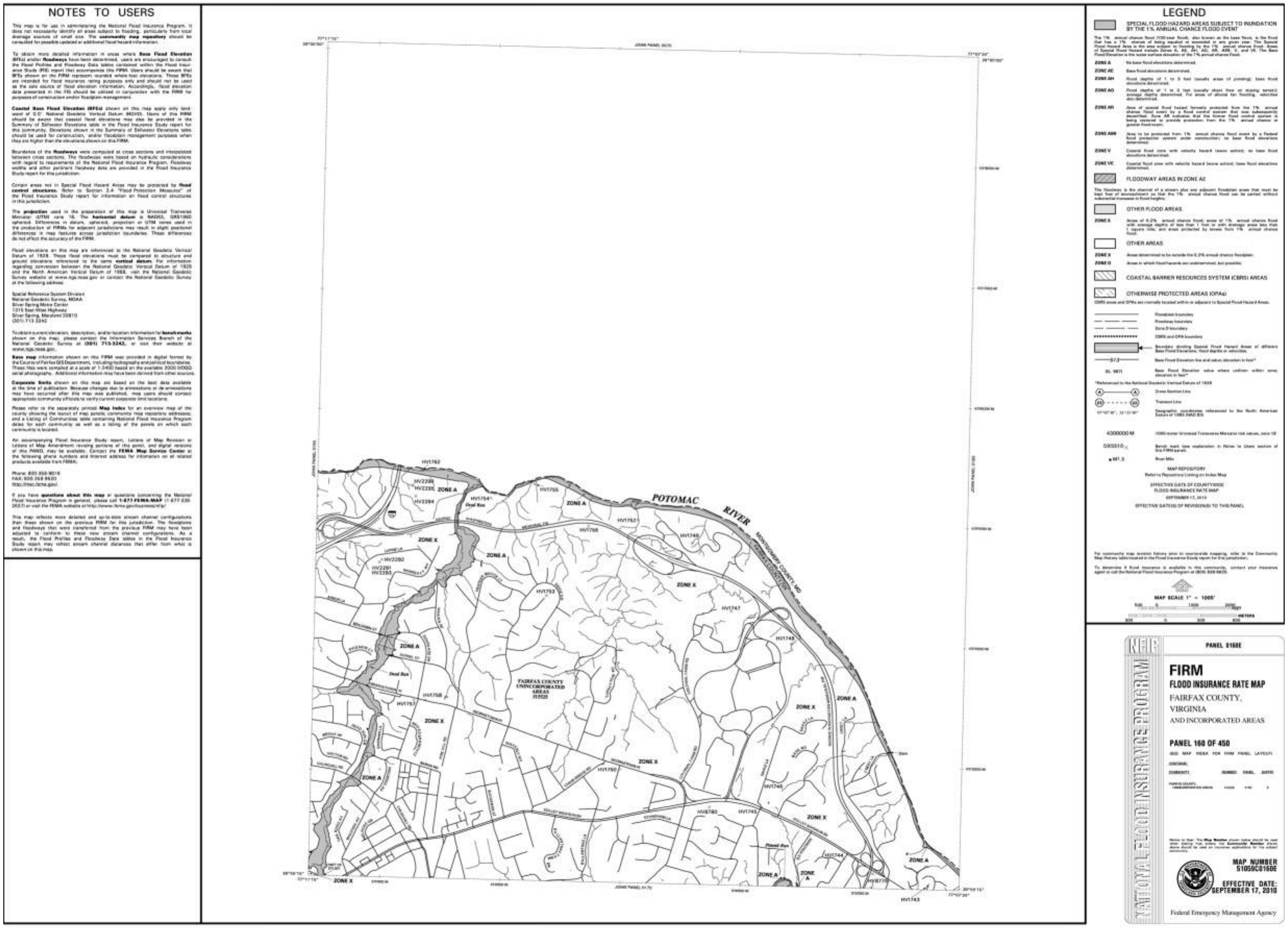
MAP NUMBER
51059C0155E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



NOTES TO USERS

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

OTHER AREAS

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

MAP SCALE 1" = 1000'

PANEL 0160E

FIRM

FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 160 OF 450

MAP NUMBER
51059C0160E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

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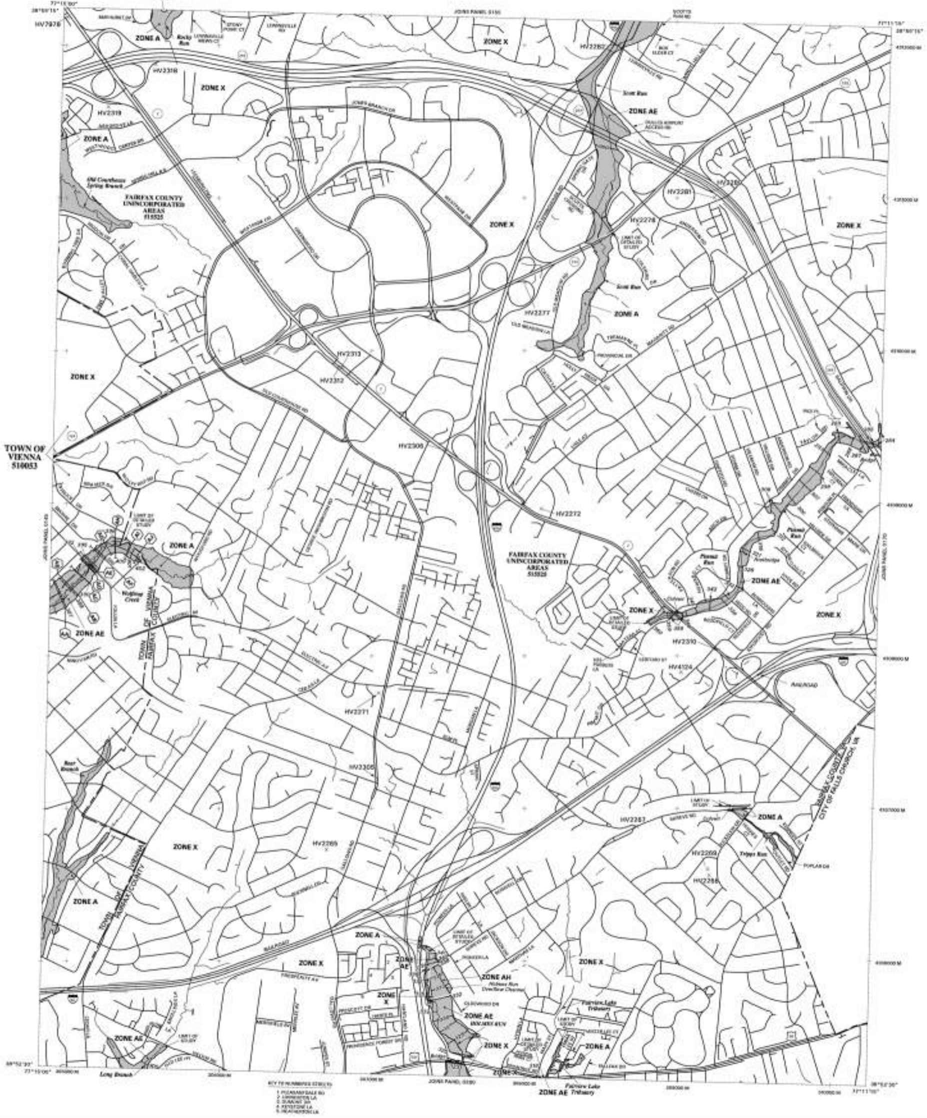

LEGEND

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ZONE A	No base flood elevations determined.
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▨ FLOODWAY AREAS IN ZONE AE

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▨ OTHER FLOOD AREAS

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☐ OTHER AREAS

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(A)———(A)	Cross Section Line
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MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0165E

FIRM

FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 165 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	[illegible]	[illegible]	E
VIENNA, TOWN OF	[illegible]	[illegible]	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER
51059C0165E**

**EFFECTIVE DATE:
SEPTEMBER 17, 2010**

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' National Geodetic Vertical Datum (NGVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

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National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

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FAX: 800-358-9620
http://msc.fema.gov/

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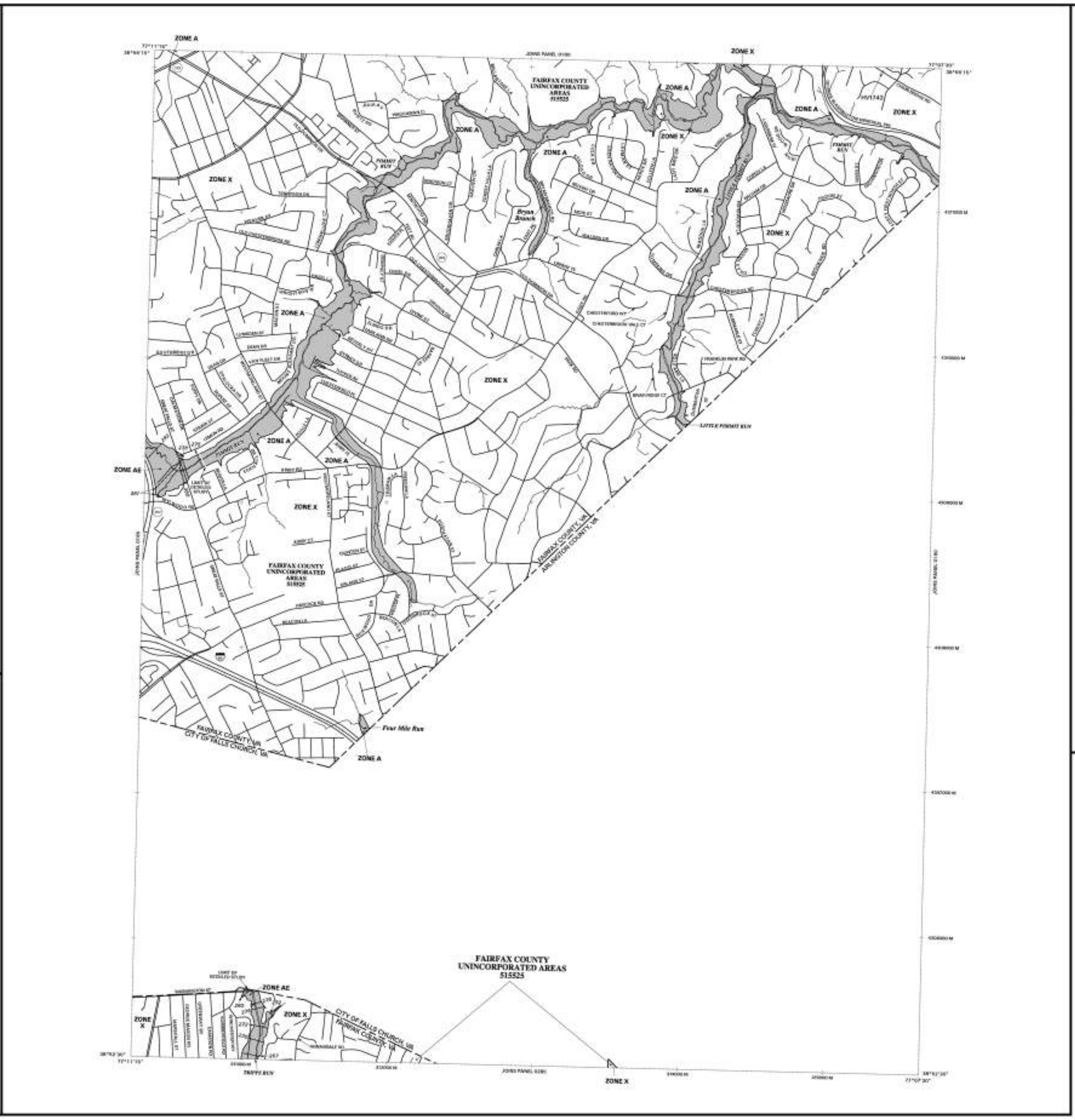
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.



LEGEND

▒ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▒ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
••••••••••	CBRS and OPA boundary
▭	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
——513——	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ	Cross Section Line
㉓- - - -㉓	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator tick values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0170E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 170 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0170	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0170E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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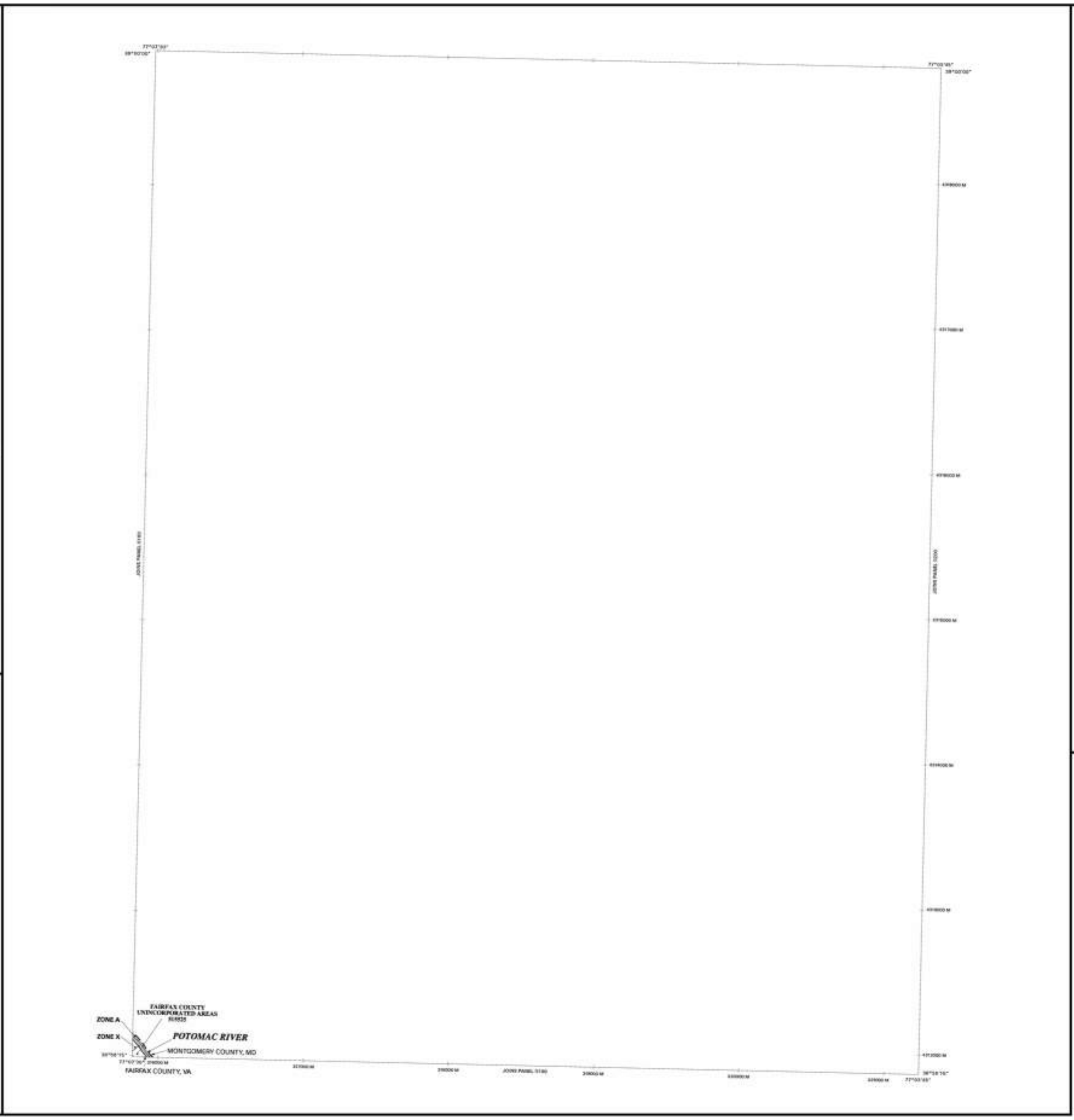

LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

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ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
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ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
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ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

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———————	Floodplain boundary
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••••••••••••••••	CBRS and OPA boundary
▭ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~513~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ———Ⓐ	Cross Section Line
(23)- - - - -(23)	Transect Line
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4300000 M	1000-meter Universal Transverse Mercator ticks values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0180E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 180 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY UNINCORPORATED AREAS	515525	0180	E

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MAP NUMBER
51059C0180E

EFFECTIVE DATE:
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Federal Emergency Management Agency

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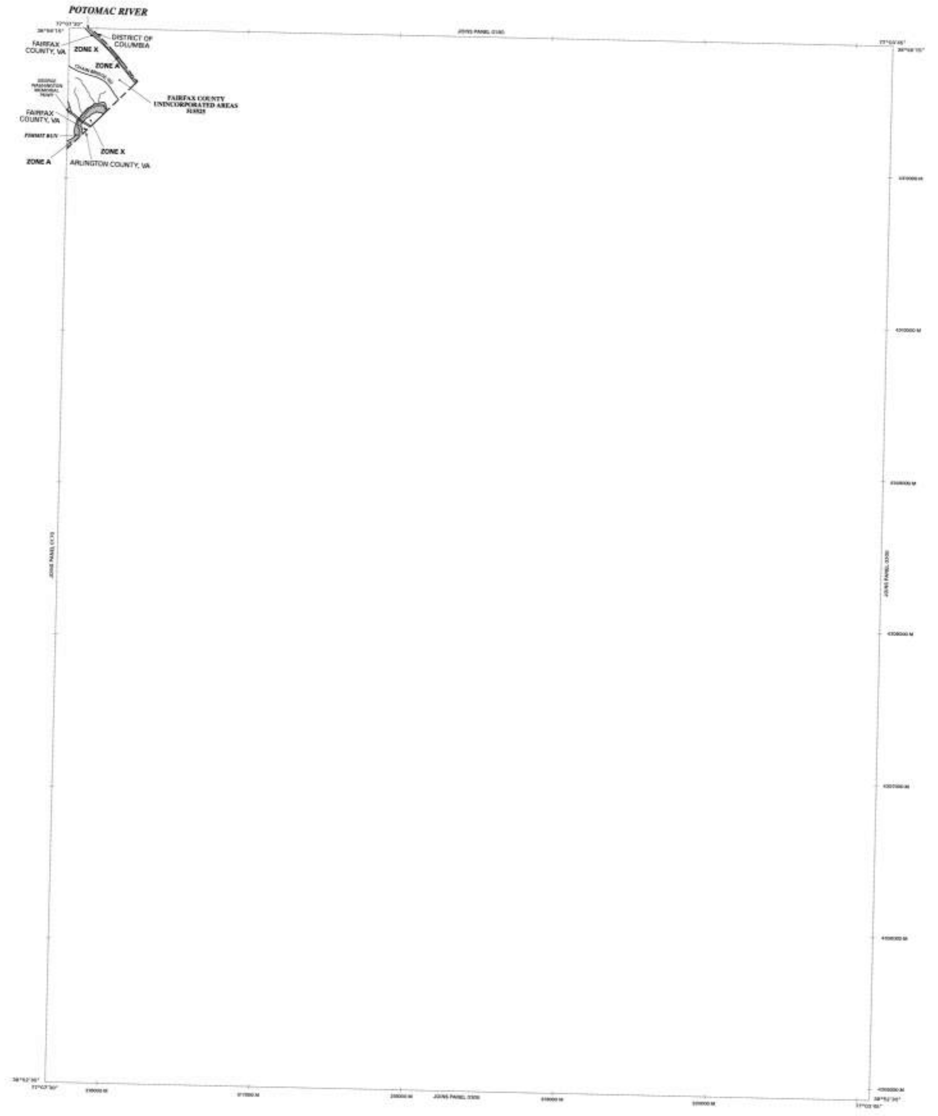

LEGEND

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▨ OTHER FLOOD AREAS

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MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0190E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 190 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0190	E

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MAP NUMBER
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Federal Emergency Management Agency

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1315 East-West Highway
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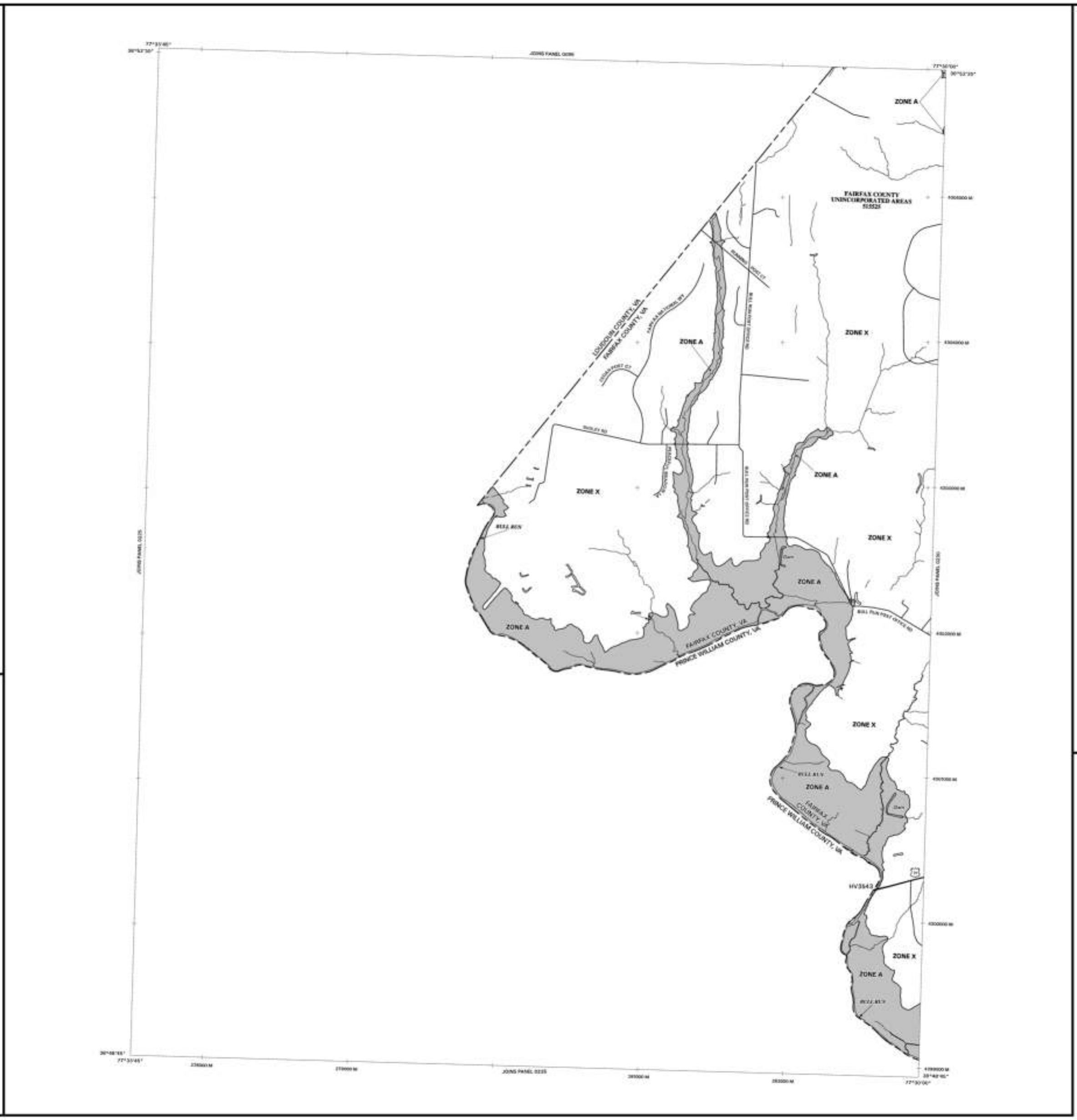

LEGEND

▒ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

░ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
••••••••••••••••	CBRS and OPA boundary
▒◄—	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~ 513 ~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ———Ⓐ	Cross Section Line
㉓- - - - -㉓	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator tick values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0210E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 210 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY UNINCORPORATED AREAS	515525	0210	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0210E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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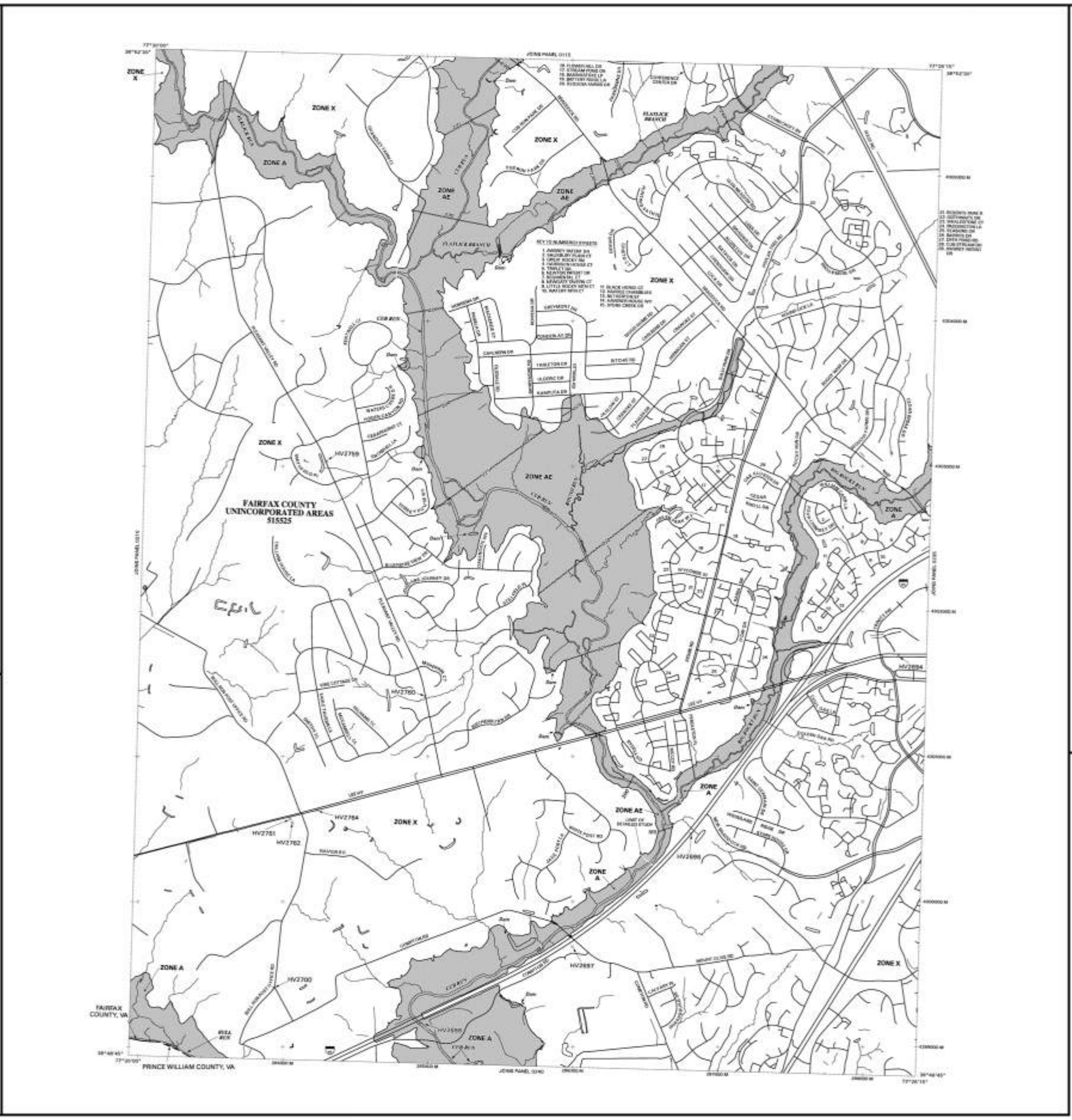

LEGEND

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▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

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————	Floodplain boundary
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~~513~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ	Cross Section Line
(23)- - - - -(23)	Transect Line
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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0230E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 230 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY UNINCORPORATED AREAS	515525	0230	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0230E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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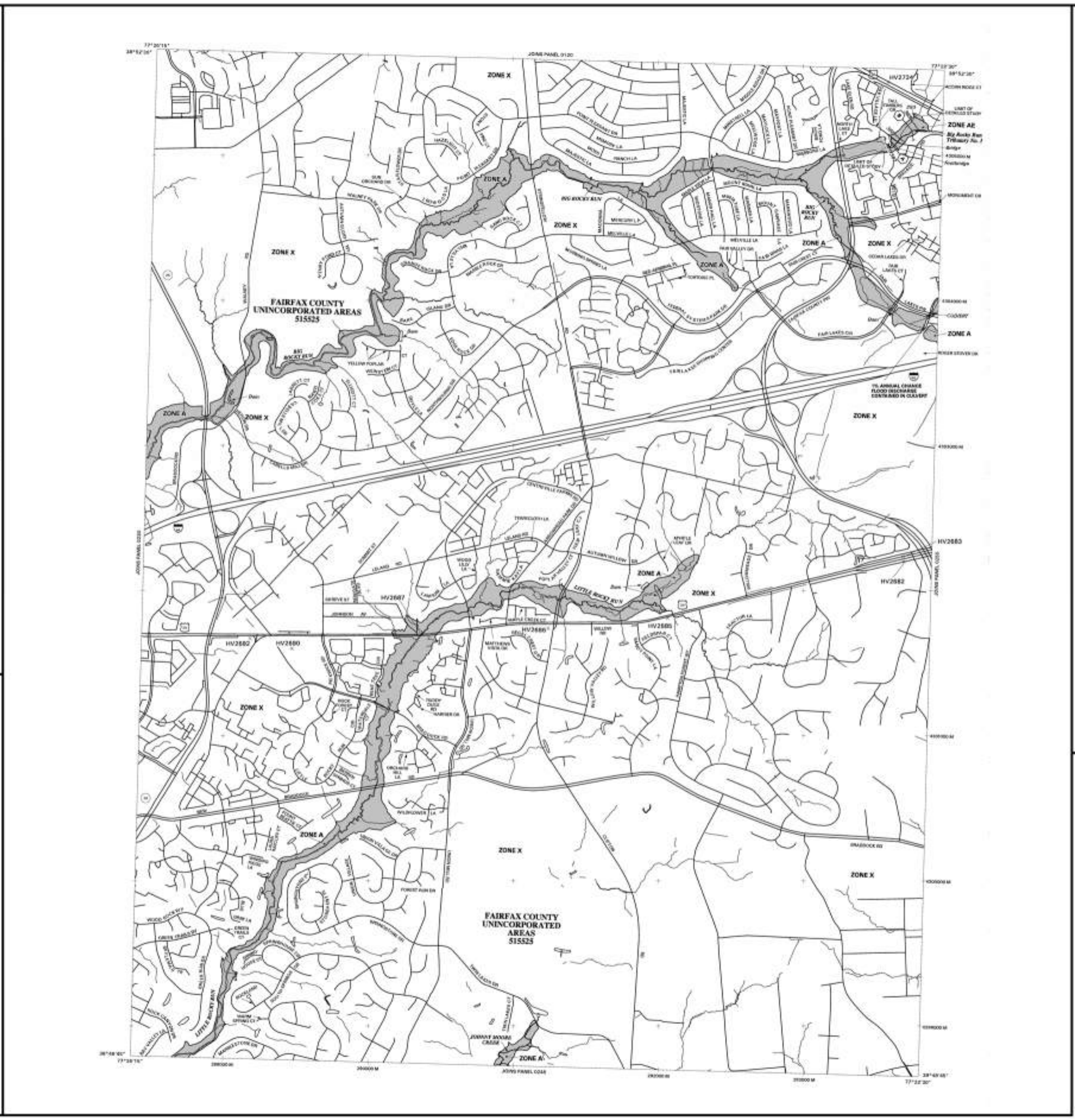

LEGEND

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MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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500 0 1000 2000 FEET

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NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0235E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 235 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0235	E

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51059C0235E

EFFECTIVE DATE:
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Federal Emergency Management Agency

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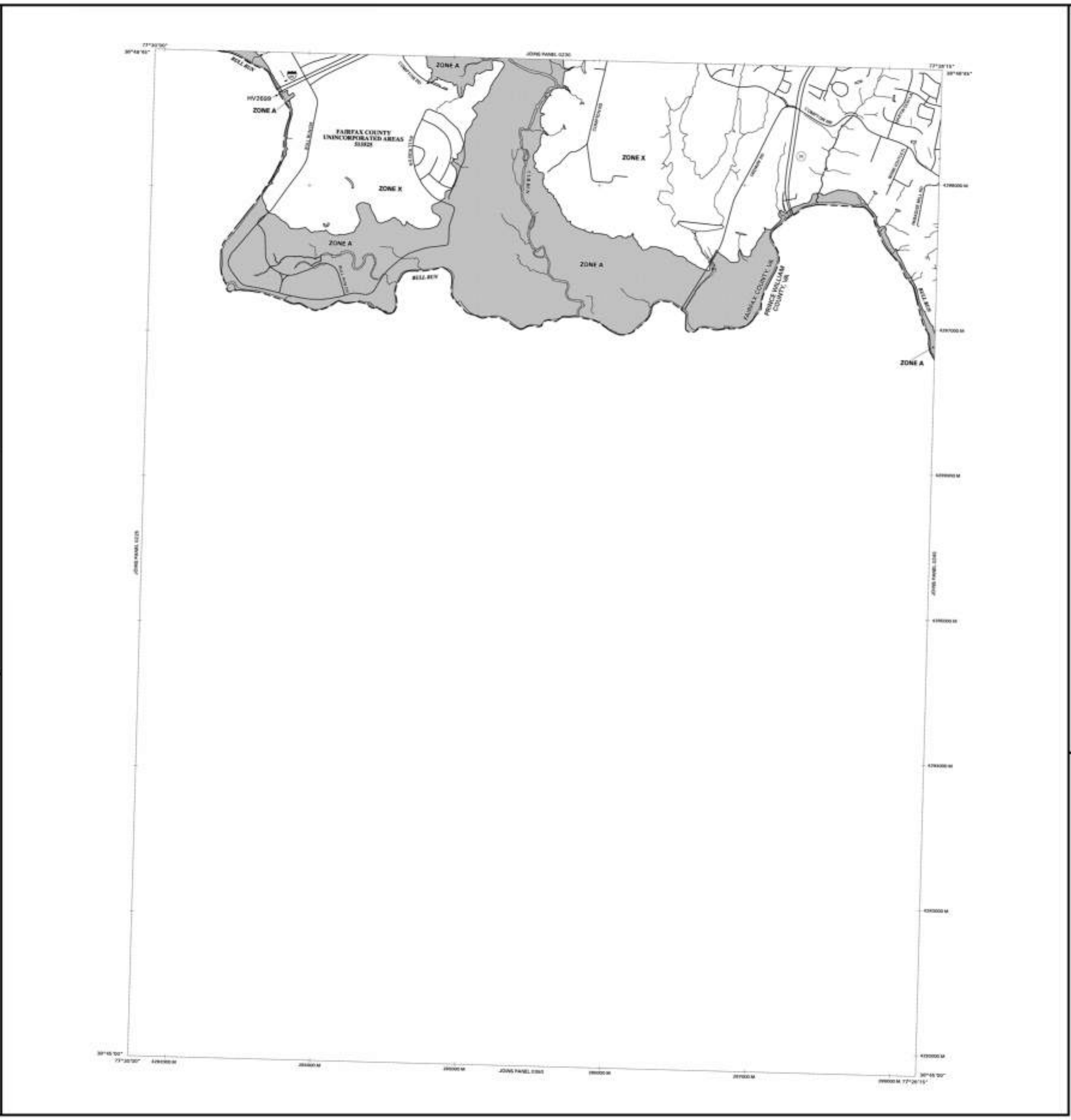

LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
••••••••	CBRS and OPA boundary
▭ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
——513——	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ	Cross Section Line
㉓- - - -㉓	Transect Line
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4300000 M	1000-meter Universal Transverse Mercator tick values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0240E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 240 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0240	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0240E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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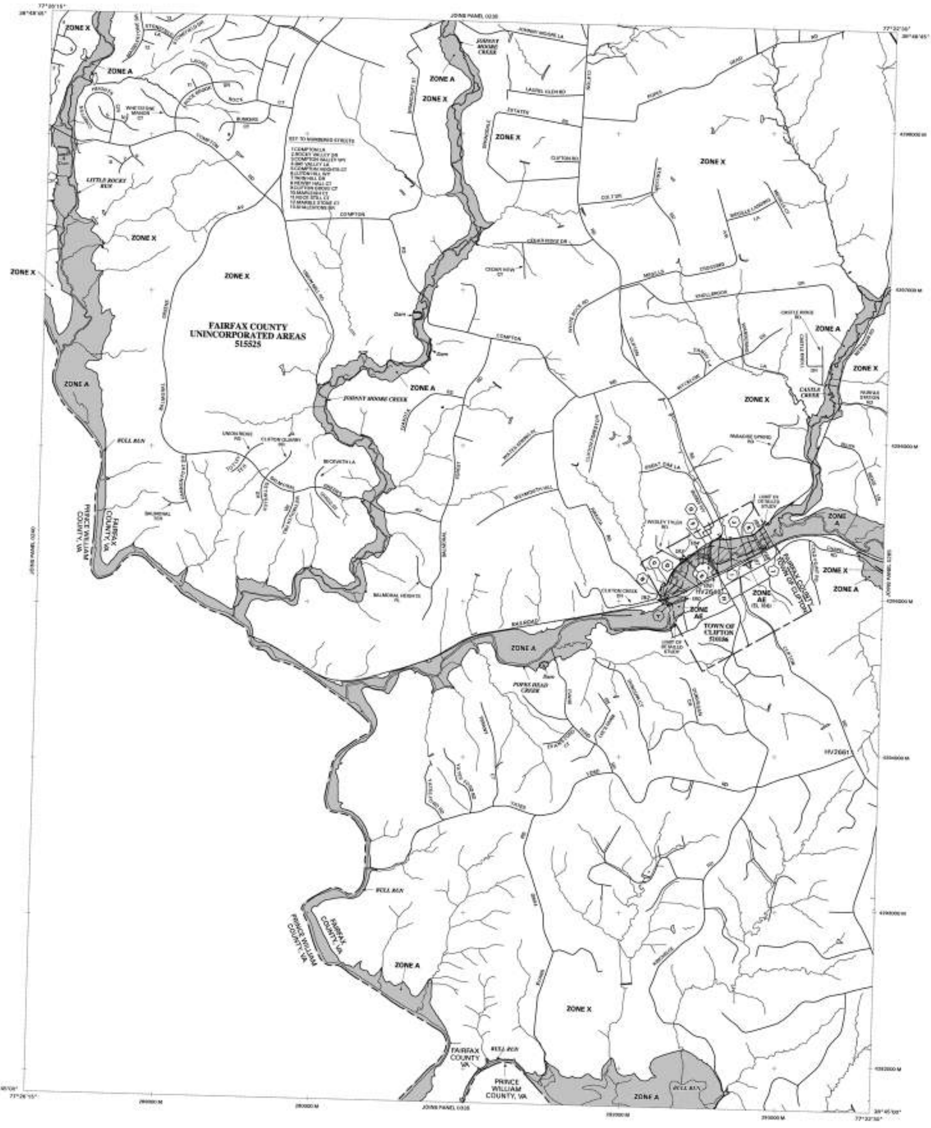

LEGEND

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The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

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———	Floodplain boundary
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(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel).
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0245E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 245 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0245	E
CLIFTON, TOWN OF	510036	0245	E

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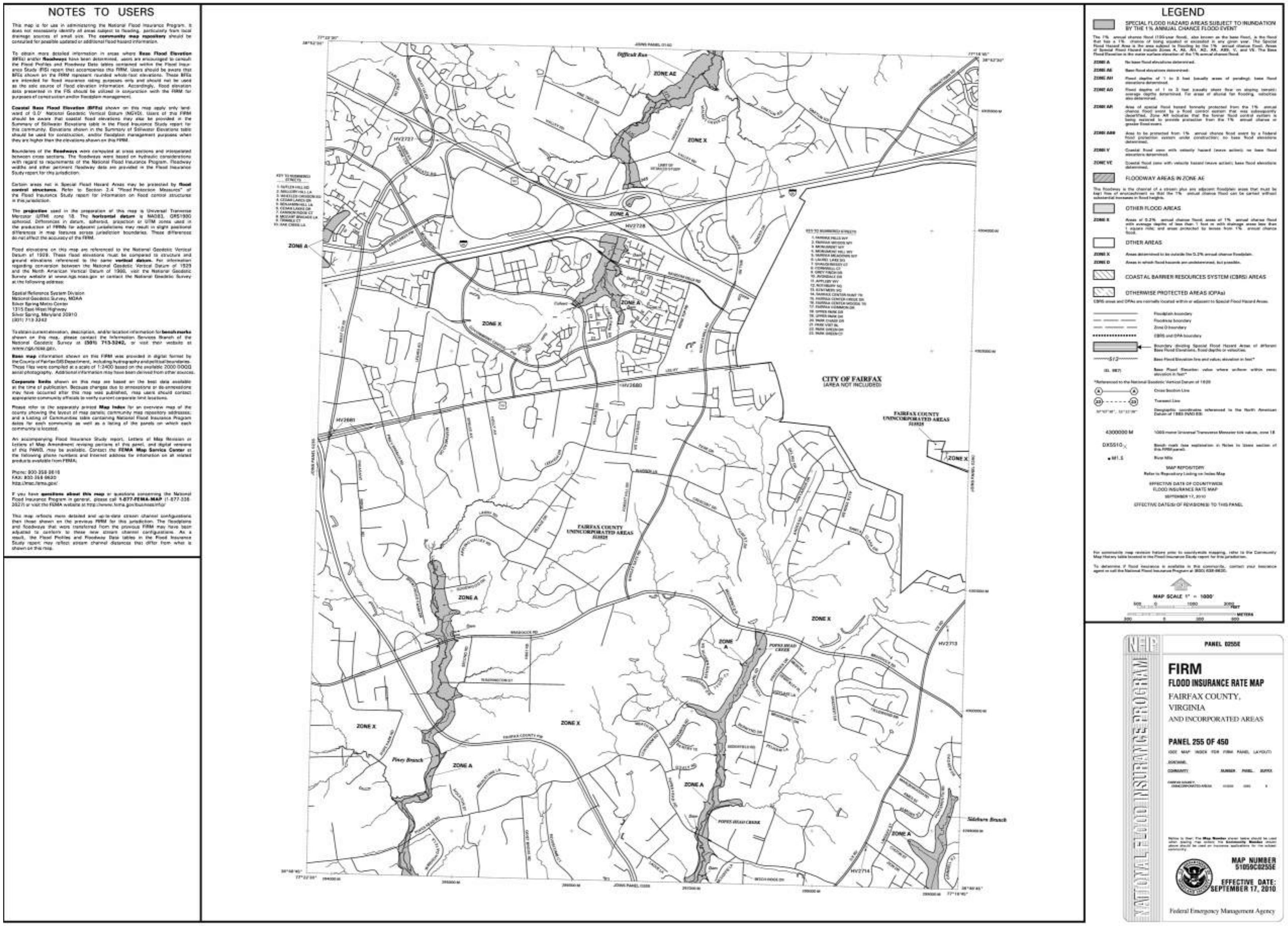
MAP NUMBER
51059C0245E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



NOTES TO USERS

LEGEND

PANEL 0255E

FIRM

FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 255 OF 450

MAP NUMBER
51059C0255E

EFFECTIVE DATE:
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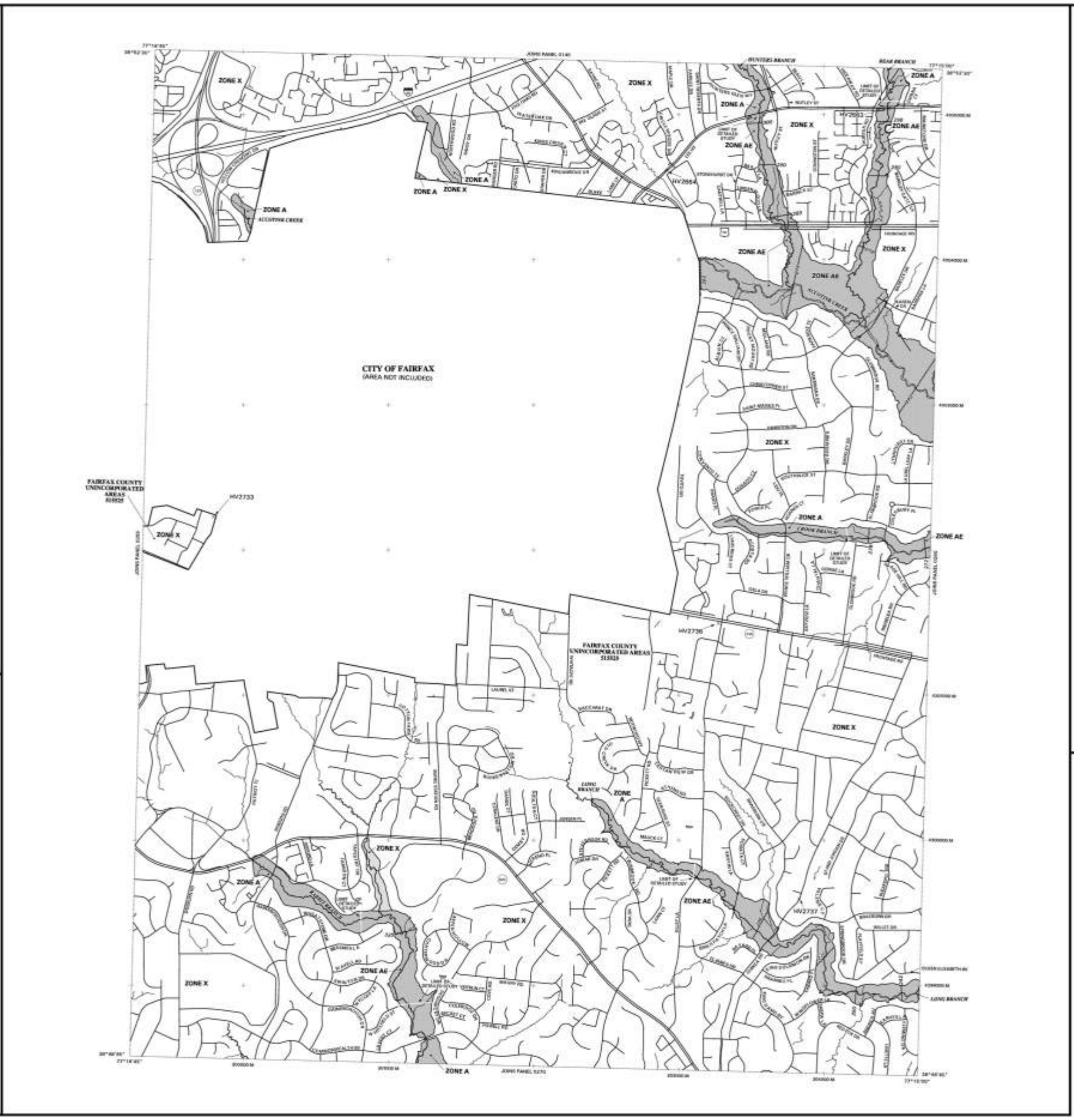

LEGEND

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SEPTEMBER 17, 2010

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NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0260E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY, VIRGINIA AND INCORPORATED AREAS

PANEL 260 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0260	E

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EFFECTIVE DATE:
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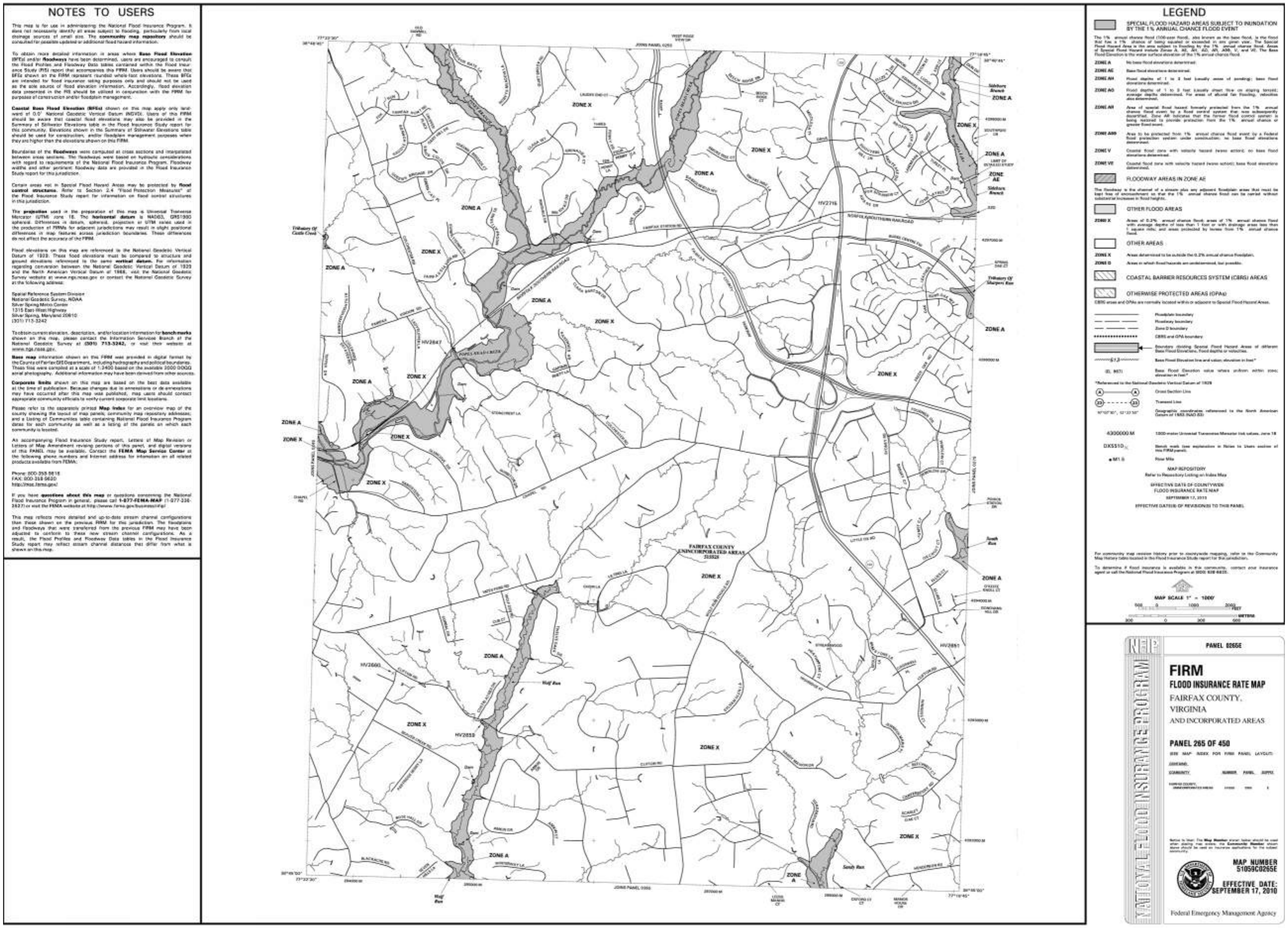

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LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— —— —	Zone D boundary
••••••••••••••••	CBRS and OPA boundary
▭	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~513~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ	Cross Section Line
㉓- - - -㉓	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator tick values, zone 18
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0265E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 265 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0265	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0265E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

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Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

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National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

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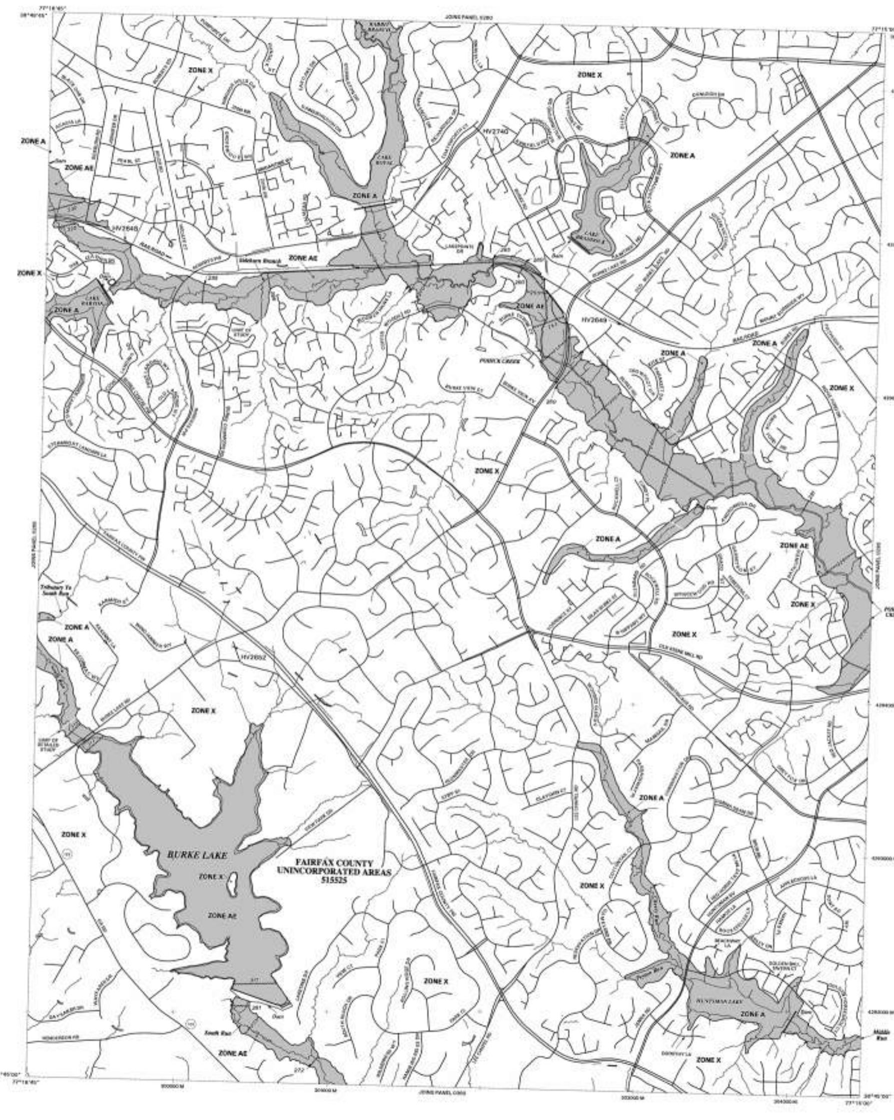

LEGEND

▒ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

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ZONE A	No base flood elevations determined.
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ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▒ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

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▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

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———	Floodplain boundary
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— — —	Zone D boundary
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~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

Ⓐ——Ⓐ	Cross Section Line
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4300000 M	1000-meter Universal Transverse Mercator ticks values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0270E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 270 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0270	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0270E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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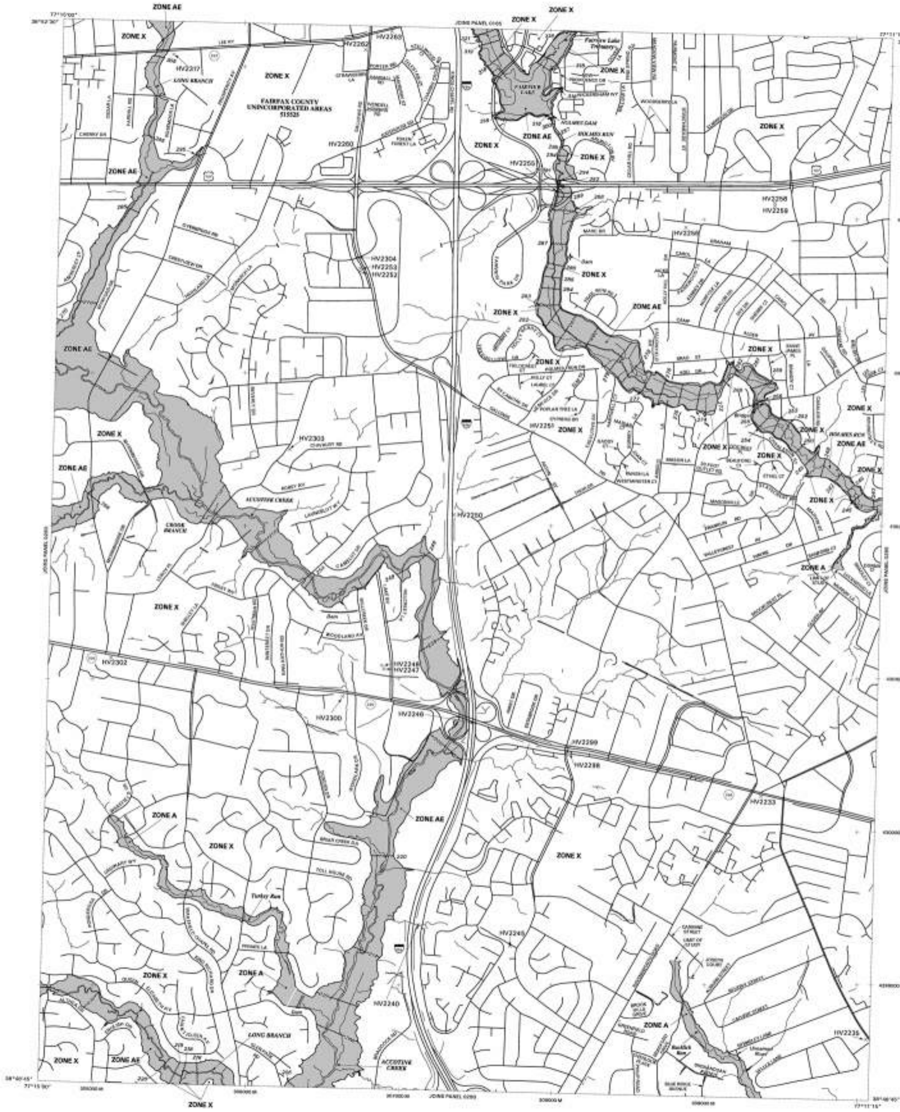

LEGEND

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ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
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▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

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~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
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*Referenced to the National Geodetic Vertical Datum of 1929

(A)———(A)	Cross Section Line
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MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0280E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 280 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0280	E

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MAP NUMBER
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EFFECTIVE DATE:
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Federal Emergency Management Agency

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▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

——	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
••••••••	CBRS and OPA boundary
▭	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~513~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

(A)——(A)	Cross Section Line
(23)- - - -(23)	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator tick values, zone 18
DX5510×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0285E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 285 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY UNINCORPORATED AREAS	515525	0285	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0285E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

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National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

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http://msc.fema.gov/

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LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0290E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 290 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0290	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0290E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

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LEGEND

▒ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
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The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

░ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

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▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0295E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 295 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0295	E

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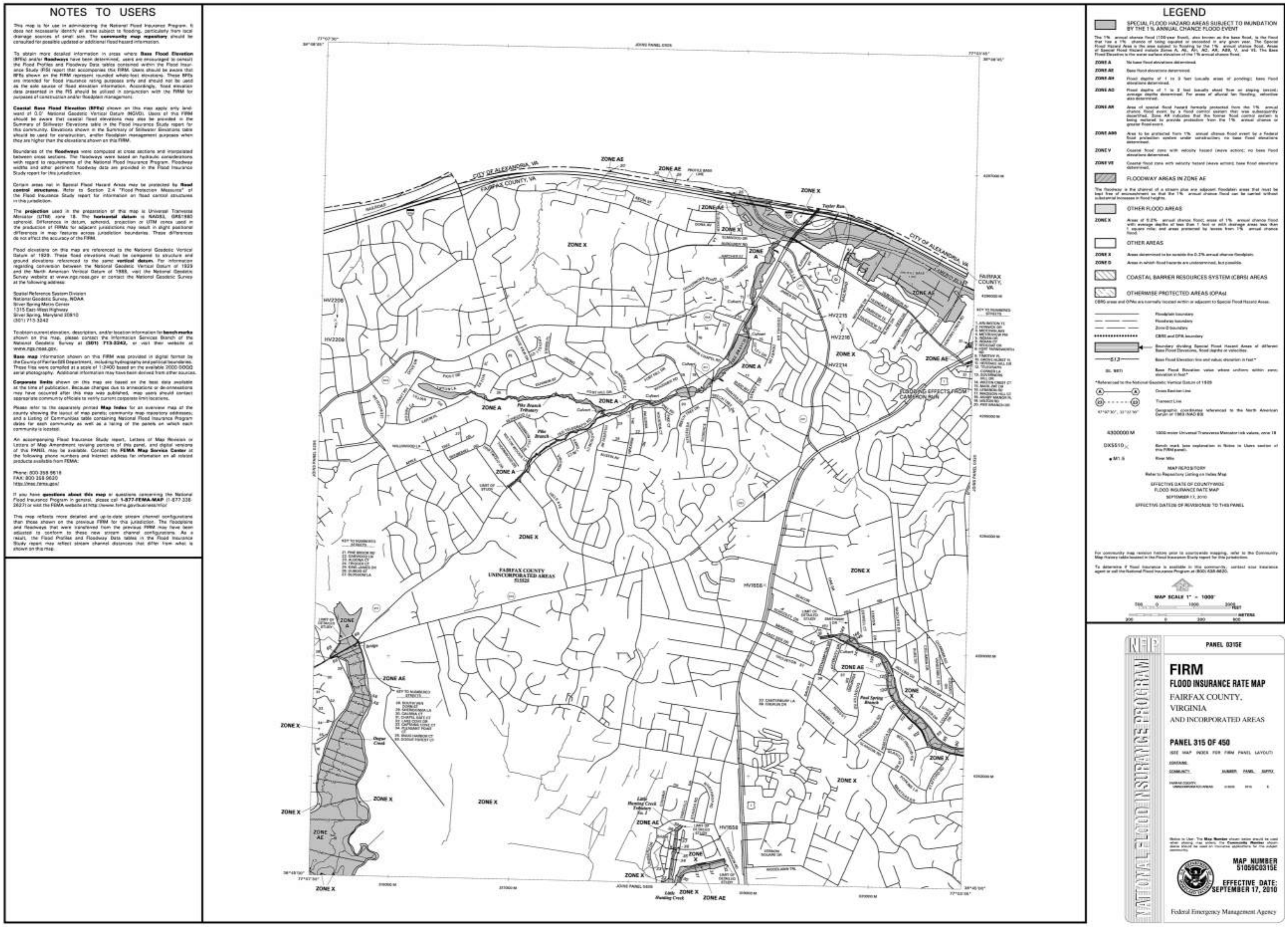
MAP NUMBER
51059C0295E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



NOTES TO USERS

LEGEND

PANEL 0315E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 315 OF 450

MAP NUMBER
51059C0315E

EFFECTIVE DATE:
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Federal Emergency Management Agency

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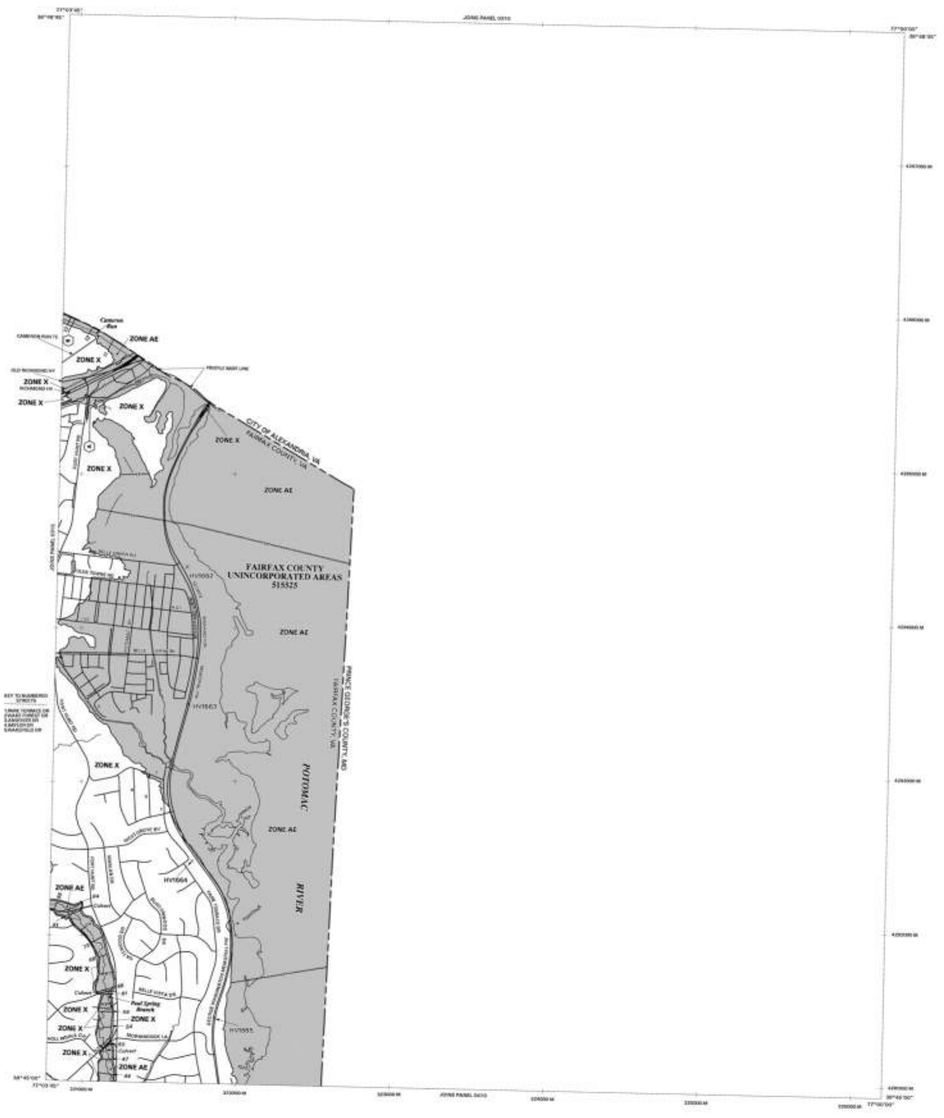

LEGEND

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ZONE A	No base flood elevations determined.
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ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

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▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

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MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0320E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 320 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0320	E

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Federal Emergency Management Agency

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Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

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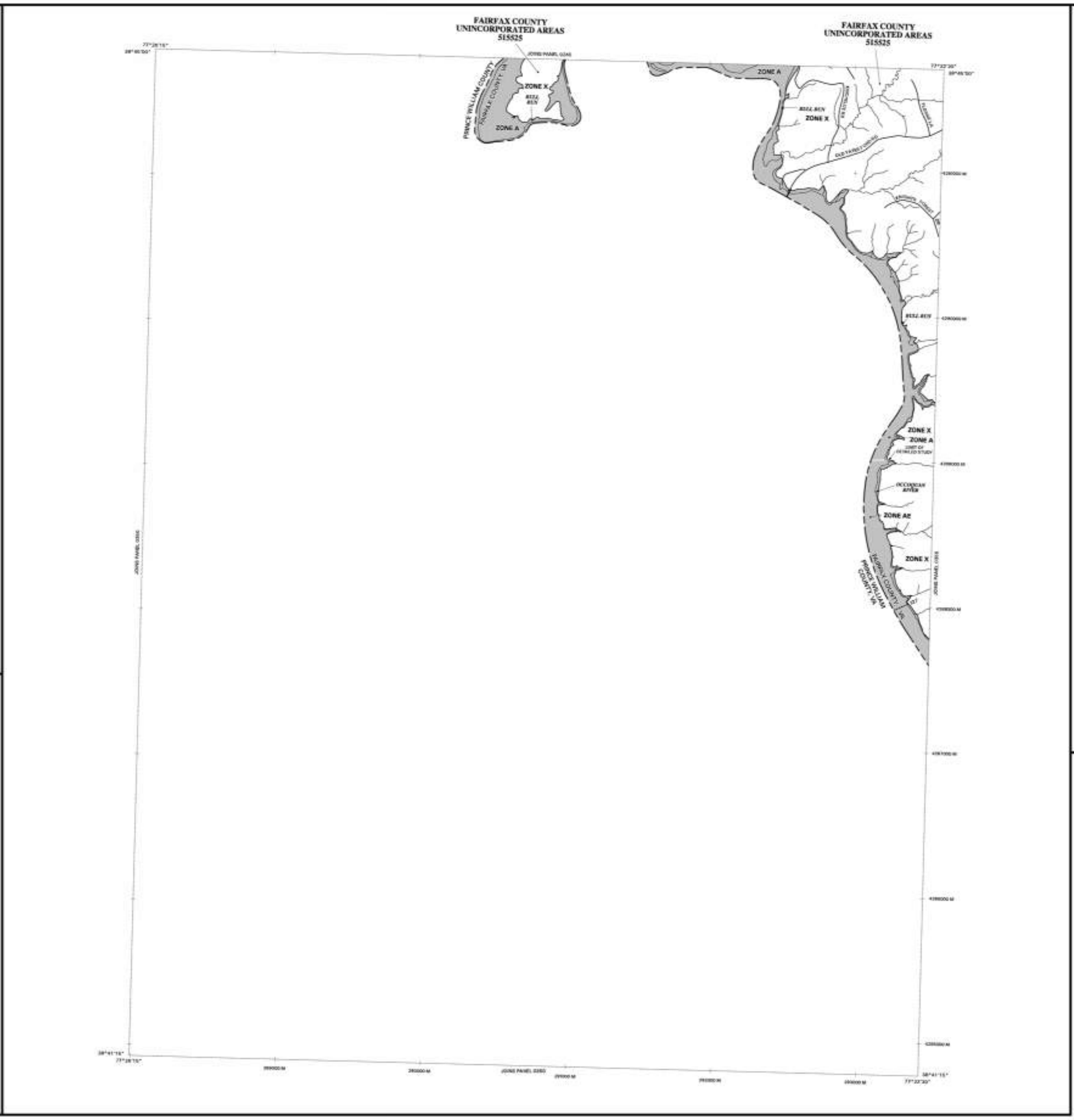

LEGEND

▩ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▩ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
++++++++++++++++	CBRS and OPA boundary
▩ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
——513——	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

(A)———(A)	Cross Section Line
(23)- - - - -(23)	Transect Line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4300000 M	1000-meter Universal Transverse Mercator tick values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
METERS
300 0 300 600

NFIP

PANEL 0335E

FIRM

FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 335 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0335	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0335E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

NATIONAL FLOOD INSURANCE PROGRAM

Federal Emergency Management Agency

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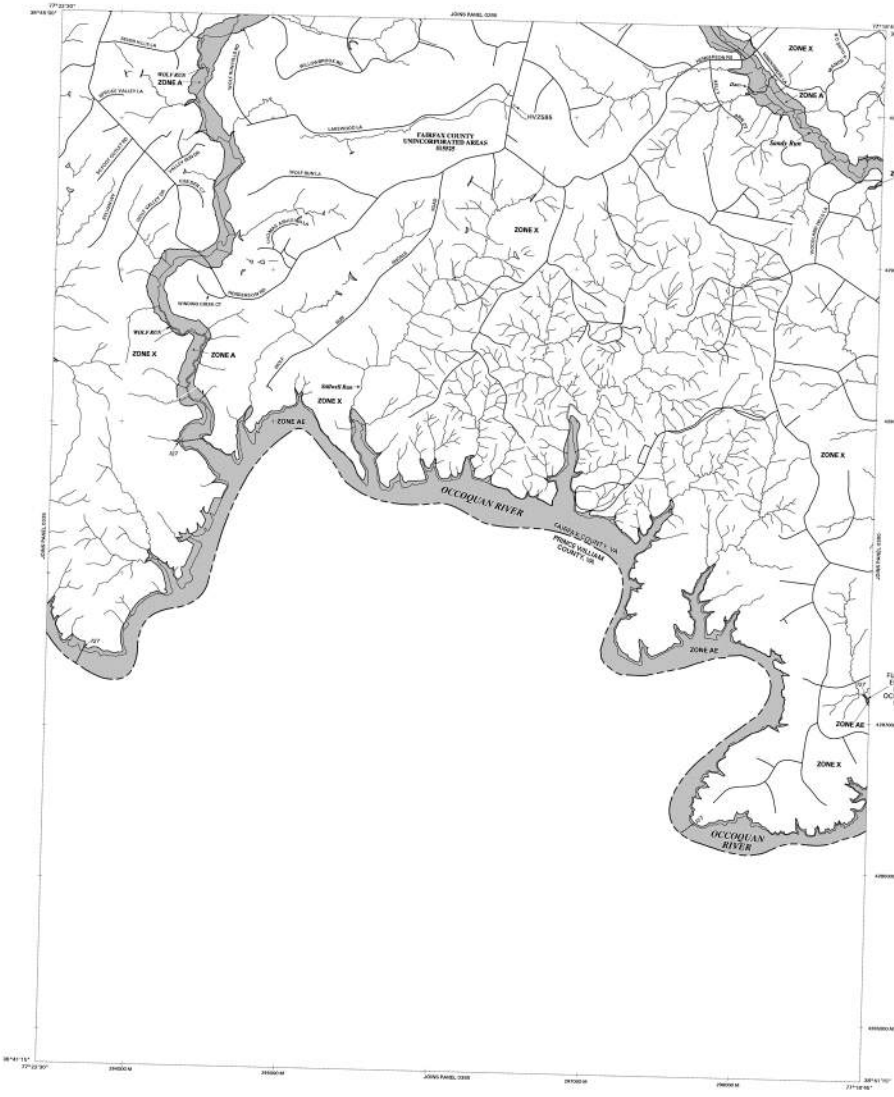

LEGEND

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▨ FLOODWAY AREAS IN ZONE AE

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░ OTHER FLOOD AREAS

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(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

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MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0355E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 355 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0355	E

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MAP NUMBER
51059C0355E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

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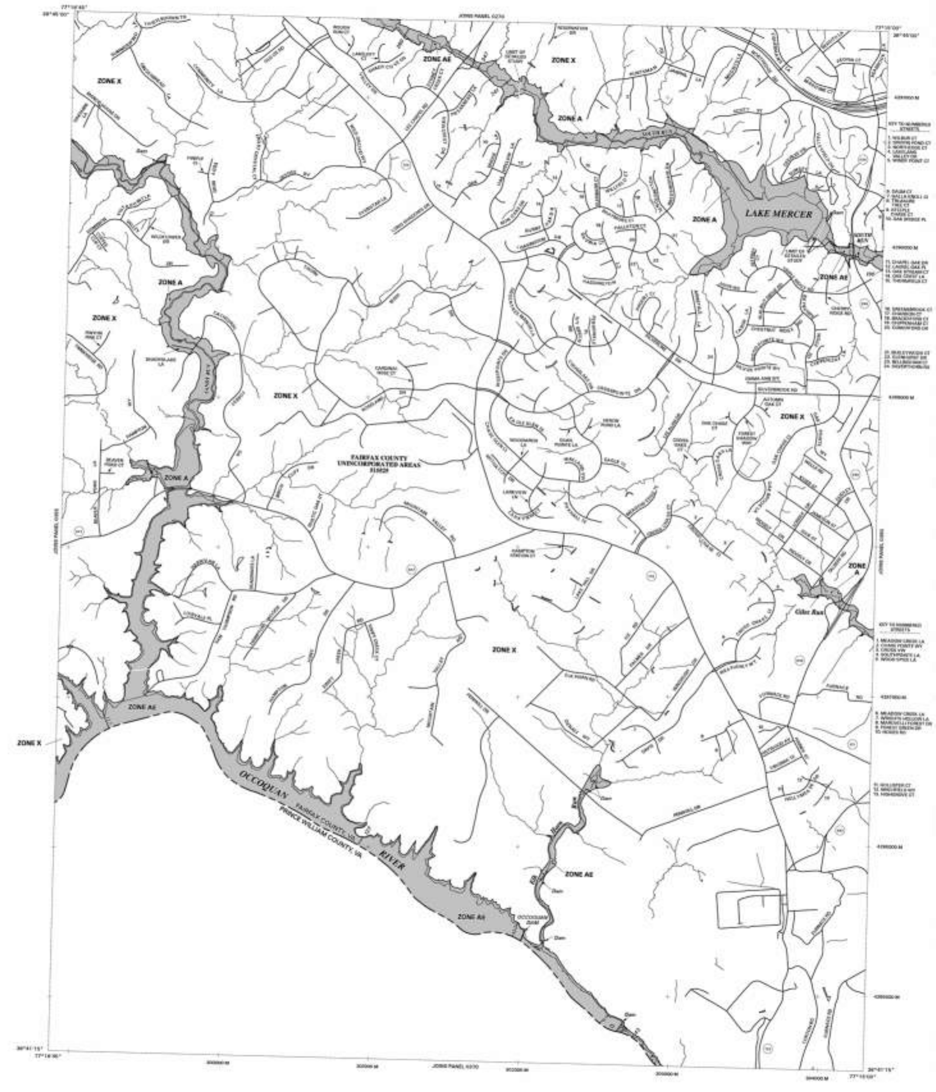

LEGEND

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MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0360E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 360 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0360	E

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MAP NUMBER
51059C0360E

EFFECTIVE DATE:
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Federal Emergency Management Agency

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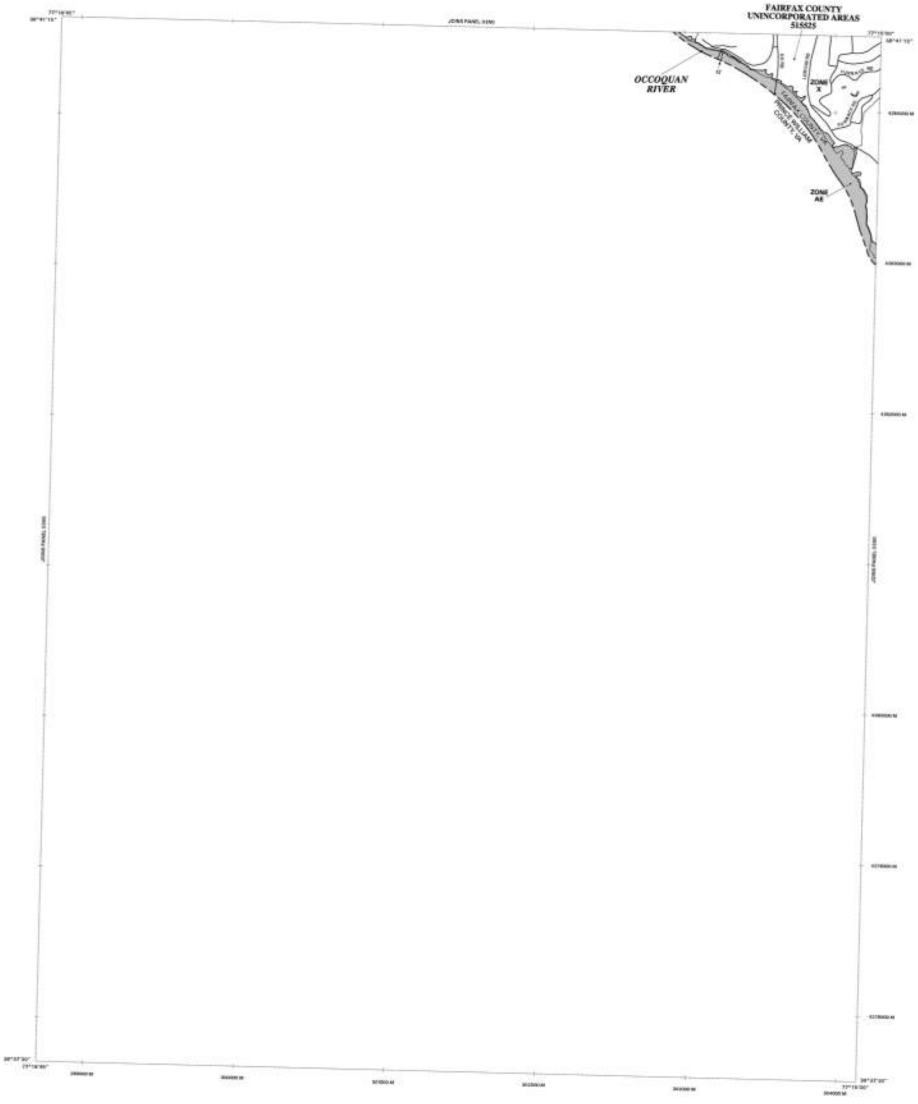

LEGEND

▒ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
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▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

░ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

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ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———————	Floodplain boundary
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••••••••••••••••	CBRS and OPA boundary
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4300000 M	1000-meter Universal Transverse Mercator tick values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0370E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY, VIRGINIA
AND INCORPORATED AREAS

PANEL 370 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

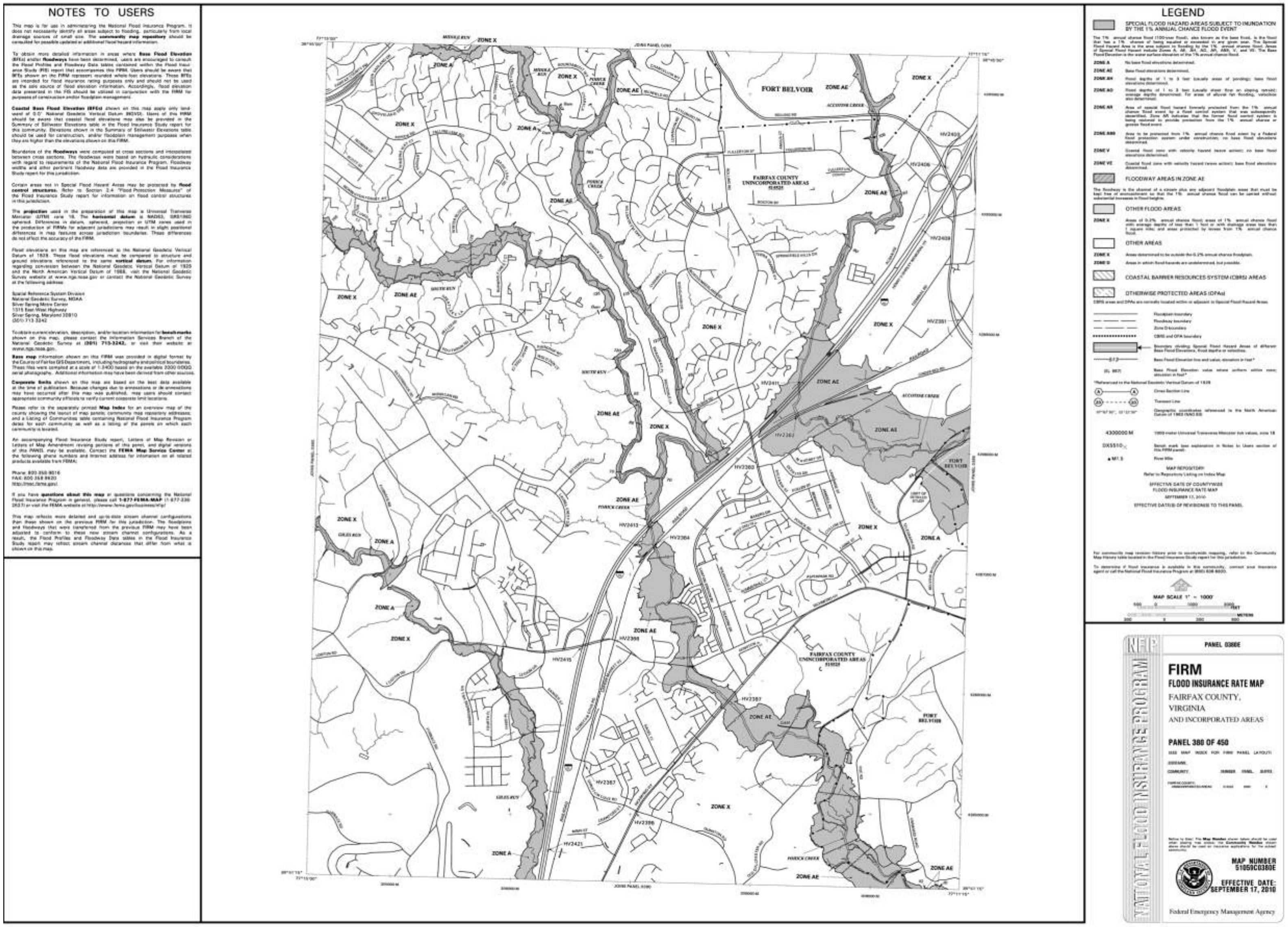
COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0370	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0370E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



PANEL 0380E

FIRM

FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 380 OF 450

NATIONAL FLOOD INSURANCE PROGRAM

MAP NUMBER
51059C0380E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

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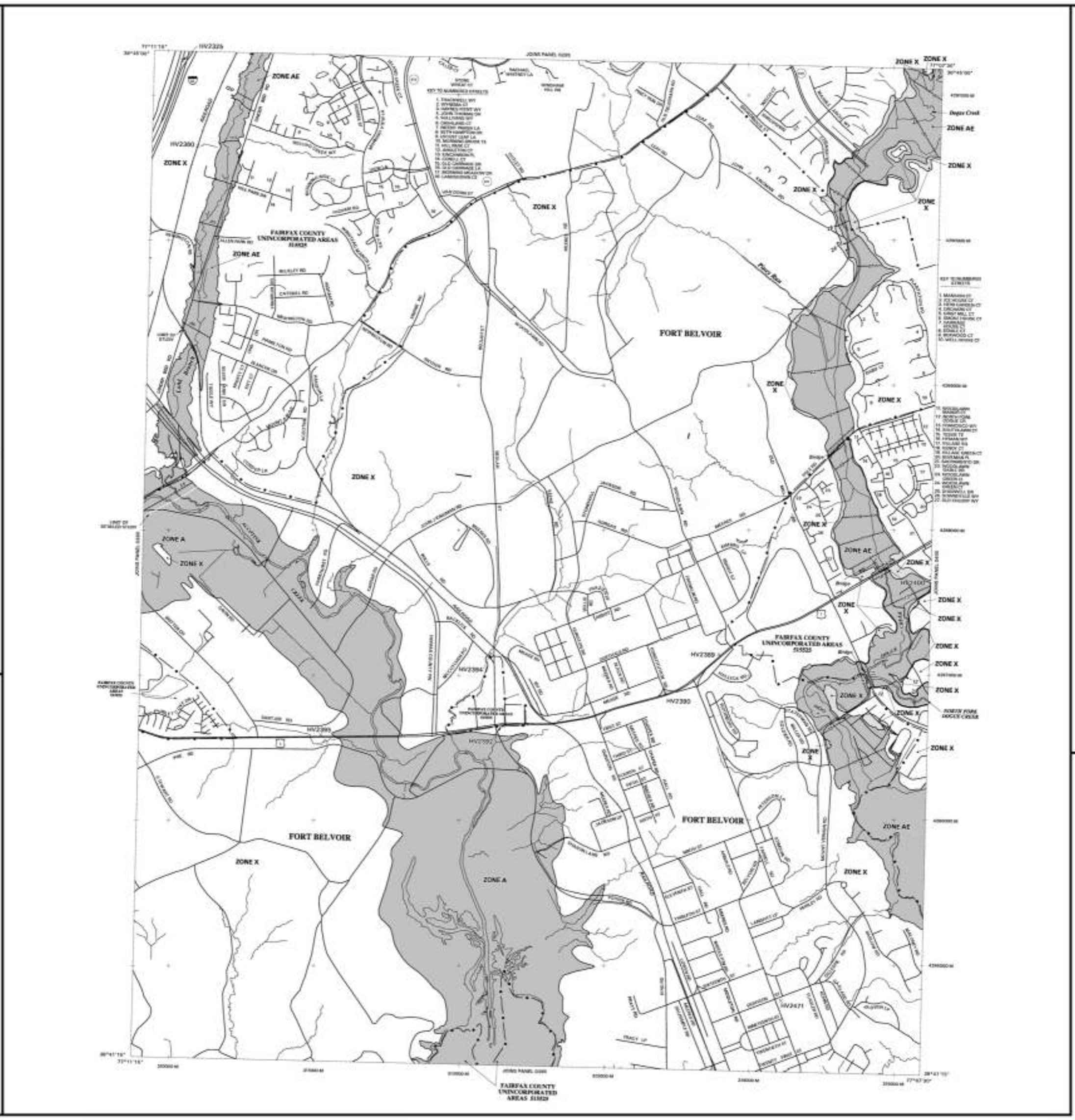

LEGEND

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MAP REPOSITORY
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SEPTEMBER 17, 2010

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500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0385E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 385 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY UNINCORPORATED AREAS	515525	0385	E

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MAP NUMBER
51059C0385E

EFFECTIVE DATE:
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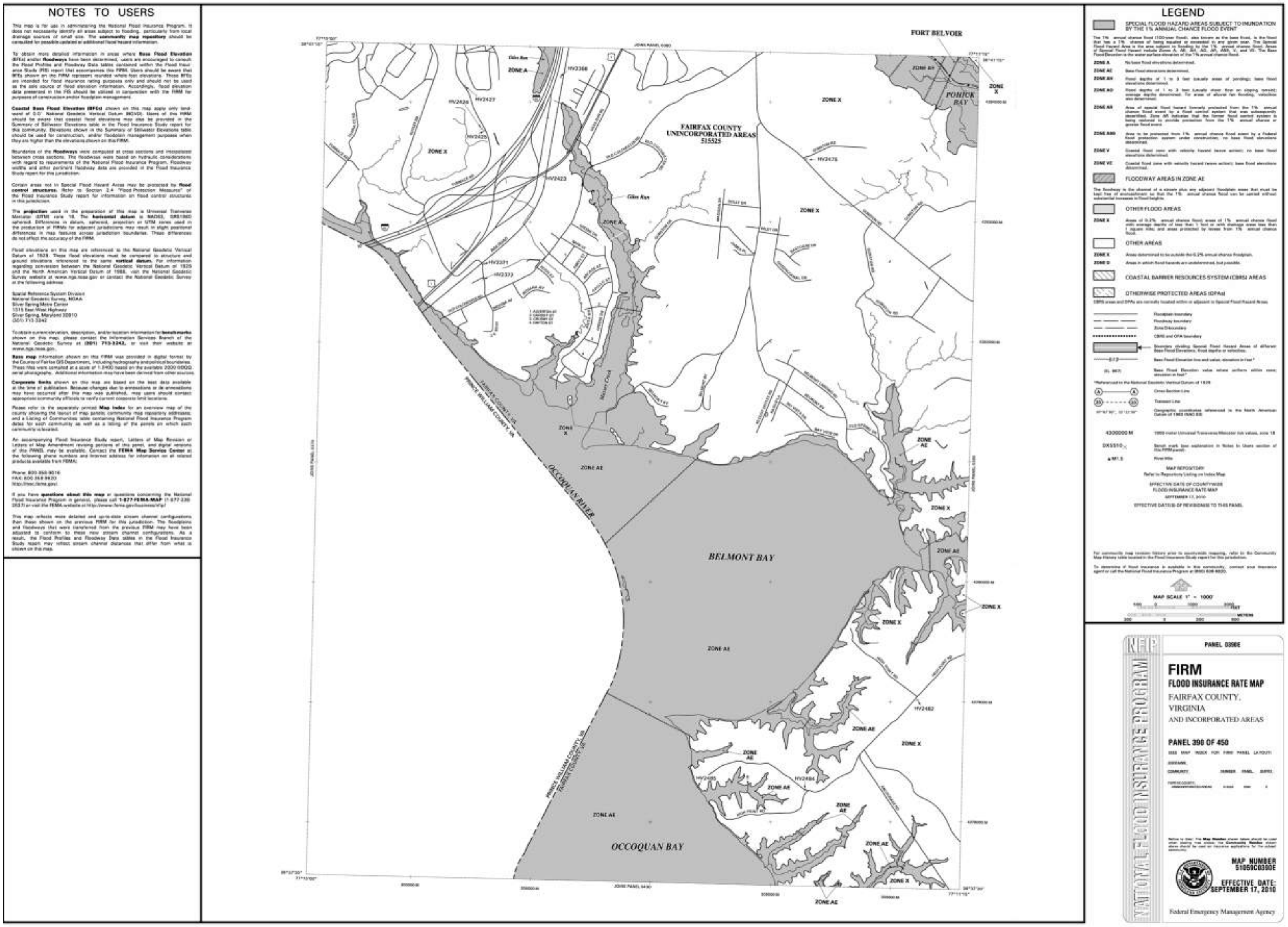
NOTES TO USERS
LEGEND
FORT BELVOIR
POHICK BAY
FAIRFAX COUNTY
UNINCORPORATED AREAS
515525
ZONE A
ZONE X
ZONE AE
Giles Run
HV2368
HV2424
HV2427
HV2425
HV2423
HV2371
HV2372
HV2476
HV2482
HV2485
HV2484
Massey Creek
FAIRFAX COUNTY, VA
PRINCE WILLIAM COUNTY, VA
OCCOQUAN RIVER
BELMONT BAY
OCCOQUAN BAY
MAP SCALE 1" = 1000'
PANEL 0390E
NATIONAL FLOOD INSURANCE PROGRAM
NFIP
FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS
PANEL 390 OF 450
MAP NUMBER
51059C0390E
EFFECTIVE DATE:
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Federal Emergency Management Agency

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SEPTEMBER 17, 2010

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0395E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY, VIRGINIA AND INCORPORATED AREAS

PANEL 395 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY UNINCORPORATED AREAS	515525	0395	E

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51059C0395E

EFFECTIVE DATE:
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Federal Emergency Management Agency

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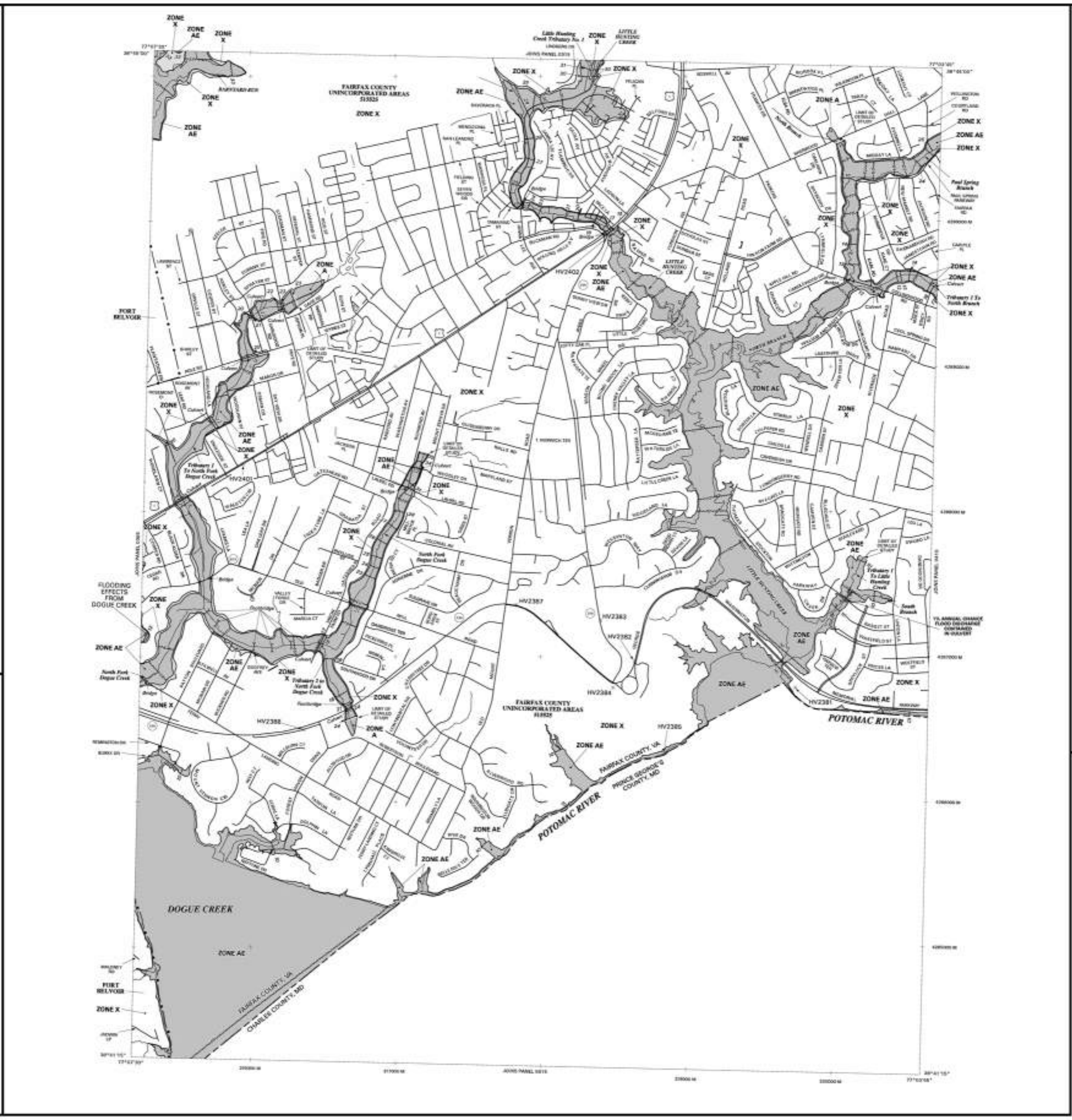

LEGEND

▒ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
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ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

░ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———————	Floodplain boundary
— — — —	Floodway boundary
— —— —	Zone D boundary
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(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

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4300000 M	1000-meter Universal Transverse Mercator grid values, zone 18
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0405E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 405 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

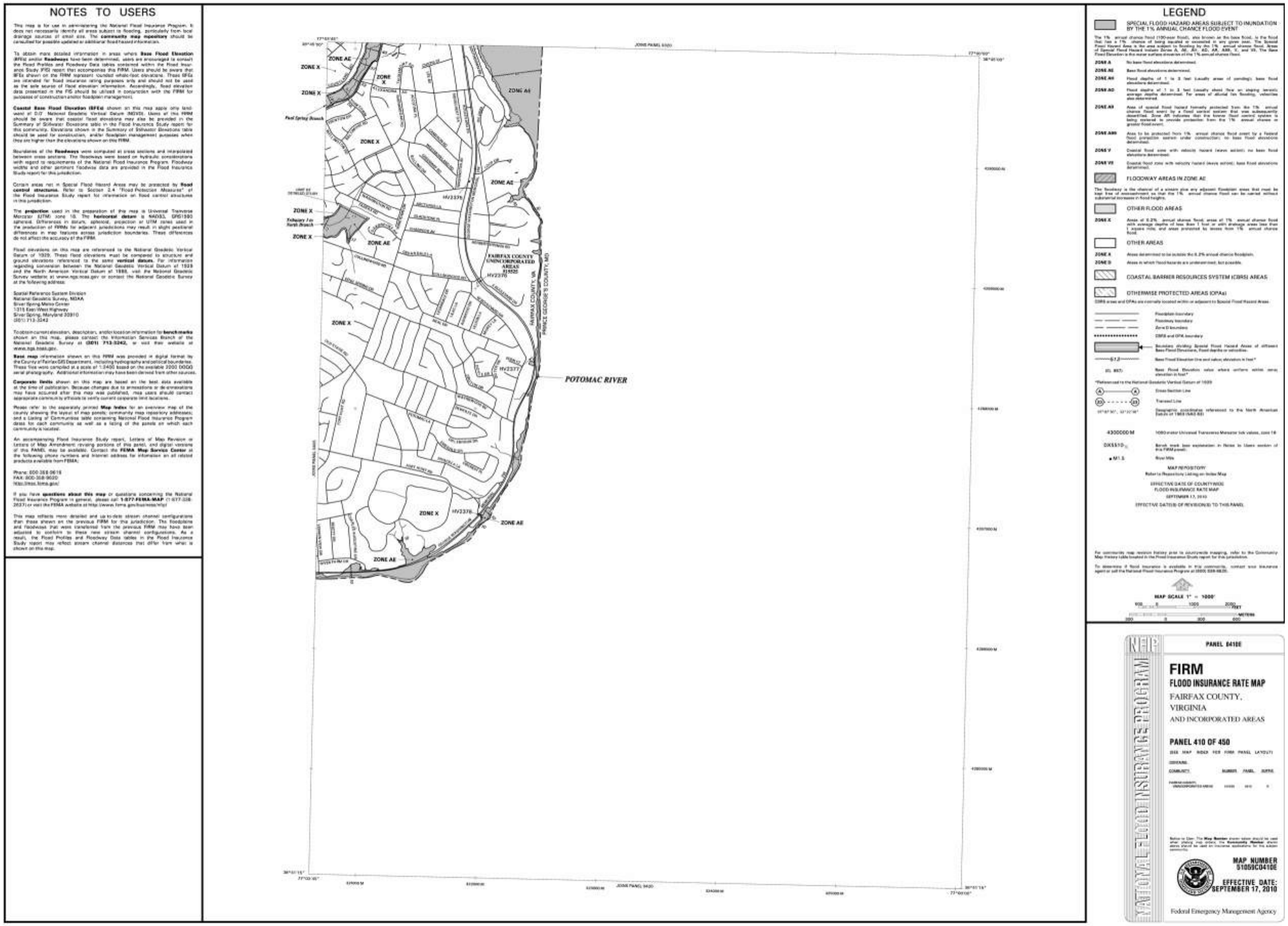
COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0405	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51059C0405E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



NOTES TO USERS

LEGEND

PANEL 0410E

FIRM

FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 410 OF 450

MAP NUMBER
51059C0410E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

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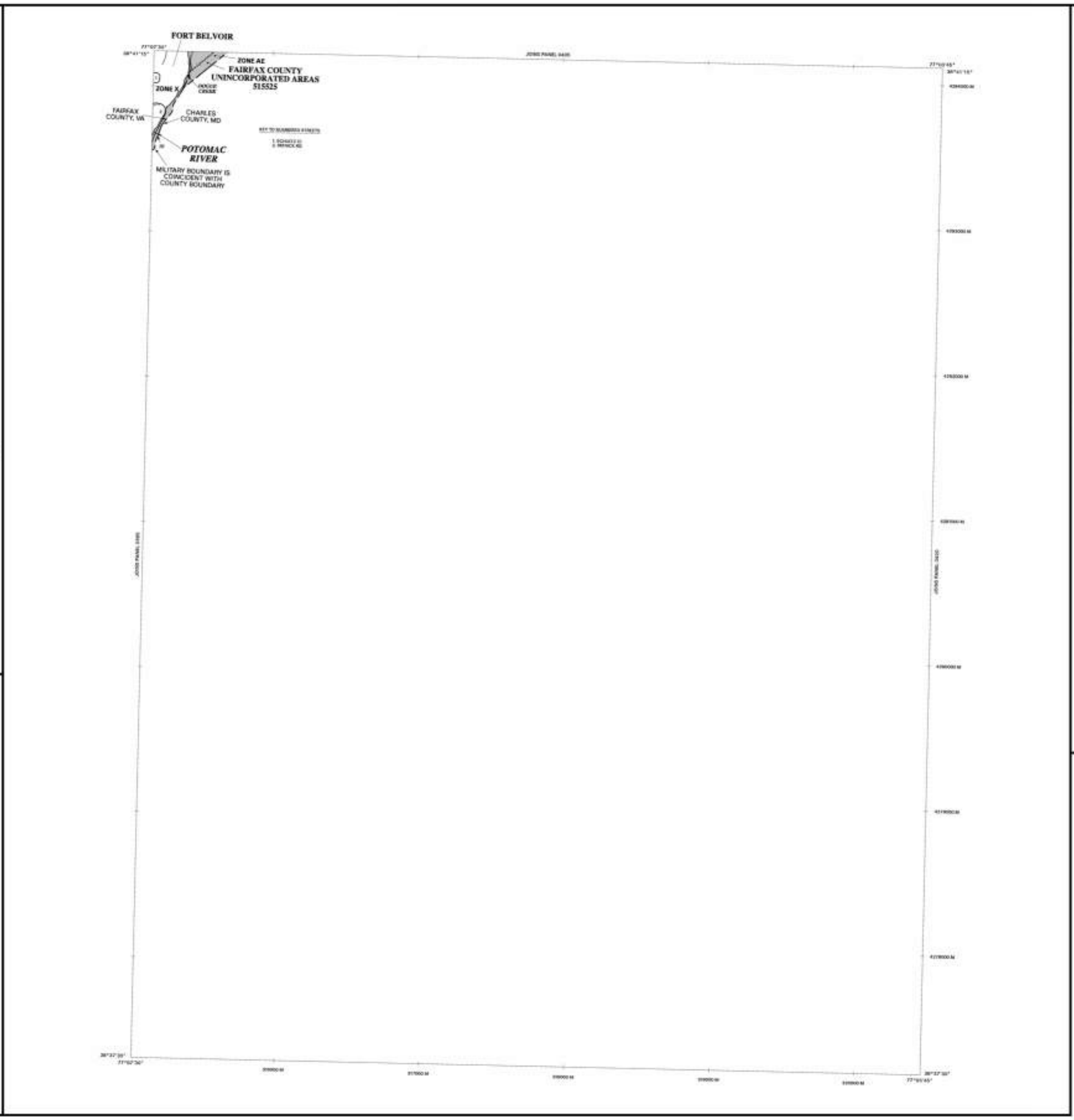

LEGEND

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SEPTEMBER 17, 2010

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500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0415E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 415 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY, UNINCORPORATED AREAS	515525	0415	E

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51059C0415E

EFFECTIVE DATE:
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Federal Emergency Management Agency

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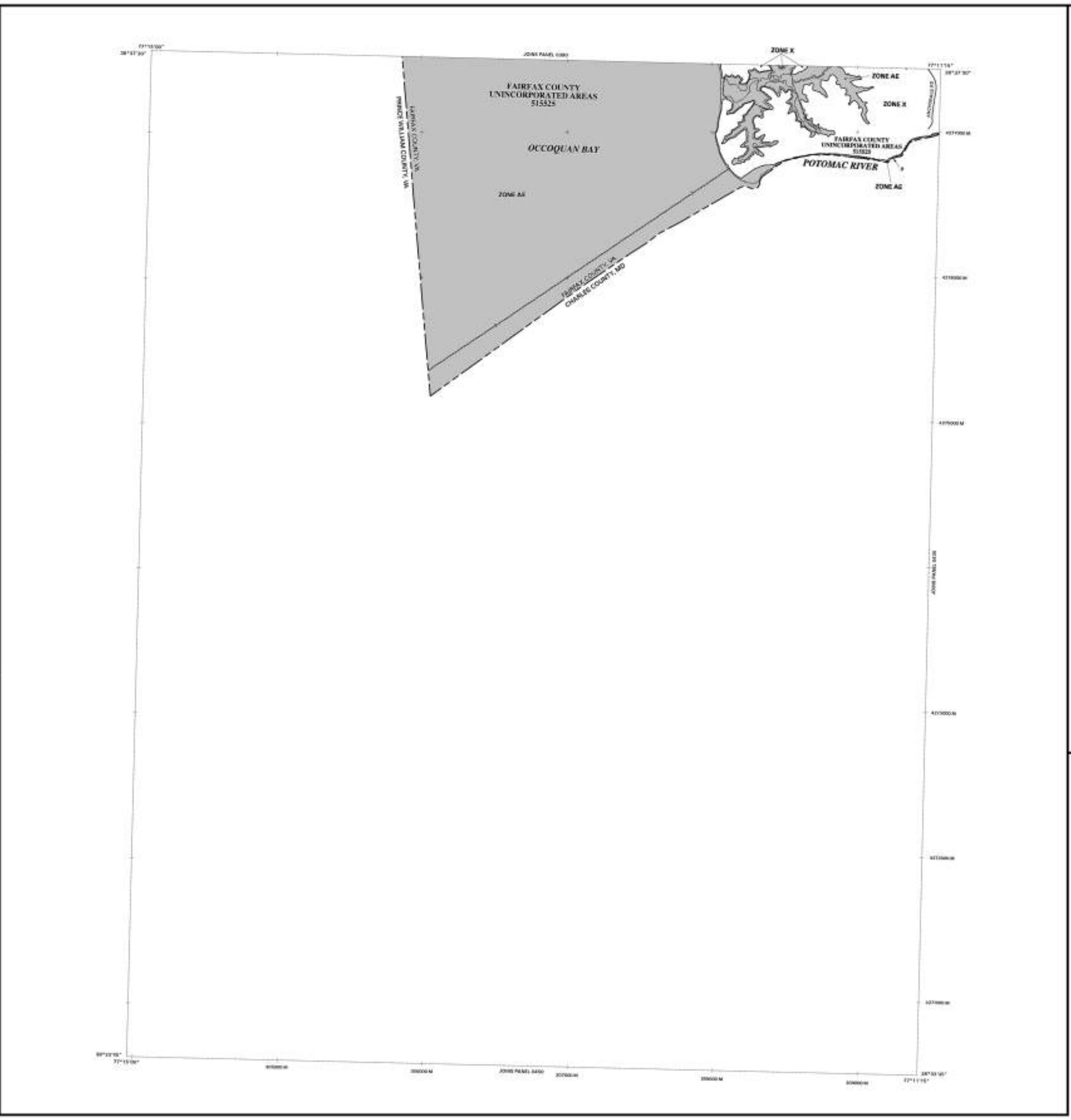

LEGEND

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Ⓐ———Ⓐ	Cross Section Line
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SEPTEMBER 17, 2010

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500 0 1000 2000 FEET

300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0430E

FIRM
FLOOD INSURANCE RATE MAP

FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 430 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX COUNTY UNINCORPORATED AREAS	515525	0430	E

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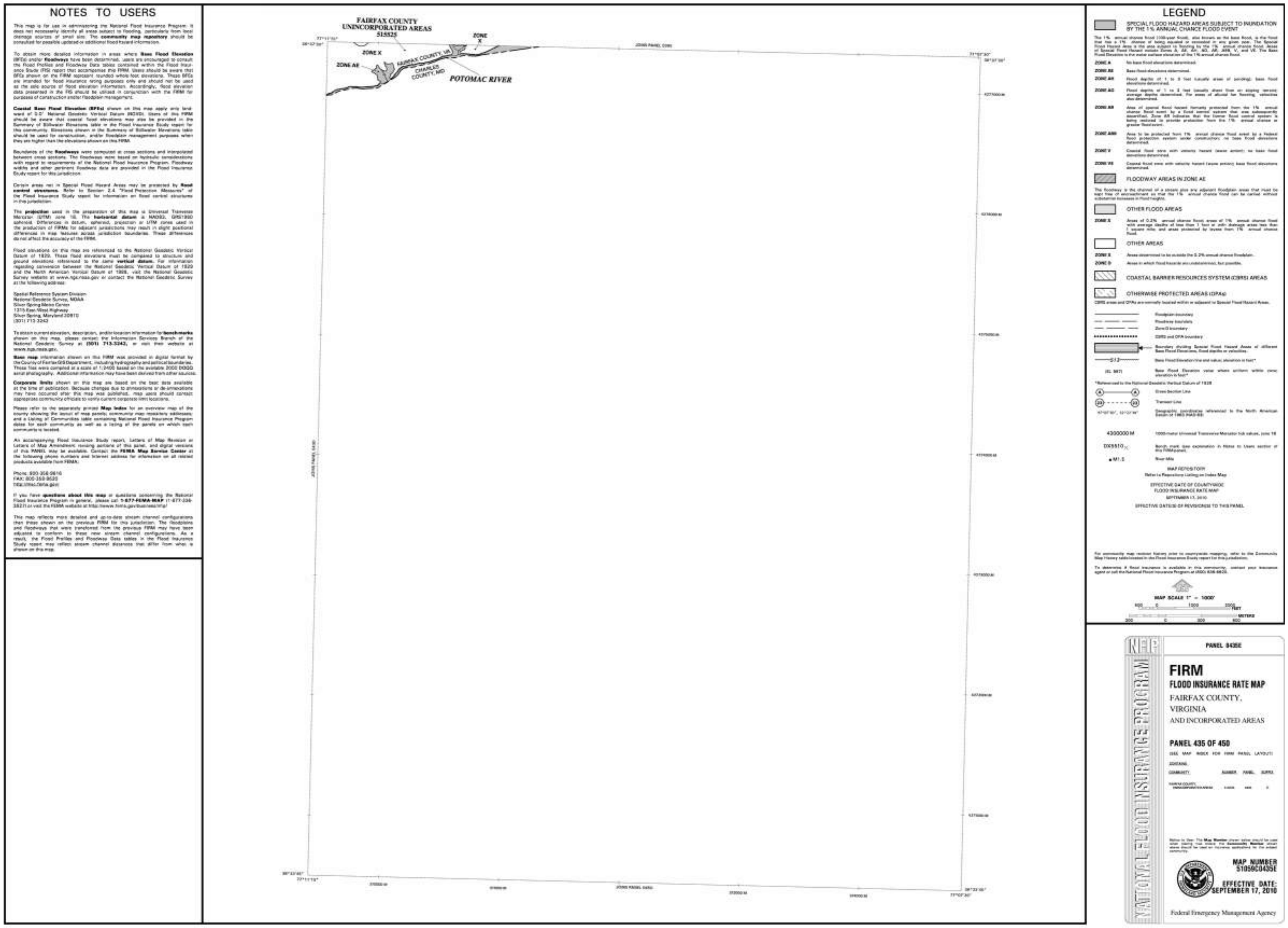
MAP NUMBER
51059C0430E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency



NOTES TO USERS

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

OTHER AREAS

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0435E

FIRM
FLOOD INSURANCE RATE MAP
FAIRFAX COUNTY,
VIRGINIA
AND INCORPORATED AREAS

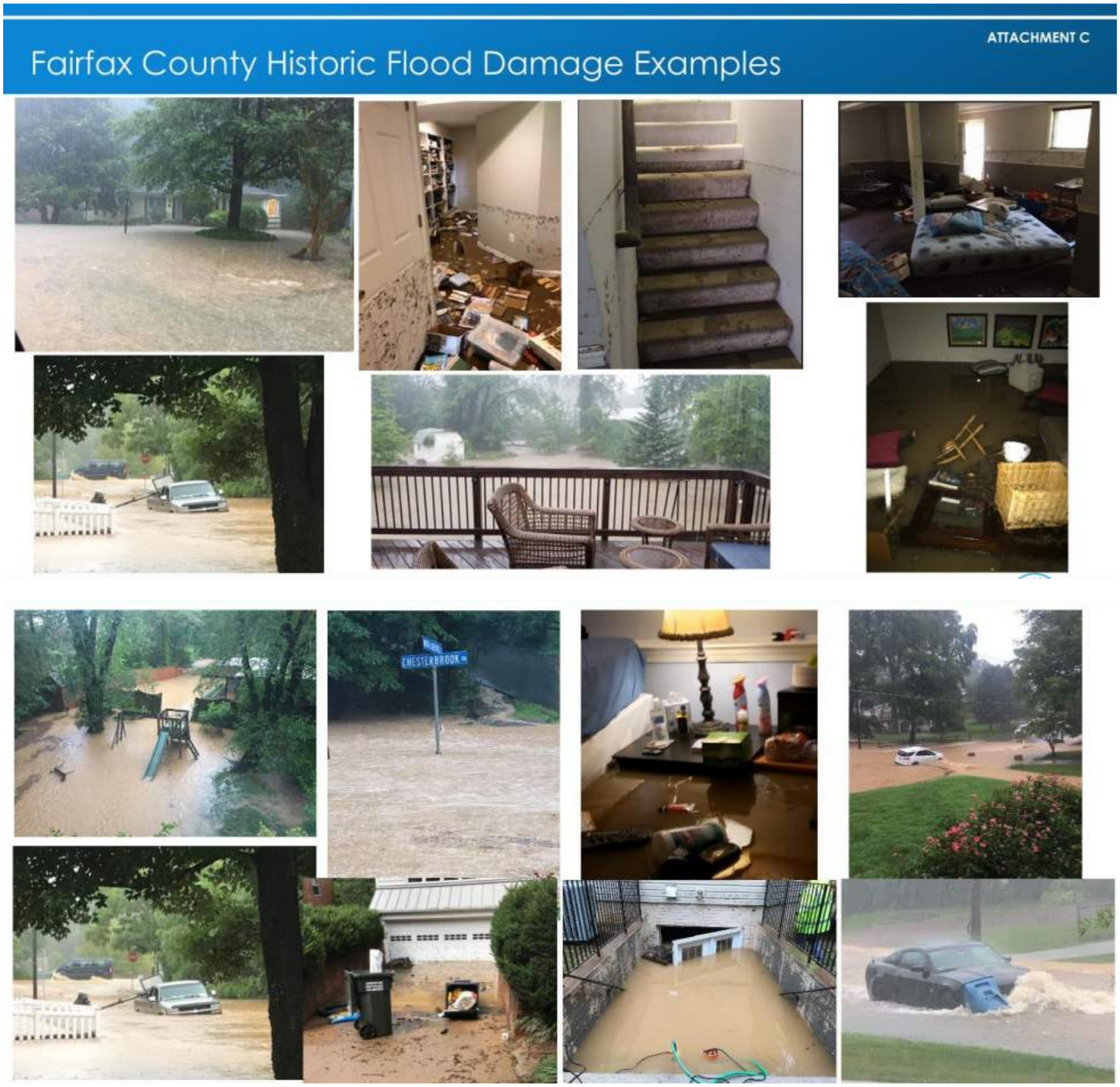
PANEL 435 OF 450

MAP NUMBER
51059C0435E

EFFECTIVE DATE:
SEPTEMBER 17, 2010

Federal Emergency Management Agency

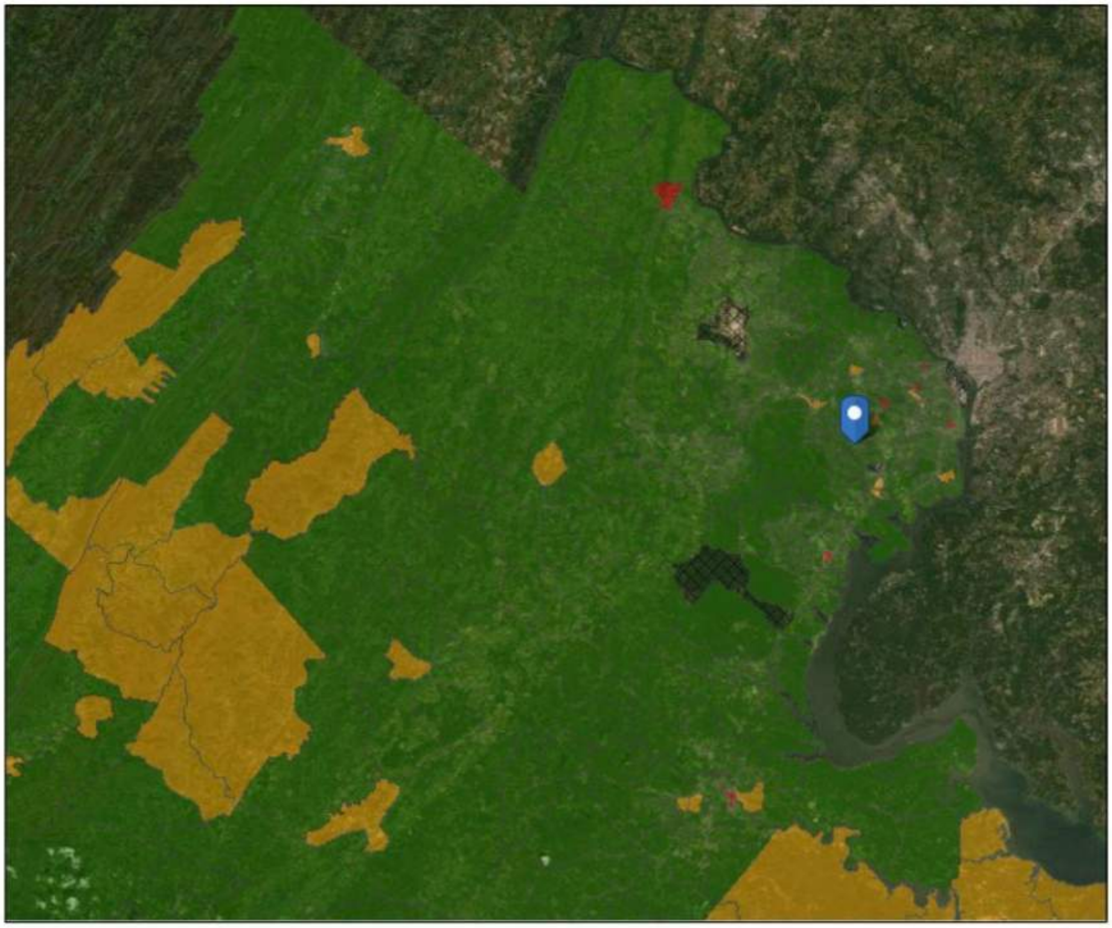
Attachment C. Historic flood damage images



ATTACHMENT C

Fairfax County Historic Flood Damage Examples

Attachment D. Social vulnerability index score from ADAPT VA's Virginia Vulnerability Viewer



March 8, 2022

Social Vulnerability Classification

- 🟥 High Social Vulnerability
- 🟨 Moderate Social Vulnerability
- 🟩 Not Socially Vulnerable
- ▨ Not included in the analysis

1:1,155,581

0 5 10 20 mi

0 5 10 20 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management

Virginia Institute of Marine Science

ADAPT VA

Attachment E. Approved Resilience Plan

Ann Jennings
Secretary of Natural and Historic Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

January 10, 2022

Joni Calmbacher, PE, CFM
Project Manager II
DPWES, Stormwater Planning Division
Watershed Projects Implementation Branch – South
12000 Government Center Parkway Fairfax, VA 22035

RE: Fairfax County Resilience Plan Submission - CFPF

Dear Ms. Calmbacher,

Thank you for providing an overview of your Resilience Plan, and informing DCR of the various plans that Fairfax County will be utilizing to fulfill the Resilience Plan submission requirements. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on January 11, 2025.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

   Meets criteria as written.

   a. Project-based: Fairfax County is divided into 30 watersheds which have been addressed in 11 major watershed management plans. Each of the watershed management plans contains projects and watershed management area restoration strategies. The 2017 *Northern Virginia Hazard Mitigation Plan* was a regional effort involving nineteen counties, including Fairfax County, and outlines specific mitigation projects for each participating community in order to reduce vulnerability and exposure to future hazards, including flooding events. The *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management* contains projects at various locations throughout Fairfax County. The projects included and described in the *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management* align with the established *Comprehensive Plan* objectives. The *Resilient Critical*

Infrastructure Roadmap for Northern Virginia contains a database of resilience projects throughout northern Virginia, including Fairfax County.

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

   Meets criteria as written.

   a. The 2020 R*egional Collaboration to Build Community Resilience in Northern Virginia* expanded upon *The Roadmap*, to include maximization of green infrastructure. Nature-based solutions are also presented in the *Fairfax County Watershed Management Plan* and the *Fairfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management.*

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**

   Meets criteria as written.

   a. All parts of a locality: The *Northern Virginia Hazard Mitigation Plan* discusses the demographic and economic trends throughout the entirety of Fairfax County.

   b. Social vulnerability: The R*egional Collaboration to Build Community Resilience in Northern Virginia* presents a more comprehensive approach that includes an assessment of the socioeconomic impacts of infrastructure disruptions on vulnerable populations that will be taken into account as well as the socioeconomic benefits of infrastructure investment. This expanded upon objectives contained within *The Roadmap*, to ensure equitable access to resilient critical infrastructure.

   c. Demographic Analysis: Population and demographic characteristics outlined within the *Northern Virginia Hazard Mitigation Plan*. The *Fairfax County Comprehensive Plan* also looks at demographics and social factors and utilizes this information to support the Human Services section of the *Comprehensive Plan*.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**

   Meets criteria as written.

   a. Coordination with other local and inter-jurisdictional projects, plans and activities: Objective 4: Strengthen Regional Resilience Through Innovative Partnerships, Programs, and Pilots contained within *Resilient Critical Infrastructure Roadmap for Northern Virginia* focuses on coordination with local and inter-jurisdictional agencies and aligning strategies and programs. The *Comprehensive Plan for Fairfax County, Virginia* was adopted by the Board of Supervisors, Planning Commision, The Department of Planning and Zoning, and the Department of Transportation, and guides all of the plans presented in the Resilience Plan

submission for Fairfax County. The *Northern Virginia Hazard Mitigation Plan* was a collaborative effort that was adopted by all impacted localities.

b. Clearly articulated timeline or phasing plan for implementation: Timeline for deliverables is presented within the R*egional Collaboration to Build Community Resilience in Northern Virginia*. Timeline presented within the F*airfax County FY 2022 - FY 2026 Capital Improvement Program, Stormwater Management*. Phased implementation plans presented in the *Fairfax County Watershed Management Plans*.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

Meets criteria as written.

a. The 2018 *Resilient Critical Infrastructure Roadmap for Northern Virginia (Roadmap)* incorporates best available science and identifies actions to potentially decrease the severity of future consequences emanating from climate and extreme weather, to include sea level rise and storm surge. *Sea Level Rise: Impact on Northern Virginia* is an interactive story map and dashboard that was created in 2019 to convey the impact of sea level rise scenarios. The *Northern Virginia Hazard Mitigation Plan* includes analyses of natural hazards based on best available science to include flooding, sea level rise and land subsidence, tropical and coastal storms, and shoreline erosion.

VA DCR looks forward to working with you as you work to make Fairfax County a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl Glover, DCR

CID515525_FairfaxCounty_CFPF-5 (Map Updates)

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Fairfax County

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

_X_ **Study**

NFIP/DCR Community Identification Number (CID) 515525

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bryan J. Hill, County Excutive

Signature of Authorized Official:

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 552

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-2531 **Cell Phone Number:** (____) N/A

Email Address: cexbryanhill@fairfaxcounty.gov

Contact Person (If different from authorized official): Craig Carinci

Mailing Address (1): 12000 Government Center Parkway

Mailing Address (2): Suite 449

City: Fairfax **State:** VA **Zip:** 22035

Telephone Number: (703) 324-5500 **Cell Phone Number:** (____) N/A

Email Address: Craig.Carinci@fairfaxcounty.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☒ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☒ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): 27 Fairfax County Watersheds

NFIP Community Identification Number (CID#):(See appendix F 515525

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): SFHA Zones A and AE

Flood Insurance Rate Map Number(s) (If Applicable): See spreadsheet

Total Cost of Project: $1,200,000

Total Amount Requested $600,000

FEMA FIRM Panels

Panel	Effective Date
51059CIND0A	9/17/2010
51059C0020E	9/17/2010
51059C0040E	9/17/2010
51059C0045E	9/17/2010
51059C0065E	9/17/2010
51059C0095E	9/17/2010
51059C0110E	9/17/2010
51059C0115E	9/17/2010
51059C0120E	9/17/2010
51059C0130E	9/17/2010
51059C0135E	9/17/2010
51059C0140E	9/17/2010
51059C0145E	9/17/2010
51059C0155E	9/17/2010
51059C0160E	9/17/2010
51059C0165E	9/17/2010
51059C0170E	9/17/2010
51059C0180E	9/17/2010
51059C0190E	9/17/2010
51059C0210E	9/17/2010
51059C0230E	9/17/2010
51059C0235E	9/17/2010
51059C0240E	9/17/2010
51059C0245E	9/17/2010
51059C0255E	9/17/2010
51059C0260E	9/17/2010
51059C0265E	9/17/2010
51059C0270E	9/17/2010
51059C0280E	9/17/2010
51059C0285E	9/17/2010
51059C0290E	9/17/2010
51059C0295E	9/17/2010
51059C0315E	9/17/2010
51059C0320E	9/17/2010
51059C0335E	9/17/2010
51059C0355E	9/17/2010
51059C0360E	9/17/2010
51059C0370E	9/17/2010
51059C0380E	9/17/2010
51059C0385E	9/17/2010
51059C0390E	9/17/2010
51059C0395E	9/17/2010
51059C0405E	9/17/2010
51059C0410E	9/17/2010
51059C0415E	9/17/2010
51059C0430E	9/17/2010
51059C0435E	9/17/2010

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Fairfax County	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration	☒ Yes ☐ No
Applicant Name:	Fairfax County

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	**30**
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	**35**
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	
☒ Regional hydrologic and hydraulic studies of floodplains.	**45**	**45**
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	**0**
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	**0**
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	**0**
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	**0**
Total Points		**105**

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID515525_FairfaxCounty_CFPF Applications

2 messages

Torgersen, Catherine S <Catherine.Torgersen@fairfaxcounty.gov> Tue, Apr 5, 2022 at 4:31 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Pokharel, Sajan" <Sajan.Pokharel@fairfaxcounty.gov>, "Habete, Daniel" <Daniel.Habete@fairfaxcounty.gov>, "Calmbacher, Joni" <Joni.Calmbacher@fairfaxcounty.gov>, "Wilkins, Fred H." <Fred.Wilkins@fairfaxcounty.gov>, "Carinci, Craig A." <Craig.Carinci@fairfaxcounty.gov>, "Ambrose, Heather" <Heather.Ambrose@fairfaxcounty.gov>, "Gutzler, Emma B." <Emma.Gutzler@fairfaxcounty.gov>

Good afternoon,

Fairfax County is pleased to submit the following five applications for grant round 3 of the Virginia Community Flood Preparedness Fund:

1. CID515525_FairfaxCounty_CFPF-1 Tucker Avenue Neighborhood Stormwater Improvement Project Application
2. CID515525_FairfaxCounty_CFPF-2 Chowan Avenue Stormwater Improvement Project Application
3. CID515525_FairfaxCounty_CFPF-3 Little Pimmit Run Tributary at Woodland Terrace Project Application
4. CID515525_FairfaxCounty_CFPF-4 Tripps Run at Barrett Road Flood Mitigation Project Application
5. CID515525_FairfaxCounty_CFPF-5 Regulated Floodplain Map Updates Study Application

The applications are available for download at the following Sharefile link: https://fairfaxcounty-ent.sharefile.com/d-s52b8f9fb46c444d8a5ecbe1f4ad3dd45

Please let me know if you are unable to download the applications or if you have any questions.

Thank you,

Catie Torgersen

Planner

Stormwater Planning Division, SWPD
Fairfax County DPWES

12000 Government Center Parkway
Fairfax, VA 22035
703-639-7664 (cell)

CFPF, rr <cfpf@dcr.virginia.gov> Wed, Apr 6, 2022 at 10:00 AM
To: "Torgersen, Catherine S" <Catherine.Torgersen@fairfaxcounty.gov>
Cc: "Pokharel, Sajan" <Sajan.Pokharel@fairfaxcounty.gov>, "Habete, Daniel" <Daniel.Habete@fairfaxcounty.gov>, "Calmbacher, Joni" <Joni.Calmbacher@fairfaxcounty.gov>, "Wilkins, Fred H." <Fred.Wilkins@fairfaxcounty.gov>, "Carinci,

Craig A." <Craig.Carinci@fairfaxcounty.gov>, "Ambrose, Heather" <Heather.Ambrose@fairfaxcounty.gov>, "Gutzler, Emma B." <Emma.Gutzler@fairfaxcounty.gov>

Received

On Tue, Apr 5, 2022 at 4:31 PM Torgersen, Catherine S <Catherine.Torgersen@fairfaxcounty.gov> wrote:

> Good afternoon,
>
> Fairfax County is pleased to submit the following five applications for grant round 3 of the Virginia Community Flood Preparedness Fund:
>
> 1. CID515525_FairfaxCounty_CFPF-1 Tucker Avenue Neighborhood Stormwater Improvement Project Application
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>
> The applications are available for download at the following Sharefile link: https://fairfaxcounty-ent.sharefile.com/d-s52b8f9fb46c444d8a5ecbe1f4ad3dd45
>
> Please let me know if you are unable to download the applications or if you have any questions.
>
> Thank you,
>
> Catie Torgersen
>
> Planner
>
> Stormwater Planning Division, SWPD
> Fairfax County DPWES
>
> 12000 Government Center Parkway
> Fairfax, VA 22035
> 703-639-7664 (cell)

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: Rappahannock-Rapidan Regional Commission

Category of Grant Being Applied for (check one):

__X__Capacity Building/Planning

_____Project

_____Study

NFIP/DCR Community Identification Number (CID)_042 (See below for all)________

If a state or federally recognized Indian tribe, Name of tribe: N/A

Name of Authorized Official: Patrick L. Mauney

Signature of Authorized Official: _

Mailing Address (1): 420 Southridge Parkway

Mailing Address (2): Suite 106

City: Culpeper **State:** VA **Zip:** 22701

Telephone Number: (540) 829-7450 **Cell Phone Number: (____) _________________**

Email Address: plmauney@rrregion.org

Contact Person (If different from authorized official): ________________________________

Mailing Address (1): ____

Mailing Address (2): ____

City: ___________________________ **State:** _________________ **Zip:** ___________________

Telephone Number: (____) _______________ **Cell Phone Number: (____)** ________________

Email Address: ____

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

✓ Resilience Plan Development

  ✓ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ✓ Resource assessments, planning, strategies and development.
    ✓ Policy management and/or development.
    ✓ Stakeholder engagement and strategies.

Location of Project (Include Maps): Rappahannock-Rapidan Region

NFIP Community Identification Number (CID#):(See appendix F) 510041 (Culpeper County); 510042 (Town of Culpeper); 510055 (Fauquier County); 510094 (Madison County); 510203 (Orange

County); 510366 (Town of Orange); 510128 (Rappahannock County); 510056 (Town of Remington); 510057 (Town of Warrenton); 510288 (Town of Washington); 510137-DCR1 (Town of Gordonsville); 510061-DCR1 (Town of The Plains)??

Is Project Located in an NFIP Participating Community? **X** Yes ☐ No

Is Project Located in a Special Flood Hazard Area? **X** Yes ☐ No

Flood Zone(s) (If Applicable): ____

Flood Insurance Rate Map Number(s) (If Applicable): N/A

Total Cost of Project: $150,000

Total Amount Requested: $37,500

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Rappahannock-Rapidan Regional Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration		**x Yes** **☐ No**
Applicant Name:	**Rappahannock-Rapidan Regional Commission**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	**55**
Development of a new resilience plan.	**55**	**55**
Resource assessments, planning, strategies and development.	**45**	**45**
Policy management and/or development.	**40**	**40**
Stakeholder engagement and strategies.	**25**	**25**
Goal planning, implementation and evaluation.	**25**	**25**
Long term maintenance strategy.	**25**	**25**
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (**Based on ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		298

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No X N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No X N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No X N/A
A link to or a copy of the current floodplain ordinance	☐ Yes ☐ No X N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	X Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	X Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☐ Yes ☐ No X N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	X Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	X Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	X Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	X Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	X Yes ☐ No ☐ N/A

Scope of Work Narrative

Introduction

The Rappahannock-Rapidan Regional Commission (RRRC) is a planning district commission in Virginia's Northern Piedmont and consists of Culpeper, Fauquier, Madison, Orange and Rappahannock Counties, and the incorporated towns within them. While not within the Coastal Zone, the Rappahannock-Rapidan Region is vulnerable to climate change, particularly extreme weather events. Portions of the Region are experiencing rapid development as the Washington, DC metropolitan area continues to move westward. The vulnerability of future buildings, infrastructure and critical facilities is of great concern to community leaders across the Region as are threats to its robust agricultural economy and agritourism.

The most common hazard identified in the Region's 2018 Hazard Mitigation Plan is flooding, which is primary focus of the proposed project. Three major rivers, the York, the Rappahannock and the Potomac, all of which have tributaries of significant size, drain the region to the Chesapeake Bay. Runoff from creeks and streams high in the Blue Ridge Mountains contribute to the downstream flow, often resulting in flash floods during periods of heavy rain and/or rapid snow melt.

Increases in the intensity of rain events is also a concern for the approximately one hundred state-regulated dams in the Region that have known hazard classifications, including fourteen high hazard potential dams and 27 significant hazard potential dams. Furthermore, lack of stormwater management on land developed prior to state stormwater law and stormwater practices not sized for the changing climate carry additional flood risk.

With these risk factors and others in mind, RRRC seeks grant funding to develop a regional resiliency plan to assist its member jurisdictions in assessing and mitigating these risks, as part of its overall Regional Hazard Mitigation Plan update process.

Capacity Needs and Assets

The Rappahannock-Rapidan Region is a semi-rural region of 183,197 residents, and as such, the majority of RRRC's member jurisdictions operate with limited resources and technical capacity. For this reason, RRRC is requesting grant funding to contract a consultant to provide technical and planning expertise in the development of a regional resiliency plan with locality-specific strategies as part of its Hazard Mitigation Plan update. By working regionally and incorporating resiliency plan development into the larger planning process, RRRC would be able to more efficiently and effectively utilize these limited resources. Additionally, the Region's localities would benefit from collaboration and information sharing throughout the process, taking advantage of the technical expertise within the more developed jurisdictions.

RRRC serves as the plan developer and coordinator for the Rappahannock-Rapidan Regional Hazard Mitigation Plan. The plan's most recent adoption date is December 13, 2018 and must be reviewed and updated within 5 years to ensure compliance and maintain eligibility for various FEMA grant programs. While RRRC staff previously conducted Hazard Mitigation Plan updates, the significant updates being required and the desire to include the resiliency component exceed current staff capacity.

Goals and Objectives

The proposed project seeks to incorporate DCR's Resilience Plan Elements into the next update of the Rappahannock-Rapidan Regional Hazard Mitigation Plan in order to address both cross-jurisdictional and locality-specific issues related to flood control and resilience. Objectives of this process include:

- Update Hazard Mitigation risk assessment data, including climate change considerations and current flood maps
- Include additional emphasis on stormwater management and nature-based solutions
- Conduct more comprehensive stakeholder outreach than previous Hazard Mitigation Plan updates, addressing cross-departmental considerations and environmental justice
- Develop lists of actionable locality-specific projects
- Approval of Resiliency/Hazard Mitigation Plan by each jurisdiction and DCR

Stakeholder Identification, Outreach and Education Strategies

RRRC will seek to expand the stakeholder identification and outreach component of past Hazard Mitigation Plan updates to include a broader cross-section of stakeholders from its jurisdictions in-line with a whole-community approach. As part of the plan development process, the steering committee made up of local government and RRRC staff will identify the most effective methods of community engagement to achieve that objective.

Planned tasks and activities include development of outreach materials in English and Spanish, media advisories and press releases delivered to local newspapers in the region, and public notice of stakeholder meetings and public comment opportunities. Public input will also be solicited via survey and feedback mechanisms as the plan update progresses.

Additionally, local governments participating in the plan update have agreed, through letters of intent to participate, to provide notices of the plan update on local government websites, providing notice through available media (including jurisdiction email lists and social media) and supporting public meetings and outreach within their jurisdiction. During the course of the plan update, it may be necessary to conduct virtual meetings. RRRC will follow Code of Virginia guidance to ensure that meetings are properly noticed and accessible and allow for public comment.

The planning process will make use of several existing mechanisms to ensure broad-based participation and involvement from local and regional stakeholders. In addition to the Steering Committee that will guide the project, the Regional Commission currently organizes several regional committees that will be briefed at the outset and during the Hazard Mitigation Plan update:

- Rappahannock-Rapidan Land Use & Environment Committee: includes representatives from Virginia Department of Health, Virginia Department of Environmental Quality, local governments, Soil & Water Conservation Districts, non-profit water quality organizations
- RRRC Chief Administrative Officers Committee
- Rappahannock-Rapidan Food Council
- RRRC Rural Transportation Committee / Planners Roundtable

VDEM Region II coordinates a Culpeper Area Emergency Coordinators meeting, at which project information will be shared throughout the planning process. This group includes representatives from Community Colleges, Hospitals, and local emergency management. The Regional Commission will also notify its neighboring Planning Districts of the plan update and communicate with them throughout the plan update process. All stakeholders, including businesses, will also be reached through the planned media releases.

Implementation Plan

The requested funds would be spent contracting a consultant to provide technical assistance to RRRC through the Plan development process. The consultant would be chosen through a competitive bid process and perform the same services for the overall Hazard Mitigation Plan update.

A grant application was submitted to the Virginia Department of Emergency Management (VDEM) and Federal Emergency Management Administration (FEMA) in late 2021. Rather than a stand-alone plan, the resiliency plan would be a part of the regional hazard mitigation plan with relevant sections on flooding, dam failure, etc. and locality-specific resiliency goals added to the locality summaries.

<u>Risk Assessment</u>

The consultant will compile data and update the existing Hazard Mitigation Plan risk assessment with participation and review by the steering committee. RRRC will seek new data regarding identified hazards as part of the plan update process. Where such data is unavailable, the hazard profiles included in the current plan (2018) will be used.

Community asset information is included in the current plan (2018) and those assets identified will form the baseline for the plan update. Following the initiation of the plan update, participating jurisdictions will review previously identified assets and will offer additional assets for inclusion with a focus on the following assets:

- Critical facilities (Public Safety, Public infrastructure)
- Lifeline Infrastructure
- Vulnerable Population facilities (Senior Centers, Schools, Assisted Living)
- Natural Resources with important environmental benefits
- Economic drivers (primary employers)
- Significant historic resources

As the plan update process begins, local and regional plans, studies and reports relevant to hazard mitigation will be inventoried. These plans may include local Emergency Operations Plans, Comprehensive Plans, Emergency Response plans (general or hazard-specific), and studies focused on those hazards identified as part of this plan update. The process will include requests to local government contacts, as well as to those regional and state agencies with specific focus on the hazards impacting the region (VDEM, DEQ, Soil & Water Conservation Districts, etc.).

Existing information from the Commonwealth of Virginia Hazard Mitigation Plan will be reviewed and incorporated for areas and hazards where statewide information is critical. Information on resiliency and climate change in the Commonwealth's Hazard Mitigation Plan and other resiliency efforts will be utilized to guide the inclusion and incorporation of such impacts into the region’s plan. Additionally, each of the participating jurisdictions in the Region will have an updated FIRM in place, which will be incorporated into the flood risk analysis.

The Risk Assessment Update will likewise build on methods utilized in the existing plan (2018) and will incorporate new data that is available at the beginning of the plan update process. The update process will include review and updates for regional and local hazard profiles, vulnerability assessments, loss estimates and risk rankings, as new data and information allows.

The Risk Assessment will include:
- Review and addition/subtraction of hazards included in the plan
- Review and incorporation of relevant information from Commonwealth of Virginia Hazard Mitigation Plan
- Identification of hazards that are not mitigation-related
- Identifying gaps and limitations of existing data
- Incorporating, by narrative, potential implications of climate change on the region

Based on feedback from FEMA Region III, the Rappahannock-Rapidan Regional Commission anticipates re-organizing the Regional Hazard Mitigation Plan to provide locality summary documents that are expected to enhance the connectivity between local risks and locally-developed mitigation strategies. As the overall planning process progresses, the Regional Commission will work with the selected consultant and the stakeholder committees to determine the preferred approach to incorporating resiliency within each locality summary sections, as well as creating a stand-alone section focused on flood resiliency information and strategies.

Mitigation Strategy Development

The mitigation strategy section of the current 2018 Regional Hazard Mitigation Plan includes documentation of local and region capability assessments, mitigation goals, mitigation actions, implementation plans and mitigation priorities for each participating jurisdiction. RRRC anticipates each participating jurisdiction reviewing the existing information and completing FEMA’s Local Capability Assessment Tool focused on the following areas:

- Planning & Regulatory
- Administrative & Financial
- Technical
- Education & Outreach

The 2018 plan includes mitigation goals for the Rappahannock-Rapidan region. As part of the update, RRRC will lead the steering committee in a review of those goals and incorporate new information and data gathered during the update to inform revisions and additional mitigation goals. This review will include information from the Commonwealth of Virginia Hazard Mitigation Plan, as well as incorporation of concerns identified by the public and/or other stakeholders.

The 2018 plan includes regional mitigation actions and local mitigation actions identified by each participating jurisdiction. The update will evaluate those identified actions and provide a status update for each action.

Participating jurisdictions may identify and evaluate new mitigation actions that will address goals and problem statements identified during this planning process. Those mitigation actions will focus on local plans/regulations, structural or infrastructure projects, natural resource/system protection, and/or education and outreach programs. Each identified mitigation action will be evaluated based on commonly accepted criteria, as appropriate for each action:

- Anticipated effectiveness
- Technical feasibility
- Administrative capability
- Local Champion/Political Will
- Legal authority
- Environmental constraints
- Social considerations
- Community objectives
- Benefit Cost Analysis (limited)

Each participating jurisdiction will then prioritize these mitigation actions as high/medium/low and as short/mid/long range actions. New mitigation actions will incorporate implementation plans that identify:

- Hazards addressed
- Responsible agency/department
- Possible Funding sources
- Timeline
- Initial/Next Steps

Plan Approval and Adoption

RRRC will coordinate approval and adoption processes for the Hazard Mitigation Plan/Resiliency Plan in coordination with the steering committee and participating jurisdictions.

Plan review, adoption, and approval efforts will include:

- A draft Plan will be prepared and shared for review with local and community partners
- The final draft Plan will be submitted, along with a completed Plan Review Tool, to the Virginia State Hazard Mitigation Officer (SHMO) for review. Any revisions requested by the State will be completed and the Plan Update resubmitted.
- After the SHMO is satisfied that the Plan Update meets all of the required elements and submits the documents to FEMA Region III for review, any revisions requested by FEMA Region III will be completed and the Plan Update resubmitted.
- After FEMA Region III is satisfied with the Plan Update and designates the Plan Update as "approvable pending adoption," an Adoption Resolution will be prepared for adoption by each Participating Jurisdiction. The Adoption Resolution will include the following:
  - Responsibility for overall coordination of plan maintenance and implementation including the requirement to provide periodic reporting to the Participating Jurisdiction's governing body on at least an annual basis
  - Continuing participation in plan maintenance and implementation by the Participating Jurisdiction's governing body, agencies, and organizations during the subsequent 5-year cycle
  - Specific roles and responsibilities for agencies and organizations as described in the Mitigation Strategy and the mitigation action implementation plans
- The governing body of each Participating Jurisdiction will formally adopt the final version of the Plan and the signed resolutions will be submitted by RRRC to the SHMO who will relay the documents to FEMA Region III for the issuance of approval letters.

Timeline

The process of updating the Region's Hazard Mitigation Plan, of which the resiliency plan will be a part of, is expected to last 18 to 24 months with the following estimated timeline, subject to change based on funding availability:

1. Grant planning/administration and contracting consultant: July – August 2022
2. Hazard identification and data collection: September 2022 – January 2023
3. Risk and vulnerability assessment: September 2022 – April 2023
4. Capability assessment: January 2023 – June 2023
5. Mitigation strategy development: April 2023 – September 2023
6. Draft plan review: October – November 2023
7. Submit plan to VDEM for review: December 2023
8. Submit plan to FEMA for review: January 2024
9. Local plan adoption: March – April 2024
10. Project closeout: July 2024

Responsible Parties

RRRC staff would handle grant administration, project coordination, meeting planning and facilitation. A consultant would provide technical assistance, data gathering, analysis and plan writing. Outreach activities are expected to be shared between RRRC, the participating local jurisdictions, and the consultant team.

Each participating jurisdiction has identified a primary and secondary contact person that will serve on the Hazard Mitigation Plan/Resiliency Plan steering committee, as identified in the included letters of intent to participate. These representatives bring experience in emergency management and response, planning and zoning, public works/utilities infrastructure, and community development. Each jurisdiction has also agreed to involve their floodplain administrator (if that individual is not the primary or secondary contact) and other relevant local staff and stakeholders as part of the plan review and update.

In many instances, the designated contacts have participated in previous updates to the regional hazard mitigation plan and are accustomed to the process of reviewing mitigation strategies, capability assessments and critical facilities. Should the steering committee identify areas with lower levels of expertise, the Regional Commission will reach out to partner agencies (VDEM, DEQ, DCR) or other regional organizations to provide guidance and input.

Performance outputs and Measures and Plans for Maintaining Capacity

The Rappahannock-Rapidan Regional Commission will include plan maintenance procedures in the Regional Hazard Mitigation/Resiliency Plan for monitoring of implementation efforts, evaluation of the Plan effectiveness in achieving local and regional goals and procedures for reviewing the Plan based on subsequent disaster events and within the context of FEMA's five-year Hazard Mitigation Plan update cycle.

Plan implementation procedures will be identified to track progress on implementation projects, methods of communicating funding opportunities tied to specific mitigation actions and incorporate co-benefits for identified mitigation actions.

Budget Narrative

The total project cost for the Rappahannock-Rapidan Regional Hazard Mitigation Plan update, inclusive of the incorporation of DCR's identified Resilience Plan Elements into the overall Hazard Mitigation Plan update, is budgeted at $150,000. A previous application to FEMA's Building Resilient Infrastructure and Communities (BRIC) program will provide $100,000 in funding for the Hazard Mitigation Plan update. This application requests $37,500 from the CFPF, with the Regional Commission contributing $12,500 in cash match, in order to incorporate the Resilience Plan Elements and locally resilience strategies into the plan update.

Included with this application package is a letter certifying authorization to request funding and confirming availability of matching funds.

Rappahannock-Rapidan
REGIONAL COMMISSION

March 31, 2022

Wendy C. Howard-Cooper
Division Director, Dam Safety & Floodplain Management
Virginia Department of Conservation & Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219-2094

Re: Community Flood Preparedness Fund Application Pledge Agreement

Ms. Howard-Cooper,

At its meeting on February 23, 2022, the Rappahannock-Rapidan Regional Commission (RRRC) approved submission of an application to the Community Flood Preparedness Fund (CFPF) program administered by the Department of Conservation and Recreation. As part of the application, RRRC committed to match grant funds with cash, per the program guidelines. The source of funds will be local per capita dues provided by RRRC's member jurisdictions, or other allowable matching fund source.

Please accept this letter as authorization of the submission of the application and confirmation that, if the grant application is successful, RRRC will provide a cash match of $12,500, or 25% for the application request, unless a lower match is allowable based on DCR's review of the application. In the latter case, RRRC will provide the amount less than 25% not provided by the Department of Conservation and Recreation.

Thank you for your consideration of the request from RRRC.

Sincerely,

Patrick Mauney
Executive Director

420 Southridge Parkway, Suite 106, Culpeper, Virginia 22701
Phone 540.829.7450 http://www.rrregion.org

John C. Egertson, AICP
County Administrator
302 N. Main Street, Culpeper, Virginia 22701
Phone: (540) 727-3427
E-mail: jegertson@culpepercounty.gov

December 8, 2020

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
CULPEPER COUNTY

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, CULPEPER COUNTY is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the CULPEPER COUNTY:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:

- Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
- Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
- Support the Steering Committee selected to oversee the development of this plan.
- Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).
- Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:

    - Structure and facility inventory data
    - Identification of new development and anticipated development
    - Identification of natural hazard risk areas
    - Identification of natural hazard events and losses that have impacted your community in the last five years
    - Identification of plans, reports and ordinances addressing natural hazard risk
    - Identify mitigation activity in our community in the last five years, including progress on previously identified mitigation actions

- Support public outreach efforts in your community which may include:

    Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website
    - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
    - Advertising and supporting public meetings in your area.

- Assist with the identification of stakeholders within our community that should be informed and potentially involved with the planning process.

- Review draft Plan sections when requested and provide comment and input as appropriate.

- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.

- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.

- Involve your local NFIP Floodplain Administrator in the planning process.

- Adopt the Plan by resolution of their governing body after FEMA conditional approval.

- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings, and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

<u>Primary Project Contact</u>: Bill Ooten, Director of Emergency Management Services

Phone Number: 540-727-7161

Email Address: booten@culpepercounty.gov

Secondary Project Contact: Captain Thomas Dawson

Phone Number: 540-727-7161

Email Address: tdawson@culpepercounty.gov

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

John Egertson

John Egertson, AICP, County Administrator

COUNTY OF FAUQUIER
OFFICE OF THE COUNTY ADMINISTRATOR

PAUL S. McCULLA
County Administrator

10 Hotel Street, Suite 204
Warrenton, Virginia 20186
PHONE 540-422-8001
FAX 540-422-8022
E-mail: paul.mcculla@fauquiercounty.gov

ERIN M. KOZANECKI
Deputy County Administrator

December 9, 2020

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
Fauquier County

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, the County of Fauquier is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the County of Fauquier:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:

- Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
- Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
- Support the Steering Committee selected to oversee the development of this plan.
- Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).

- Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
  - Structure and facility inventory data
  - Identification of new development and anticipated development
  - Identification of natural hazard risk areas
  - Identification of natural hazard events and losses that have impacted your community in the last five years
  - Identification of plans, studies, reports and ordinances addressing natural hazard risk
  - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions

- Support public outreach efforts in your community which may include:
  - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission websiteProviding notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
  - Advertising and supporting public meetings in your area.

- Assist with the identification of stakeholders within your community that should be informed and potentially involved with the planning process.

- Review draft Plan sections when requested and provide comment and input as appropriate.

- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.

- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.

- Involve your local NFIP Floodplain Administrator in the planning process.

- Adopt the Plan by resolution of their governing body after FEMA conditional approval.

- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings, and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Michael Guditus, PEM, MEP
Emergency Manager
Fauquier County Department of Fire, Rescue and Emergency Management
62 Culpeper Street, Warrenton, Va. 20186
Office: 540-422-8800
Cell: 540-340-4381
Michael.guditus@fauquiercounty.gov

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

Paul S. McCulla
County Administrator

PSM:rd
cc: Mr. Darren Stevens, DFREM
Mr. Michael Guditus, DFREM

Chairman
R. Clay Jackson

Vice-Chairman
Charlotte Hoffman

BOARD MEMBER
Amber Foster
Kevin McGhee
Carlton Yowell

Madison County Board of Supervisors

County Administrator
Jack Hobbs

County Attorney
Sean D. Gregg

302 Thrift Road
P. O. Box 705
Madison, Virginia 22727
(540) 948-7500 (ph)
(540) 948-3843 (fax)

December 9, 2020

Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
Madison County, VA

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, Madison County is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, Madison County:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:
    - Execute and return this “Authorization and Acknowledgement” letter to the Rappahannock-Rapidan Regional Commission.
    - Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
    - Support the Steering Committee selected to oversee the development of this plan.
    - Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).
    - Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
        - Structure and facility inventory data

  - Identification of new development and anticipated development
  - Identification of natural hazard risk areas
  - Identification of natural hazard events and losses that have impacted your community in the last five years
  - Identification of plans, studies, reports and ordinances addressing natural hazard risk
  - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions
- Support public outreach efforts in your community which may include:
  - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website
  - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
  - Advertising and supporting public meetings in your area.
- Assist with the identification of stakeholders within your community that should be informed and potentially involved with the planning process.
- Review draft Plan sections when requested and provide comment and input as appropriate.
- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.
- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.
- Involve your local NFIP Floodplain Administrator in the planning process.
- Adopt the Plan by resolution of their governing body after FEMA conditional approval.
- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact:	John Sherer
Phone Number:	540/383-2057
Email Address:	jsherer@madisonco.virginia.gov
Secondary Project Contact:	Brian Gordon
Phone Number:	540/948-5161
Email Address:	bgordon@madisonco.virginia.gov

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

Jack Hobbs

Jack Hobbs
County Administrator

Cc: John Sherer, Emergency Services Coordinator
Brian Gordon, Director of Emergency Communications

ORANGE COUNTY, VIRGINIA
OFFICE OF THE COUNTY ADMINISTRATOR

THEODORE L. VOORHEES
COUNTY ADMINISTRATOR

tvoorhees@orangecountyva.gov
PHONE: (540) 672-3313
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orangecountyva.gov

1734

MAILING ADDRESS:
P. O. BOX 111
ORANGE, VA 22960

PHYSICAL ADDRESS:
112 WEST MAIN STREET
ORANGE, VA 22960

December 8, 2020

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, Virginia 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
County of Orange

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, the County of Orange is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the County of Orange:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:

- Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
- Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
- Support the Steering Committee selected to oversee the development of this plan.
- Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).
- Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
    - Structure and facility inventory data
    - Identification of new development and anticipated development
    - Identification of natural hazard risk areas
    - Identification of natural hazard events and losses that have impacted your community in the last five years

    - Identification of plans, studies, reports and ordinances addressing natural hazard risk
    - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions

- Support public outreach efforts in your community which may include:
    - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website
    - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
    - Advertising and supporting public meetings in your area.

- Assist with the identification of stakeholders within your community that should be informed and potentially involved with the planning process.

- Review draft Plan sections when requested and provide comment and input as appropriate.

- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.

- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.

- Involve your local NFIP Floodplain Administrator in the planning process.

- Adopt the Plan by resolution of their governing body after FEMA conditional approval.

- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact: Nathan Mort, Chief of Fire and EMS
Phone Number: (540) 406-1484
Email Address: nmort@orangecountyva.gov

Secondary Project Contact: Roger Wilson, Assistant Chief of Operations
Phone Number: (540) 406-9245
Email Address: rwilson@orangecountyva.gov

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

Theodore L. Voorhees

Theodore L. Voorhees
County Administrator

Garrey W. Curry, Jr.,
County Administrator

Christine Smith, Chair
Debbie P. Donehey, Vice-Chair
Ronald L. Frazier
I. Christopher Parrish
Keir A. Whitson

RAPPAHANNOCK COUNTY
COUNTY ADMINISTRATOR'S OFFICE
3 Library Road - P.O. Box 519
Washington, Virginia 22747-0519
Phone: (540) 675-5330 Fax: (540) 675-5331
www.rappahannockcountyva.gov

December 9, 2020

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
Rappahannock County

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, the Rappahannock County, is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the Rappahannock County:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.
2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:
    - Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
    - Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
    - Support the Steering Committee selected to oversee the development of this plan.
    - Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).
    - Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
        - Structure and facility inventory data
        - Identification of new development and anticipated development

    - Identification of natural hazard risk areas
    - Identification of natural hazard events and losses that have impacted your community in the last five years
    - Identification of plans, studies, reports and ordinances addressing natural hazard risk
    - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions
- Support public outreach efforts in your community which may include:
    - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website
    - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
    - Advertising and supporting public meetings in your area.
- Assist with the identification of stakeholders within your community that should be informed and potentially involved with the planning process.
- Review draft Plan sections when requested and provide comment and input as appropriate.
- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.
- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.
- Involve your local NFIP Floodplain Administrator in the planning process.
- Adopt the Plan by resolution of their governing body after FEMA conditional approval.
- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings, and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact: Emergency Management Coordinator (currently vacant, G. Curry interim)
Phone Number: (540) 675-5322
Email Address: emanagement@rappahannockcountyva.gov
Secondary Project Contact: Garrey W. Curry, Jr.
Phone Number: (540) 675-5330
Email Address: gwcurry@rappahannockcountyva.gov

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

Garrey W. Curry, Jr.
County Administrator

TOWN OF CULPEPER

400 S. Main St., Suite 101 • Culpeper, VA 22701
(540) 829-8250 • FAX (540) 829-8249
www.culpeperva.gov

Town Council
Michael T. Olinger, Mayor
William M. Yowell, Vice Mayor
Keith L. Brown
Jamie Clancey
Keith D. Price
Frank Reaves Jr.
Pranas A. Rimeikis
Jon D. Russell
Meaghan E. Taylor

Town Manager
Christopher D. Hively, PE

December 7, 2020

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: **Rappahannock-Rapidan Regional Hazard Mitigation Plan Update**
Authorization and Letter of Intent to Participate
Town of Culpeper

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, the Town of Culpeper, is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the Town of Culpeper:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:

- Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
- Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
- Support the Steering Committee selected to oversee the development of this plan.
- Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).
- Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
  - Structure and facility inventory data
  - Identification of new development and anticipated development
  - Identification of natural hazard risk areas
  - Identification of natural hazard events and losses that have impacted your community in the last five years
  - Identification of plans, studies, reports and ordinances addressing natural hazard risk
  - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions
- Support public outreach efforts in your community which may include:
  - Providing notices of the planning project on our locality website if available with links to a project

  website hosted on the Commission website
  - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
  - Advertising and supporting public meetings in your area.

- Assist with the identification of stakeholders within your community that should be informed and potentially involved with the planning process.
- Review draft Plan sections when requested and provide comment and input as appropriate.
- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.
- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.
- Involve your local NFIP Floodplain Administrator in the planning process.
- Adopt the Plan by resolution of their governing body after FEMA conditional approval.
- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings, and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact: Jim Hoy

Phone Number: 825-0285

Email Address: jhoy@culpeperva.gov

Secondary Project Contact: Andrew Hopewell

Phone Number: 829-8260

Email Address: ahopewell@culpeperva.gov

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

Christopher D. Hively
Town Manager

Cc: Jim Hoy
Andrew Hopewell

Town of Gordonsville, Virginia

Office of the Town Manager
Post Office Box 276
112 South Main Street
Gordonsville, Virginia 22942
Phone: (540) 832-2233; Fax: (540) 832-2449
E-mail: dkendall@gordonsville.org

December 22, 2020

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update Authorization and Letter of Intent to Participate - Town of Gordonsville

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, the Town of Gordonsville is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the Town:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:

   - Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
   - Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
   - Support the Steering Committee selected to oversee the development of this plan.
   - Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).

- Provide data and information about our community as requested by the Rappahannock-Rapidan Regional Commission, including:
    - Structure and facility inventory data
    - Identification of new development and anticipated development
    - Identification of natural hazard risk areas
    - Identification of natural hazard events and losses that have impacted our community in the last five years
    - Identification of plans, studies, reports and ordinances addressing natural hazard risk
    - Identify mitigation activity in our community in the last five years, including progress on previously identified mitigation actions

- Support public outreach efforts in our community which may include:
    - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website
    - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
    - Advertising and supporting public meetings in our area.
    - Assist with the identification of stakeholders within our community that should be informed and potentially involved with the planning process.
    - Review draft Plan sections when requested and provide comment and input as appropriate.
    - Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.
    - Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to our community.
    - Involve our local NFIP Floodplain Administrator in the planning process.
    - Adopt the Plan by resolution of their governing body after FEMA conditional approval.
    - Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for ensuring local representation at steering committee meetings, and ensuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact: Deborah S. Kendall, AICP, Town Manager

Phone Number: 540-832-2233

Email Address: dkendall@gordonsville.org

Secondary Project Contact: Robert K. Coiner, Mayor

Phone Number: 540-832-3264

Email Address: bobbycoiner@gmail.com

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee, will result in our locality being excluded from the planning process.

We look forward to working with you on this important endeavor.

Sincerely,

TOWN OF GORDONSVILLE

Deborah S. Kendall

Deborah S. Kendall, AICP
Town Manager

Cc: Mayor and members of Council
Janet W. Jones, Town Clerk

January 8, 2021

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
TOWN OF MADISON

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, the *TOWN OF MADISON*, is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the *TOWN OF MADISON:*

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:

- Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
- Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
- Support the Steering Committee selected to oversee the development of this plan.
- Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).
- Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
  - Structure and facility inventory data
  - Identification of new development and anticipated development
  - Identification of natural hazard risk areas
  - Identification of natural hazard events and losses that have impacted your community in the last five years
  - Identification of plans, studies, reports and ordinances addressing natural hazard risk
  - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions

- Support public outreach efforts in your community which may include:
  - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website

  - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
  - Advertising and supporting public meetings in your area.

- Assist with the identification of stakeholders within your community that should be informed and potentially involved with the planning process.
- Review draft Plan sections when requested and provide comment and input as appropriate.
- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.
- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.
- Involve your local NFIP Floodplain Administrator in the planning process.
- Adopt the Plan by resolution of their governing body after FEMA conditional approval.
- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings, and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact: MAYOR WILLIAM LAMAR

Phone Number: 540-948-6717

Email Address: mbkrxcy@yahoo.com

Secondary Project Contact: NANCY KNIGHTING

Phone Number: 540-948-7031

Email Address: niteing@verizon.net

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

ORANGE
Sweet Living Steady Progress

Town of Orange
Town Manager's Office

119 Belleview Avenue, Orange, Virginia 22960
Phone: (540) 672-5005 Fax: (540) 672-4435
Email: townmanager@townoforangeva.org

December 9, 2020

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
Town of Orange

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, the *Town of Orange* is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the *Town of Orange*

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner
Expectations),
specifically:

- Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
- Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.
- Support the Steering Committee selected to oversee the development of this plan.
- Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).
- Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
    - Structure and facility inventory data
    - Identification of new development and anticipated development
    - Identification of natural hazard risk areas
    -

    - Identification of natural hazard events and losses that have impacted your community in the last five years
    - Identification of plans, studies, reports and ordinances addressing natural hazard risk
    - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions

- Support public outreach efforts in your community which may include:
    - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website
    - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g. newsletters, flyers, email blasts, social media, etc.)
    - Advertising and supporting public meetings in your area.

- Assist with the identification of stakeholders within your community that should be informed and potentially involved with the planning process.

- Review draft Plan sections when requested and provide comment and input as appropriate.

- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.

- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.

- Involve your local NFIP Floodplain Administrator in the planning process.

- Adopt the Plan by resolution of their governing body after FEMA conditional approval.

- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings, and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact: John G. Cooley

Phone Number: (540) 672-6917

Email Address: townplanner@townoforangeva.org

Secondary Project Contact: Gregory S. Woods

Phone Number: (540) 672-5005

Email Address: townmanager@townoforangeva.org

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

Gregory S Woods

Gregory S. Woods
Town Manager

GSW/

1/5/2021

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
Town of Remington

Dear Mr. Mauney:

Per your letter, dated December 4,2020, the Town of Remington is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the Town of Remington:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:

- Execute and return this "Authorization and Acknowledgement "letter to the Rappahannock-Rapidan Regional Commission.

- Identify local government representatives to serve as the planning point of contacts (POC), below. These people will be responsible for representing their community and assuring that these participation expectations are met by their community.

- Support the Steering Committee selected to oversee the development of this plan.

- Provide representation at steering committee meetings (~3 meetings over 8-12 months likely beginning in 2022, including Kick-Off Meeting and a Jurisdictional Review Workshop meeting).

- Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
    - Structure and facility inventory data
    - Identification of new development and anticipated development
    - Identification of natural hazard risk areas
    - Identification of natural hazard events and losses that have impacted your community in the last five years.
    - Identification of plans, studies, reports and ordinances addressing natural hazard risk.
    - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions.

- Support public outreach efforts in your community which may include:

  - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website.
  - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g., newsletter, flyers, email blasts, social media, etc.)
  - Advertising and supporting public meetings in your area.

- Assist with the identification of stakeholders within your community that should be informed and potentially involved with the planning process.

- Review and draft Plan sections when requested and provide comment and input as appropriate.

- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission. Templates and instructions to aid in the compilation of this information will be provided to all participating partners. Each partner will be expected to complete their templates in a timely manner and according to the timeline specified by the Steering Committee. The Steering Committee will assure that technical and administrative resources are available to assist with the preparation and completion of the assessments.

- Identify specific mitigation actions to address each of the natural hazards posing high or medium risk to your community.

- Involve your local NFIP Floodplain Administrator in the planning process.

- Adopt the Plan by resolution of their governing body after FEMA conditional approval.

- Periodically provide the Steering Committee with summary or local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POC's are responsible for assuring local representation at steering committee meetings, and assuring that the other minimum requirements of jurisdictional participation, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact: James Steward
Phone Number: 540-439-3220
Email Address: JSteward@remington-va.gov

Secondary Project Contact: Sharon Lee
Phone Number: 540-439-3220
Email Address: Slee@remington-va.gov

4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee will result in our locality being excluded from the planning process.

Sincerely,

James E. Steward

James Steward
Town Superintendent

EXPERIENCE
WARRENTON
VIRGINIA
EST. 1810

Brandie Schaeffer
TOWN MANAGER
T(540) 347-1101
bschaeffer@warrentonva.gov

TOWN COUNCIL
H.E. Carter Nevill, Mayor
Renard J. Carlos
Sean M. Polster
Heather D. Sutphin
William T. Semple II
Brett A. Hamby
James N. Hartman III
Kevin T. Carter

December 7, 2020

Mr. Patrick Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701

Subject: Rappahannock-Rapidan Regional Hazard Mitigation Plan Update
Authorization and Letter of Intent to Participate
Town of Warrenton, Virginia

Dear Mr. Mauney:

Per your letter, dated December 4, 2020, the Town of Warrenton is committed to participating in the Rappahannock-Rapidan Regional Hazard Mitigation Plan (HMP) Update project. By way of this letter, the Town of Warrenton:

1. Authorizes the Rappahannock-Rapidan Regional Commission to guide and direct this planning process, perform certain parts of the planning process, and prepare certain parts of the plan documents on our behalf.

2. Agrees to meet the minimum requirements of jurisdictional participation (a.k.a. the Planning Partner Expectations), specifically:

- Execute and return this "Authorization and Acknowledgement" letter to the Rappahannock-Rapidan Regional Commission.
- Identify local government representatives to serve as the planning points of contact (POCs) below.
- Support the Steering Committee selected to oversee the development of this plan.
- Provide representation at steering committee meetings (~ 3 meetings over 8-12 months likely beginning in 2022, including a Kick-Off Meeting and a Jurisdictional Review Workshop meeting).
- Provide data and information about your community as requested by the Rappahannock-Rapidan Regional Commission, including:
    - Structure and facility inventory data
    - Identification of new development and anticipated development
    - Identification of natural hazard risk areas
    - Identification of natural hazard events and losses that have impacted your community in the last five years
    - Identification of plans, studies, reports, and ordinances addressing natural hazard risk
    - Identify mitigation activity in your community in the last five years, including progress on previously identified mitigation actions

- Support public outreach efforts in your community, which may include:
    - Providing notices of the planning project on our locality website if available with links to a project website hosted on the Commission website
        - Providing notice of the planning project, the availability of Plan documents, and notice of public meetings via available local media (e.g., newsletters, flyers, email blasts, social media, etc.)
        - Advertising and supporting public meetings in your area.
- Assist with identifying stakeholders within your community that should be informed and potentially involved with the planning process.
- Review draft Plan sections when requested and provide comments and input as appropriate.
- Prepare and submit a local Capability Assessment to the Rappahannock-Rapidan Regional Commission.
- Identify specific mitigation actions to address each of the natural hazards posing a high or medium risk to your community.
- Involve your local NFIP Floodplain Administrator in the planning process.
- Adopt the plan by resolution of their governing body after FEMA's conditional approval.
- Periodically provide the Steering Committee with a summary of local government staff and volunteer labor spent on the planning process.

3. Assigns the following persons to be the Points of Contact for our jurisdiction. We understand that these POCs are responsible for assuring local representation at steering committee meetings and assuring that jurisdictional participation's other minimum requirements, as detailed in the Planning Partner Expectations above, are met.

Primary Project Contact: Michael Potter

Phone Number: (540) 340-4308

Email Address: mpotter@warrentonva.gov

Secondary Project Contact: Dustin Dawson

Phone Number: 540-718-1894

Email Address ddawson@warrentonva.gov

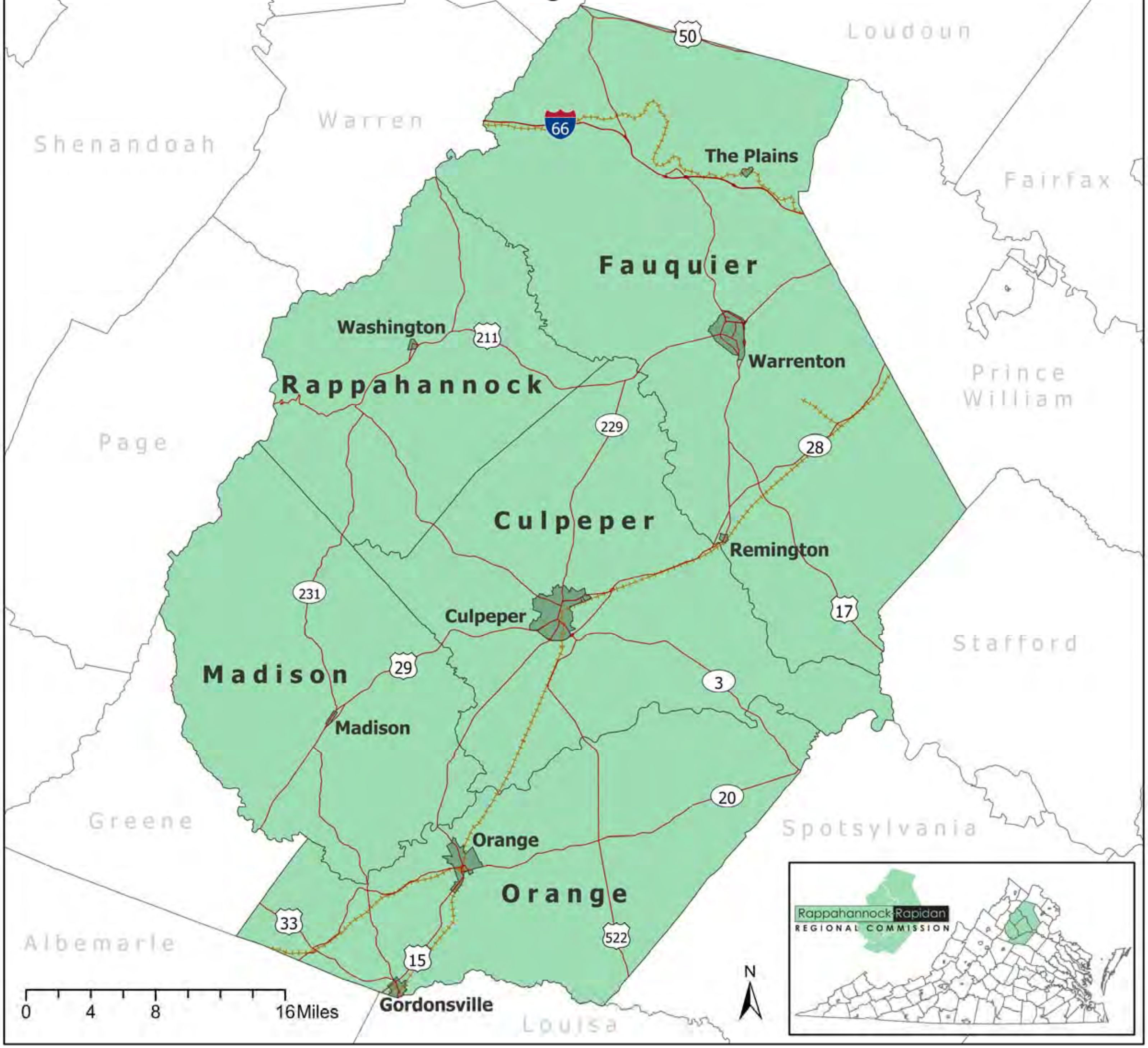
4. Recognizes that failure to meet the minimum participation expectations and deadlines, as determined by the Steering Committee, will result in our locality being excluded from the planning process.

Sincerely,

Brandie M. Schaeffer
Town Manager

Rappahannock-Rapidan Regional Commission

Planning District 9



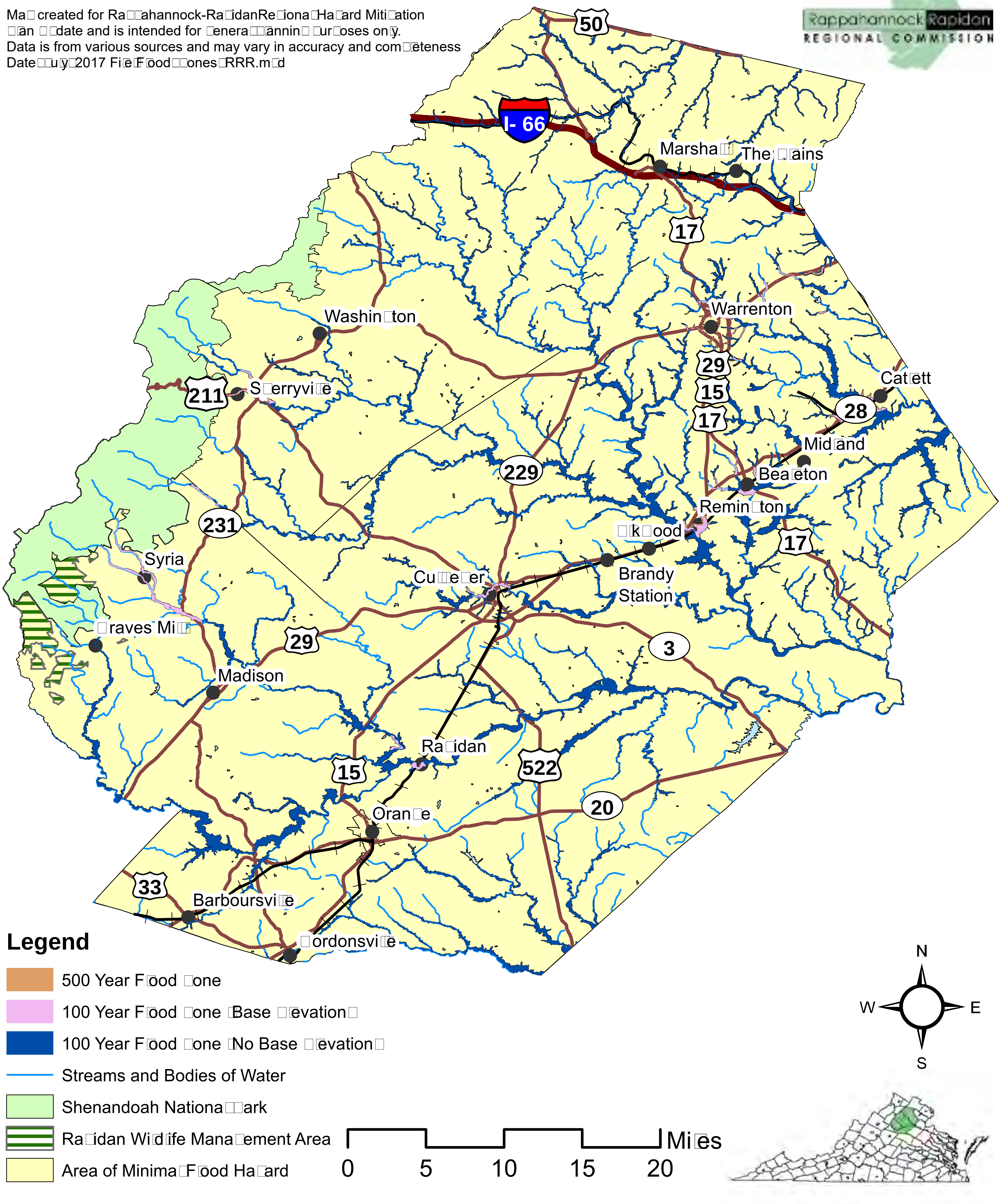
Flood Hazard Areas

Figure 5.1

Rappahannock-Rapidan Regional Hazard Mitigation Plan
Flood Zone Data Source: FEMA, Localities

Map created for Rappahannock-RapidanRegional Hazard Mitigation Plan Update and is intended for general planning purposes only.
Data is from various sources and may vary in accuracy and completeness
Date: July 2017 File: Flood Zones RRR.mxd

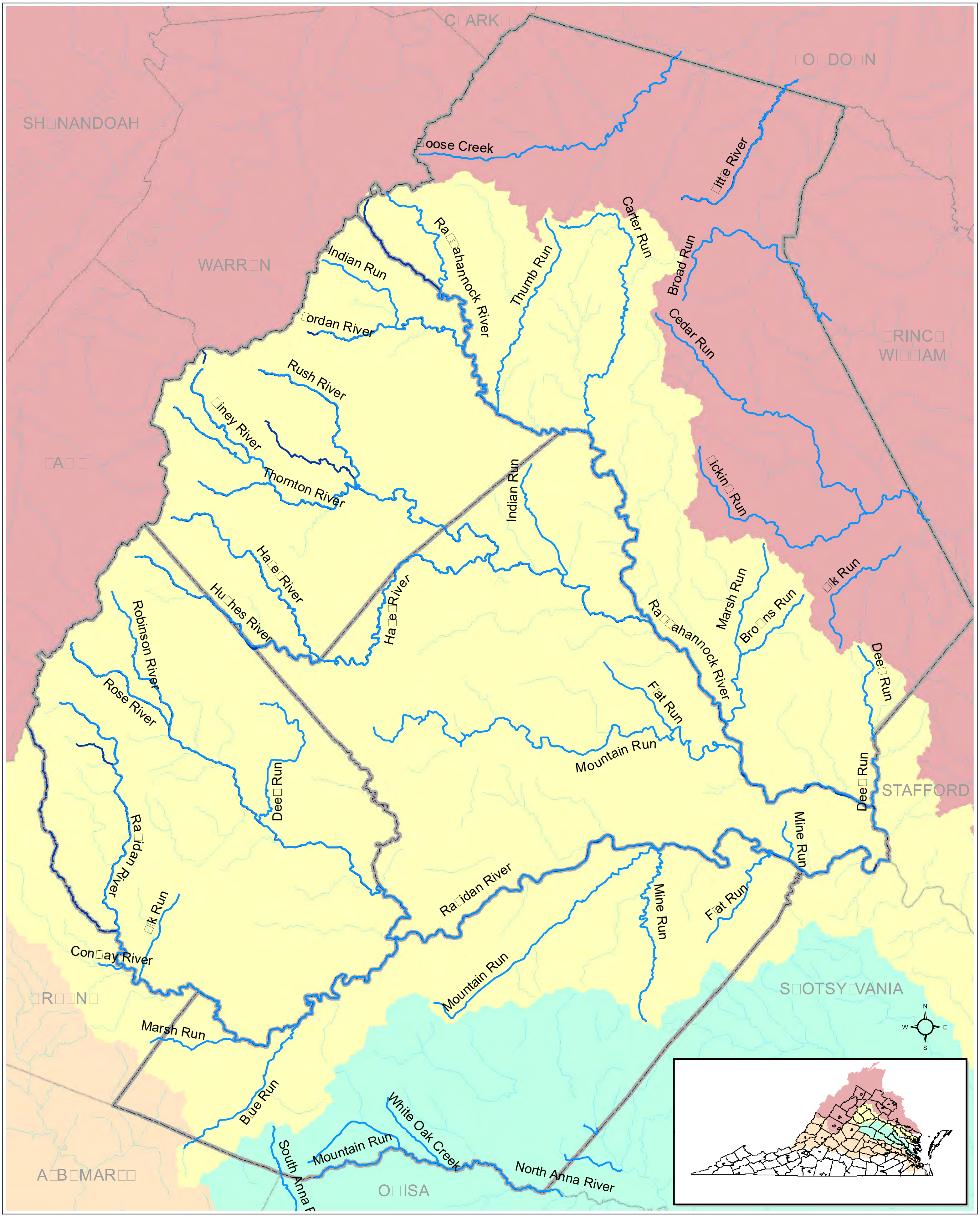
Rappahannock Rapidan
REGIONAL COMMISSION



Legend

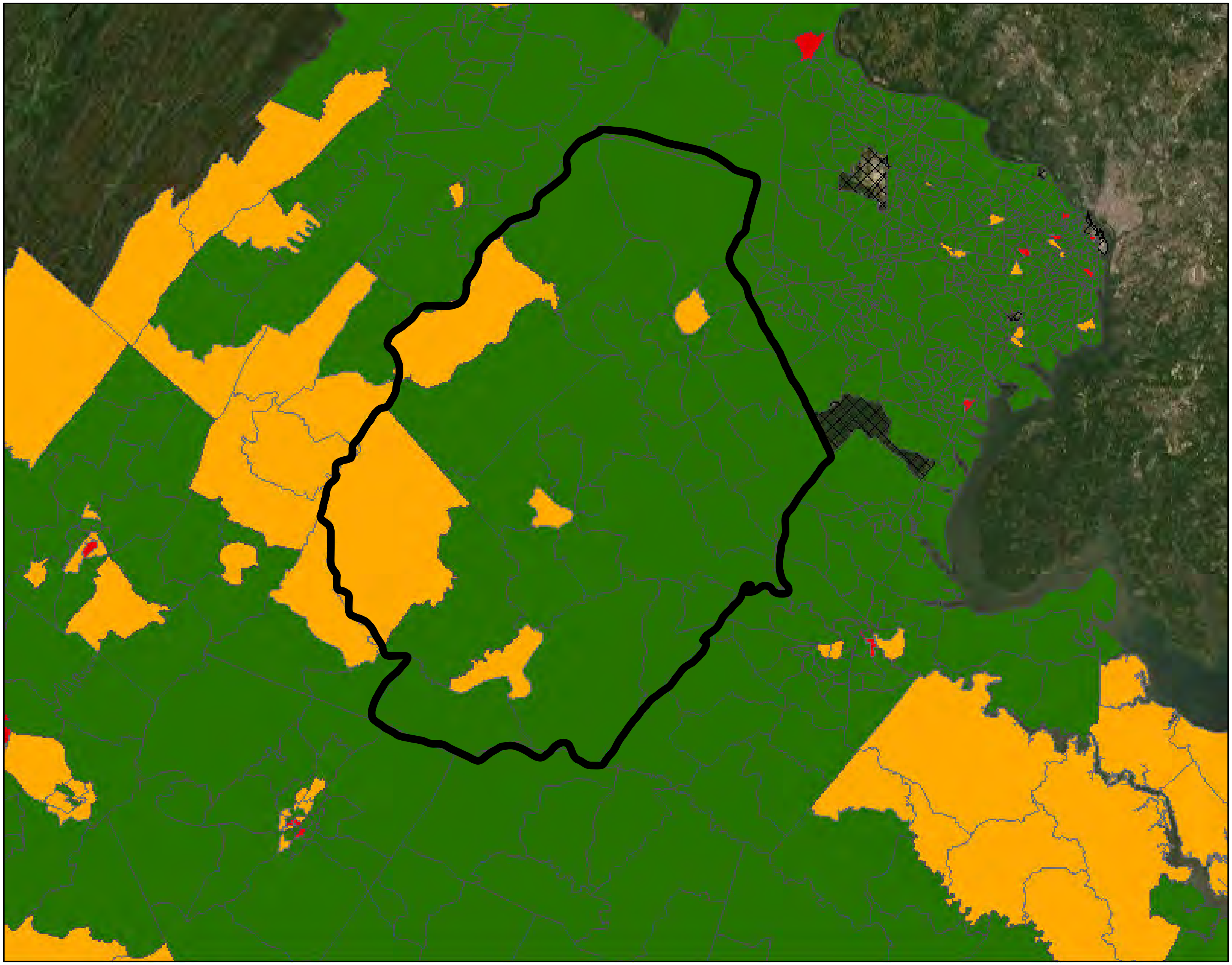
- 🟧 500 Year Flood Zone
- 🟪 100 Year Flood Zone (Base Elevation)
- 🟦 100 Year Flood Zone (No Base Elevation)
- — Streams and Bodies of Water
- 🟩 Shenandoah National Park
- ▤ Rapidan Wildlife Management Area
- 🟨 Area of Minimal Flood Hazard

Rivers & Watersheds of the Rappahannock-Rapidan Region



Social Vulnerability Classification

- 🟥 High Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟩 Not Socially Vulnerable
- ▨ Not included in the analysis



April 5, 2022

1:1,155,581

0 5 10 20 mi

0 10 20 40 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPTVA

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CFPF Grant Round 3 - RRRC Application Submission

1 message

Patrick Mauney <plmauney@rrregion.org> Tue, Apr 5, 2022 at 2:44 PM
To: cfpf@dcr.virginia.gov
Cc: Michelle Edwards <medwards@rrregion.org>

Good Afternoon,

Per the 2022 Virginia Community Flood Preparedness Fund Round 3 Grant Manual, please find attached an application and required attachments from the Rappahannock-Rapidan Regional Commission (Planning District 9). While our application is a regional project, we did conform to the naming requirements using our office location as the Community Identification Number.

Our application is to support the development of Regional Resilience Plan as a complementary part of our existing Regional Hazard Mitigation Plan, which is slated for update beginning later this calendar year.

Please feel free to reach out to me or to Michelle Edwards (medwards@rrregion.org) with any questions. Thank you for your consideration,

Patrick Mauney
--

Patrick L. Mauney
Executive Director
Rappahannock-Rapidan Regional Commission
420 Southridge Parkway, Suite 106
Culpeper, VA 22701
O: 540.829.7450, ext. 11
C: 540.403.0595

CID510042_RRRC-Multi-CFPF.pdf
9776K

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

Davis Creek – Channel Dredging and Novel Dredging Spoils Reuse for Flood Protection and Economic Development of Mathews County Aquatic Recreation and Maritime Industries

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

PROJECT TITLE: Davis Creek - Davis Creek – Channel Dredging and Novel Dredging Spoils Reuse For Flood Protection and Economic Development of Mathews County Aquatic Recreation and Maritime Industries

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning __X__ Project ___Study

NFIP/DCR Community Identification Number (CID): 510096

If a state or federally recognized Indian tribe, Name of tribe: N/A

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards, Senior Planning Project Manager
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes _X_ No ___

Categories (select applicable project): Project Grants

Project Grants (Check All that Apply)

- ☑ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☑ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☑ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County **-** Please see the attached corresponding maps for this application.

NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? Yes

Is Project Located in a Special Flood Hazard Area? Yes

Flood Zone(s) (If Applicable): Zones AE and VE

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0130E eff. 12/9/2014

Total Cost of Project: $2,132,102

Total Amount Requested: $1,296,967

SCOPE OF WORK NARRATIVE

INTRODUCTION

This proposal requests funding for the dredging of an economically important channel, Davis Creek in Mathews County, which has been shoaled by flood action. Dredging and the upland disposal of the dredged material is vital for the protection and viability of Davis Creek as it serves to be critical infrastructure for County's water-based economic activities. In other words, the project serves to revive and bolster the economic and climate resilience of Mathews County. The project will implement a shovel-ready dredging design developed in 2020 by the Middle Peninsula Planning District Commission (MPPDC) in partnership with the VIMS Shoreline Studies Program. The scope of the proposed project involves three (3) principal tasks:

- selection of a disposal site for dredged material via a cost efficiency analysis,
- acquisition or site preparation for construction of an upland staging area for dredged material which may be mined to provide for future resilience and flood protection activities,
- and dredging of Davis Creek to enhance the economic resilience of Mathews County's water-dependent industries.

As detailed below, the shoaling of Davis Creek has resulted in the US Coast Guard removing aids to navigation (ATONs) from the Creek in October 2017. Since then, Mathews County has taken ownership of three ATONs on Davis Creek to ensure public safety, and in early 2020, several channel markers were reactivated. Three pilings that were removed by the Coast Guard in 2017 were outfitted with signs and lights. The County owned public landing and the Marina at Davis Creek provide critical access for landing, docking, and mooring in close proximity to public and private oyster grounds and public crabbing grounds in Mobjack Bay and the Chesapeake Bay. Maintenance dredging of Davis Creek is necessary to re-establish the authorized navigable depths to provide safe navigation for vessels utilizing the working waterfronts located on the creek.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

FEMA, the Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula Planning District Commission (MPPDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). To that end, this proposal is a partnership between the MPPDC and Mathews County (see Community Support Letter, **Attachment 1**).

- A link or copy to the approved MPPDC resilience plan: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
- Mathews County Comprehensive Plan: https://www.mathewscountyva.gov/196/Comprehensive-Plan

This project is consistent with multiple objectives and strategies outlined within the Regional All-Hazards Mitigation Plan. Relevant strategies include the following:

- Objective 1.1: Provide protection for future development to the greatest extent possible.
    - Strategy 1.1.1: Reduce or eliminate flood damage to residential/business structures that are highly vulnerable for continual flood damage.
    - Strategy 1.1.3: Protect public buildings and public infrastructure from flood waters resulting from 100-year flood storm events.
    - Strategy 1.3.1: Mitigation projects that will result in protection of public or private property from natural hazards.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

The intent of the proposed project design is to incorporate flood damage abatement measures which consider and mitigate any potential impacts to neighboring properties. However, the final designs ultimately will require approval by the permit issuing authority (Local Wetland Board on behalf of the VMRC, the Local Chesapeake Bay Preservation Act/Wetland Board on behalf of the VDEQ, and any agencies overseeing the Joint Permit Application process), and we will abide by the final design in the approved permits.

PROJECT INFORMATION

Project Description

Davis Creek is located in Mathews County, Virginia and is a tributary of the Mobjack Bay, in the lower Chesapeake Bay. The creek has a narrow mouth that splits into three prongs. The eastern prong is shortest at 2,200 ft from the mouth, and the western prong is the longest extending about 3,000 ft from the mouth. The County-owned public landing and the Marina on Davis Creek occur on this prong. Land use adjacent to the creek is mostly residential with some agriculture and wooded properties. The headwaters do not have extensive marsh. Instead, the creek terminates soon after the channel narrows at the headwaters. Davis Creek has historically been the location of for some of the greatest levels of seafood industry activity among creeks in the Commonwealth and is an active working waterfront that is threatened immensely by shoaling impacts driven by storm activity and climate change.

Davis Creek is a federal navigation project that was authorized in 1950 with a 1-mile-long channel and turning basin. The original maximum depth was -10 ft MLLW, but more recent documentation by the US Army Corps of Engineers (USACE) lists -8 ft MLLW as the controlling depth. It is 80 ft wide along most of its length and has a turning basin that is 165 ft by 450 ft. The nearshore has sand shoals and submerged aquatic vegetation (SAV). An interior **flood shoal** also existed which reduced the channel depths inside the creek. In 1956, about 244,050 cubic yards (cy) of material was dredged from the channel and placed east of the creek along the shoreline. Maintenance dredging occurred in 1962 with 119,080 cy removed and placed in the same disposal area. Maintenance dredging occurred again in December 1970/January 1971 with 53,497 cy of material removed. That was the last time that it was dredged as Federal funding for shallow draft dredging maintenance was defunded by Congress beginning around 2010.

At Davis Creek today, the nearshore has sand shoals and submerged aquatic vegetation (SAV). A **flood shoal** occurs just inside the creek. The narrow mouth, though, has widened over time. In 1937, the mouth was 147 ft wide, but in 2017, it was 255 ft wide. East of the creek, where the material was placed in the nearshore along the adjacent shoreline in 1956, new land has been created. The 2017 shoreline in this area is about 900 ft in front of the 1937 shoreline. The center part of the disposal is relatively high, and several houses have since been constructed on it. On either end, extensive marshes have been created. However, the natural trend along this shoreline is very low to low erosion (0 to -2 ft/yr).

Since then, the creek has experienced shoaling to the point that on October 10, 2017, the US Coast Guard removed aids to navigation (ATONs) from Davis Creek. The Corps considered the channel unstable and therefore discontinued the federal aids, and mariners were cautioned to proceed at their own risk due to shallow water depths. Mathews County has taken ownership of three ATONs on Davis Creek. Early in 2020, several channel markers were reactivated. Three pilings that were removed by the Coast Guard in 2017 were outfitted with signs and lights. Much of the shoaling in the channel occurs in the approach to Davis Creek where the sand shoals are compromising the channel. The Marina at Davis Creek provides seasonally critical access for landing, docking, and mooring in close proximity to public and private oyster grounds and public crabbing grounds in Mobjack Bay. Maintenance dredging of Davis Creek is necessary to re-establish the authorized navigable depths to provide safe navigation for vessels utilizing the working waterfront located on the creek.

The rate of channel sedimentation from the initial dredging in 1956 to the first maintenance dredging in 1962 (119,080 cy) over 6 years is about 20,000 cy/yr. Between 1962 and 1971 (53,497 cy), the rate of infilling was 6,000 cy/yr. The actual depth to which the channel was dredged is not known. Because the volumes for the dredging amounts and the calculated infilling rates are very different, we can speculate that the channel was dredged to 10 ft the first two times but only to 8 ft the third time. Post dredging sedimentation may occur in the same manner as the historic infilling. The alongshore and nearshore sands will continue to fill in the creek mouth, outbound channel, and **flood shoal**. The inside channel may get fines brought in by tidal flow and the contribution from upland sources. The interior channel remains relatively deep, about -9 ft MLLW which seems to indicate that not many fines are being input to the creek from upland sources or they are being transported into Mobjack Bay. The VIMS Shoreline Studies surveys conducted during 2020 determined that the material to be dredged from Davis Creek is too fine to be utilized for placement along shorelines and upland reuse is the optimal alternative.

Simply put, navigation and recreational and economic activity at Davis Creek and its working waterfronts have been impacted by **flooding** causing the channel to shoal, and impacts must be abated and continuously mitigated to preserve the integrity and resilience of the community.

Principal project tasks will include analyzing several upland staging areas nearby where the dredged materials may be placed in geotubes. The analysis will consider the nearby Dutchman Point property owned by the Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA) (see **Figure 4**) as well as other nearby land currently for sale. It is known that the MPCBPAA Dutchman Point property contains some wetland areas, so a qualified engineer will be contracted to delineate wetlands on the property. Once a delineation is complete, the site will be assessed to see if the placement of geotubes at the site is an option and if not, then the costs of wetland mitigation credit purchases will be calculated. Concurrently, nearby properties currently for sale without wetland areas will be identified and a comparison of costs between identified property alternatives will be conducted to identify the most cost-effective approach.

For the selected site, the staging area consist of Geotubes® that are 5 ft tall with a 25 ft circumference and a 10 ft filled width can be stacked along the perimeter of the site to create the dike (see ***Approach, Milestones, and Deliverables section****)*. Once the material is staged at the site, the material may be mined and used for resilience and flood mitigation purposes. Beginning in 2021, the MPPDC, MPCBPAA, and VA Sea Grant have partnered on a project to advance innovative resilience solutions for rural coastal Virginia through the private sector. The endeavor involved a series of business competitions for research and development of innovative technologies which may be applied in rural coastal areas. The propopsed project will utilize some of the strategies arising from the business competitions involving the beneficial reuse of dredged material. Specifically, the material dredged from Davis Creek may be reused to create concrete which can be used for a variety of different flood purposes including shoreline protection structures, impermeable pavements, etc. The dredged material concrete has the potential of being produced on site via either cast concrete process or 3-D printing. Once the material from the initial dredging of Davis Creek is used up, additional material can be placed inside the dike from subsequent rounds of dredging. In essence, the upland staging area will serve as a resilience hub for advancing resilience solutions throughout the watershed and beyond.

Project Location Information

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth’s total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

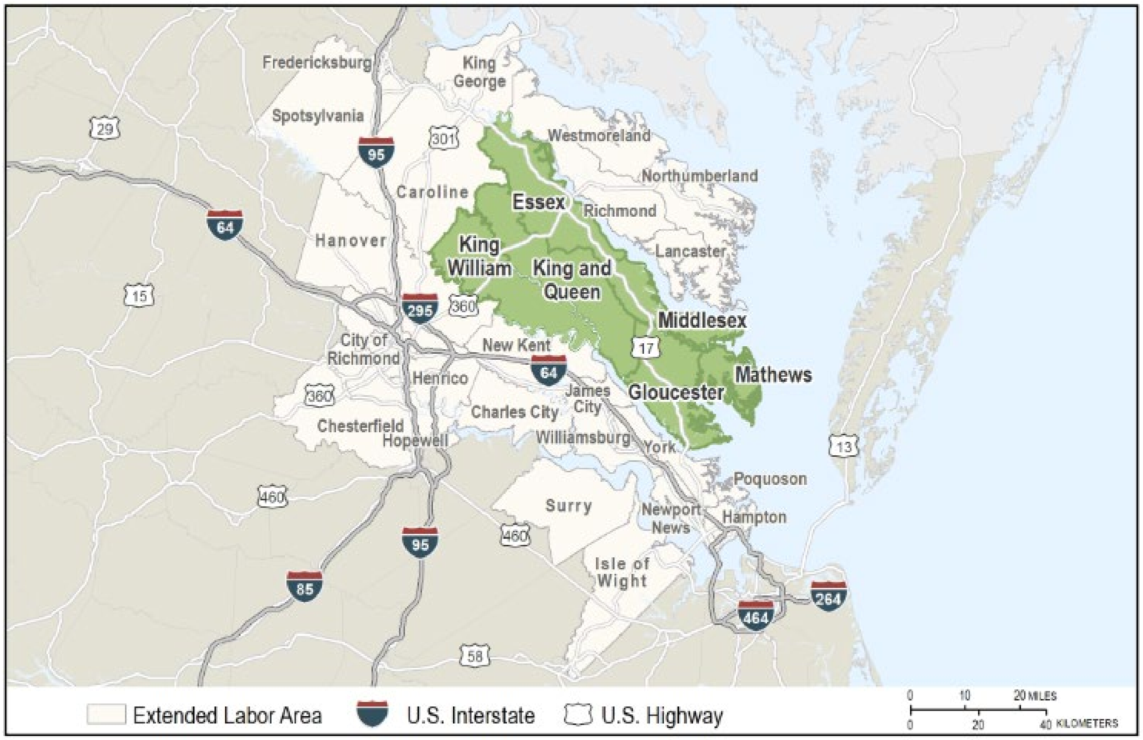
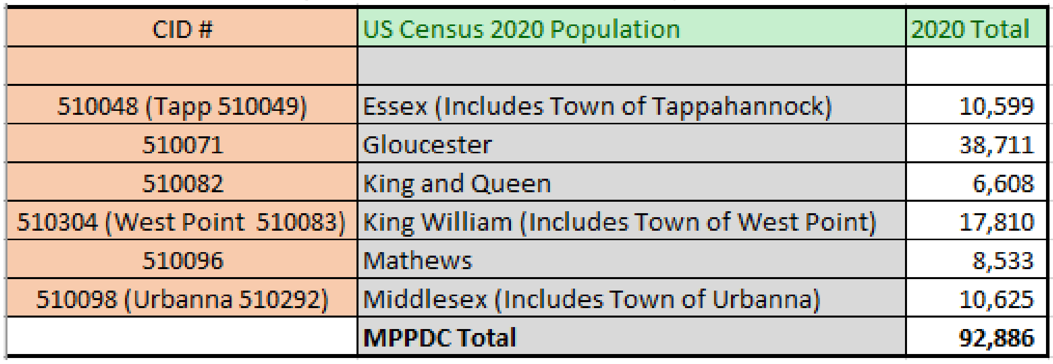


Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

This project proposes to dredge Davis Creek and stage dredged material in an upland area adjacent to the creek so that it may be used to drive further resilience and shoreline protection solutions via innovative and beneficial reuses as shown in **Figures 3 and 4**.

Figure 3. County Map of Project Location

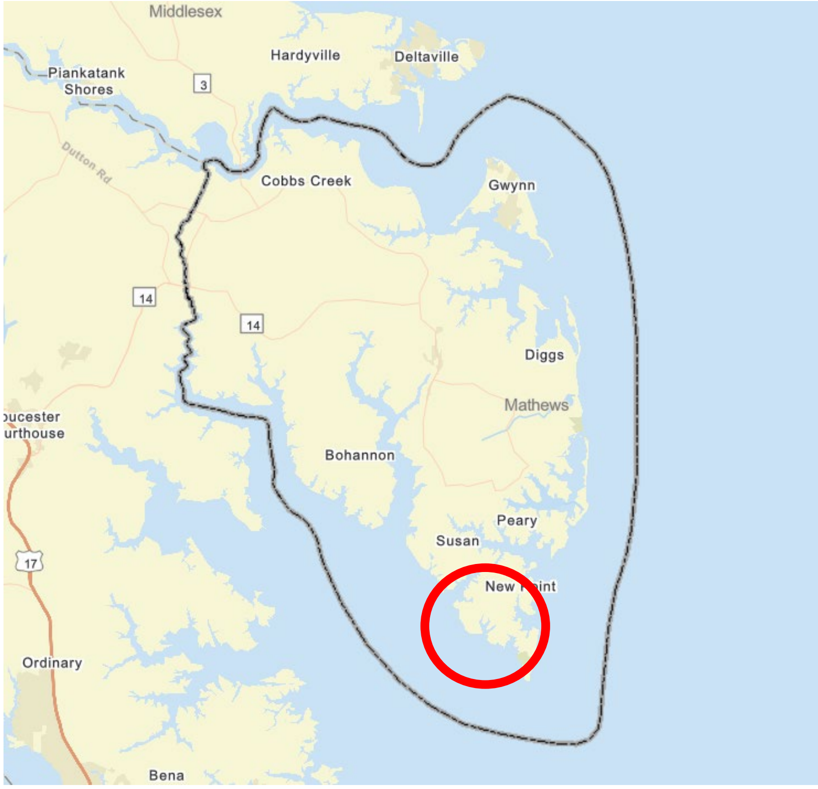
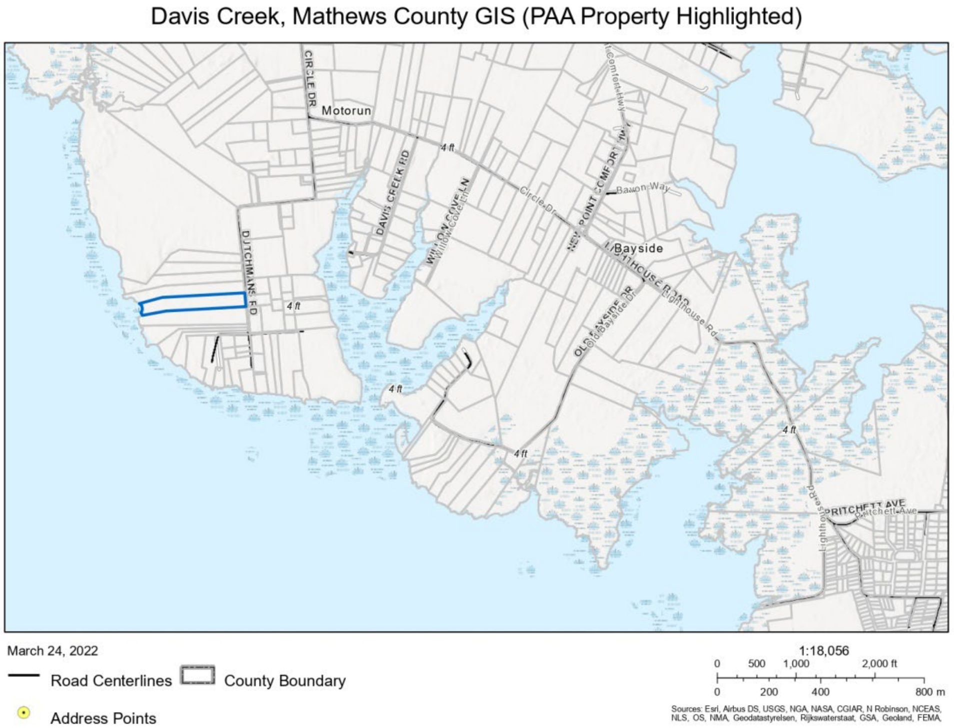


Figure 4. Parcel Map of Project Location



Population Information

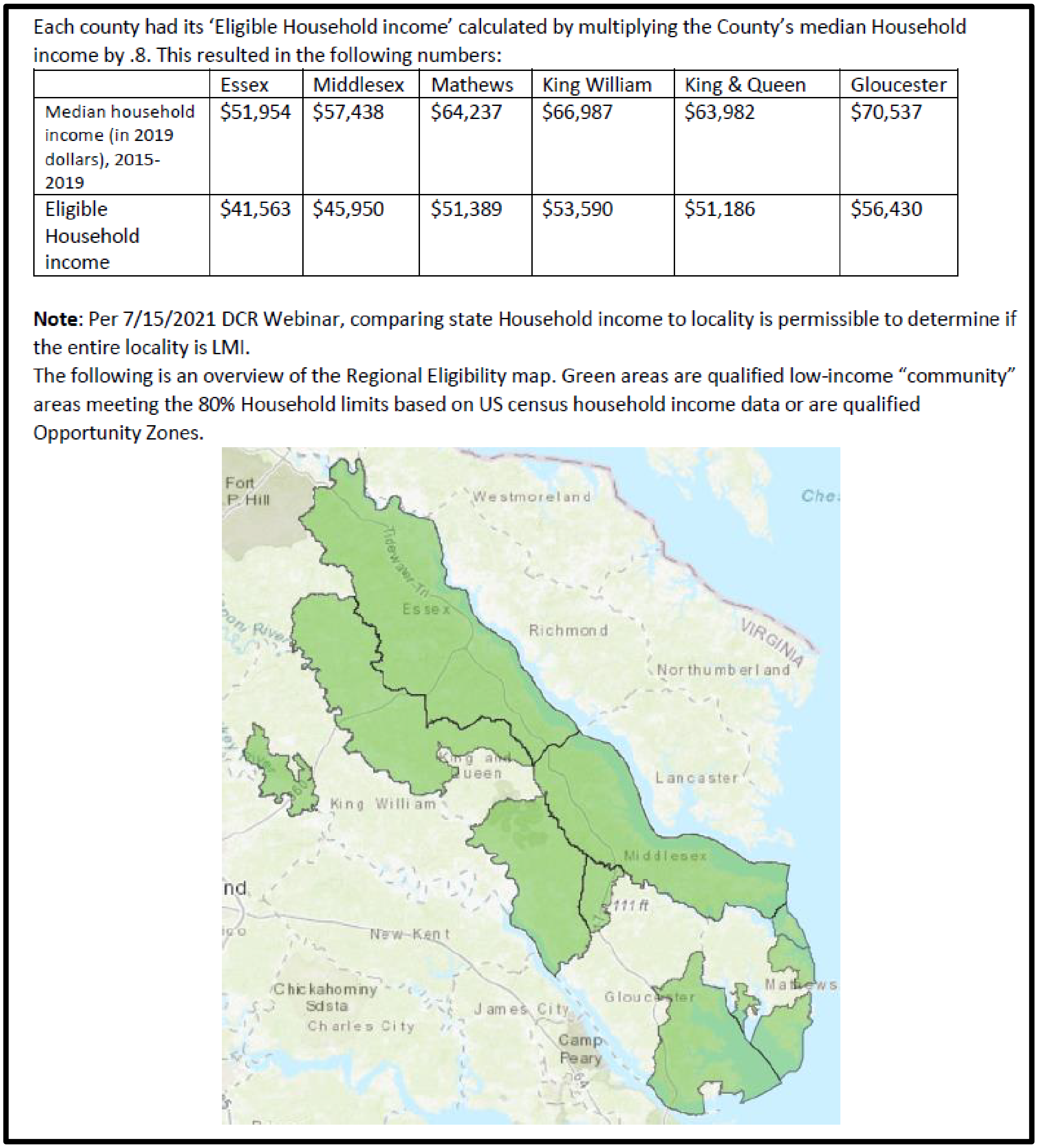
Mathews County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 86 square miles of land 166 miles of shorelines. Based on 2020 Census Data, Mathews County's population totals 8,533 which makes it the largest Middle Peninsula locality. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5,** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data[1] or are qualified Opportunity Zones.

---

[1] Based upon 2015-2019 U.S. Census American Community Survey data available on January 4, 2022, when CFPF Round 3 opened; 2016-2020 ACS data was not released until March 17, 2022.

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

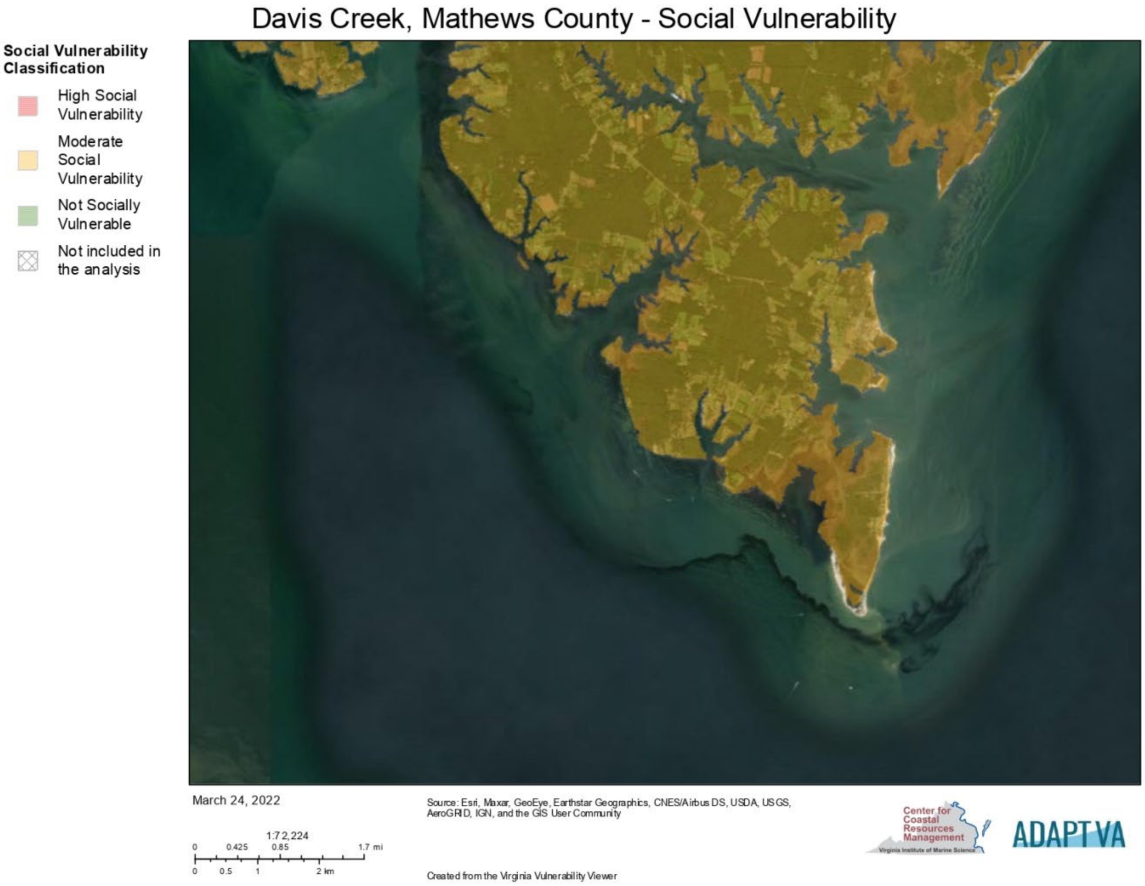
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within the Green Low-Income Area

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

According to the VDAPT Virginia’s Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location



March 24, 2022

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

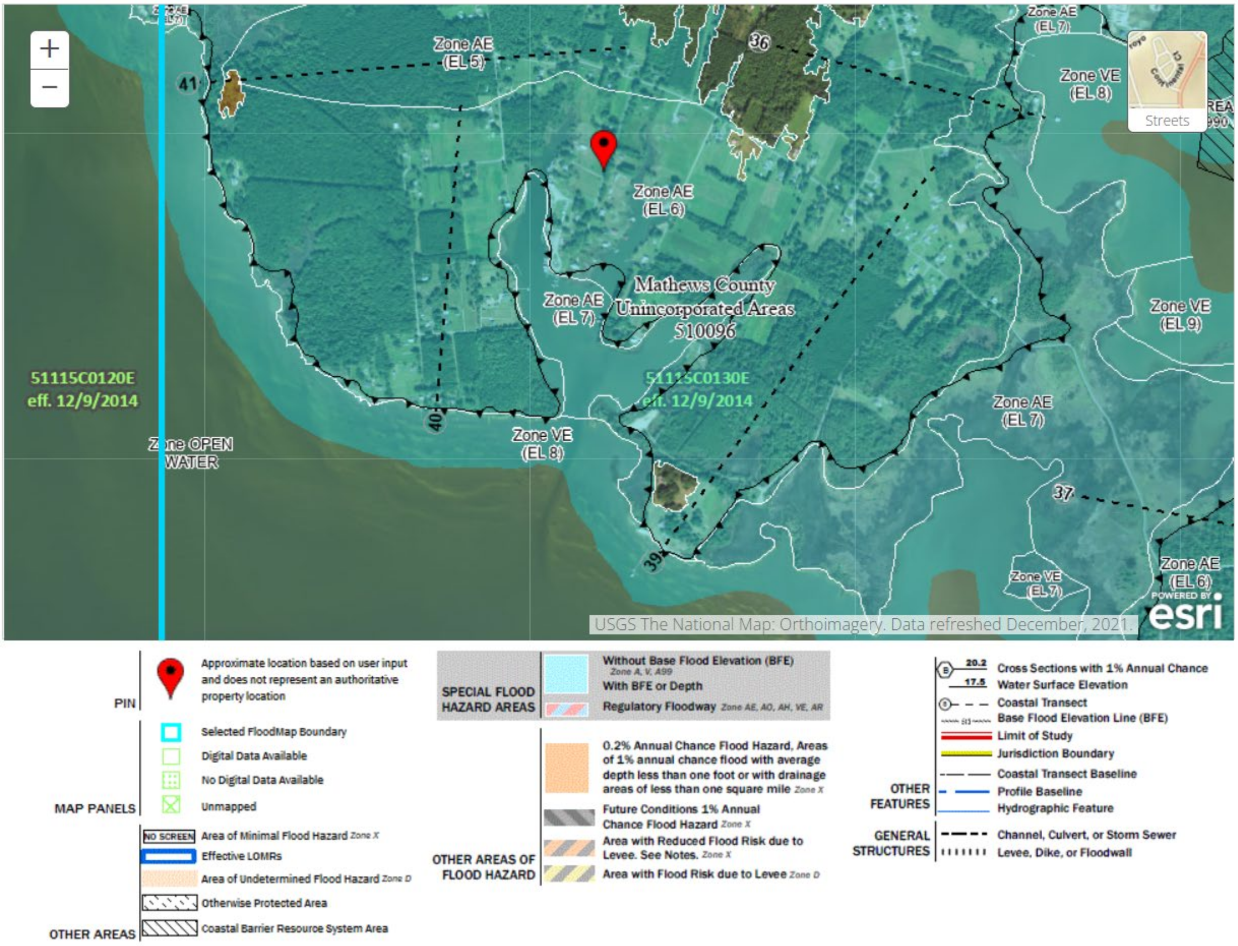
Created from the Virginia Vulnerability Viewer

Flood Risk Information

The project is generally located at the Davis Creek Marina at 346 Davis Creek Rd, Port Haywood Virginia 23138 (37.332835057172844, -76.29944371765536), and the entirety of the site is located within a mapped floodplain, with portions located within FEMA Flood Zones AE and VE (**Figure 8**). Mathews County's Planning and Zoning Department administers the requirements of the NFIP program, and the County's Floodplain Management Ordinance may be accessed at the following link: https://www.co.Mathews.va.us/DocumentCenter/View/422/Floodplain-Management-PDF?bidId=

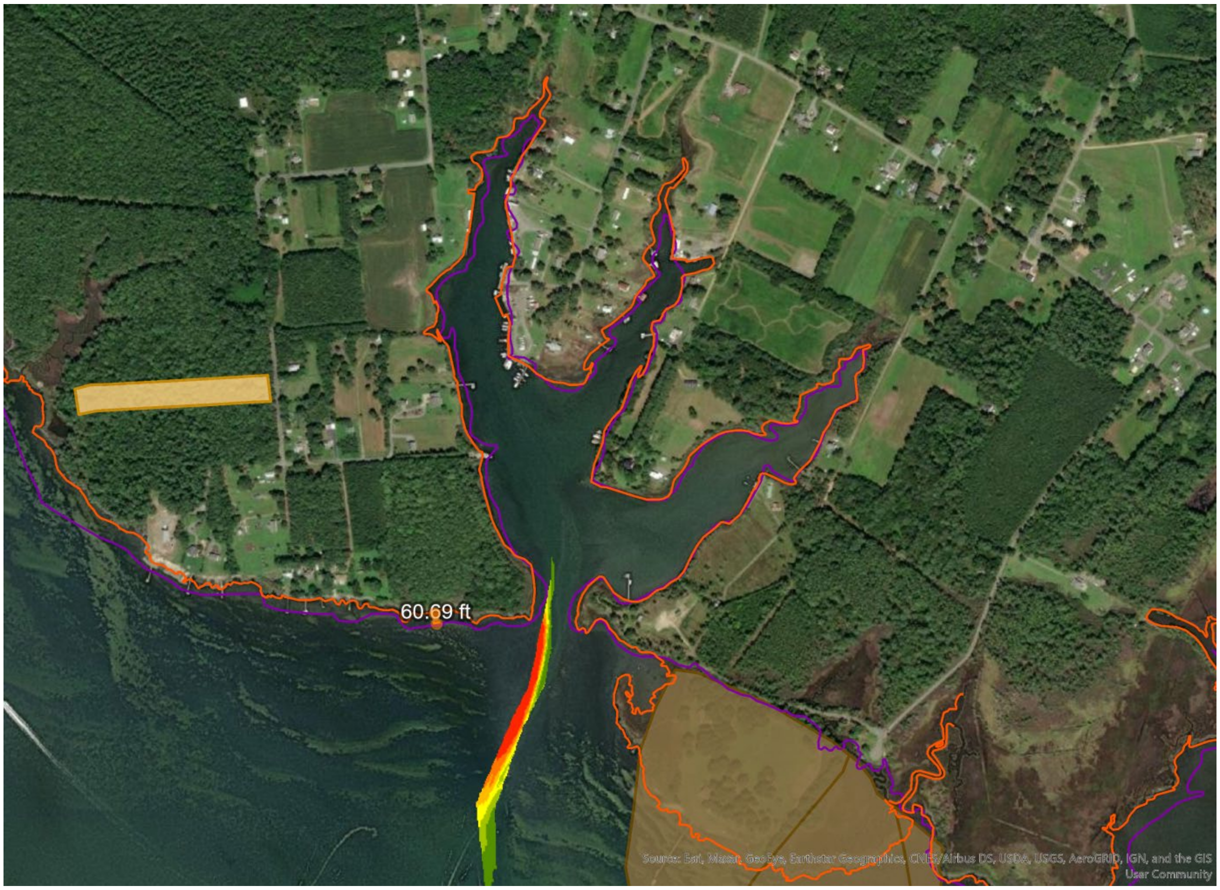
Losses in Mathews County are spread throughout the county with pockets of higher loss in the northern one-third of the county. Approximately $210,000 US Dollars (or 45%) of estimated annualized damages can be attributed to the northern one-third of the County; versus approximately $145,000 US Dollars (or 31%) in the center and $109,000 US Dollars (or 24%) in the southern one-third.

Figure 8: Map of FEMA Flood Zones of Project Location



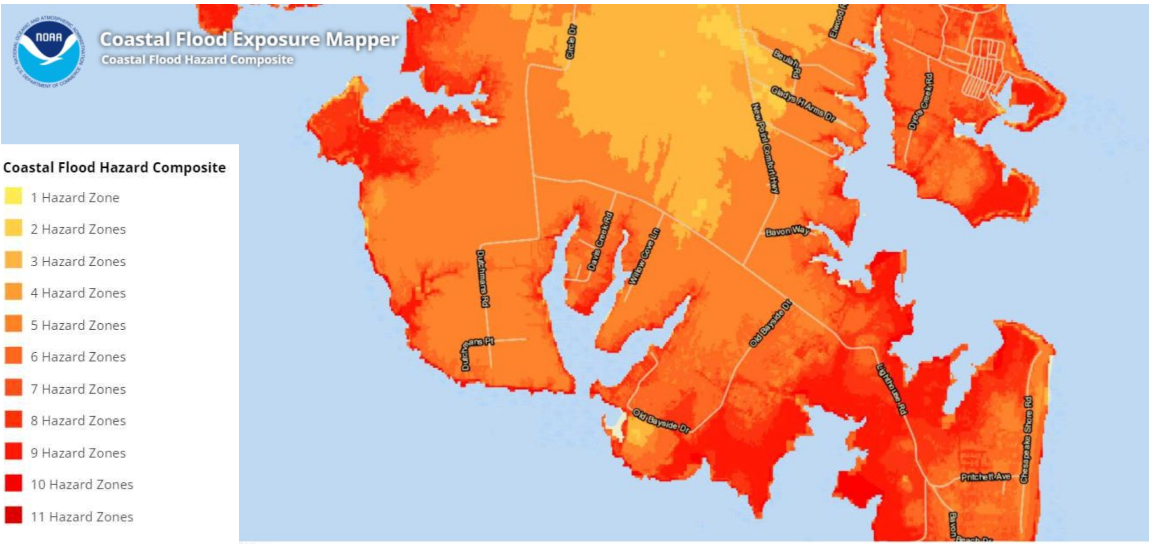
Due to the project site’s proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 9** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline, with roughly 60 ft of erosion at some points. The project location has and continues to be impacted by tropical, sub-tropical, and nor’easter events. **Appendix 4** lists 79 storm events and provides a map with the project location. Without the dredging measures proposed to abate the consequences of flooding on the channel, the land and maritime infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base. Furthermore, the innovative reuse of dredged material for shoreline and flood protection is anticipated to advance solutions for the observed extreme erosion occurring in the vicinity of Davis Creek.

Figure 9. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 10**.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



NEED FOR ASSISTANCE

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex counties, as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened FTE staff. MPPDC staff consists of an Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, and clerical support staff; a Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, and Emergency Planner are co-operative procured; Housing, Community Development Planner and Public Relations staff are hourly.

The Planning District staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scales - from grants in excess of $1,000,000 to small grants. MPPDC is an entrepreneurial-based government agency with an annual operating budget ranging from $750,000 to more than $1,000,000. Annually, the MPPDC manages 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software and other software (e.g., GIS, Microsoft Office) as required and/or necessitated by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance, as well as other areas determined by the Commission. MPPDC has more than 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission, no audit findings have occurred.

The need for assistance is two-fold. First, Mathews County is along the Chesapeake Bay and numerous tidal rivers that contribute to the area's high risk to coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from the Virginia Institute of Marine Science (VIMS), relative sea-level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Mathews County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds as storm surge. When a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide".

Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and sediment, and produce hurricane-force winds that push large amounts of seawater inland. A strong indicator that Mathews County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, Mathews County had over 1,000 NFIP claims with claims topping $20.5 Million. The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on its communities. This project will therefore build on local efforts moving toward a more resilient community.

Second, this project location is primed for co-benefits derived from dredging and beneficial reuse activities. The proposed upland staging for innovative reuse via the production of concrete for shoreline protection or other resilience measures will facilitate multiple, simultaneous activities that will contribute to economic growth in the area while fostering innovation.

Business Development

As explained previously, Davis Creek represents a key economic engine for Mathews County. The dredging activities will greatly benefit the commercial and recreational industries that have been severely threatened by the hazardous navigability conditions present in the creek. Additionally, the reuse of the material staged in the upland area will represent new economic activity with the potential to bring additional business and jobs to the County.

Community Scale Benefits

As explained in previous sections, the proposed activities represent a coordinated effort to address accelerating climate impacts altering and accelerating sediment migration patterns driven by storm surge and wave energy. The MPPDC and Mathews County will work together to protect the highly vulnerable water-based marine and recreational economies and properties along Davis Creek. The activities will have direct benefit to the general public in the form of navigability for the recreational and commercial boating activities occurring on these creeks as well as new and improved public access to the water from land, which is currently restricted in the vicinity. Additionally, and most importantly, the shoaled conditions of the creek and flood vulnerabilities of the properties adjacent to the creeks represent an immediate and dire public safety issue desperately in need of DCR Flood Fund assistance. Due to the multitude of public investment for shoreline protection and flood research and innovation, we believe this site meets the test of "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk." The Davis Creek project serves as one of the Commonwealth's best chances to innovate shoreline resilience projects in "live time" so that all of coastal Virginia can benefit. This creek has provided critical community scale benefits for generations, and it is essential that action be taken now to ensure that the site can continue to provide similar benefit to the citizens, businesses, and visitors of Mathews County and the Commonwealth.

ALTERNATIVES

The submission of alternatives is not applicable in this application. Nature-based and hybrid solutions are anticipated, and the project cost is less than $3 million.

GOALS AND OBJECTIVES

The focused goals and objectives of this project are as follows:

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Increase economic and flood resiliency by abating current flood damage and developing a system for mitigating recurrent, repetitive, and future flood shoaling within the project area using a hybrid design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a hybrid design approach.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a hybrid design approach. Although some SAV may be temporarily impacted, water quality within Davis Creek may improve with deeper channel access.

Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC expects the following results and benefits of the completed project:

1. **Foster economic growth in the area over the useful life of site infrastructure and most likely, beyond.** Enabling public access to this creek which represents a major county asset while ensuring its sustainability will protect and enhance the area's recreational economies and has the potential to positively impact related commercial endeavors.

2. **Prevent loss of property without cementing an alternative.** Building resilient structures and facilities at the project site as outlined will help prevent loss of property and property value, while capitalizing on the useful life of the site as much as possible.

3. **Provide ecosystem services to the community toward increased quality of life.** Increased public access to recreational, educational and cultural opportunities leverage

the provisioning and cultural services associated with the site's natural resources, services that provide benefits to safety, health and well-being for all visitors.

APPROACH, MILESTONES, AND DELIVERABLES

The proposed project is to create a -6 ft MLLW channel and 1 ft of overdepth (Total dredge depth -7 ft MLLW), hydraulically dredging approximately 24,150 cy of material that will then be pumped to an upland disposal site where it will be staged in geotubes and within a geotube walled area (see **Figure 11**). Once the material is staged it may be mined for beneficial reuse activities.

Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with Mathews County.

The proposed project includes three principal phases of activities over the course of a nine-month period.

The anticipated timeline for the proposed project could be quicker than 9 months but will be completed well in advance of the maximum three-year limit required per the DCR Grant Manual. The timeline range is due to the potential delays in project initiation, contractor availability, and permitting.

The principal project tasks are described in detail below.

Project Milestone Schedule

TASK 1 - Selection of a staging site for dredged material via a cost efficiency analysis (2 months)

MPPDC staff will work with the MPCBPAA, and Mathews County conduct a cost efficiency analysis of the available property alternatives discussed previously to select the most suitable and effective site for the staging of dredged material.

Once the site has been selected, Mathews County will submit the Joint Permit Application developed by VIMS during 2020 to dredge Davis Creek and pump the material for upland staging at the identified optimal property, where it may be used beneficially for resilience or other use.

TASK 2 – Acquisition and/or site preparation for construction of an upland disposal area (2 months)

After a property is selected for staging the dredged material, MPPDC staff will work with the MPCBPAA and the County to prepare the property for the desired activities.

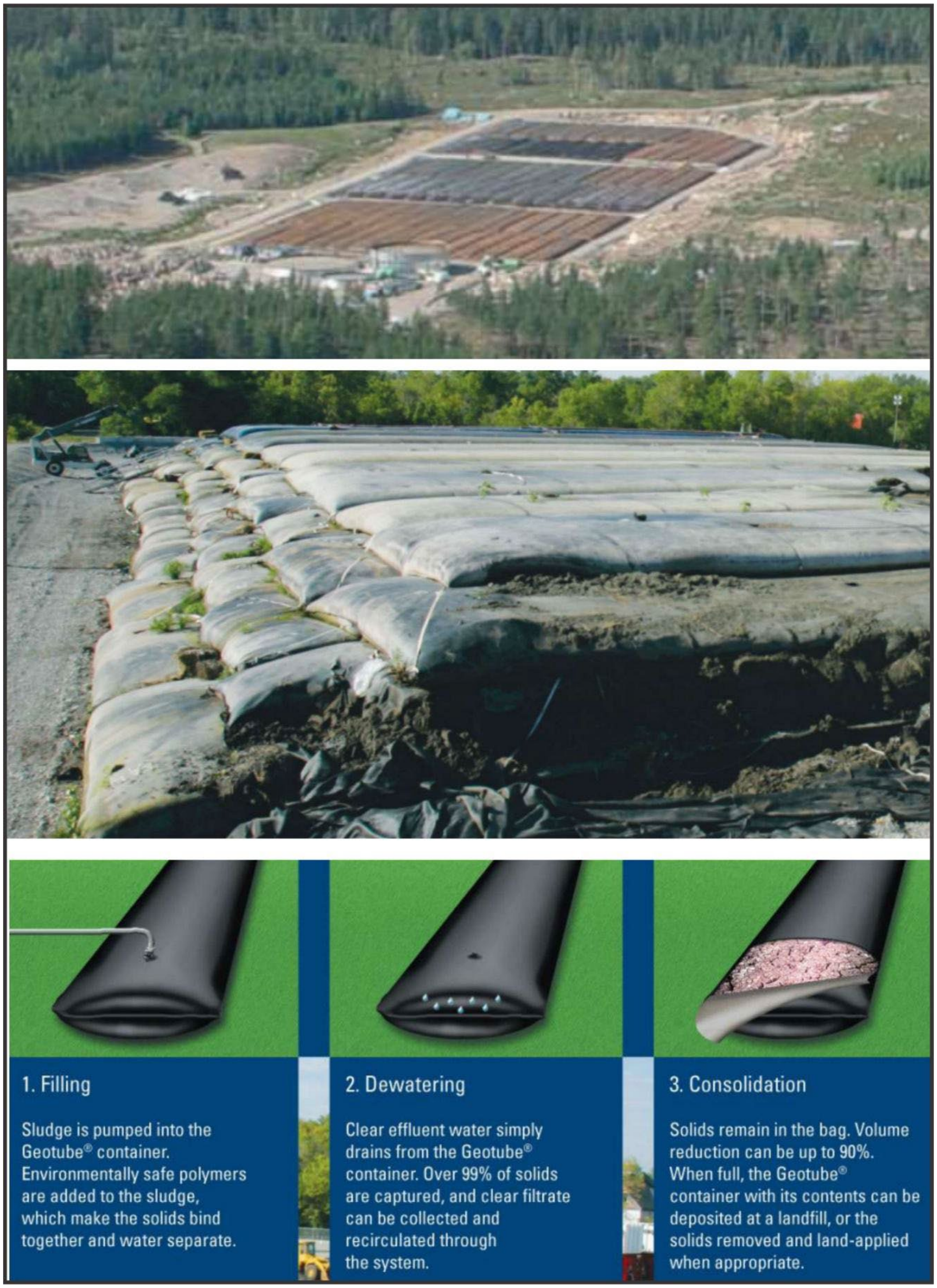
If it is found that the MPCBPAA Dutchman Point property is the optimal alternative, then the property will first be transferred to County ownership in accordance of MPCBPAA policy adopted during June 2021, where any MPCBPAA properties to be utilized for dredged material disposal areas will be returned to the County wherein the property is located and said County will assume ownership and maintenance responsibilities of the activity from that point forward. For the Dutchman Property, funding is requested to prepare the site as necessary per the permit terms and conditions The County will oversee any required erosion and sediment control and enforcement actions that may be required by permitting agencies for this alternative.

If it is found that it is more cost effective to acquire a new property near Davis Creek, then all efforts will be made to identify a nearby property with sufficient elevation and lack of wetland areas to support the desired activities without any regulatory or permitting issues. The US Army Corps of Engineers has been working for years to identify a property owner willing to partner with the Corps to construct a disposal alternative to no avail. The Corps' efforts are severely restricted because they cannot use their federal allocations for property acquisition which necessitates a different approach. Therefore, the local solutions posed here for property acquisition represent the most likely alternative for ever getting Davis Creek dredged. A recent online search of such properties turned up multiple suitable options of properties for sale with most being priced near the $100,000 level and all suitable properties for sale being below the $200,000 level. Funding will be utilized for the County to purchase, close, and prepare the site should it be necessary. The County will oversee any required erosion and sediment control and enforcement actions that may be required by permitting agencies for this alternative as well.

TASK 3 – Dredge Davis Creek and stage dredged material at upland site (5 months)

MPPDC and Mathews County will work with legal counsel to create a bid packet to procure a contractor to dredge Davis Creek. Once a contractor is selected, they will dredge the channel based on the design, terms and conditions included in the approved the JPA. MPPDC and Mathews County will work with the selected contractor to stage the material on the site selected under Tasks 1 and 2. Once the material is on site and dewatered, MPPDC staff will engage Mathews County and the suite of MPPDC Fight the Flood businesses to consider and advance reuse solutions involving the staged material.

Figure 11. Geotube Disposal Method



1. Filling

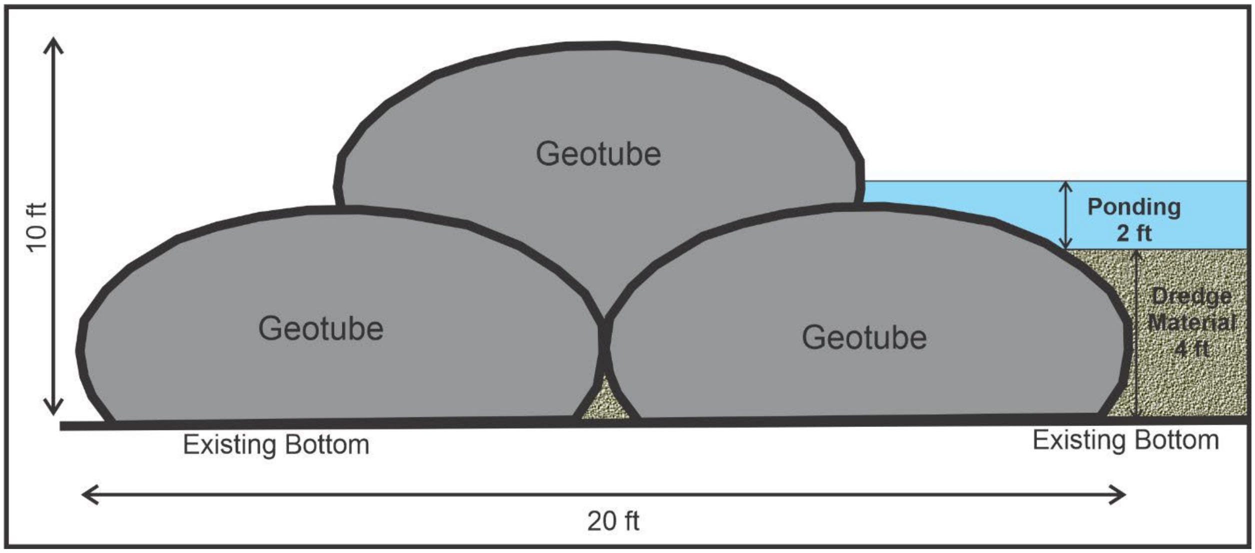
Sludge is pumped into the Geotube® container. Environmentally safe polymers are added to the sludge, which make the solids bind together and water separate.

2. Dewatering

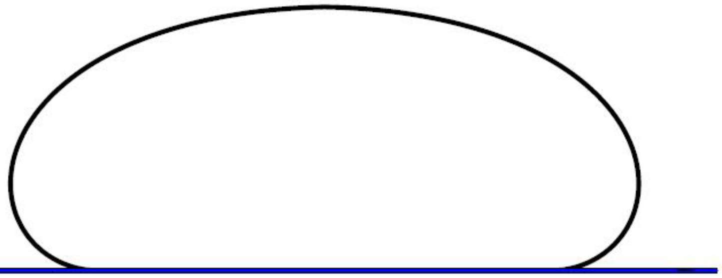
Clear effluent water simply drains from the Geotube® container. Over 99% of solids are captured, and clear filtrate can be collected and recirculated through the system.

3. Consolidation

Solids remain in the bag. Volume reduction can be up to 90%. When full, the Geotube® container with its contents can be deposited at a landfill, or the solids removed and land-applied when appropriate.



Geotube® Simulator
Cross Section



11/12/20	**Project:**	**Davis Creek UDF Geotube® Perimeter Dike**

Units:	**English**		Circumferential Tensile Force (T) =	**175.12**	lb/in.
Water Level:	**Fully Emerged**		Geotube® Base Contact Width (B) =	**11.53**	ft
			Geotube® Filled Width (W) =	**16.13**	ft
Geotube® Height (H) =	**7.5**	ft	Geotube® Cross Section Area (A) =	**101.96**	sq ft
Geotube® Circumference (C) =	**40**	ft	Geotube® Volume Per Unit of Length (V) =	**3.78**	cu yd/ft
Relative Density of Fill Material =	**1.8**	sg	FS of Circumferential Failure =	**6.5**	FS
Geotube® Fabric Type:	**GT1000MOLAP**		Axial Direction FS (AFS) =	**7.1**	FS
Geotube® Fabric Type:	**Rigid Mechanical**		FS of Fill Port Failure =	**6.1**	FS

The equations used in the Geotube® Simulator are based on the paper "Two-dimensional analysis of geosynthetic tubes" by R. H. Plaut and S. Suherman, Acta Mechanica, Volume 129, 1998, pages 207-218, and on further research by Professor Raymond H. Plaut. The software was developed by Benjamin Z. Dymond. The work was performed at Virginia Tech.

RELATIONSHIP TO OTHER PROJECTS

As explained previously, the proposed project represents the culmination and nexus for multiple MPPDC endeavors.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR in August of 2021. This Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents. These documents frame the foundation and implementation of the Middle Peninsula flood protection approach and are indirectly and directly supported by specific regional planning documents each approved by federal, regional, and/or local partners as required by statute.

Other plans and resources integral to the implementation of the Flood Resiliency Plan include:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan - FEMA and Middle Peninsula locality, approved 2016 (MPPDC Website)
    - This overarching project provides updates every five years on the hazards within the region; it identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – MPPDC, approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – MPPDC, approved annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design - MPPDC Commission, approved June 2020; Chairman approved update 8/6/21
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program - Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

The MPPDC has a history of continuous work on flooding and coastal resiliency topics, as described in **Attachment 5**. These projects have built upon each other to establish within the

MPPDC a solid foundation of regional expertise in flooding and coastal resiliency. Now, given this history of accumulated information and knowledge, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One such effort, launched in 2020 following the Commission's authorization, was developed in response to emerging flood challenges. This effort, the **Middle Peninsula Fight the Flood (FTF) Program**, leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built and natural environments with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. MPPDC staff have partnered with private property owners registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that their outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN

A maintenance plan is not applicable in this application. The proposed project is to develop a hybrid solution and its cost does not require ongoing operation and future maintenance.

CRITERIA

Describe how the project meets each of the applicable scoring criteria contained in ***Appendix B*** *and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application.* ***Appendix B*** *must be completed and submitted with the application.*

For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**

    - Yes; the applicant is a regional planning district commission.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or**

a link provided?

- Yes; the MPPDC's DCR-approved resilience plan may be accessed at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**

    - Yes; please see **Attachment 1**

4. **Has the applicant provided evidence of an ability to provide the required match funds?**

    - Yes; please see **Attachment 1**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**

    - Yes

BUDGET NARRATIVE

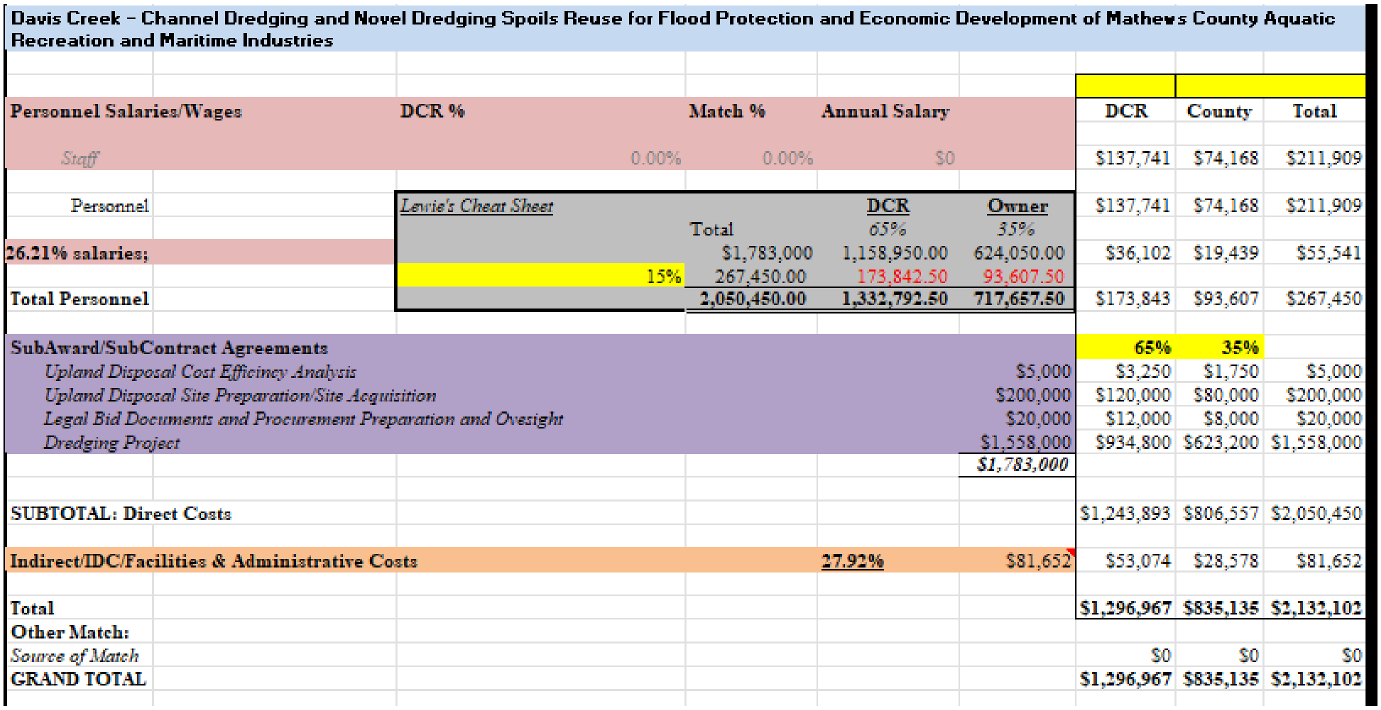
ESTIMATED TOTAL PROJECT COST

Based upon the identified scope of work, as well as the Davis Creek Dredge Channel Data Report prepared by VIMS which included cost estimates from private sector dredging operators, the total estimated project cost is $2,132,102. This total estimate is based upon the following estimated cost breakdowns:

- Upland Staging Area Cost Efficiency Analysis: $5,000
- Upland Staging Area Site Preparation/Site Acquisition: $200,000
- Bid Document and Procurement Preparation and Oversight: $20,000
- Dredging Project including mobilization and demobilization of dredging equipment and geotube staging equipment, all installation of pipe, all costs for other associated work that is necessary to advance the actual dredging operations, dewatering and polymer for geotubes, and purchase of the needed eight geotube units per design specs: $1,558,000

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY23 is

26.21% and comprised of: Health Insurance – 48.58%, Retirement – 18.06%, Workers Comp – 0.28%, Social Security – 28.55%, Life Insurance – 4.39%, Unemployment – 0.14%. Direct charges are costs associated with overall projects costs consistent with general accounting principles. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.92%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)-Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.



Davis Creek – Channel Dredging and Novel Dredging Spoils Reuse for Flood Protection and Economic Development of Mathews County Aquatic Recreation and Maritime Industries								
Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**County**	**Total**
Staff		0.00%	0.00%	$0		$137,741	$74,168	$211,909
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$137,741	$74,168	$211,909
			Total	*65%*	*35%*			
26.21% salaries;			$1,783,000	1,158,950.00	624,050.00	$36,102	$19,439	$55,541
		15%	267,450.00	173,842.50	93,607.50			
Total Personnel			**2,050,450.00**	**1,332,792.50**	**717,657.50**	$173,843	$93,607	$267,450
SubAward/SubContract Agreements						**65%**	**35%**	
Upland Disposal Cost Efficincy Analysis					$5,000	$3,250	$1,750	$5,000
Upland Disposal Site Preparation/Site Acquisition					$200,000	$120,000	$80,000	$200,000
Legal Bid Documents and Procurement Preparation and Ovesight					$20,000	$12,000	$8,000	$20,000
Dredging Project					$1,558,000	$934,800	$623,200	$1,558,000
					$1,783,000			
SUBTOTAL: Direct Costs						$1,243,893	$806,557	$2,050,450
Indirect/IDC/Facilities & Administrative Costs				**27.92%**	$81,652	$53,074	$28,578	$81,652
Total						**$1,296,967**	**$835,135**	**$2,132,102**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$1,296,967**	**$835,135**	**$2,132,102**

AMOUNT OF FUNDS REQUESTED

The total amount of requested grant assistance is $1,296,967 or 65% of total project costs, as the project is located in and serves a low-income geographic area and the project results in hybrid solutions. These funds, combined with local match, would be used for the services identified above.

AMOUNT OF CASH FUNDS AVAILABLE

Mathews County will appropriate the requisite 35% or $835,135 in required local match funds, to be combined with the $1,296,967 in grant assistance to equal the total estimated project cost. The County's match commitment letter is included as **Attachment 1**.

AUTHORIZATION TO REQUEST FUNDING

The authorization to request funding is included as **Attachment 1**.

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	35
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension		

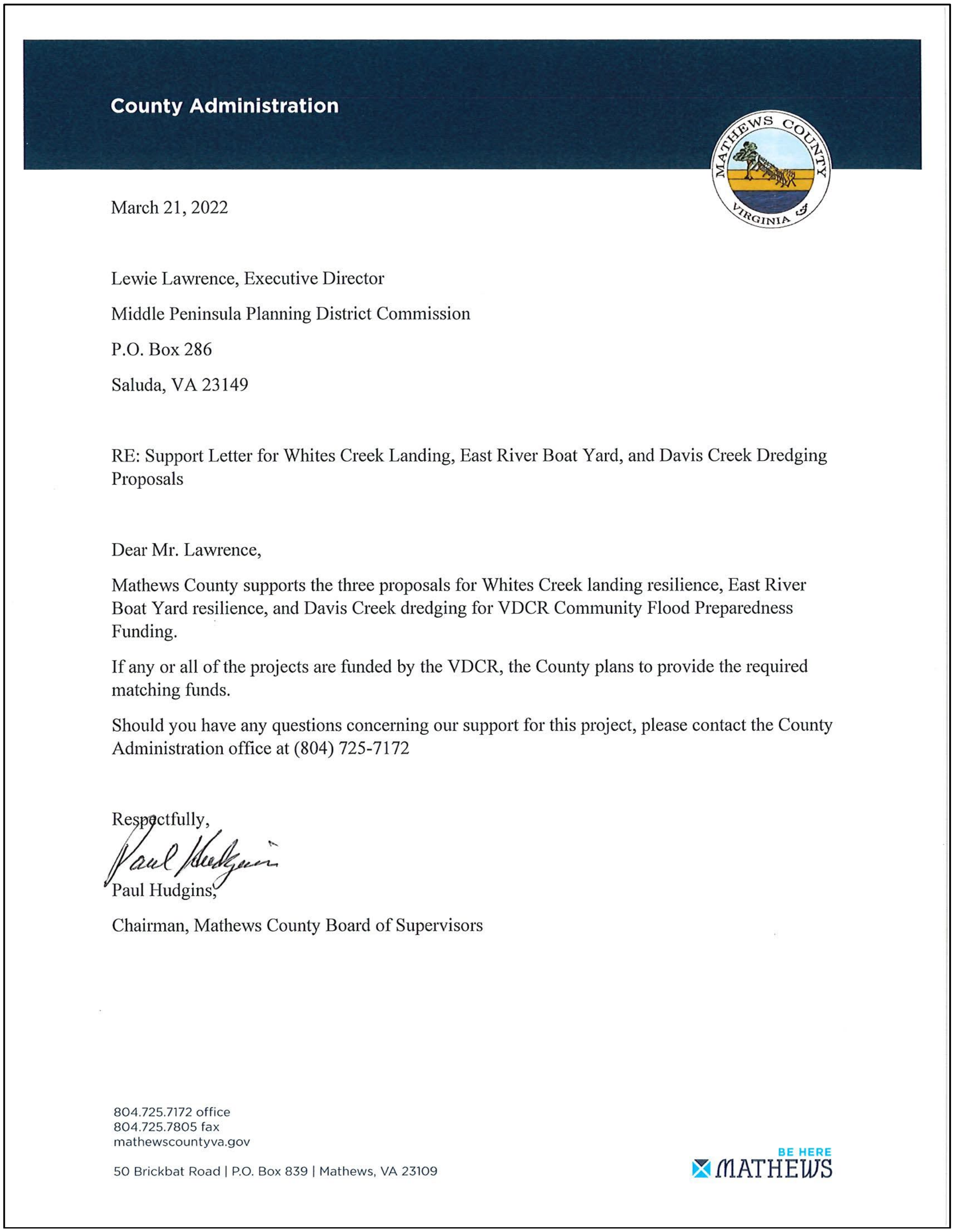
from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		78

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Attachment 1: Community Support/Match Commitment/Authorization Letter



County Administration

March 21, 2022

Lewie Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Whites Creek Landing, East River Boat Yard, and Davis Creek Dredging Proposals

Dear Mr. Lawrence,

Mathews County supports the three proposals for Whites Creek landing resilience, East River Boat Yard resilience, and Davis Creek dredging for VDCR Community Flood Preparedness Funding.

If any or all of the projects are funded by the VDCR, the County plans to provide the required matching funds.

Should you have any questions concerning our support for this project, please contact the County Administration office at (804) 725-7172

Respectfully,

Paul Hudgins

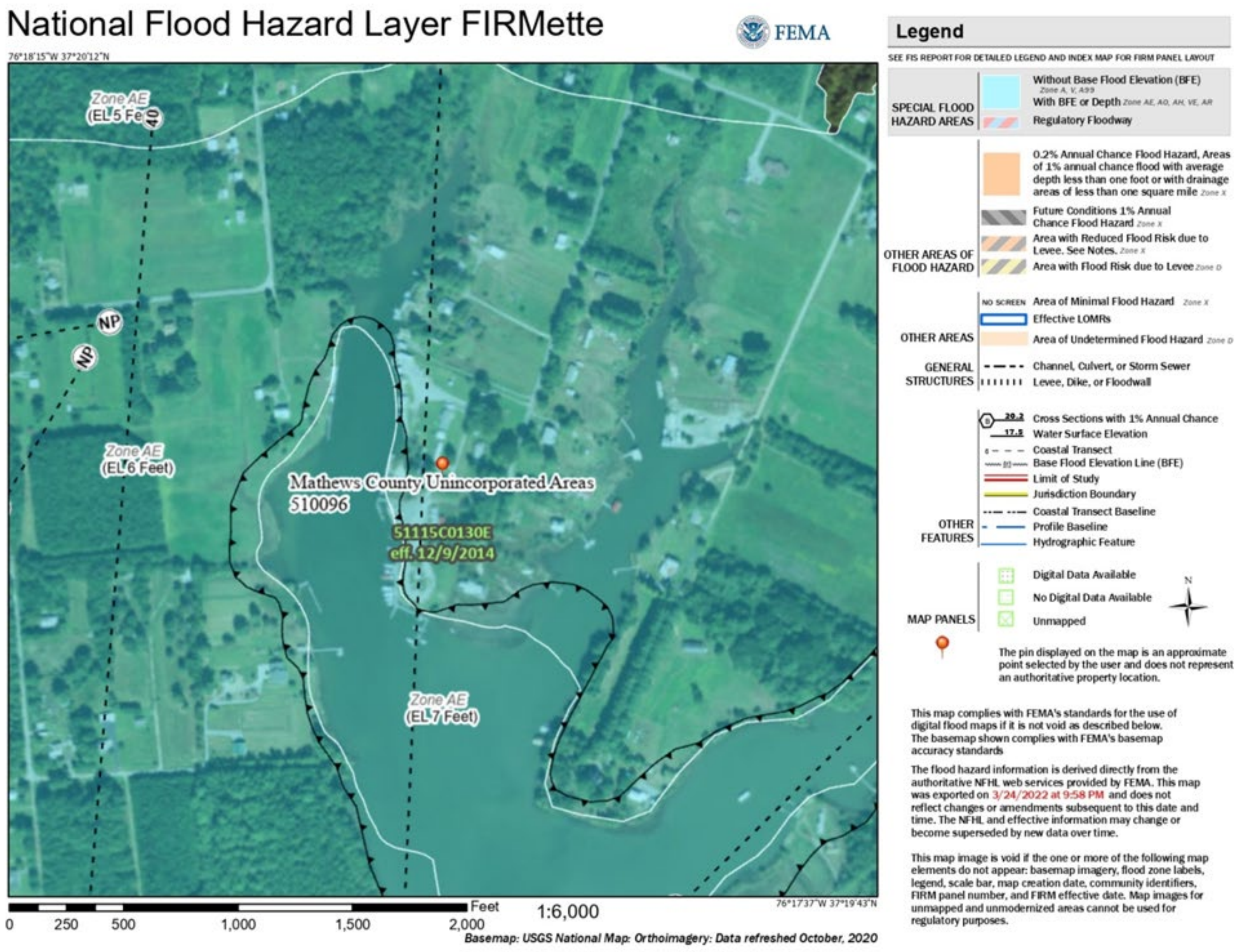
Paul Hudgins,
Chairman, Mathews County Board of Supervisors

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE MATHEWS

Attachment 2: Project Location FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
		Future Conditions 1% Annual Chance Flood Hazard *Zone X*
		Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
		Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
		Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES	20.2	Cross Sections with 1% Annual Chance
	17.5	Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

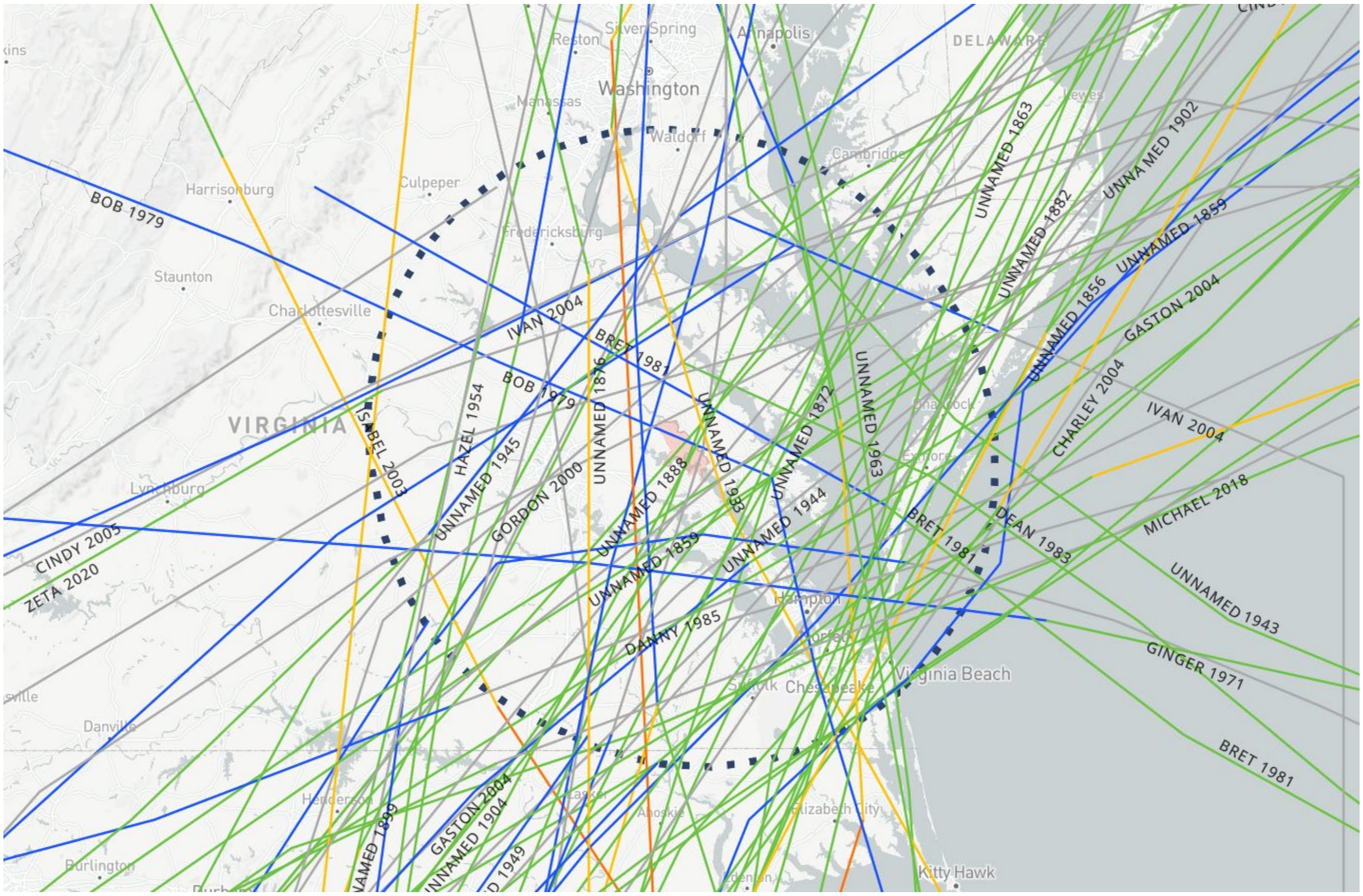
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/24/2022 at 9:58 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 3: List of historic hurricanes impacting the project area 1851 to present per NOAA.



Location: 23181

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY

ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ISABEL 2003	Sep 06, 2003 to Sep 20, 2003	145	915	H5
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
UNNAMED 1976	Sep 13, 1976 to Sep 17, 1976	40	1011	TS
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	65	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5

UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
HAZEL 1954	Oct 05, 1954 to Oct 18, 1954	115	938	H4
UNNAMED 1949	Sep 11, 1949 to Sep 14, 1949	45	-1	TS
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1905	Oct 05, 1905 to Oct 11, 1905	45	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Sep 25, 1893 to Oct 15, 1893	105	955	H3

UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1861	Sep 22, 1861 to Sep 29, 1861	70	989	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: Additional Site Images

Source: dailypress.com

Attachment 5: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)
The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a HAZUS assessment of hurricane wind, sea level rise* (i.e., Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc., staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal

land use management/water quality and Onsite Sewage Disposal System (OSDS) and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

MPPDC Round 3 CFPF New Applications

2 messages

Curt Smith <csmith@mppdc.com> Fri, Apr 8, 2022 at 11:46 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Lewis Lawrence <llawrence@mppdc.com>, Jackie Rickards <jrickards@mppdc.com>, Heather Modispaw <Hmodispaw@mppdc.com>, "Howard-cooper, Wendy" <wendy.howard-cooper@dcr.virginia.gov>

Greetings,

The MPPDC is respectfully submitting five proposals for consideration under Round 3. These projects were requested by our member jurisdictions as projects of highest priority with regards to flood mitigation and resilience needs. The projects are located on and involve publicly-owned property and infrastructure and were identified as sites with the greatest potential for community scale benefits within the locality/region.

The proposals may downloaded via the following links:

- CID510071_GloucesterCounty_Public_CFPF.doc.pdf
- CID510098_MiddlesexCounty_Public_CFPF.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-1.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-2.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-3.pdf

We thank you in advance for your consideration. Please contact me directly should you have any questions.

Best,

Curt

Curtis Smith
Deputy Director
Middle Peninsula Planning District Commission
Cell: 804-384-7509
125 Bowden Street, Saluda, VA 23149
Web: www.mppdc.com
Email: csmith@mppdc.com

CFPF, rr <cfpf@dcr.virginia.gov> Fri, Apr 8, 2022 at 11:52 AM
To: Curt Smith <csmith@mppdc.com>

Curt,

Are these applications in addition to the eight already submitted?
[Quoted text hidden]

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

Whites Creek Public Landing Resilience Enhancements

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

PROJECT TITLE: Whites Creek Public Landing Resilience Enhancements

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning __X__ Project ___Study

NFIP/DCR Community Identification Number (CID): Mathews County (510096)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ________________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ___

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☑ Living shorelines and vegetated buffers.
- ☑ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☑ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☑ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County, Diggs, Virginia

NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? Yes

Is Project Located in a Special Flood Hazard Area? Yes

Flood Zone(s) (If Applicable): Zones AE and VE

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0060E eff. 12/9/2014

Total Cost of Project: **$213,740**

Total Amount Requested: **$131,507**

SCOPE OF WORK NARRATIVE

INTRODUCTION

This proposal focuses on necessary resilience enhancements including erosion management and improvement of public access for the landing and pier of publicly owned property (822 Whites Creek Lane) located on Whites Creek in Diggs, Virginia (Mathews County). The public waterfront site experiences severe flooding and erosion from storm surge and sea-level rise, eroding the drive area and resulting in sand intrusion in the right-of-way and drainage ditches, causing issues for neighboring properties. During the most recent nor'easter, the end of the pier was damaged, requiring closure until repairs can be made. The project scope includes conducting a stormwater drainage study and design of BMPs to address overwash and sand intrusion, the development of a shovel ready design and draft JPA for a shoreline erosion control structure (i.e. living shoreline) allowing public access in the form of a kayak/small skiff launch, and repair and replacement of the pier in the same footprint (approximately 215' in length, 5' wide, with a 20' x 12' L-head) at an increased elevation to make it more resistant to damage during high water events, and the development of a small turnaround and parking area for 2 vehicles. Whites Creek is a key access point to the Chesapeake Bay and the design and implementation of resilient structures and shoreline stabilization will preserve this key access point and hub for recreation along the Virginia Water Trails.

FEMA, the Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula Planning District Commission (MPPDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). To that end, this proposal is a partnership between the MPPDC and Mathews County (see Community Support Letter, **Attachment 1**).

- A link or copy to the approved MPPDC resilience plan: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
- Mathews County Comprehensive Plan: https://www.mathewscountyva.gov/196/Comprehensive-Plan

This project is consistent with multiple objectives and strategies outlined within the Regional All-Hazards Mitigation Plan. Relevant strategies include the following:

- Objective 1.1: Provide protection for future development to the greatest extent possible.
    - Strategy 1.1.1: Reduce or eliminate flood damage to residential/business structures that are highly vulnerable for continual flood damage.
    - Strategy 1.1.3: Protect public buildings and public infrastructure from flood waters resulting from 100-year flood storm events.
    - Strategy 1.3.1: Mitigation projects that will result in protection of public or private property from natural hazards.

PROJECT INFORMATION

Project Description

The project site is the **Whites Creek Public Landing**, with waterfront access on Whites Creek in Mathews County, Virginia. The approximately one-acre property consists of a fishing pier, boat launch, and public beach and water access. There are no designated parking spaces, and the site accommodates limited traffic while allowing flow of traffic to the boat launch and beach. Whites Creek is a key access point for recreational fishing, and is one of the County's only public accesses with direct access to the Chesapeake Bay. Currently, the shoreline erosion is limiting access to key community and recreational features of the site. Studying stormwater drainage and addressing shoreline erosion will increase the site's resilience to coastal weather events and sea level rise. Further replacement of the pier with a resilient design is essential to long term viability of this resource. The site is relatively small, however, it represents a significant amount of commercial and economic activity, and as such, the County would like to protect the site for continued public access.

Specifically, this project proposes to:

1. Conduct a stormwater drainage study and design of BMPs to address overwash and sand intrusion;
2. Develop a shovel ready design and draft JPA for a shoreline erosion control structure;
3. Replacement of the pier in the same footprint (215' long, 5' wide, 20' x 12' L-head) at an increased elevation to make it more resistant to damage during high water events; and
4. Develop a small turnaround and parking for 2 parking spaces, based upon developed designs.

Project Location Information

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia, as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth’s total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

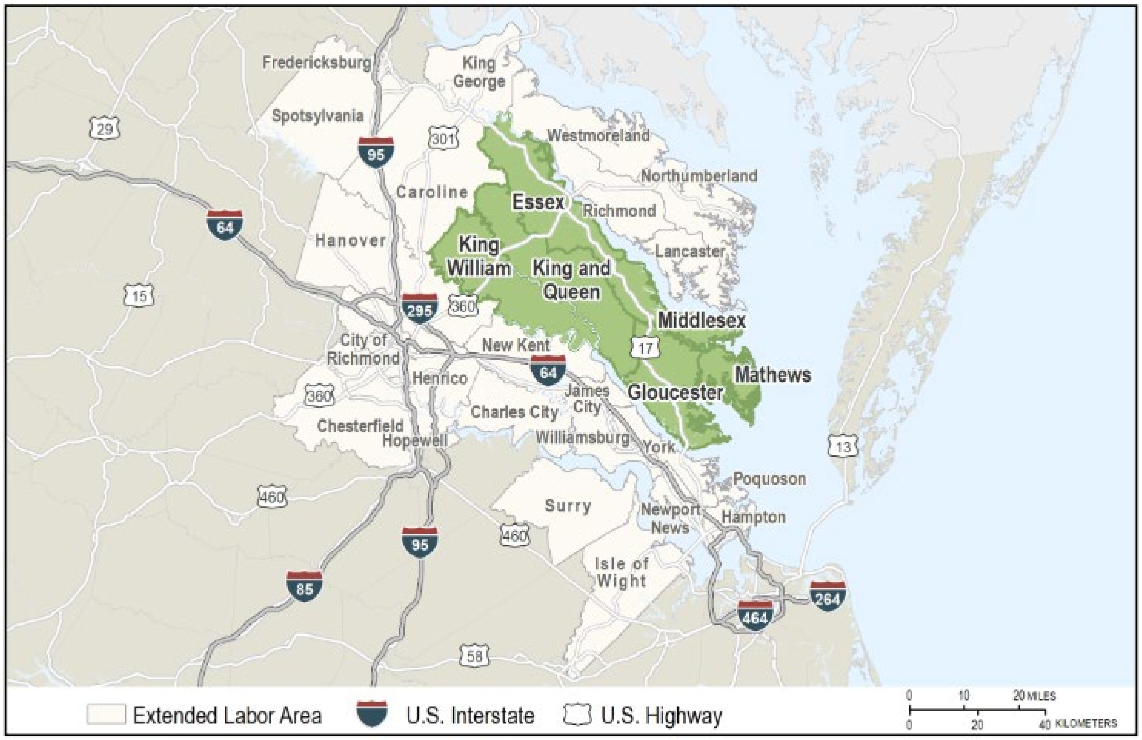
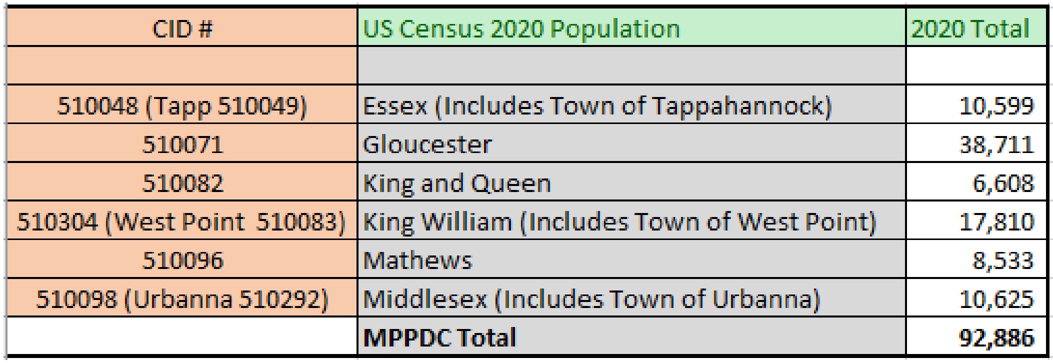


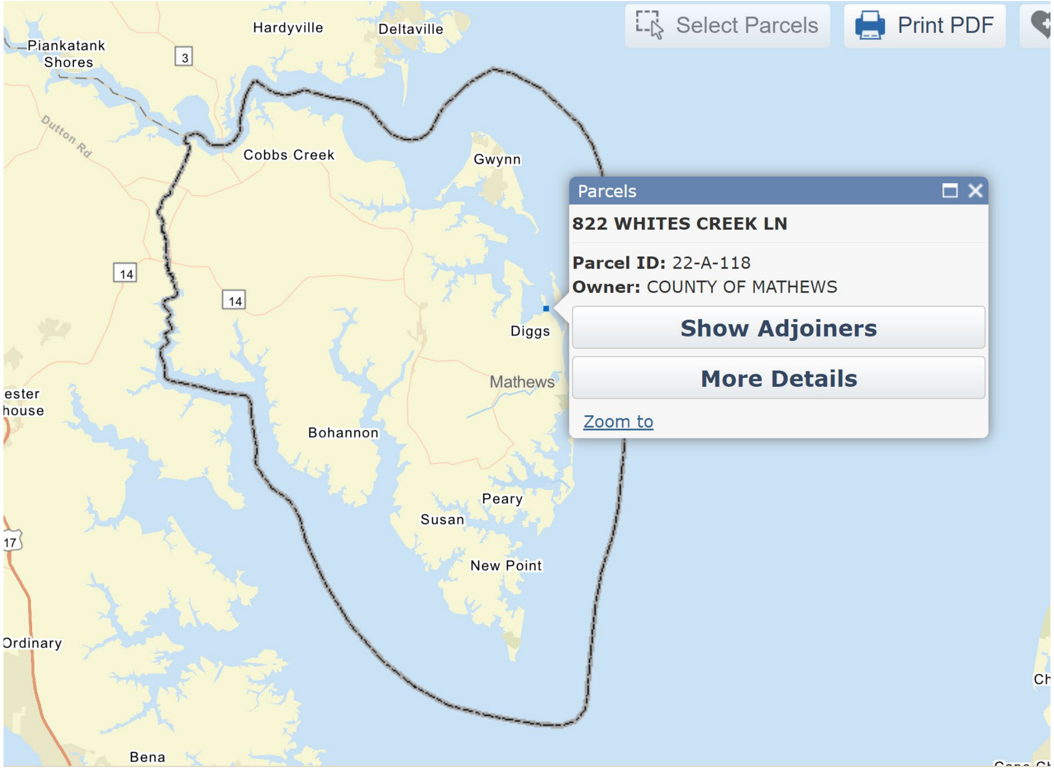
Figure 2. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

The project proposes to study and implement measures to enhance the resiliency of the Whites Creek Landing site, an approximately 1-acre property located in Mathews County, along Whites Creek in Diggs, Virginia. (**Figures 3 and 4**).

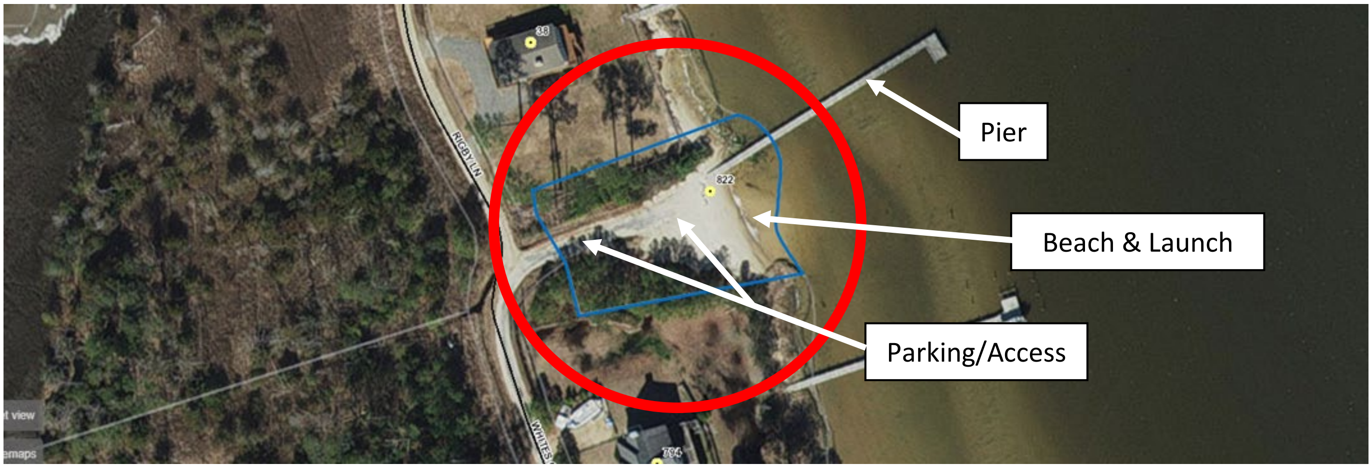
Figure 3. County Map of Project Location



822 WHITES CREEK LN

Parcel ID: 22-A-118
Owner: COUNTY OF MATHEWS

Figure 4. Parcel Map of Project Location

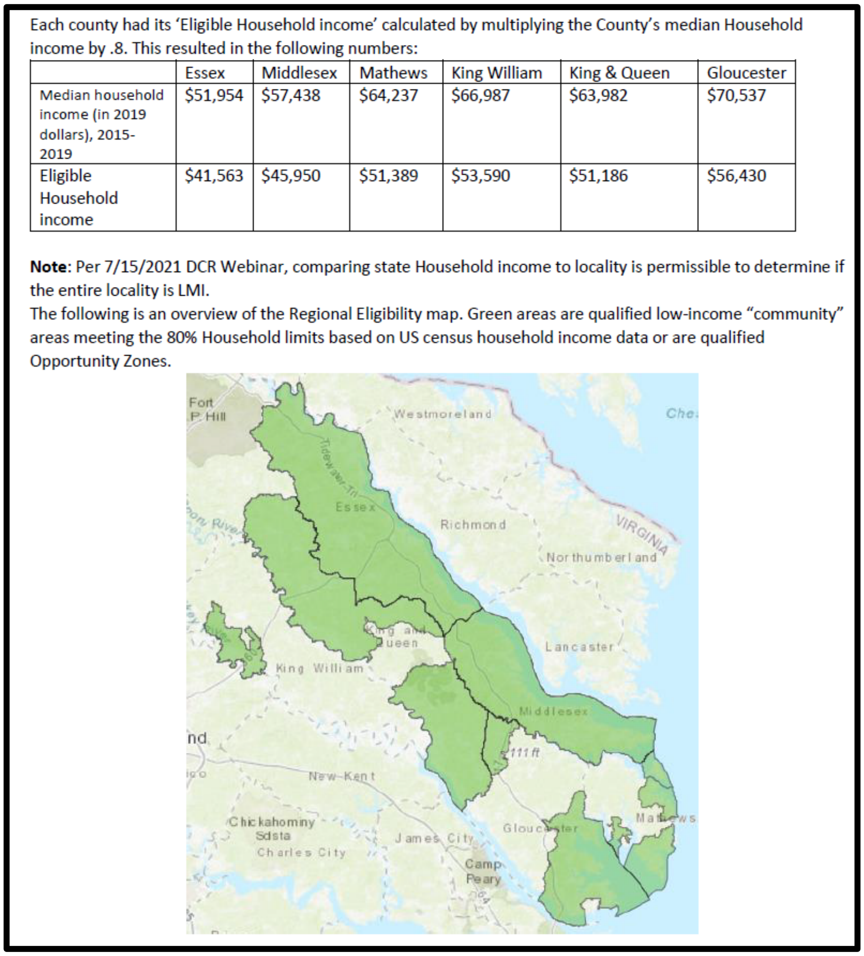


Population Information

Mathews County is located on the easternmost portion of Virginia's Middle Peninsula and is an agriculture, forestry and water-based economy. The County is a coastal community located between the Mobjack Bay, Piankatank River and the Chesapeake Bay. Mathews County has more than 200 miles of shoreline. Based on 2020 Census Data, Mathews County's population totals 18,533 (**Figure 2**).

According to DCR guidelines, a portion of the county is considered a low-income geographic area. In **Figure 5**, the green areas depict qualified low-income "community" areas meeting the 80% Household limits based on US census household income data[1] or are qualified Opportunity Zones.

Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

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[1] Based upon 2015-2019 U.S. Census American Community Survey data available on January 4, 2022, when CFPF Round 3 opened; 2016-2020 ACS data was not released until March 17, 2022.

Please see **Figure 6** for a detailed map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

Figure 6. Map of the Project Location within in the Green Low-Income Area

With respect to social vulnerability, according to ADAPTVA's Social Vulnerability Index Score, this project location has a Social Vulnerability Index Score of 0.6, classified as Moderate Social Vulnerability (**Figure 7)**

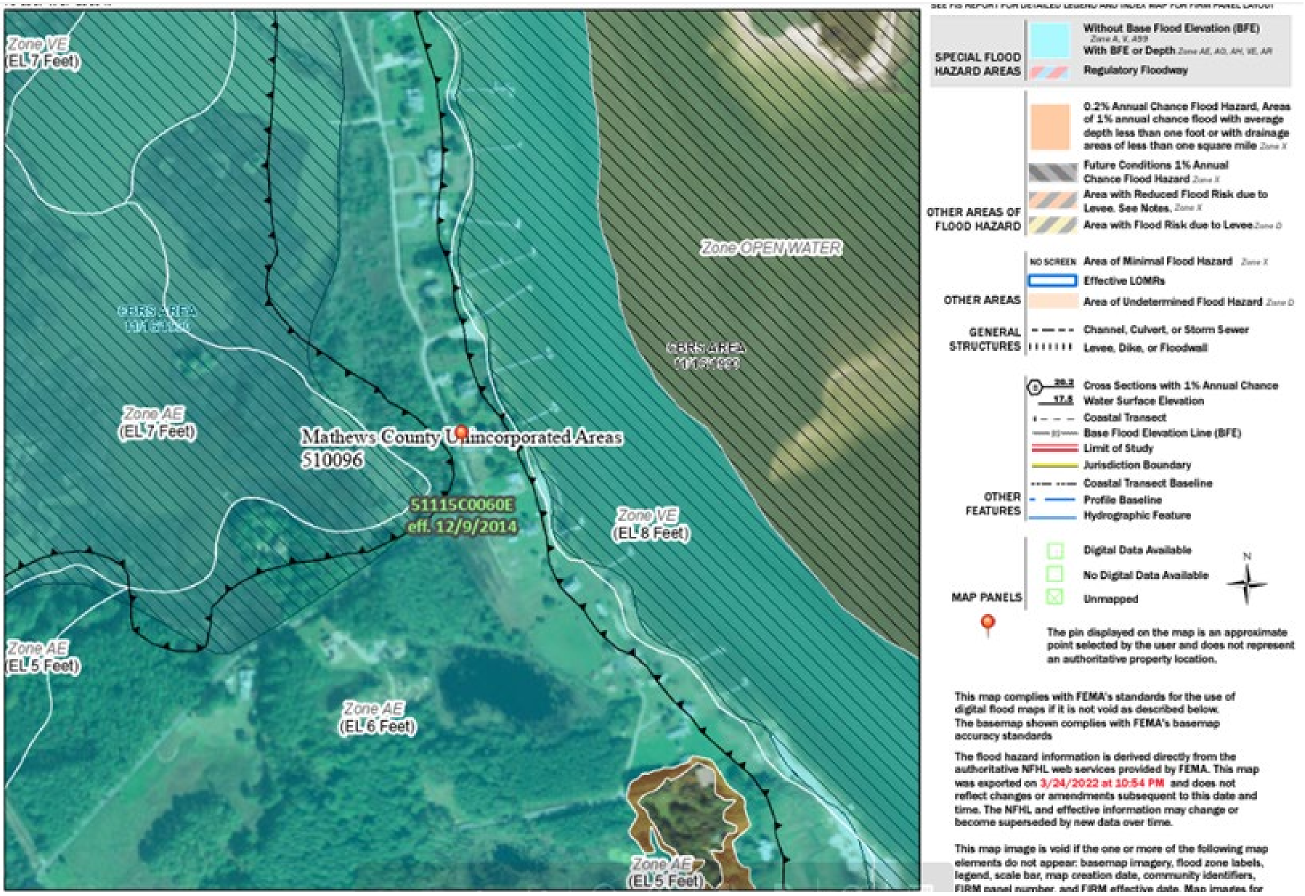
Figure 7. ADAPTVA Social Vulnerability Index Score Viewer

Flood Risk Information

The entirety of the site (822 Whites Creek Lane, Diggs, Virginia, 37.44691, -76.26051) is located within a mapped floodplain, with portions located within FEMA Flood Zones AE and VE (**Figure 8**). Mathews County's Planning and Zoning Department administers the requirements of the NFIP program, and the County's Floodplain Management Ordinance may be accessed at the following link:

https://www.co.Mathews.va.us/DocumentCenter/View/422/Floodplain-Management-PDF?bidId=

Figure 8. Map of FEMA Flood Zones



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/24/2022 at 10:54 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for

Due to the project site's proximity to the water and low elevation, the site has an extensive history of being subject to extreme weather events that have resulted in significant impacts to infrastructure and the environment. For example, the project location has long been, and continues to be, impacted by tropical, sub-tropical, and Nor'easter events (**Attachment 3**). During the most recent nor'easter, the end of the pier was damaged, requiring closure until repairs can be made. According to NOAA's Coastal Flood Mapper, this project location is at the highest risk of coastal flooding (**Figure 9**). Collectively, these reoccurring and storm-related events have contributed to shoreline loss at site. **Figure 10** depicts the shoreline in 1937 and the 2017, based on historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program; illustrated are an approximate loss of 5,000 square feet of shoreline at the site location over an eighty-year period. The site was historically sheltered from the wind and wave forces of the Chesapeake Bay by Rigby Island, which is a rapidly disintegrating barrier island due east of the site. Rigby Island was connected to the mainland to the south until it breached and became disconnected in 1960. Since 1960, Whites Creek has become increasingly open to the Chesapeake Bay and currently only ~1 acre or less of

Rigby Island remains and the mainland shorelines are virtually fully exposed to the fetch and high energy of the Chesapeake Bay. Protection at Whites Creek landing is more necessary than ever due to these drastic changes which have put the viability of the site at great risk.

Figure 9. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)

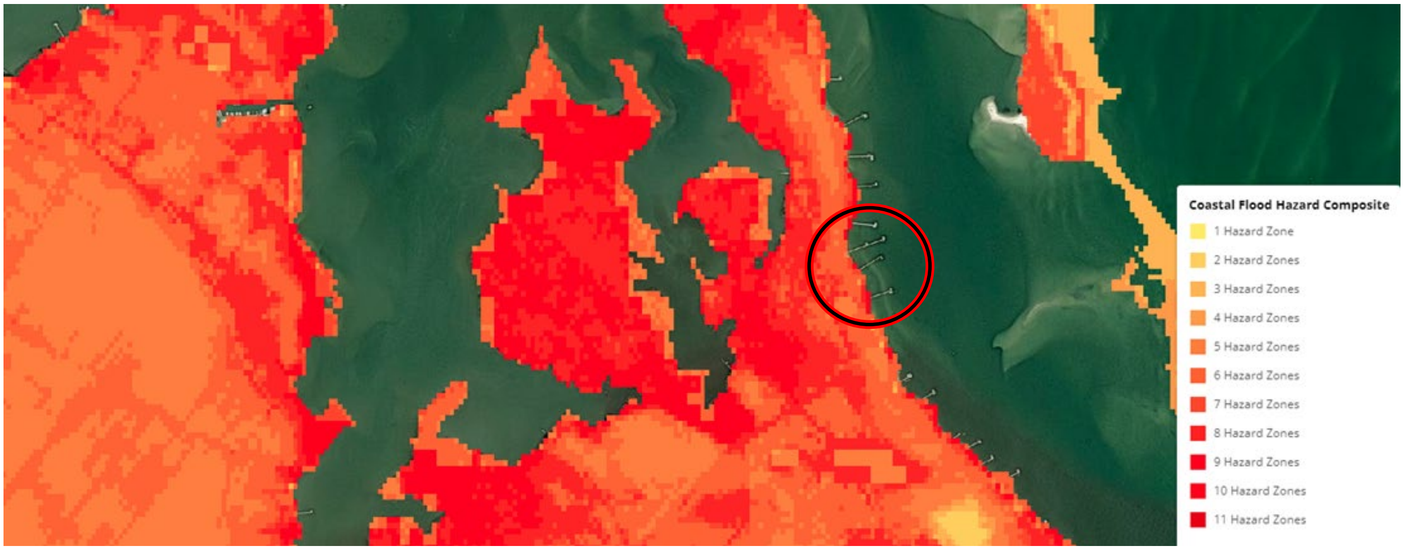


Figure 10. Project Location and Map of Associated Shoreline Change Between 1937 and 2017

NEED FOR ASSISTANCE

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex counties, as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened FTE staff. MPPDC staff consists of an Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, and clerical support staff; a Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, and Emergency Planner are co-operative procured; Housing, Community Development Planner and Public Relations staff are hourly.

The Planning District staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scales - from grants in excess of $1,000,000 to small grants. MPPDC is an entrepreneurial-based government agency with an annual operating budget ranging from $750,000 to more than $1,000,000. Annually, the MPPDC manages 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software and other software (e.g., GIS, Microsoft Office) as required and/or necessitated by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance, as well as other areas determined by the Commission. MPPDC has more than 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission, no audit findings have occurred.

As noted, the Whites Creek Public Landing site is subject to shoreline erosion, limiting access to key community and recreational features of the site. Studying shoreline erosion and implementing a living shoreline design for the site will increase access for kayaks and skiffs in addition to increasing resilience to coastal weather events and sea level rise. Without the erosion protection measures proposed, the land, habitat and public infrastructure will be compromised, resulting in degradation of the environment and loss of public assets. Coastal flooding resilience remains the biggest weakness of the Whites Creek Landing site. The area around the Whites Creek site is prone to erosion from weather events as evidenced by neighboring living shoreline and shoreline protection features. Any category of storm surge will affect the Whites Creek site, depositing sediment in the drainage features, eroding the shoreline, and precluding access. Moreover, rising sea levels will have a negative impact on the property, increasing the potential for shoreline erosion and loss of public assets.

Figure 11 illustrates flood levels combined with sea-level rise and their effects on the site. Notably, floods in 60 years pose an issue to the site; key construction techniques will need to be employed to increase overall resilience in order to mitigate the effects of exceptional floods and sea level rise 60 years and out.

Figure 11. Sea Level and Flood Elevation

Sea Level for 2020 *Sea Level Projection for 2080*

The need for assistance is two-fold. First, Mathews County is along the Chesapeake Bay and numerous tidal rivers that contribute to the area's high risk to coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from the Virginia Institute of Marine Science (VIMS), relative sea-level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Mathews County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds as storm surge. When a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide".

Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and sediment, and produce hurricane-force winds that push large amounts of seawater inland. A strong indicator that Mathews County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, Mathews County had over 1,000 NFIP claims with claims topping $20.5 Million. The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on its communities. This project will therefore build on local efforts moving toward a more resilient community.

Second, this project location is primed for co-benefits derived from shoreline erosion mitigation efforts. The proposed application of shoreline protection features, boat launch improvements, and increased public access that provides strategic protection of the infrastructure and landscape at this point of interest. For example, the proposed improvements will facilitate multiple, simultaneous activities that will contribute to economic growth in the area while fostering innovation.

Business Development

The potential of increased community interest drawn to the site is significant. Visitors seeking access to local waterways could be drawn to activities available at Whites Creek Landing, supporting the local economy with outside revenue in their pursuits. The project proposes to design a resilient fishing pier, study and design of a living shoreline, and study and design for dredging Whites Creek with beneficial reuse of sediments. Close proximity to recreational opportunities has increasingly become a factor in where businesses decide to locate. The provision of a public access site with enhanced amenities thus has the potential to drive continued economic growth through business development in the area. Moreover, the boat launch and fishing pier provide key access to the waterways for the community and visitors to Whites Creek Landing.

Community Scale Benefits

Due to the multitude of public investment for shoreline protection and flood research and innovation, we believe this site meets the test of “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk.” The Whites Creek Landing site serves as one of the Commonwealth’s best chances to innovate shoreline resilience projects in “live time” so that all of coastal Virginia can benefit.

MPPDC believes that proposing resilience projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels.

Benefit of Natural Based solutions

Adapt VA contains a data layer illustrating areas of less than ten feet in elevation that show locations in the Middle Peninsula offering benefits of NNBF to coastal buildings, habitat, and community protection (see **Figure 12**). The project site offers multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit.

Figure 12. Natural and Nature-Based Features at the Project Site

ALTERNATIVES

The submission of alternatives is not applicable in this application. Nature-based and hybrid solutions are anticipated, and the project cost is less than $3 million.

GOALS AND OBJECTIVES

This proposal will develop a comprehensive strategy to increase resilience of the site against multiple shoreline erosion inputs while providing co-benefits that foster resilience at the Whites Creek Landing site. The focused goals and objectives of the project are as follows:

Goal 1: Improve public access to local coastal waterways.

- Objective A: Increase public access to the Chesapeake Bay with improved conditions and mitigation of recurrent and repetitive flooding and erosion using a nature-based approach on site.
- Objective B: Enhance quality of life for local residents and visitors alike through recreation, educational and cultural opportunities, and commercial fishing at the point of interest.
- Objective C: Leverage improved public access and coastal resiliency for economic growth within Mathews County.

Goal 2: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Mitigate recurrent and repetitive flooding and erosion alongside storm surge and sea level rise using natural and nature-based solutions that benefit people and the economy as well as the environment.
- Objective B: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.
- Objective C: Enhance the resilience of public infrastructure, ensuring longer-term viability.

Goal 3: Transferability to other communities.

- Objective A: Model natural and nature-based solutions for coastal sites exploring development potential.
- Objective B: Foster innovative research and solutions-oriented studies on site focused on coastal adaptation and mitigation for external transfer.
- Objective C: Improve the implementation of Fight the Flood as a model program to be replicated in other communities within the region and/or Commonwealth.

The MPPDC expects the following results and benefits of the completed project:

1. **Foster economic growth in the area over the useful life of site infrastructure and most likely, beyond.** Enabling public access to this county asset while ensuring its sustainability will protect and enhance the area's recreational economies and has the potential to positively impact related commercial endeavors.

2. **Prevent loss of property without cementing an alternative.** Building resilient structures and facilities at the project site as outlined will help prevent loss of property and property value, while capitalizing on the useful life of the site as much as possible.

3. **Provide ecosystem services to the community toward increased quality of life.** Increased public access to recreational, educational and cultural opportunities leverage the provisioning and cultural services associated with the site's natural resources, services that provide benefits to safety, health and well-being for all visitors.

APPROACH, MILESTONES, AND DELIVERABLES

As noted, the intent of this project is to focus on erosion management and improvement of public access for the landing and pier located at Whites Creek Landing. This project will utilize and incorporate sustainable planning, design, environmental management, and engineering practices that weave natural features together and allow for floodwater inundation and stormwater flow to reduce the exposure to public facilities while promoting adaptation and resilience.

The principal tasks and milestones are as follows:

- Conduct a stormwater drainage study and design of BMPs to address overwash and sand intrusion;
- Develop a shovel ready design and draft JPA for a shoreline erosion control structure;
- Replacement of the pier in the same footprint (215' long, 5' wide, 20' x 12' L-head) at an increased elevation to make it more resistant to damage during high water events; and
- Develop a small turnaround and parking area for 2 vehicles, based upon developed designs.

The expected timeline for the project milestones, and deliverables, is as follows. All activities are contingent upon approval of the relevant permitting authorities, and as such, the schedule and milestones should be considered estimates at best. The ultimate project schedule will be dictated predominantly by the permitting process; however, the proposed activities are not anticipated to exceed the 3 years allowed per the DCR Grant Manual:

<u>Year 1/Months 1-3 - Stormwater drainage study and design of BMPs</u>

<u>Year 1/Months 4-6 - Develop design and draft JPA for shoreline erosion control structure/living shoreline</u>

Year 1/Months 6-12 - Replacement of the pier

Year 2/Months 13-18 - Improvement of site access/parking

RELATIONSHIP TO OTHER PROJECTS

While the specific proposed project bears no direct relationship to specific past, future, or future resilience projects, the project does relate to larger regional resilience efforts. For more than 40 years, the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (e.g., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR in August of 2021. This Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents. These documents frame the foundation and implementation of the Middle Peninsula flood protection approach, and are indirectly and directly supported by specific regional planning documents each approved by federal, regional, and/or local partners as required by statute.

Other plans and resources integral to the implementation of the Flood Resiliency Plan include:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan - FEMA and Middle Peninsula locality, approved 2016 (MPPDC Website)
    - This overarching project provides updates every five years on the hazards within the region; it identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – MPPDC, approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – MPPDC, approved annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design - MPPDC Commission, approved June 2020; Chairman approved update 8/6/21
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program - Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

The MPPDC has a history of continuous work on flooding and coastal resiliency topics, as described in **Attachment 5**. These projects have built upon each other to establish within the MPPDC a solid foundation of regional expertise in flooding and coastal resiliency. Now, given this history of accumulated information and knowledge, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One such effort, launched in 2020 following the Commission's authorization, was developed in response to emerging flood challenges. This effort, the **Middle Peninsula Fight the Flood (FTF) Program**, leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built and natural environments with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. MPPDC staff have partnered with private property owners registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that their outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN

A maintenance plan is not applicable in this application. The proposed project is to develop a nature-based design solution and its cost does not require ongoing operation and future maintenance.

CRITERIA

Describe how the project meets each of the applicable scoring criteria contained in ***Appendix B*** *and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application.* ***Appendix B*** *must be completed and submitted with the application.*

For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**

    - Yes; the applicant is a regional planning district commission.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**

    - Yes; the MPPDC's DCR-approved resilience plan may be accessed at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**

    - Yes; please see **Attachment 1**

4. **Has the applicant provided evidence of an ability to provide the required match funds?**

    - Yes; please see the match commitment letter in **Attachment 1**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**

    - Yes

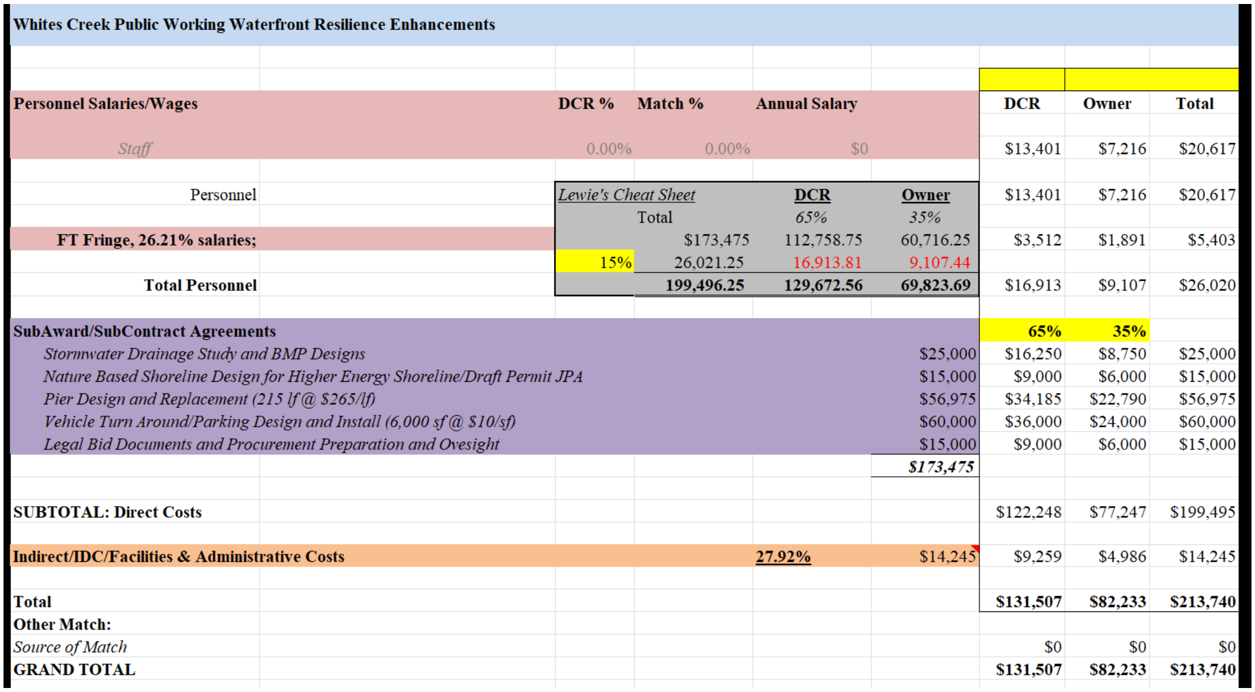
BUDGET NARRATIVE

ESTIMATED TOTAL PROJECT COST

Based upon the identified scope of work, the estimated total project cost is $213,740. A cost breakdown of project elements is as follows:

- Stormwater Drainage Study and BMP Designs: $25,000
- Living Shoreline Design and Draft JPA: $15,000
- Pier Design and Replacement: $56,975 (215' at $265 per linear foot)
- Vehicle Turnaround/Parking Design and Install: $60,000 (6,000 sq. ft. at $10 per sq. ft.)
- Legal Bid Documents and Procurement Preparation and Oversight: $15,000

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY23 is 26.21% and comprised of: Health Insurance – 48.58%, Retirement – 18.06%, Workers Comp – 0.28%, Social Security – 28.55%, Life Insurance – 4.39%, Unemployment – 0.14%. Direct charges are costs associated with overall projects costs consistent with general accounting principles. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.92%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)-Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.



Whites Creek Public Working Waterfront Resilience Enhancements							
Personnel Salaries/Wages	**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff	0.00%	0.00%	$0		$13,401	$7,216	$20,617
Personnel	*Lewie's Cheat Sheet*		**DCR**	**Owner**	$13,401	$7,216	$20,617
		Total	*65%*	*35%*			
FT Fringe, 26.21% salaries;		$173,475	112,758.75	60,716.25	$3,512	$1,891	$5,403
	15%	26,021.25	16,913.81	9,107.44			
Total Personnel		**199,496.25**	**129,672.56**	**69,823.69**	$16,913	$9,107	$26,020
SubAward/SubContract Agreements					**65%**	**35%**	
Stormwater Drainage Study and BMP Designs				$25,000	$16,250	$8,750	$25,000
Nature Based Shoreline Design for Higher Energy Shoreline/Draft Permit JPA				$15,000	$9,000	$6,000	$15,000
Pier Design and Replacement (215 lf @ $265/lf)				$56,975	$34,185	$22,790	$56,975
Vehicle Turn Around/Parking Design and Install (6,000 sf @ $10/sf)				$60,000	$36,000	$24,000	$60,000
Legal Bid Documents and Procurement Preparation and Oversight				$15,000	$9,000	$6,000	$15,000
				$173,475			
SUBTOTAL: Direct Costs					$122,248	$77,247	$199,495
Indirect/IDC/Facilities & Administrative Costs			**27.92%**	$14,245	$9,259	$4,986	$14,245
Total					**$131,507**	**$82,233**	**$213,740**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$131,507**	**$82,233**	**$213,740**

AMOUNT OF FUNDS REQUESTED

The total amount of requested grant assistance is $131,507, or 65% of total project costs, as the project is located in and serves a low-income geographic area and the project results in hybrid solutions. These funds, combined with local match, would be used for the services identified above.

AMOUNT OF CASH FUNDS AVAILABLE

Mathews County will appropriate the requisite 35% or $82,233 in required local cash match funds, to be combined with the $131,507 in grant assistance to equal the total estimated project cost. The County's match commitment letter is included as **Attachment 1**.

AUTHORIZATION TO REQUEST FUNDING

The authorization to request funding is included as **Attachment 1**.

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
X Wetland restoration, floodplain restoration X Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal X Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	**45**
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (**Based on [ADAPT VA's Social Vulnerability Index Score.)](#)**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	

8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

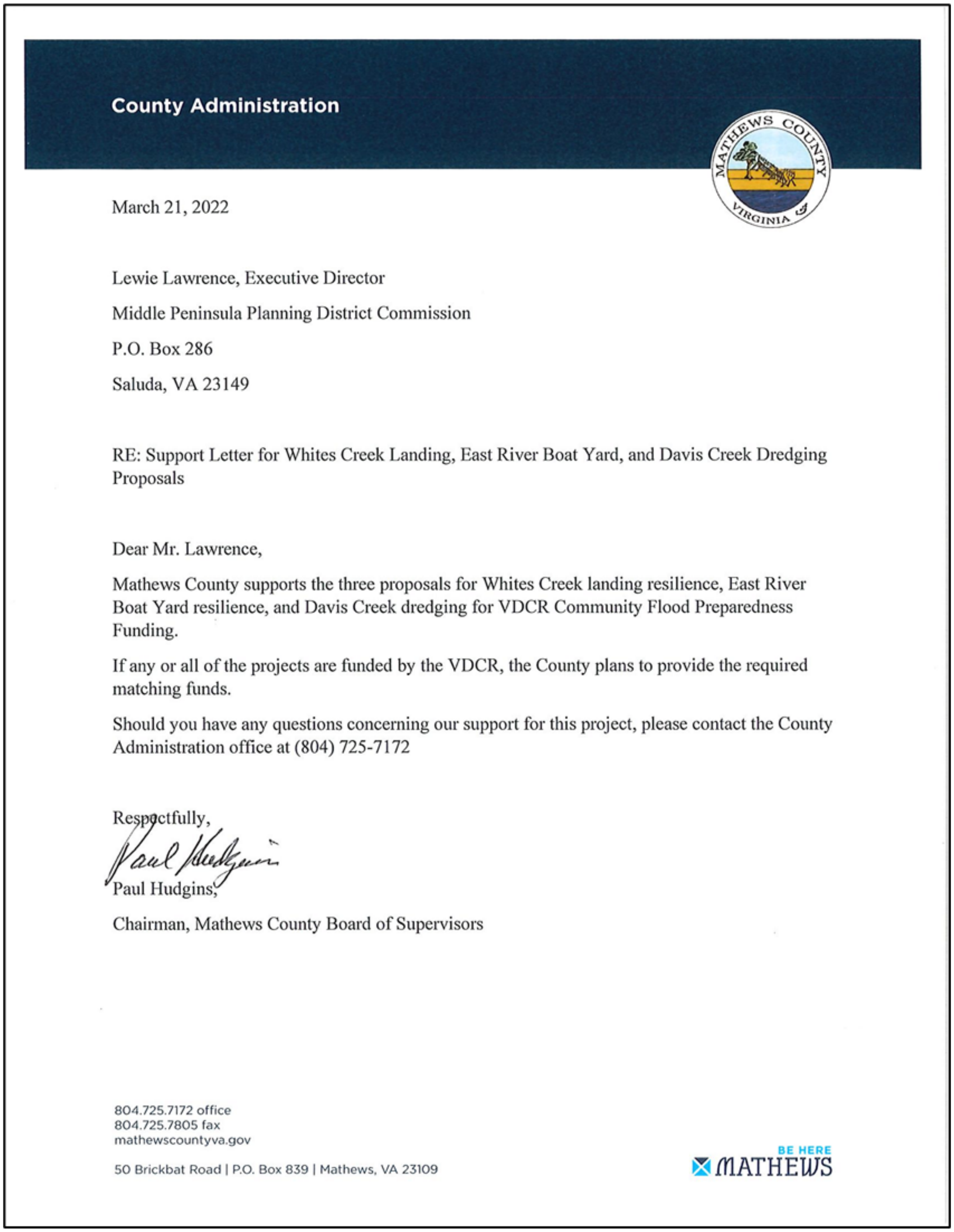
Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Attachment 1: Community Support/Match Commitment/Authorization Letter



County Administration

March 21, 2022

Lewie Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Whites Creek Landing, East River Boat Yard, and Davis Creek Dredging Proposals

Dear Mr. Lawrence,

Mathews County supports the three proposals for Whites Creek landing resilience, East River Boat Yard resilience, and Davis Creek dredging for VDCR Community Flood Preparedness Funding.

If any or all of the projects are funded by the VDCR, the County plans to provide the required matching funds.

Should you have any questions concerning our support for this project, please contact the County Administration office at (804) 725-7172

Respectfully,

Paul Hudgins

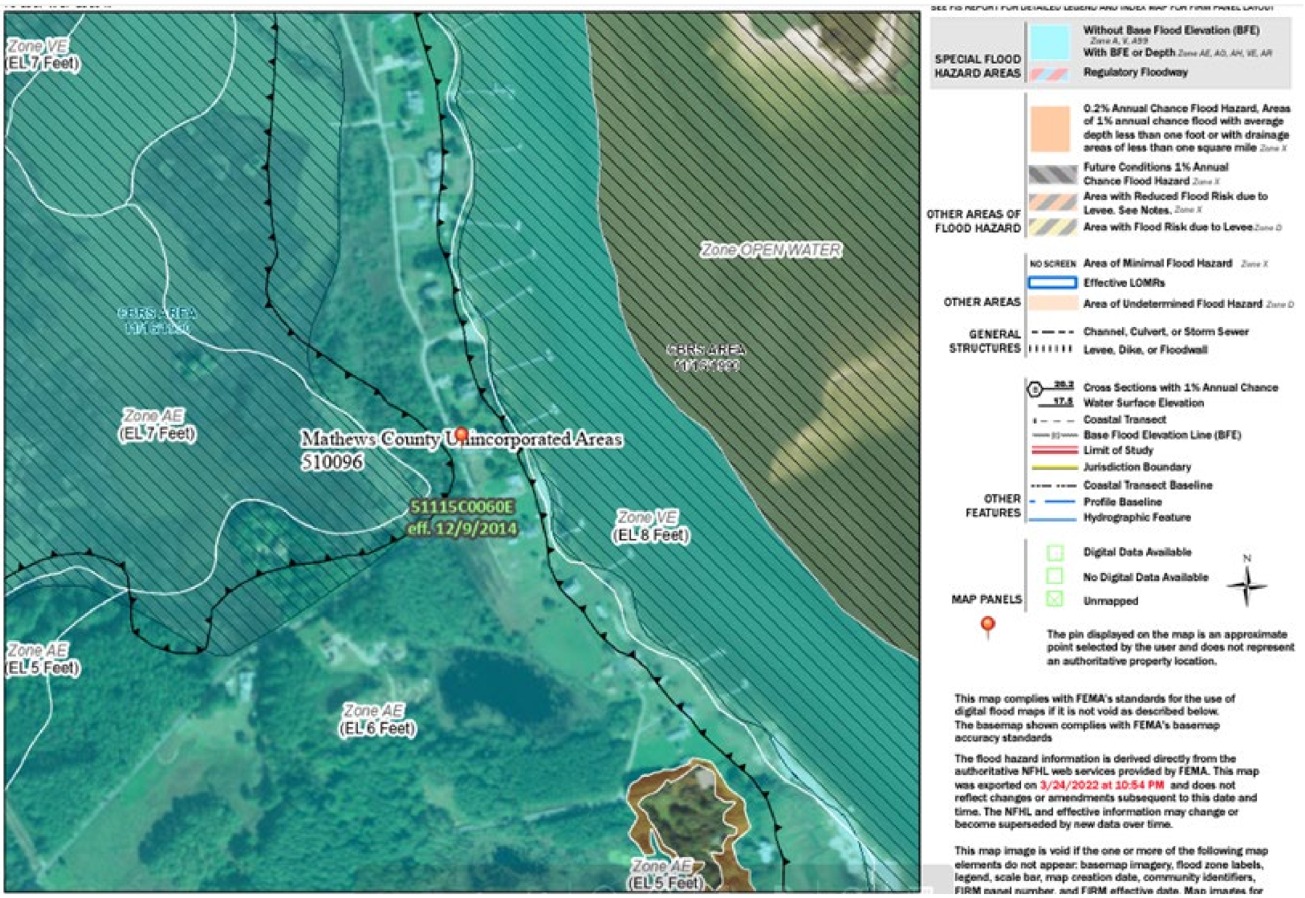
Paul Hudgins,
Chairman, Mathews County Board of Supervisors

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE MATHEWS

Attachment 2: Project Location FIRMette



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

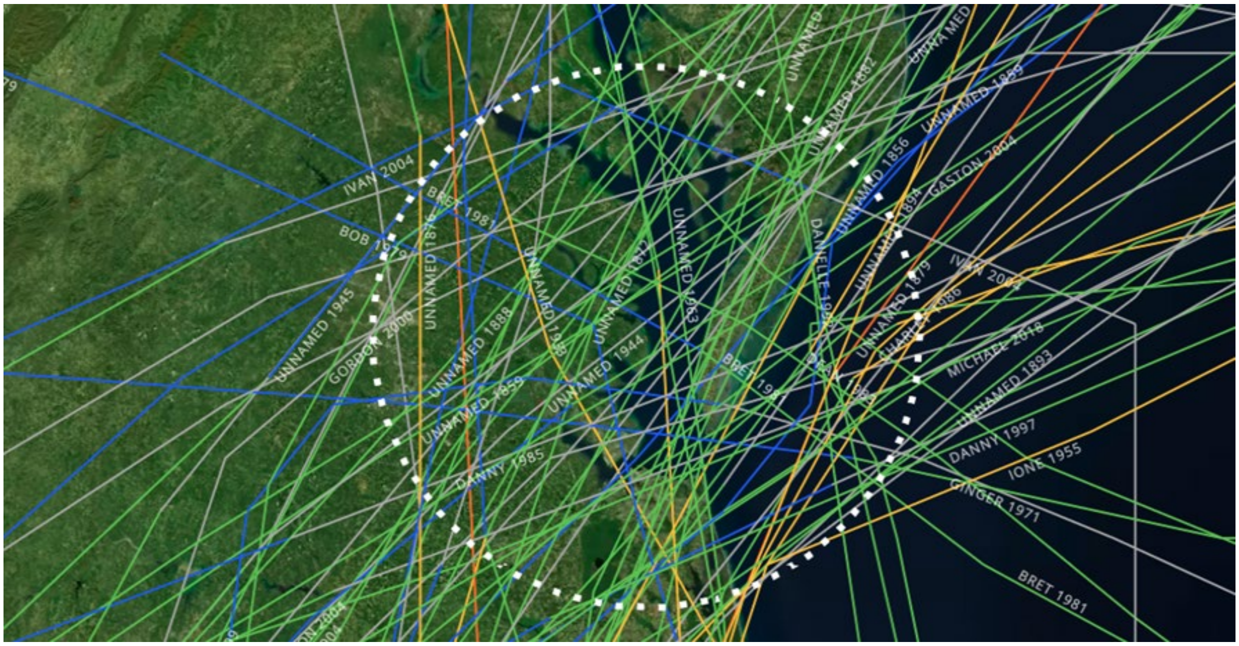
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/24/2022 at 10:54 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for

Attachment 3: List of historic hurricanes impacting the project area 1851 to present per NOAA.

Hurricane List



Search Filter Criteria

Location: 37.44691, -76.26051

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

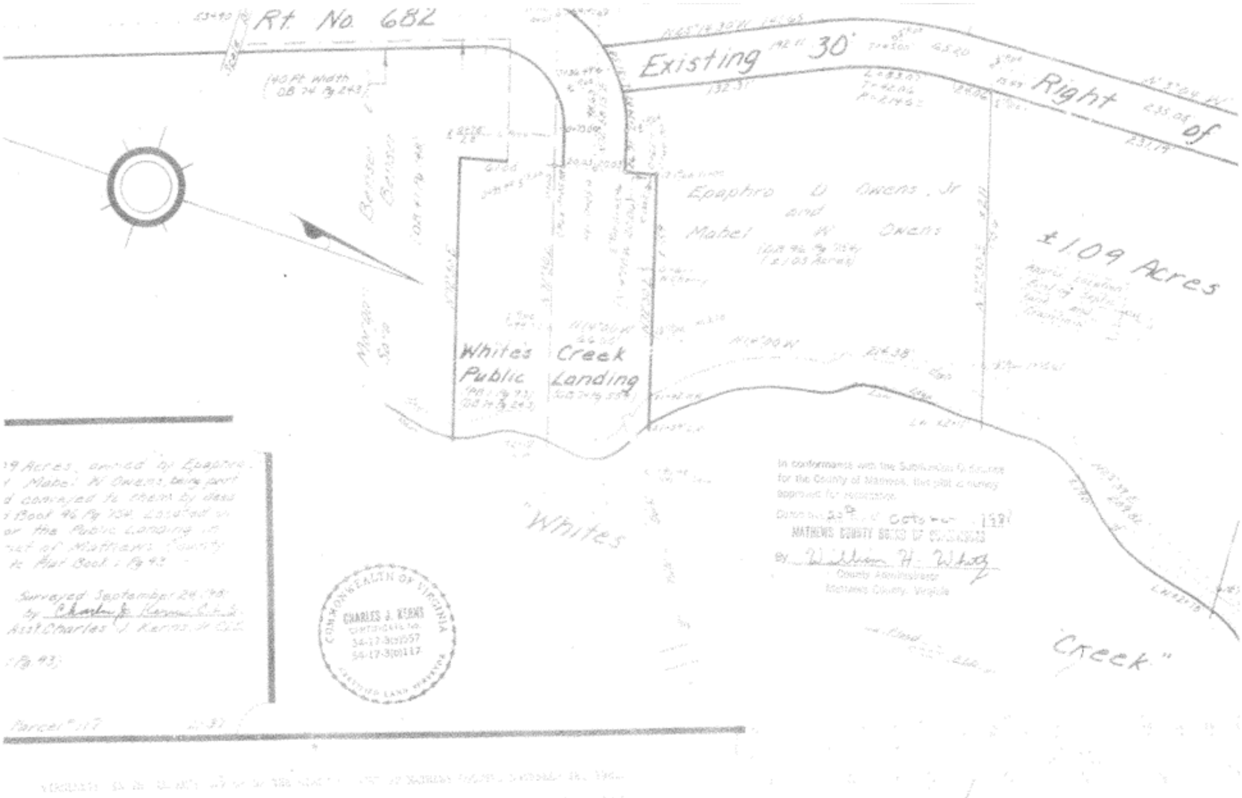
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS

BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5

UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2

UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: Photos and Survey of the Whites Creek Landing property.



...9 Acres, owned by Epaphro ...
... Mabel W. Owens, being part
...d conveyed to them by deed
... Book 46 Pg 154. Located ...
...ar the Public Landing in
...nty of Mathews County
... Plat Book 1 Pg 43

Surveyed September 24, 1981
by Charles J. Kerns C.L.S.
Asst. Charles J. Kerns, Jr. C.L.S.

... Pg 43)

In conformance with the Subdivision Ordinance for the County of Mathews, this plat is hereby approved for recordation.

Date the 23rd of October 1981
MATHEWS COUNTY BOARD OF SUPERVISORS
By William H. Whitley
County Administrator
Mathews County, Virginia

Attachment 5: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)
The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a HAZUS assessment of hurricane wind, sea level rise* (i.e., Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc., staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal

land use management/water quality and Onsite Sewage Disposal System (OSDS) and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

MPPDC Round 3 CFPF New Applications

2 messages

Curt Smith <csmith@mppdc.com> Fri, Apr 8, 2022 at 11:46 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Lewis Lawrence <llawrence@mppdc.com>, Jackie Rickards <jrickards@mppdc.com>, Heather Modispaw <Hmodispaw@mppdc.com>, "Howard-cooper, Wendy" <wendy.howard-cooper@dcr.virginia.gov>

Greetings,

The MPPDC is respectfully submitting five proposals for consideration under Round 3. These projects were requested by our member jurisdictions as projects of highest priority with regards to flood mitigation and resilience needs. The projects are located on and involve publicly-owned property and infrastructure and were identified as sites with the greatest potential for community scale benefits within the locality/region.

The proposals may downloaded via the following links:

- CID510071_GloucesterCounty_Public_CFPF.doc.pdf
- CID510098_MiddlesexCounty_Public_CFPF.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-1.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-2.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-3.pdf

We thank you in advance for your consideration. Please contact me directly should you have any questions.

Best,

Curt

Curtis Smith
Deputy Director
Middle Peninsula Planning District Commission
Cell: 804-384-7509
125 Bowden Street, Saluda, VA 23149
Web: www.mppdc.com
Email: csmith@mppdc.com

CFPF, rr <cfpf@dcr.virginia.gov> Fri, Apr 8, 2022 at 11:52 AM
To: Curt Smith <csmith@mppdc.com>

Curt,

Are these applications in addition to the eight already submitted?
[Quoted text hidden]

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

East River Boat Yard: Managing Current Flooding for a Publicly Owned Working Waterfront and Building for the Future of Living with Flood Waters

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

PROJECT TITLE: East River Boat Yard: Managing Current Flooding for a Publicly Owned Working Waterfront and Building for the Future of Living with Flood Waters

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning _X_ Project ___Study

NFIP/DCR Community Identification Number (CID): Mathews County (510096)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ___ No _X_

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
☐ Wetland restoration.
☑ Floodplain restoration.
☐ Construction of swales and settling ponds.
☑ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large-scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☑ Stream bank restoration or stabilization.
☑ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Mathews County, 502 Mill Lane Rd, Bohannon, VA 23021

NFIP Community Identification Number (CID#) (See appendix F): 510096

Is Project Located in an NFIP Participating Community? Yes

Is Project Located in a Special Flood Hazard Area? Yes

Flood Zone(s) (If Applicable): Zones AE and VE

Flood Insurance Rate Map Number(s) (If Applicable): 51115C0090E eff. 12/9/2014

Total Cost of Project: **<u>$966,987</u>**

Total Amount Requested: **<u>$580,192</u>**

SCOPE OF WORK NARRATIVE

INTRODUCTION

This proposal focuses on advancing a holistic approach to enhancing the current and future resilience and utility of the publicly owned East River Boat Yard site located on the East River and Mill Creek in Bohannon, Virginia (Mathews County). The site has served as a hub for commercial and recreational marine activity for Mathews County for centuries and is currently experiencing severe shoreline erosion issues, which are likely contributing to the shoaling and need for dredging of the mouth of Mill Creek. The proposed project will accomplish the following six unique tasks which holistically will transform the site in a manner which will allow for continued productivity from the site for decades to come:

1. Develop shovel ready resilient designs for a wharf or dock on the East River for commercial users to load/offload catch and gear,
2. Develop shovel ready designs for a resilient boat ramp and tending pier on Mill Creek that can withstand increased coastal flooding conditions and sea-level rise,
3. Shovel ready designs for improvements to an existing commercial building that has served the commercial seafood industry but is in need of repair due to recurrent flood damages,
4. Designs for improvements to the parking area which has been damaged from repeated flooding,
5. Design for a living shoreline to protect the site from future erosion and to serve as best practice examples of E&S measures while also increasing overall resilience, and
6. to design and perform dredging of the mouth of Mill Creek and study beneficial reuse options for the material, whether for on-site fill or as living shoreline materials.

The East River Boat Yard is a key asset to Mathews County, for residents, visitors, and for commercial enterprise, and development of designs focused on resilience are vital to the site's success and long-term viability. The project represents an opportunity to advance and implement sitewide resilience for a publicly owned working waterfront which must be designed in a manner to remain resilient in the face of increased flooding and sea-level rise so that it may continue to serve the community and local economy. It is anticipated that the outcomes may serve as a model for the hundreds of similar working waterfronts which exist in locations vulnerable to flooding and sea-level rise throughout coastal Virginia.

The primary purpose of this project is to stabilize the property perimeter with several types of shoreline protection measures. Additional primary and secondary purposes include the development of public amenities in the form of a public boat ramp and public fishing pier.

FEMA, the Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula Planning District Commission (MPPDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). To that end, this proposal is a partnership between the MPPDC and Mathews County (see Community Support Letter, **Attachment 1**).

- A link or copy to the approved MPPDC resilience plan: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
- Mathews County Comprehensive Plan: https://www.mathewscountyva.gov/196/Comprehensive-Plan

This project is consistent with multiple objectives and strategies outlined within the Regional All-Hazards Mitigation Plan. Relevant strategies include the following:

- Objective 1.1: Provide protection for future development to the greatest extent possible.
    - Strategy 1.1.1: Reduce or eliminate flood damage to residential/business structures that are highly vulnerable for continual flood damage.
    - Strategy 1.1.3: Protect public buildings and public infrastructure from flood waters resulting from 100-year flood storm events.
    - Strategy 1.3.1: Mitigation projects that will result in protection of public or private property from natural hazards.

PROJECT INFORMATION

Project Description

The project site is the East River Boat Yard property, with waterfront access on the East River and Mill Creek in Mathews County, Virginia. The approximately one-acre property current includes a 1-story metal boathouse building and remnants of the former pier and dock structures. Given existing site conditions, including shoreline erosion, as well as the need to dredge the mouth of Mill Creek, the project involves a master redesign of the site, taking into account existing and proposed elements, and consideration of the site as a recreational and commercial asset.

The County is proposing to improve the existing property by first demolishing existing dilapidated structures that include old timber pilings and piers, bulkheading, and various mounds of rubble concrete and debris. The new improvements feature a concrete boat ramp (16 feet wide and 63 feet long), a tending pier (6 feet wide and 63 feet long), gravel parking, including an ADA parking stall, and five (5) trailered parking spaces. The shoreline protection structures are comprised of two segments of riprap revetment (75 feet and 155 feet), two sill segments (220 feet and 50 feet), and wetland plantings (3,732 sq ft E2EM and 834 sq ft E2SS) at the waterfront park.

Nearly all of the site is a previously disturbed parcel that was associated with a small marine repair yard prior to the County obtaining the land. Most of the original structures have been demolished and the County has steadily been cleaning the property up. Impacts to onsite resources have been minimized by designing the smallest footprint possible for the boat ramp)14,3% slope approaching maximum) and shoreline stabilization measures, while maintaining green space within the interior (including planted wetlands and upland buffer areas)

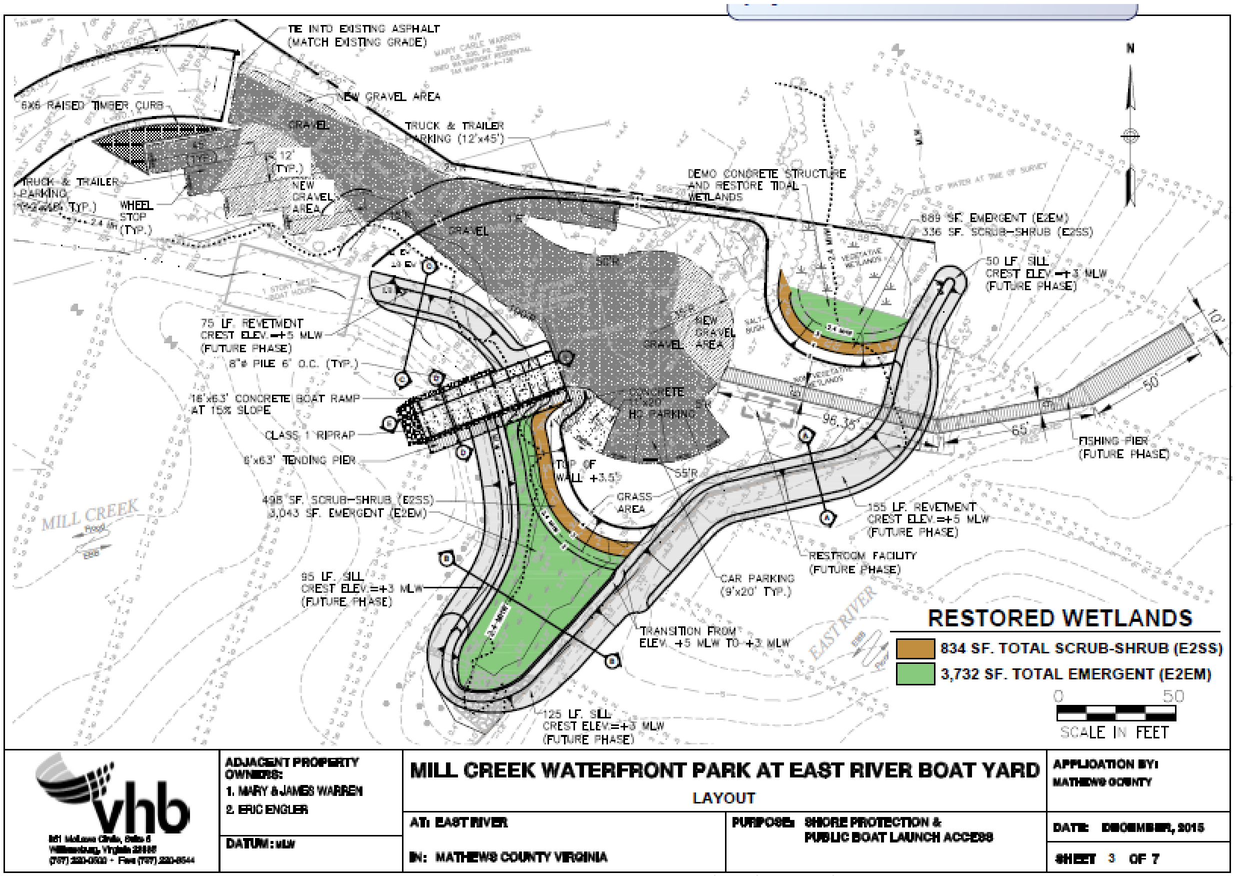
The project also includes constructing an open-pile, fixed pier for the intent of providing public fishing access at the waterfront park. The fishing pier covers approximately 955 sq ft of subaqueous lands and extends out to depths of approximately 7 feet (MLW).

The revetment structures will be placed on a coarse aggregate bedding, while the sill will be placed directly upon filter fabric. Sand for planting medium will be imported from the dredged material from the mouth of Mill Creek adjacent to the site or from an approved supplier should it be needed, and filter fabric will also be used underneath the revetment. The boat ramp will be constructed of concrete over coarse aggregate and the tending pier will be constructed from treated wood suitable for the marine environment.

Specifically, this project proposes to:

1. Assess of site conditions;
2. Replace and establish shoreline protection in areas where there are currently dilapidated structures or no structures;
3. Demolish and remove existing concrete debris and foundations;
4. Add gravel substrate to create a turnaround and parking spaces for vehicles and trailers;
5. Enhance two wetlands areas that will be located behind proposed sills and planted with tidal wetland species;
6. Construct a new concrete boat ramp and tending pier;
7. Construct a new public fishing pier; and
8. Dredge Mill Creek and incorporate beneficial reuse to the greatest extent possible.

A conceptual site layout with project components is provided in **Figure 1** below, along with cost estimates for all project activities.



ADJACENT PROPERTY OWNERS:
1. MARY & JAMES WARREN
2. ERIC ENGLER

DATUM: MLW

MILL CREEK WATERFRONT PARK AT EAST RIVER BOAT YARD

LAYOUT

AT: EAST RIVER

IN: MATHEWS COUNTY VIRGINIA

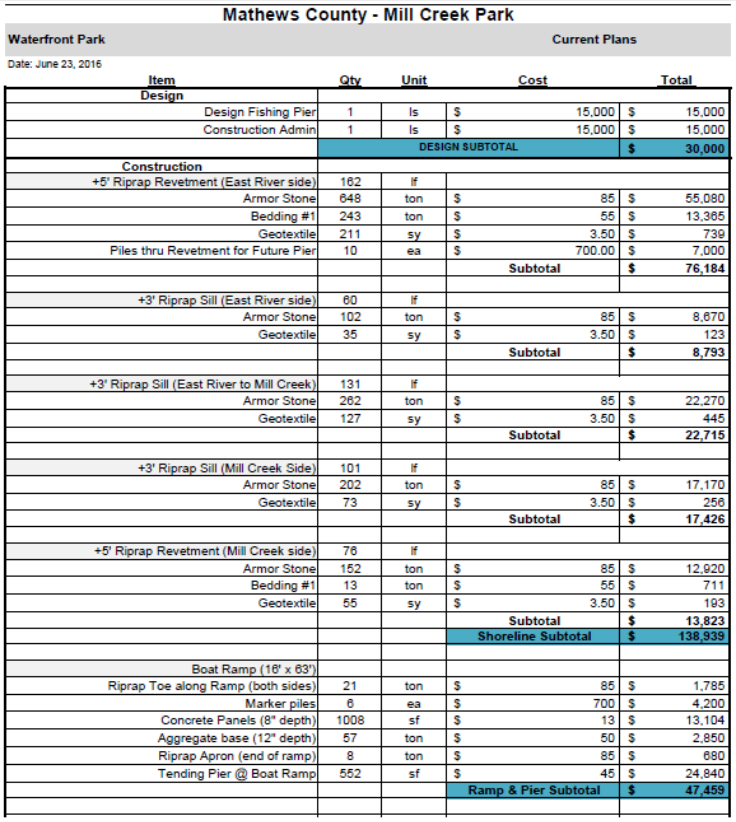
PURPOSE: SHORE PROTECTION & PUBLIC BOAT LAUNCH ACCESS

APPLICATION BY: MATHEWS COUNTY

DATE: DECEMBER, 2015

SHEET 3 **OF** 7

Figure 1. Site Layout and Cost Estimates



Mathews County - Mill Creek Park

Waterfront Park — Current Plans

Date: June 23, 2016

Item	Qty	Unit	Cost	Total
Design				
Design Fishing Pier	1	ls	$ 15,000	$ 15,000
Construction Admin	1	ls	$ 15,000	$ 15,000
			DESIGN SUBTOTAL	**$ 30,000**
Construction				
+5' Riprap Revetment (East River side)	162	lf		
Armor Stone	648	ton	$ 85	$ 55,080
Bedding #1	243	ton	$ 55	$ 13,365
Geotextile	211	sy	$ 3.50	$ 739
Piles thru Revetment for Future Pier	10	ea	$ 700.00	$ 7,000
			Subtotal	**$ 76,184**
+3' Riprap Sill (East River side)	60	lf		
Armor Stone	102	ton	$ 85	$ 8,670
Geotextile	35	sy	$ 3.50	$ 123
			Subtotal	**$ 8,793**
+3' Riprap Sill (East River to Mill Creek)	131	lf		
Armor Stone	262	ton	$ 85	$ 22,270
Geotextile	127	sy	$ 3.50	$ 445
			Subtotal	**$ 22,715**
+3' Riprap Sill (Mill Creek Side)	101	lf		
Armor Stone	202	ton	$ 85	$ 17,170
Geotextile	73	sy	$ 3.50	$ 256
			Subtotal	**$ 17,426**
+5' Riprap Revetment (Mill Creek side)	76	lf		
Armor Stone	152	ton	$ 85	$ 12,920
Bedding #1	13	ton	$ 55	$ 711
Geotextile	55	sy	$ 3.50	$ 193
			Subtotal	**$ 13,823**
			Shoreline Subtotal	**$ 138,939**
Boat Ramp (16' x 63')				
Riprap Toe along Ramp (both sides)	21	ton	$ 85	$ 1,785
Marker piles	6	ea	$ 700	$ 4,200
Concrete Panels (8" depth)	1008	sf	$ 13	$ 13,104
Aggregate base (12" depth)	57	ton	$ 50	$ 2,850
Riprap Apron (end of ramp)	8	ton	$ 85	$ 680
Tending Pier @ Boat Ramp	552	sf	$ 45	$ 24,840
			Ramp & Pier Subtotal	**$ 47,459**

Mathews County - Mill Creek Park

Waterfront Park **Current Plans**

Date: June 23, 2016

Item	Qty	Unit	Cost	Total
Landside Improvements				
Fishing Pier	1320	sf	$ 50	$ 66,000
Restroom Platform	1	ls	$ 2,000	$ 2,000
Concrete Sidewalk	30	sy	$ 100	$ 3,000
Gravel Parking Surface (4" Depth)	260	ton	$ 50	$ 13,000
Fill Below Gravel Parking Surface (8" Depth)	346	cy	$ 12	$ 4,152
Wetland Planting Area (8" depth clean sand)	100	cy	$ 30	$ 3,000
Emergent Wetland Planting Area (24" O.C. Plants)	925	ea	$ 1.25	$ 1,156
Scrub-Shrub Wetland Planting Area (5' O.C. plants)	170	ea	$ 10.00	$ 1,700
Handicap Wheelstop, Sign, Stripping	1	ls	$ 1,000	$ 1,000
Concrete Handicap Parking Space	50	sy	$ 70	$ 3,500
6x6 Timber Edging	127	lf	$ 6	$ 762
Wheel Stops	15	ea	$ 250	$ 3,750
Construction Entrance	1	ea	$ 3,000	$ 3,000
Signs	2	ea	$ 500	$ 1,000
Silt Fence	700	lf	$ 2.50	$ 1,750
Temporary & Permanent Seeding	1	ls	$ 1,000.00	$ 1,000
Mobilization	1	ls	$ 15,000	$ 15,000
Survey	1	ls	$ 5,000	$ 5,000
Demolition	1	ls	$ 15,000	$ 15,000
Landscaping	1	ls	$ 500	$ 500
			Landside Subtotal	**$ 145,270**
			Shoreline, Ramp, and Landside Construction	**$ 331,668**
			Design & Construction	**$ 361,668**
			15% Contigency	**$ 54,250**
			TOTAL COST	**$ 415,919**

Table 43. Implementation Costs for Mill Creek 2

PHASE AND COST COMPONENT	COSTS FOR INITIAL PROJECT	COSTS FOR EACH SUBSEQUENT DREDGING CYCLE
PRE-CONSTRUCTION PHASE:		
Preliminary Engineering & Design for Dredging Activities (Including Joint Permit Application)	$50,000	$30,000
Preliminary Engineering & Design for Disposal Activities Not Included in Dredging Activities Above (Including Joint Permit Application)	$50,000	$30,000
Grant and Loan Applications	$10,000	$10,000
Community Engagement	$6,000	$3,000
Environmental Assessment	$30,000	$30,000
Federal, State, and Local Permits	$25,000	$25,000
Legal Coordination	$10,000	$0
Financial Coordination	$25,000	$10,000
Dredge Material Placement Site Acquisition[76]	$0	$0
Subtotal	$206,000	$138,000
Contingencies (10% of Pre-Construction Phase Costs)	$20,600	$13,800
TOTAL PRE-CONSTRUCTION PHASE COSTS	$226,600	$151,800
CONSTRUCTION PHASE:		
Final Engineering and Design/Plans and Specifications for Dredging Activities	$25,000	$15,000
Final Engineering and Design/Plans and Specifications for Disposal Activities Not Included in Dredging Activities Above	$25,000	$15,000
Bonds and Insurance	$1,215	$1,215
Mobilization/Demobilization	$5,000	$5,000
Dredge Material Placement Site Preparation	$1,691	$1,691
Dredging	$33,810	$33,810
Disposal (Placement) of Dredge Material	--	--
Supervision and Administration for Dredging Oversight	$1,127	$1,127
Supervision and Administration for Disposal (Placement) Oversight	$1,127	$1,127
Subtotal	$93,970	$73,970
Contingencies (25% of Construction Phase Costs)	$23,492	$18,492
TOTAL CONSTRUCTION PHASE COSTS	$117,462	$92,462
POST CONSTRUCTION PHASE:		
Monitoring and/or Mitigation	$3,381	$3,381
Project Condition Survey	$25,000	$25,000
Subtotal	$28,381	$28,381
Contingencies (25% of Post Construction Phase Costs)	$7,095	$7,095
TOTAL POST CONSTRUCTION PHASE COSTS	$35,476	$35,476
TOTAL COST ALL PHASES	$379,538	$279,738

Project Location Information

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia, as seen in **Figure 2**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 3**.

Figure 2. Middle Peninsula Geographic Area

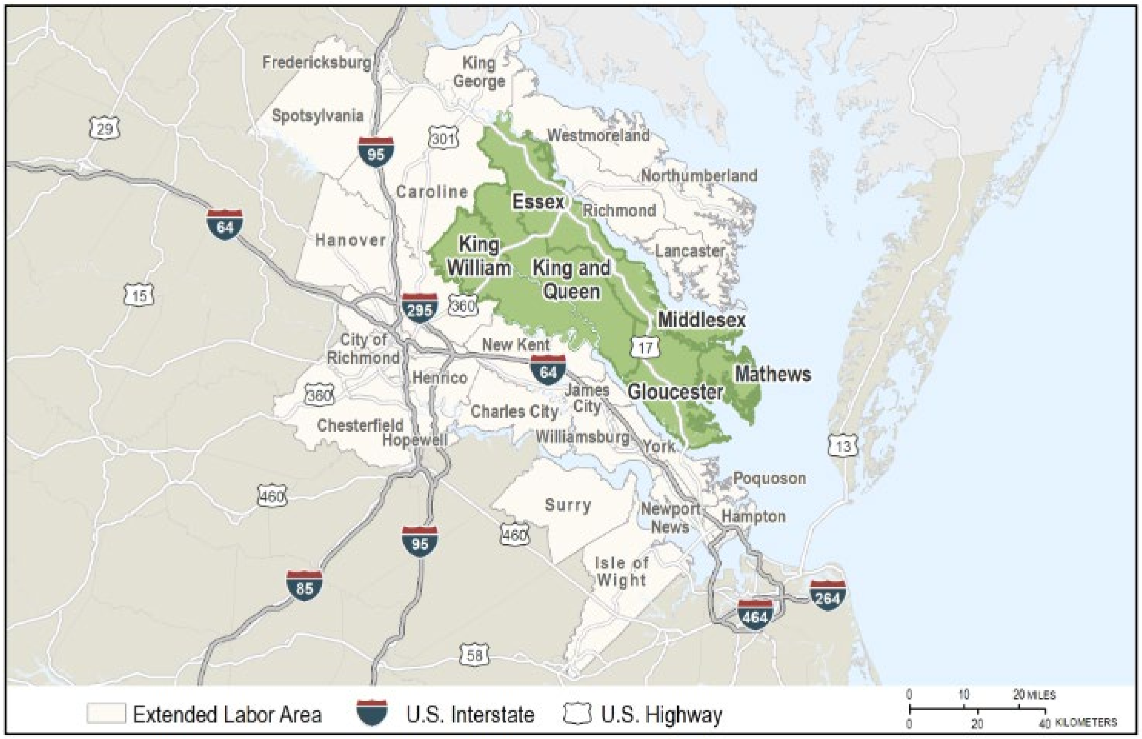
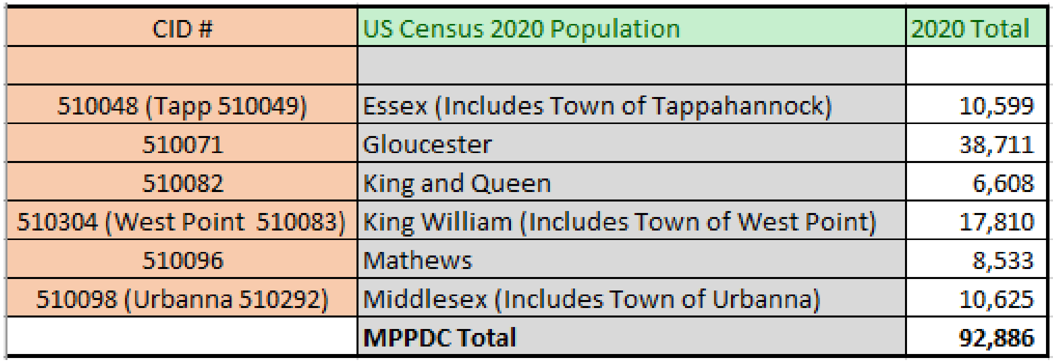


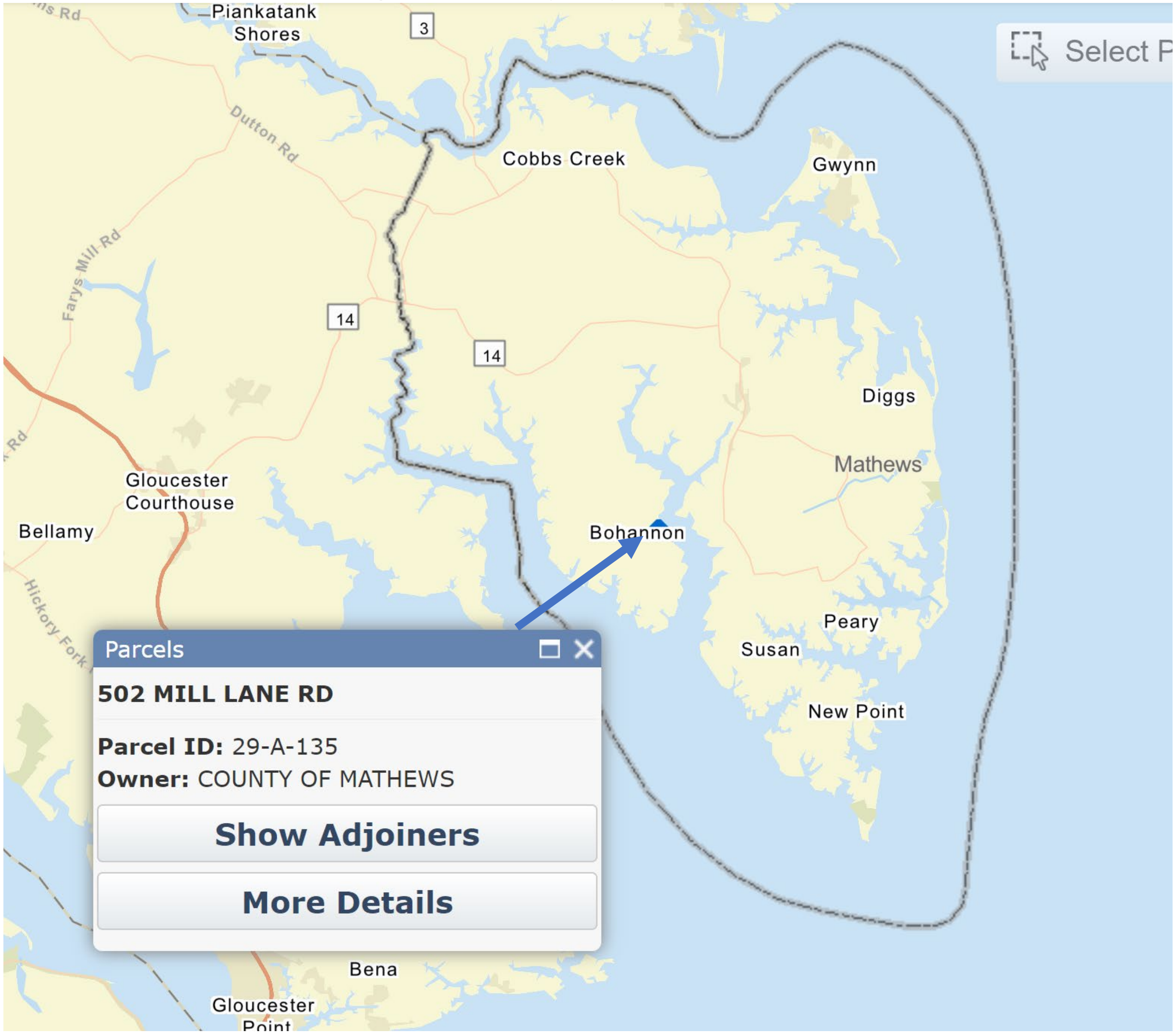
Figure 3. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

The project proposes to study and implement measures to enhance the resiliency of the East River Boat Yard site, an approximately 1-acre property located in Mathews County, along the East River and Mill Creek in Bohannon, Virginia. (**Figures 4, 5, and 6**).

Figure 4. County Map of Project Location



502 MILL LANE RD

Parcel ID: 29-A-135

Owner: COUNTY OF MATHEWS

Figure 5. Parcel Map of Project Location; Survey and Onsite Photographs

Figure 6. Site Survey

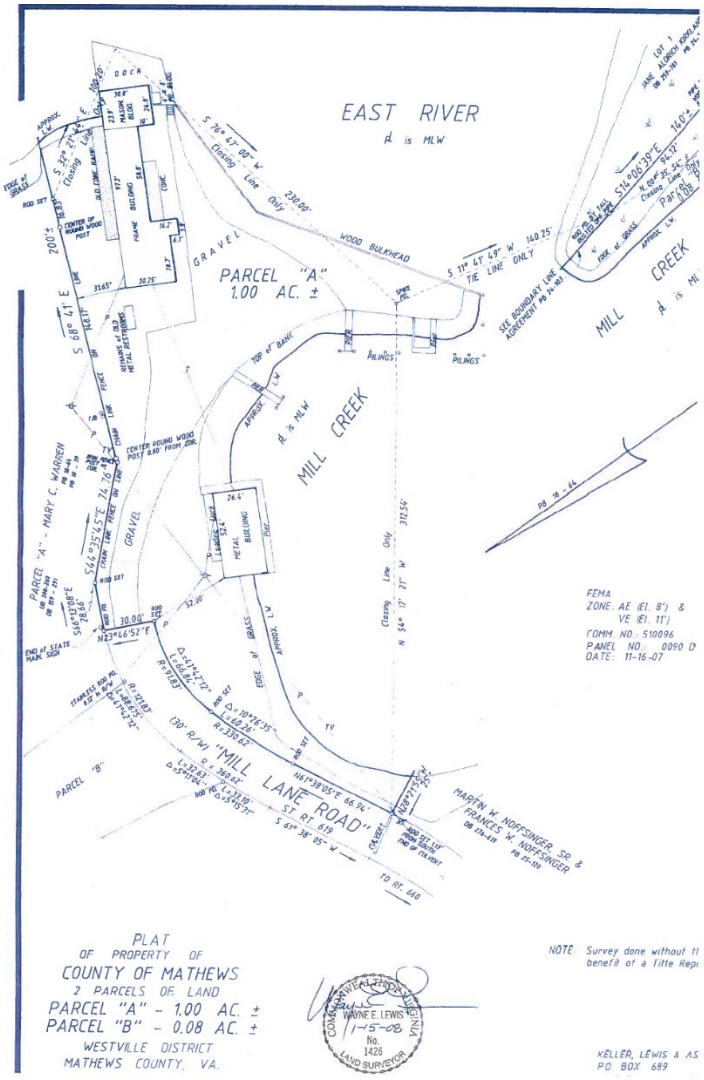
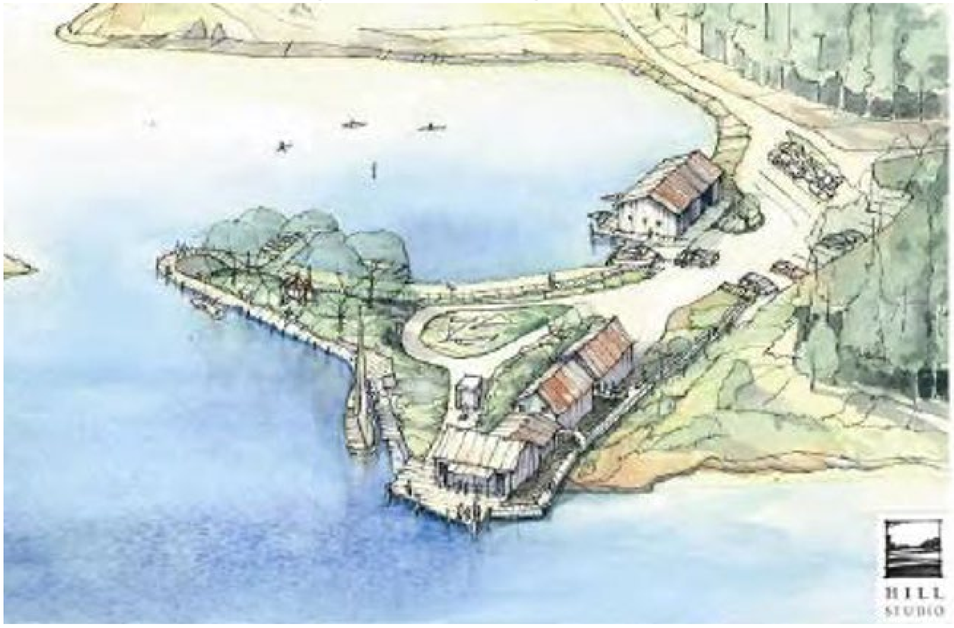


Figure 7. Site Photographs

The images of site damages are all a result of flooding and coastal weather events.

Figure 8. Rendering of Improved Site

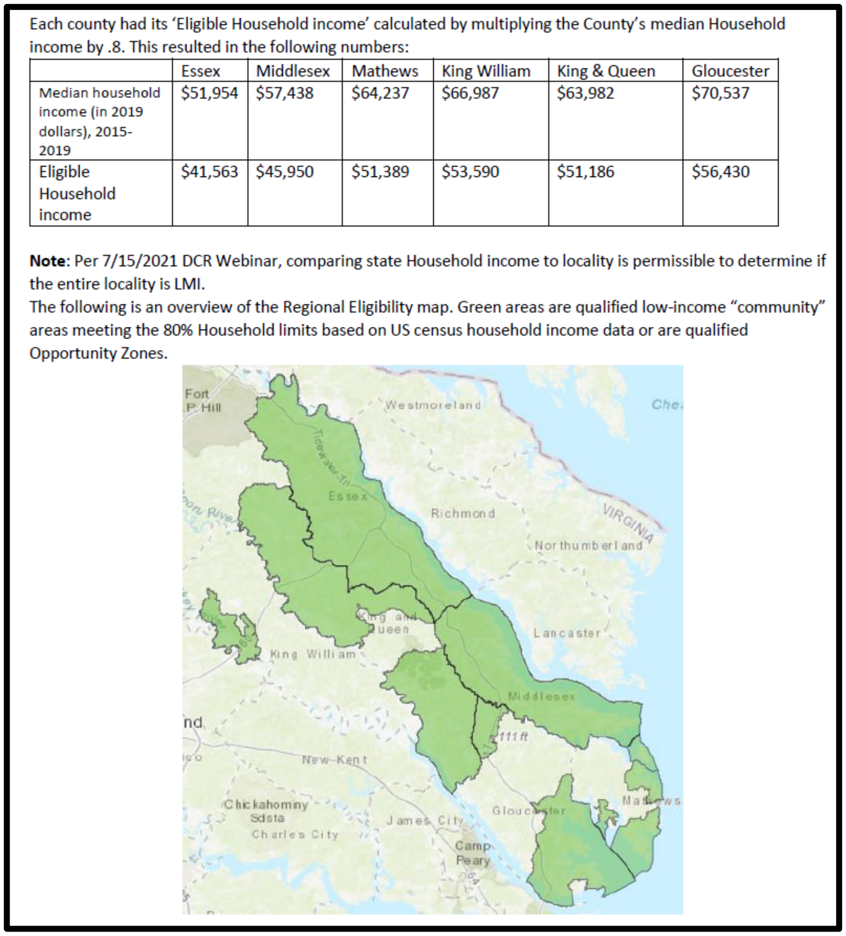


Population Information

Mathews County is located on the easternmost portion of Virginia's Middle Peninsula and is an agriculture, forestry and water-based economy. The County is a coastal community located between the Mobjack Bay, Piankatank River and the Chesapeake Bay. Mathews County has more than 200 miles of shoreline. Based on 2020 Census Data, Mathews County's population totals 18,533 (**Figure 3**).

According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 9**, the green areas depict qualified low-income "community" areas meeting

Figure 9. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

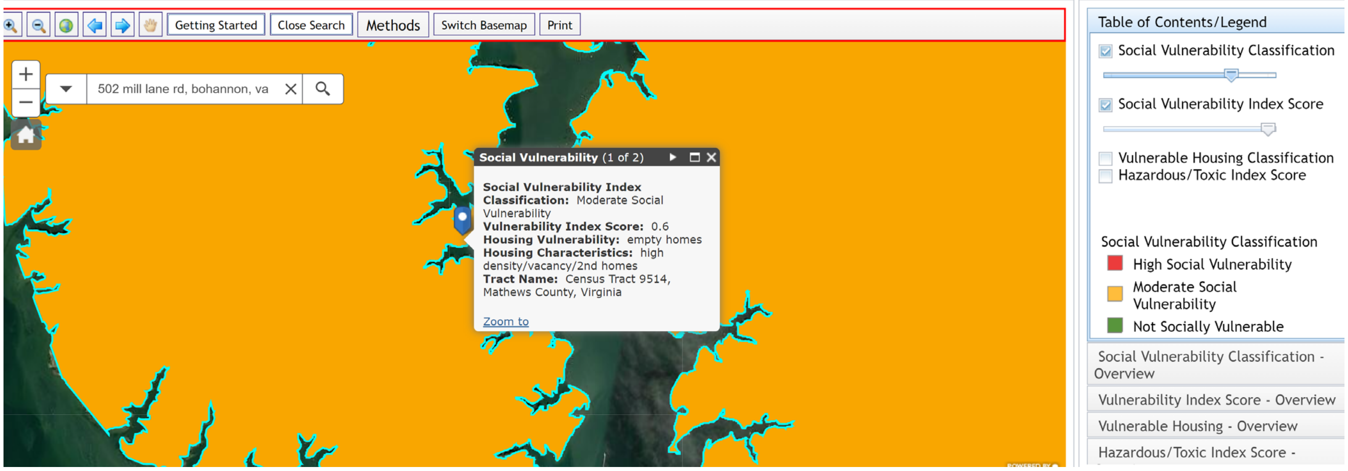
the 80% Household limits based on US census household income data[1] or are qualified Opportunity Zones.

Please see **Figure 10** for a detailed map of the project location and the green low-income area overlay. This shows that the project location is not within the low-income area.

Figure 10. Map of the Project Location within the Green Low-Income Area

With respect to social vulnerability, according to ADAPTVA's Social Vulnerability Index Score, this project location has a Social Vulnerability Index Score of 0.6, classified as Moderate Social Vulnerability (**Figure 11)**

Figure 11. ADAPTVA Social Vulnerability Index Score Viewer



502 mill lane rd, bohannon, va

Social Vulnerability (1 of 2)

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.6
Housing Vulnerability: empty homes
Housing Characteristics: high density/vacancy/2nd homes
Tract Name: Census Tract 9514, Mathews County, Virginia

Zoom to

Table of Contents/Legend

☑ Social Vulnerability Classification
☑ Social Vulnerability Index Score
☐ Vulnerable Housing Classification
☐ Hazardous/Toxic Index Score

Social Vulnerability Classification
🟥 High Social Vulnerability
🟨 Moderate Social Vulnerability
🟩 Not Socially Vulnerable

Social Vulnerability Classification - Overview
Vulnerability Index Score - Overview
Vulnerable Housing - Overview
Hazardous/Toxic Index Score -

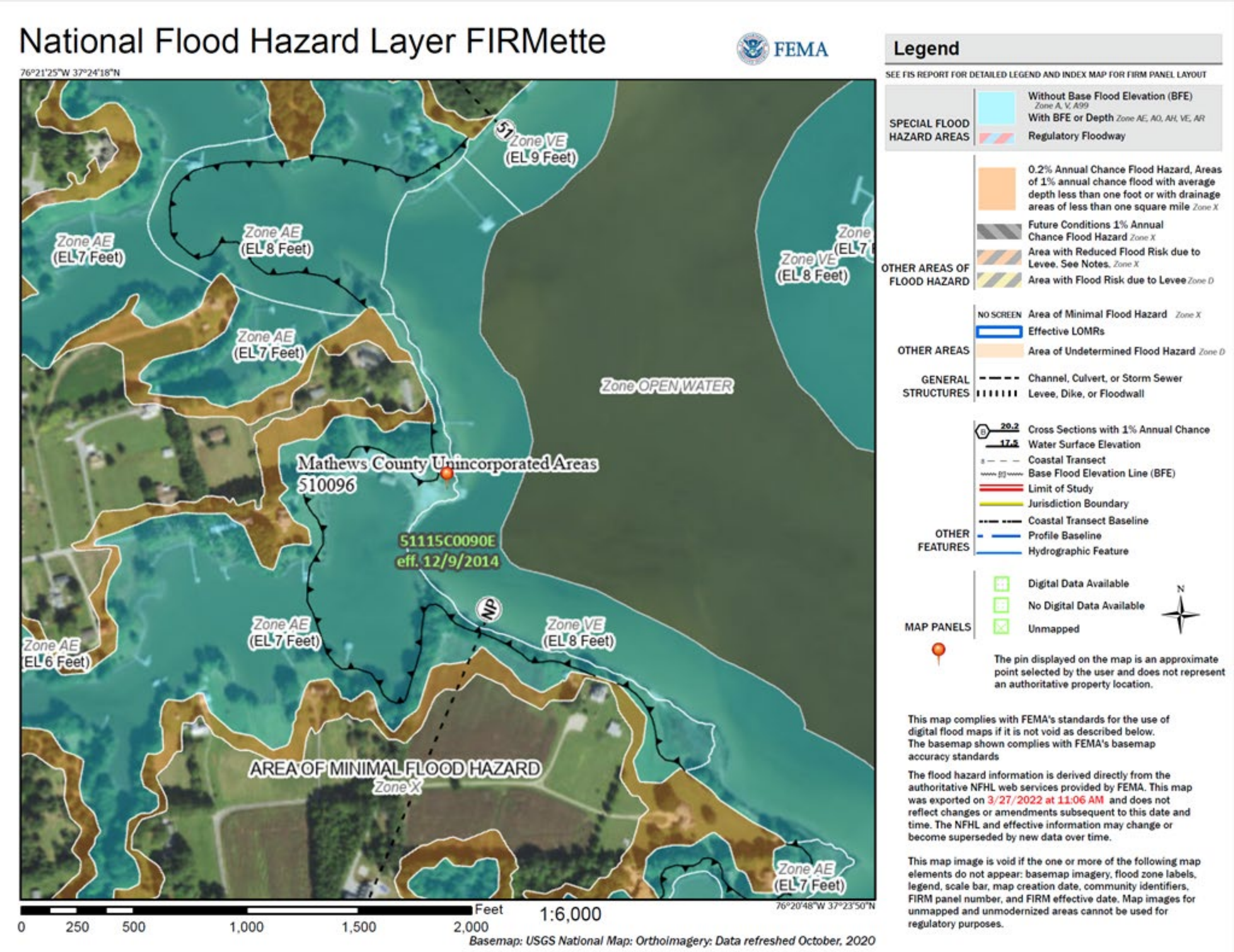
---

[1] Based upon 2015-2019 U.S. Census American Community Survey data available on January 4, 2022, when CFPF Round 3 opened; 2016-2020 ACS data was not released until March 17, 2022.

Flood Risk Information

The entirety of the site (502 Mill Lane Rd, Bohannon, Virginia, 37.4013787568471, -76.35289892950684) is located within a mapped floodplain, with portions located within FEMA Flood Zones AE and VE (**Figure 12**). Mathews County's Planning and Zoning Department administers the requirements of the NFIP program, and the County's Floodplain Management Ordinance may be accessed at the following link: https://www.co.Mathews.va.us/DocumentCenter/View/422/Floodplain-Management-PDF?bidId=

Figure 12. Map of FEMA Flood Zones



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/27/2022 at 11:06 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Due to the project site's proximity to the water and low elevation, the site has an extensive history of being subject to extreme weather events that have resulted in significant impacts to infrastructure and the environment. For example, the project location has long been, and continues to be, impacted by tropical, sub-tropical, and Nor'easter events (**Attachment 3**). According to NOAA's Coastal Flood Mapper, this project location is at the higher range for risk of coastal flooding (**Figure**

13). Collectively, these reoccurring and storm-related events have contributed to shoreline loss at site. **Figure 14** depicts the shoreline in 1937 and the 2017, based on historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program; illustrated is an approximate loss of 12,000 square feet of site area at the project location over an eighty-year period.

Figure 13. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)

Figure 14. Project Location and Map of Associated Shoreline Change Between 1937 and 2017

NEED FOR ASSISTANCE

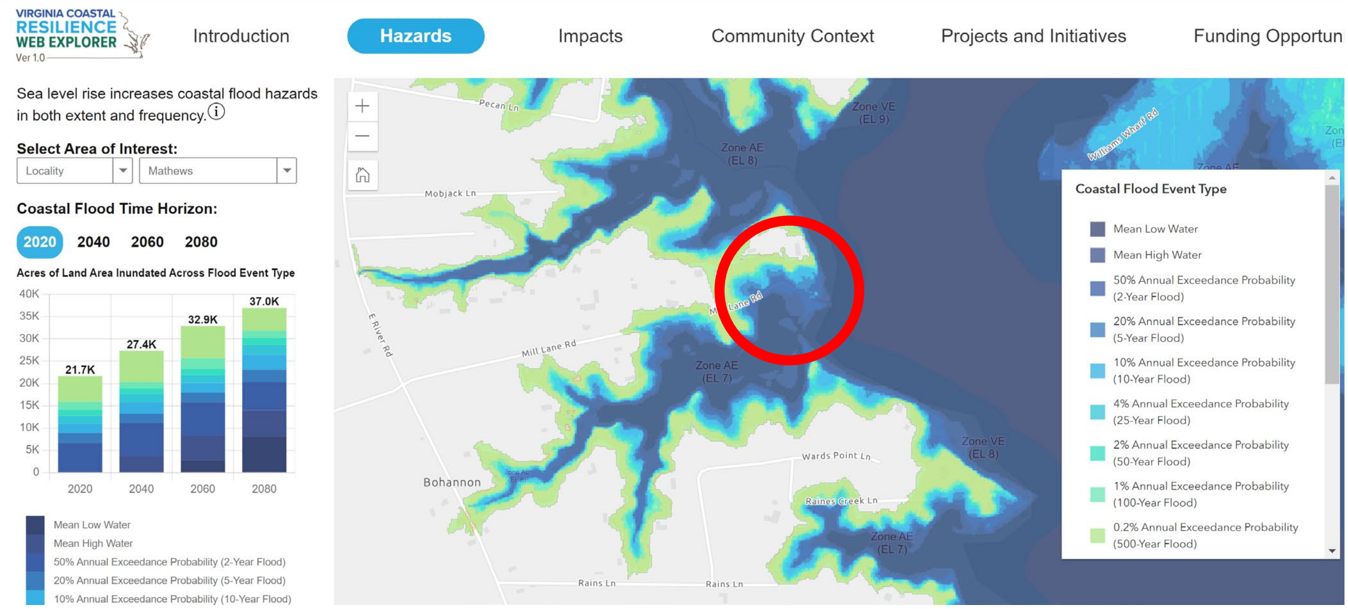
The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex counties, as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened FTE staff. MPPDC staff consists of an Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, and clerical support staff; a Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, and Emergency Planner are co-operative procured; Housing, Community Development Planner and Public Relations staff are hourly.

The Planning District staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scales - from grants in excess of $1,000,000 to small grants. MPPDC is an entrepreneurial-based government agency with an annual operating budget ranging from $750,000 to more than $1,000,000. Annually, the MPPDC manages 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software and other software (e.g., GIS, Microsoft Office) as required and/or necessitated by different grants. The MPPDC operates service centers in the topical areas of: coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance, as well as other areas determined by the Commission. MPPDC has more than 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission, no audit findings have occurred.

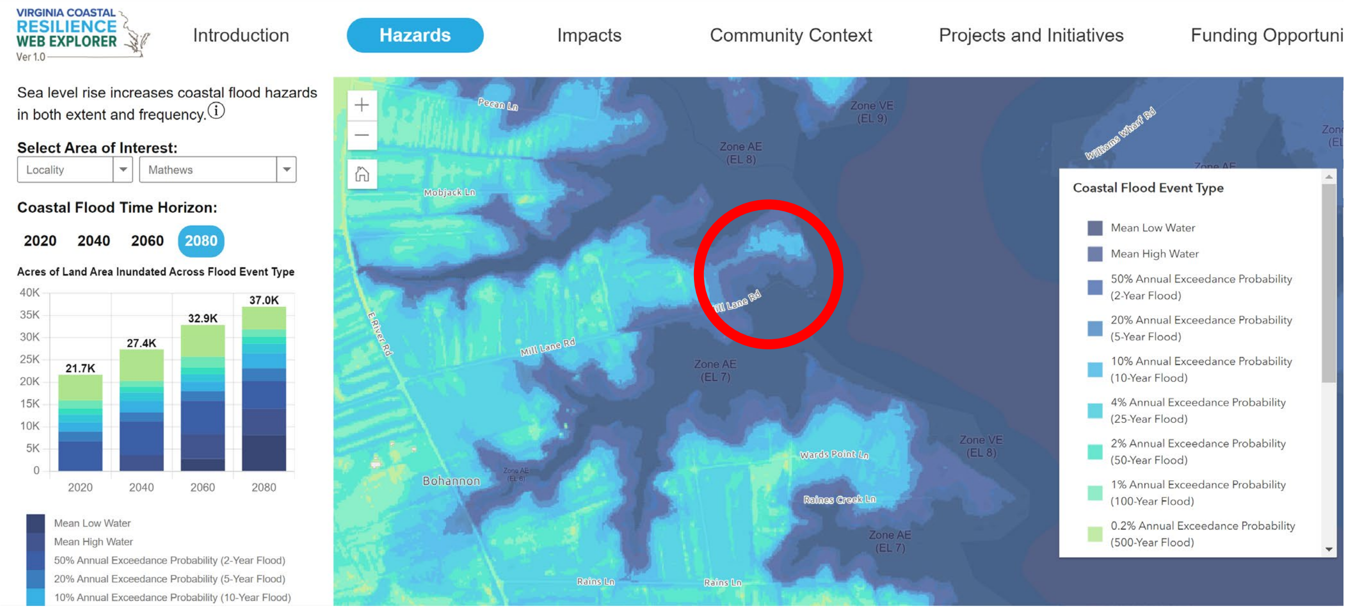
As noted, the East River Boat Yard site is compromised by shoreline erosion issues, which likely contributes to the need to dredge the mouth of Mill Creek. Further, the site needs to be comprehensively reviewed to identify measures to increase overall resilience, but to also ensure that the site serves as an asset for recreational and commercial users. **Figure 15**, from the Virginia Coastal Resilience Master Plan - Virginia Coastal Resilience Web Explorer, illustrates flood levels combined with sea-level rise and their effects on the site. Notably, sea-level rise combined with flooding over the next 60 years is expected to pose an issue to the site, resulting in inundation and increased flooding risk; key construction techniques will need to be employed to increase overall resilience in order to mitigate the effects of exceptional floods and sea level rise 60 years and out.

Figure 15. Sea Level and Flooding, 2020 - 2080


Sea level rise increases coastal flood hazards in both extent and frequency.

Select Area of Interest: Locality, Mathews

Coastal Flood Time Horizon: 2020


Sea level rise increases coastal flood hazards in both extent and frequency.

Select Area of Interest: Locality, Mathews

Coastal Flood Time Horizon: 2080

The need for assistance is two-fold. First, Mathews County is along the Chesapeake Bay and numerous tidal rivers that contribute to the area’s high risk to coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from the Virginia Institute of Marine Science (VIMS), relative sea-level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Mathews County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds as storm surge. When a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide".

Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and sediment, and produce hurricane-force winds that push large amounts of seawater inland. A strong indicator that Mathews County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, Mathews County had over 1,000 NFIP claims with claims topping $20.5 Million. The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on its communities. This project will therefore build on local efforts moving toward a more resilient community.

Second, this project location is primed for co-benefits derived from shoreline erosion mitigation efforts. The proposed application of shoreline protection features, boat launch improvements, and increased public access that provides strategic protection of the infrastructure and landscape at this point of interest. For example, the proposed improvements will facilitate multiple, simultaneous activities that will contribute to economic growth in the area while fostering innovation.

Business Development

The potential of increased community interest drawn to the site is significant. Visitors seeking access to local waterways could be drawn to activities available at the East River Boat Yard, supporting the local economy with outside revenue in their pursuits. Additionally, the site has the unique opportunity to support and serve as an incubator for commercial seafood or other ecotourism or water management-related businesses. The provision of a public access site with enhanced amenities thus has the potential to drive continued economic growth through business development.

Community Scale Benefits

Due to the multitude of public investment for shoreline protection and flood research and innovation, we believe this site meets the test of "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk." The East River Boat Yard site serves as one of the Commonwealth's best chances to innovate shoreline resilience projects in "live time" so that all of coastal Virginia can benefit. This public working waterfront has provided critical community scale benefits for generations and it is essential that action be taken now to ensure that the site can continue to provide similar benefit to the citizens, businesses, and visitors of Mathews County and the Commonwealth.

Benefit of and Suitability for Natural Based Solutions

Adapt VA contains a data layer illustrating areas of less than ten feet in elevation that show locations in the Middle Peninsula offering benefits of NNBF to coastal buildings, habitat, and community protection; additionally, the platform contains a layer identifying areas suitable for living shorelines given the presence of marsh, ranked for co-benefits (see **Figure 16**). The project site offers multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and CRS credit. Additionally, shoreline is identified as suitable for living shorelines resulting in co-benefits.

Figure 16. Natural and Nature-Based Features at the Project Site

ALTERNATIVES

The submission of alternatives is not applicable in this application. Nature-based and hybrid solutions are anticipated, and the project cost is less than $3 million.

GOALS AND OBJECTIVES

This proposal will develop a comprehensive strategy to increase resilience of the site against multiple shoreline erosion inputs while providing co-benefits that foster resilience. The focused goals and objectives of the project are as follows:

Goal 1: Improve public access to local coastal waterways.

- Objective A: Increase public access to the Chesapeake Bay with improved conditions and mitigation of recurrent and repetitive flooding and erosion using a nature-based approach on site.
- Objective B: Enhance quality of life for local residents and visitors alike through recreation, educational and cultural opportunities, and commercial fishing at the point of interest.

- Objective C: Leverage improved public access and coastal resiliency for economic growth within Mathews County.

Goal 2: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Mitigate recurrent and repetitive flooding and erosion alongside storm surge and sea level rise using natural and nature-based solutions that benefit people and the economy as well as the environment.
- Objective B: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.
- Objective C: Enhance the resilience of public infrastructure, ensuring longer-term viability.

Goal 3: Transferability to other communities.

- Objective A: Model natural and nature-based solutions for coastal sites exploring development potential.
- Objective B: Foster innovative research and solutions-oriented studies on site focused on coastal adaptation and mitigation for external transfer.
- Objective C: Improve the implementation of Fight the Flood as a model program to be replicated in other communities within the region and/or Commonwealth.

The MPPDC expects the following results and benefits of the completed project:

1. **Foster economic growth in the area over the useful life of site infrastructure and most likely, beyond.** Enabling public access to this county asset while ensuring its sustainability will protect and enhance the area's recreational economies and has the potential to positively impact related commercial endeavors.

2. **Prevent loss of property without cementing an alternative.** Building resilient structures and facilities at the project site as outlined will help prevent loss of property and property value, while capitalizing on the useful life of the site as much as possible.

3. **Provide ecosystem services to the community toward increased quality of life.** Increased public access to recreational, educational and cultural opportunities leverage the provisioning and cultural services associated with the site's natural resources, services that provide benefits to safety, health and well-being for all visitors.

APPROACH, MILESTONES, AND DELIVERABLES

As noted, the intent of this project is to focus on shoreline erosion, dredging with beneficial reuse, and overall site planning with resilient designs for the East River Boat Yard site. This project will utilize and incorporate sustainable planning, design, environmental management, and engineering practices, coupled with a focus on programs and services to support recreation and commercial development, to promote overall adaptation and resilience of the site.

The principal tasks and milestones are as follows:

- Assessment of site conditions;
- Replacing and establishing shoreline protection in areas where there are currently dilapidated structures or no structures
- Demolishing and removing existing concrete debris and foundations
- Adding gravel substrate to create a turnaround and parking spaces for vehicles and trailers
- Enhancing two wetlands areas that will be located behind proposed sills and planted with tidal wetland species
- Constructing a new concrete boat ramp and tending pier
- Constructing a new public fishing pier
- Dredging of Mill Creek and beneficial reuse options for the material, whether on-site fill or as living shoreline materials (not included in estimate)

Expected outcomes include the development of plans to allow for the redevelopment of the site for overall resilience, including with living shoreline treatments to reduce erosion and exposure to sea-level rise and flooding, and dredging of Mill Creek to improve access and navigability.

The expected timeline for the project milestones, and deliverables, is as follows. All activities are contingent upon approval of the relevant permitting authorities, and as such, the schedule and milestones should be considered estimates at best. The ultimate project schedule will be dictated predominantly by the permitting process; however, the proposed activities are not anticipated to exceed the 3 years allowed per the DCR Grant Manual:

Year 1/Months 1-6 - Site Evaluation

- Months 1-6: Assessment of site conditions

Year 1/Months 7-9 - Development of Design Plans

Months 7-9: Replacing and establishing shoreline protection in areas where there are currently dilapidated structures or no structures, demolishing and removing existing concrete debris and foundations, and adding gravel substrate to create a turnaround and parking spaces for vehicles and trailers.

Year 1/Months 10-18 – Construction and Dredging

- Months 10-18: Enhancing two wetlands areas that will be located behind proposed sills and planted with tidal wetland species, constructing a new concrete boat ramp and tending pier, constructing a new public fishing pier, and dredging of Mill Creek. Dredging Mill Creek will ensure key waterfront access while using materials for beneficial reuse such as living shoreline materials.

RELATIONSHIP TO OTHER PROJECTS

While the specific proposed project bears no direct relationship to specific past, future, or future resilience projects, the project does relate to larger regional resilience efforts. For more than 40 years, the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (e.g., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR in August of 2021. This Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents. These documents frame the foundation and implementation of the Middle Peninsula flood protection approach, and are indirectly and directly supported by specific regional planning documents each approved by federal, regional, and/or local partners as required by statute.

Other plans and resources integral to the implementation of the Flood Resiliency Plan include:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan - FEMA and Middle Peninsula locality, approved 2016 (MPPDC Website)
    - This overarching project provides updates every five years on the hazards within the region; it identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – MPPDC, approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – MPPDC, approved annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design - MPPDC Commission, approved June 2020; Chairman approved update 8/6/21

- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program - Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

The MPPDC has a history of continuous work on flooding and coastal resiliency topics, as described in **Attachment 5**. These projects have built upon each other to establish within the MPPDC a solid foundation of regional expertise in flooding and coastal resiliency. Now, given this history of accumulated information and knowledge, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One such effort, launched in 2020 following the Commission's authorization, was developed in response to emerging flood challenges. This effort, the **Middle Peninsula Fight the Flood (FTF) Program**, leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built and natural environments with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. MPPDC staff have partnered with private property owners registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that their outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN

A maintenance plan is not applicable in this application. The proposed project is to develop a nature-based design solution and its cost does not require ongoing operation and future maintenance.

CRITERIA

*Describe how the project meets each of the applicable scoring criteria contained in **Appendix B** and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application. <u>**Appendix B** must be completed and submitted with the application.</u>*

For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**

- Yes; the applicant is a regional planning district commission.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**

   - Yes; the MPPDC's DCR-approved resilience plan may be accessed at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**

   - Yes; please see **Attachment 1**

4. **Has the applicant provided evidence of an ability to provide the required match funds?**

   - Yes; please see the match commitment letter in **Attachment 1**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**

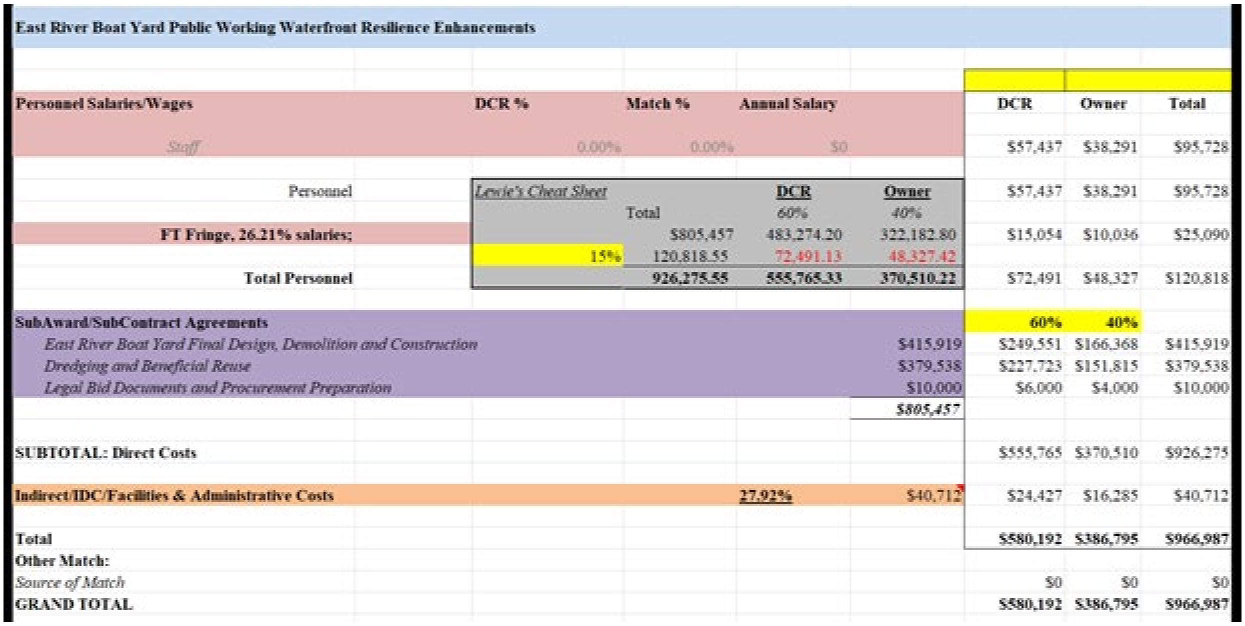
   - Yes

BUDGET NARRATIVE

ESTIMATED TOTAL PROJECT COST

Based upon the identified scope of work, the estimated total project cost is $966,987. This estimate is based on previously furnished costs estimates for project components, provided in **Figure 1**.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY23 is 26.21% and comprised of: Health Insurance – 48.58%, Retirement – 18.06%, Workers Comp – 0.28%, Social Security – 28.55%, Life Insurance – 4.39%, Unemployment – 0.14%. Direct charges are costs associated with overall projects costs consistent with general accounting principles. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.92%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)-Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.



East River Boat Yard Public Working Waterfront Resilience Enhancements

Personnel Salaries/Wages	DCR %	Match %	Annual Salary		DCR	Owner	Total
Staff	0.00%	0.00%	$0		$57,437	$38,291	$95,728
Personnel	*Lewie's Cheat Sheet*		**DCR**	**Owner**	$57,437	$38,291	$95,728
		Total	*60%*	*40%*			
FT Fringe, 26.21% salaries;		$805,457	483,274.20	322,182.80	$15,054	$10,036	$25,090
	15%	120,818.55	72,491.13	48,327.42			
Total Personnel		**926,275.55**	**555,765.33**	**370,510.22**	$72,491	$48,327	$120,818
SubAward/SubContract Agreements					**60%**	**40%**	
East River Boat Yard Final Design, Demolition and Construction				$415,919	$249,551	$166,368	$415,919
Dredging and Beneficial Reuse				$379,538	$227,723	$151,815	$379,538
Legal Bid Documents and Procurement Preparation				$10,000	$6,000	$4,000	$10,000
				$805,457			
SUBTOTAL: Direct Costs					$555,765	$370,510	$926,275
Indirect/IDC/Facilities & Administrative Costs			27.92%	$40,712	$24,427	$16,285	$40,712
Total					**$580,192**	**$386,795**	**$966,987**
Other Match:							
Source of Match					$0	$0	$0
GRAND TOTAL					**$580,192**	**$386,795**	**$966,987**

AMOUNT OF FUNDS REQUESTED

The total amount of requested grant assistance is $580,192 or 60% of total project costs, as the project is located outside of a low-income geographic area and the project results in hybrid solutions. These funds, combined with local match, would be used for the services identified above.

AMOUNT OF CASH FUNDS AVAILABLE

Mathews County will appropriate the requisite 40% or $386,795 in required local cash match funds, to be combined with the $580,192 in grant assistance to equal the total estimated project cost. The County's match commitment letter is included as **Attachment 1**.

AUTHORIZATION TO REQUEST FUNDING

The authorization to request funding is included as **Attachment 1**.

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		☑ **Yes** ☐ **No**
Applicant Name:	**Middle Peninsula Planning District Commission**	
Scoring Information		

Criterion	Point Value	Points Awarded
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☑ Wetland restoration, floodplain restoration ☑ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☑ Stream bank restoration or stabilization. ☑ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	

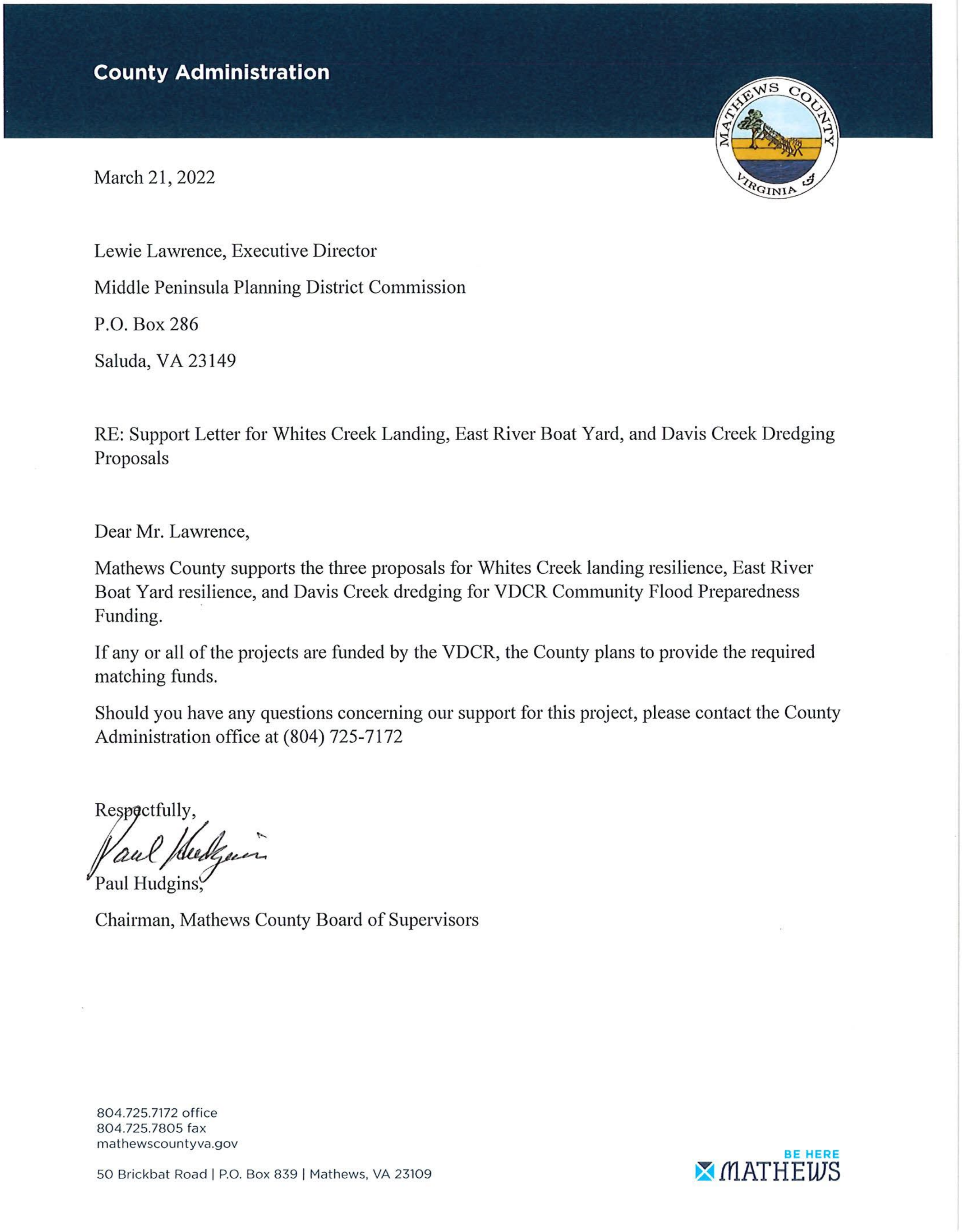
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Attachment 1: Community Support/Match Commitment/Authorization Letter



County Administration

March 21, 2022

Lewie Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Whites Creek Landing, East River Boat Yard, and Davis Creek Dredging Proposals

Dear Mr. Lawrence,

Mathews County supports the three proposals for Whites Creek landing resilience, East River Boat Yard resilience, and Davis Creek dredging for VDCR Community Flood Preparedness Funding.

If any or all of the projects are funded by the VDCR, the County plans to provide the required matching funds.

Should you have any questions concerning our support for this project, please contact the County Administration office at (804) 725-7172

Respectfully,

Paul Hudgins

Paul Hudgins,

Chairman, Mathews County Board of Supervisors

804.725.7172 office
804.725.7805 fax
mathewscountyva.gov

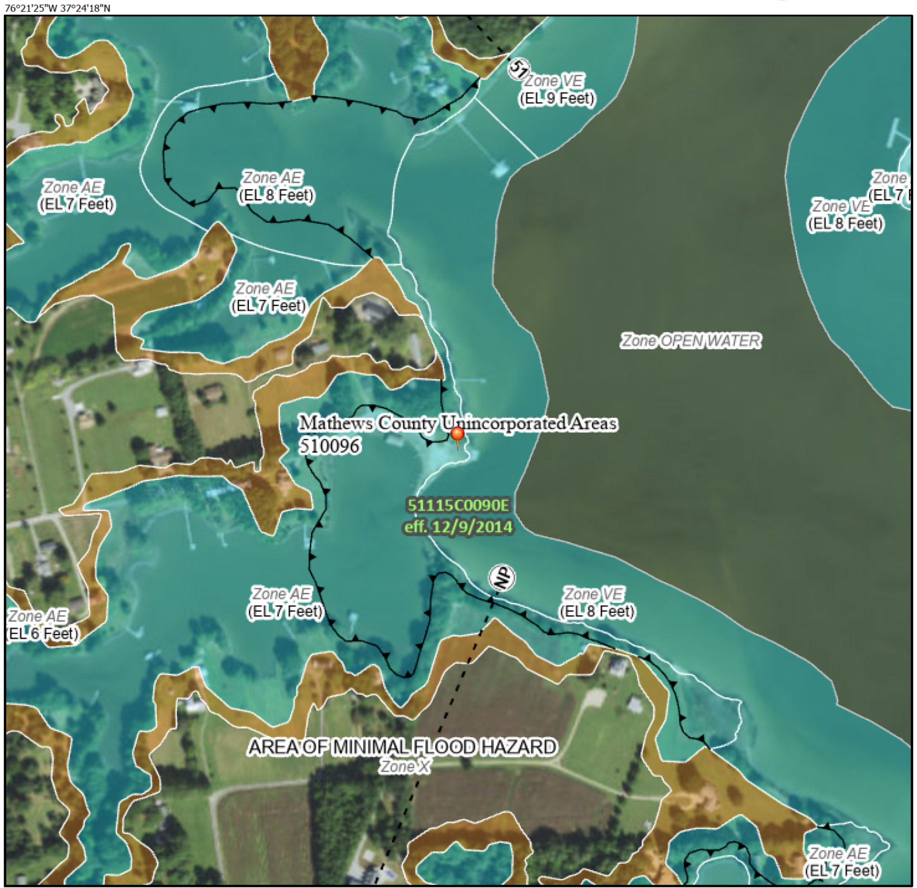
50 Brickbat Road | P.O. Box 839 | Mathews, VA 23109

BE HERE MATHEWS

Attachment 2: Project Location FIRMette

National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
		Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	– – – –	Channel, Culvert, or Storm Sewer
	❙❙❙❙❙❙❙	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2	Cross Sections with 1% Annual Chance
	17.5	Water Surface Elevation
	8 – – –	Coastal Transect
	513	Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

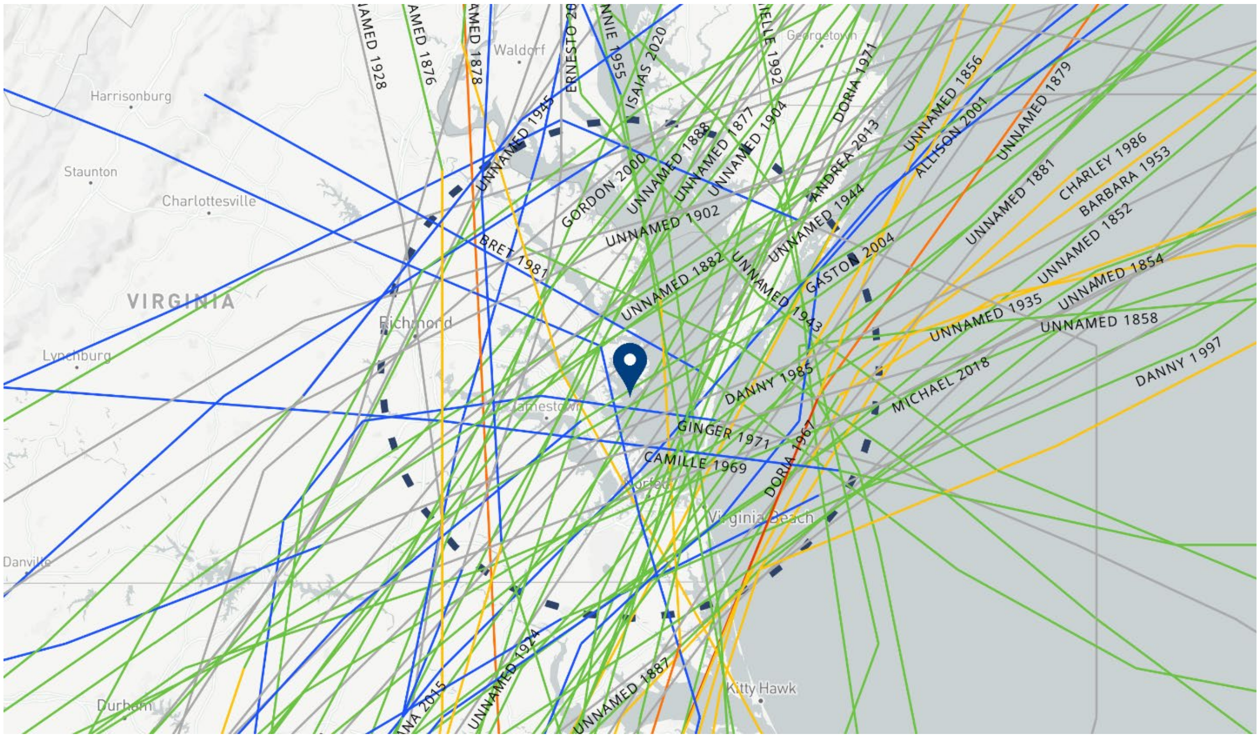
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/27/2022 at 11:06 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 3: List of historic hurricanes impacting the project area 1851 to present per NOAA.

Hurricane List



Search Filter Criteria

Location: 37.4013787568471, -76.35289892950684

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3

STORM NAME	**DATE RANGE**	**MAX WIND SPEED**	**MIN PRESSURE**	**MAX CATEGORY**
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 04, 1967 to Sep 21, 1967	85	973	H2
UNNAMED 1967	Jun 15, 1967 to Jun 22, 1967	35	1006	TS
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 5: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)
The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

> *Phase 1:* Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
> *Phase 2:* Climate Change III: Initiating Adaptation Public Policy Development
> *Phase 3:* Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a HAZUS assessment of hurricane wind, sea level rise* (i.e., Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc., staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal

land use management/water quality and Onsite Sewage Disposal System (OSDS) and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region’s stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

MPPDC Round 3 CFPF New Applications

2 messages

Curt Smith <csmith@mppdc.com> Fri, Apr 8, 2022 at 11:46 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Lewis Lawrence <llawrence@mppdc.com>, Jackie Rickards <jrickards@mppdc.com>, Heather Modispaw <Hmodispaw@mppdc.com>, "Howard-cooper, Wendy" <wendy.howard-cooper@dcr.virginia.gov>

Greetings,

The MPPDC is respectfully submitting five proposals for consideration under Round 3. These projects were requested by our member jurisdictions as projects of highest priority with regards to flood mitigation and resilience needs. The projects are located on and involve publicly-owned property and infrastructure and were identified as sites with the greatest potential for community scale benefits within the locality/region.

The proposals may downloaded via the following links:

- CID510071_GloucesterCounty_Public_CFPF.doc.pdf
- CID510098_MiddlesexCounty_Public_CFPF.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-1.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-2.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-3.pdf

We thank you in advance for your consideration. Please contact me directly should you have any questions.

Best,

Curt

Curtis Smith
Deputy Director
Middle Peninsula Planning District Commission
Cell: 804-384-7509
125 Bowden Street, Saluda, VA 23149
Web: www.mppdc.com
Email: csmith@mppdc.com

CFPF, rr <cfpf@dcr.virginia.gov> Fri, Apr 8, 2022 at 11:52 AM
To: Curt Smith <csmith@mppdc.com>

Curt,

Are these applications in addition to the eight already submitted?
[Quoted text hidden]

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

Whiting Creek Comprehensive Resilience Enhancements

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

PROJECT TITLE: Whiting Creek Comprehensive Resilience Enhancements

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning __X__ Project ___Study

NFIP/DCR Community Identification Number (CID): Middlesex County (510098)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ **No** ___

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or**

acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ **Wetland restoration.**

☑ **Floodplain restoration.**

☐ **Construction of swales and settling ponds.**

☑ **Living shorelines and vegetated buffers.**

☐ **Structural floodwalls, levees, berms, flood gates, structural conveyances.**

☑ **Storm water system upgrades.**

☐ **Medium and large-scale Low Impact Development (LID) in urban areas.**

☐ **Permanent conservation of undeveloped lands identified as having flood resilience value by Conserve Virginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.**

☐ **Dam restoration or removal.**

☐ **Stream bank restoration or stabilization.**

☑ **Restoration of floodplains to natural and beneficial function.**

☐ **Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.**

Location of Project (Include Maps): Middlesex County

NFIP Community Identification Number (CID#) (See appendix F): 510098

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): Zones AE and VE

Flood Insurance Rate Map Number(s) (If Applicable): 51119C0185E eff. 5/18/2015

Total Cost of Project: $174,312

Total Amount Requested: $113,303

SCOPE OF WORK NARRATIVE

INTRODUCTION

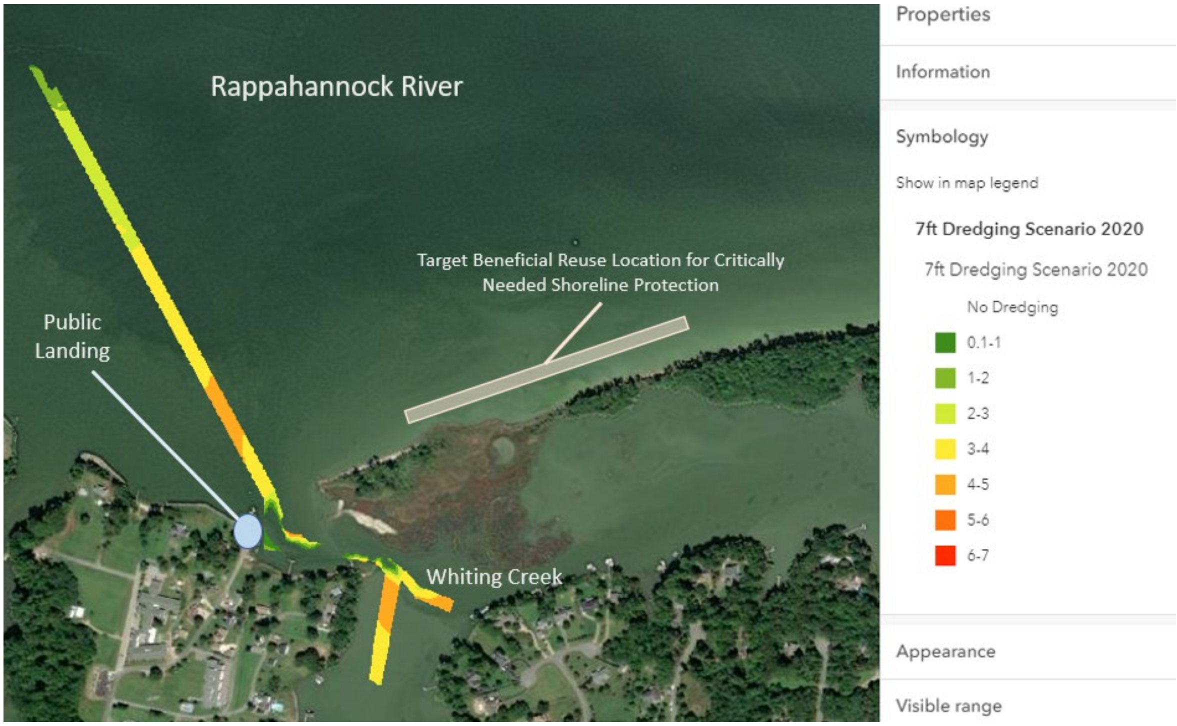
This proposal involves a multi-faceted approach to enhancing resilience on Whiting Creek in Locust Hill, Virginia (Middlesex County). Whiting Creek and the publicly owned working waterfront on the creek serve as critical infrastructure for the commercial and recreational marine economies for Middlesex County and the Middle Peninsula. Whiting Creek has experienced extreme shoaling from flooding and climate change driven coastal dynamics to the point where public safety and commerce have been severely impacted. The public working waterfront has experienced similar flooding and erosion related challenges which are compromising the site's viability to serve as the important economic hub that it has been for decades. The proposal consists of two specific elements: 1) enhancing resilience and flood protection at the Whiting Creek Public Landing and 2) designing a dredging and beneficial reuse project for Whiting Creek. This project will utilize and incorporate sustainable planning, design, environmental management, and engineering practices that weave natural features together and allow for floodwater inundation and stormwater flow to reduce the exposure to public facilities while promoting adaptation and resilience. The final outcomes are intended to represent a holistic and comprehensive resilience solution for Whiting Creek and the public working waterfront.

Middlesex County wishes to achieve comprehensive resilience to critical public infrastructure within Whiting Creek, which is a highly vulnerable location adjacent to the Rappahannock River and Chesapeake Bay. To do this the County will complete a permitted and initiated bulkhead project, and design a dredging and beneficial reuse project for Whiting Creek; the bulkhead project began after the January 4, 2022 opening of CFPF Round 3, and no project funds were spent prior to January 4, 2022. The bulkhead element of the project involves the construction and backfill 80 feet of vinyl sheet-pile bulkhead. This will extend a maximum of four feet channelward of mean low water into Whiting Creek and expand the public parking area and improve public access for commercial watermen and recreational users to the existing public boat ramp. The County's funds committed to this work will serve as match for the grant project per the DCR Grant Manual which states that "each application submitted must be for a discrete project to be completed after the beginning of the application period and not later than 3 years from the date of an executed agreement...". The Round 3 application period of the Community Flood Preparedness Fund opened on January 4, 2022, and therefore the County's funding will serve as eligible source of match for the proposed activities.

Additionally, the County will commission a study to investigate the shoaling of the boat ramp, shoreline erosion, and sedimentation within Whiting Creek, opportunities for dredging of Whiting Creek, and design for beneficial reuse of sediments. Whiting Creek is a Federally authorized channel which has not been dredged since 2003 as result of Congress defunding the US Army Corps of Engineers Shallow Draft Navigation Program. As result, the MPPDC has been working diligently and successfully to pursue alternative funding sources to address critical funding sources for channel maintenance including a 2020 project funded by the VA Port

Authority which characterized the regional dredging needs of the Middle Peninsula. For that study, Middlesex County identified Whiting Creek as a highest priority channel for which dredging and beneficial reuse solutions are needed. The proposed design will build on preliminary investigation of shoaling within the creek completed by MPPDC and the VIMS Shoreline Studies Program during the 2020 study which found that ~31,000 cubic yards of predominantly sandy material suitable for placement along shorelines for erosion protection needs to be dredged from the channel to achieve the desired 6 ft depth below mean lower low water (MLLW) and to include 1 ft overdepth dredging. The final design of the project will consider and select beneficial reuse opportunities for placing the dredged sand along adjacent shorelines where severe erosion has and continues to occur as well as beneficial reuse solutions for the boat ramp at the public landing (**Figure 1**). A narrow peninsula of land to the east of the mouth of Whiting Creek separates much of the Whiting Creek watershed from the Rappahannock River. This narrow piece of land is likely to erode to the point where a complete breach could occur in the near future or with the onset of a single severe storm event. If no action were to be taken to prevent erosion and breach of this area, the tidal dynamics of the creek would be greatly altered and have a severely negative impact on shoaling of the Whiting Creek navigation channel. The proposed beneficial reuse design will consider buffering the

<u>Figure 1. Project Location and Description</u>



The project will involve resilience enhancements at a Publicly Owned Working Waterfront and Design of a Dredging and Beneficial Reuse Project. The image below shows the areas in need of dredging (VIMS, 2020) to attain the desired 6 ft MLLW depth with 1 ft overdepth dredging and highlights an adjacent shoreline in critical need of protection which is to be targeted for beneficial reuse. If this very thin peninsula breaches and a new inlet is created, the entire tidal dynamics of the watershed will be drastically changed and likely result in worsened shoaling within the mouth and inner segments of the creek.

shoreline via placement of dredged sand as well as designing nature-based shoreline protection structures, potentially by creating concrete structures on site using the dredged material itself as the media for the concrete. Similar methods for using concrete made from the dredged material will be explored for the boat ramp improvement design as well. The MPPDC currently is partnering with VA Sea Grant to host a RISE Resilience Business Competition to advance innovate private sector resilience solutions for rural coastal communities and one of the outcomes of this effort involves an innovative solution from a company associated with the Middle Peninsula Fight the Flood program where concrete structures may be created on site using dredged material and a 3-D printer capable of making structures of any shape and size up to 700 pounds. The end dredging and beneficial reuse design will be incorporated into a draft Joint Permit Application to achieve near shovel ready project status.

FEMA, the Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula Planning District Commission (MPPDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). To that end, this proposal is a partnership between the MPPDC and Middlesex County (see Community Support Letter, **Attachment 1**).

- A link or copy to the approved MPPDC resilience plan: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
- Middlesex County Comprehensive Plan: https://www.co.middlesex.va.us/252/Comprehensive-Plan

This project is consistent with multiple objectives and strategies outlined within the Regional All-Hazards Mitigation Plan. Relevant strategies include the following:

- Objective 1.1: Provide protection for future development to the greatest extent possible.
    - Strategy 1.1.1: Reduce or eliminate flood damage to residential/business structures that are highly vulnerable for continual flood damage.
    - Strategy 1.1.3: Protect public buildings and public infrastructure from flood waters resulting from 100-year flood storm events.
    - Strategy 1.3.1: Mitigation projects that will result in protection of public or private property from natural hazards.

PROJECT INFORMATION

Project Description

Whiting Creek and the Whiting Creek Public Landing are public assets serve as critical infrastructure to aid in bolstering commercial and recreational marine economic activities for Middlesex County and the overall Middle Peninsula region. The project site is the **Whiting Creek Public Landing**, with waterfront access near the mouth of Whiting Creek in Middlesex County, Virginia. The approximately one-acre property consists of a public fishing pier, public boat ramp, beach access, and shoreline stabilization features. The parking area is a smooth paved surface but there are no designated parking spaces. The site can accommodate about six vehicles while allowing flow of traffic to the boat ramp. The dimensions of the area are 50 by 100 feet, which allows sufficient space for vehicles to maneuver and access the boat ramp.

The project involves the scope of the existing permitted and commenced project to construct and backfill 80 feet of vinyl sheet-pile bulkhead, extending a maximum of four feet channelward of mean low water into Whiting Creek, to expand the public parking area and improve public access to an existing boat ramp. It is significant to accommodate for these improvements as the landing and ramp are considered to be the primary uses of the site, according to the Middle Peninsula Public Access Master Plan.

A second phase will involve a study and dredging beneficial reuse project design and draft joint permit application. The design will target the shoaling of the boat ramp, shoreline erosion, and sedimentation within Whiting Creek and opportunities for dredging and beneficial reuse of dredged materials. A priority of the beneficial reuse refers to preventing the peninsula on the east side of the creek’s mouth from breaching, changing the tidal dynamics, and exacerbating shoaling at the mouth of the creek (**Figure 1**). The study will be used to develop designs for identified solutions and to fund the implementation of physical solutions.

As noted in the Introduction, the overall scope of this project is to present a holistic approach to enhance resilience on Whiting Creek and the related working public waterfront (i.e., Public Landing). Whiting Creek has suffered from extreme shoaling caused by flooding and climate change-driven coastal dynamics, which in turn severely affects public safety and local commerce. The public waterfront has experienced similar flooding and erosion-related issues which compromises the viability of the site to serve as an economic hub for Middlesex County.

Project Location Information

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia, as seen in **Figure 2**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 3**.

Figure 2. Middle Peninsula Geographic Area

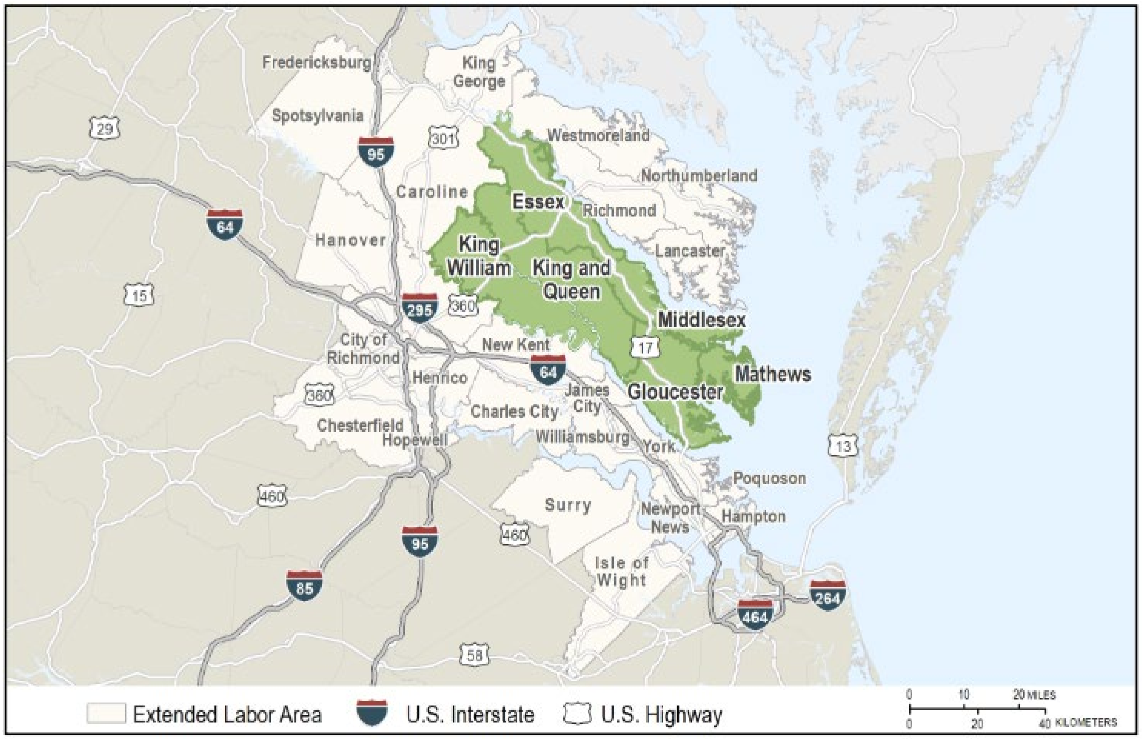


Figure 3. Middle Peninsula Population

CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

Project implementation would take place along Whiting Creek in an area of Middlesex County, Virginia known as Locust Hill (**Figures 4 and 5**).

Figure 4. County Map of Project Location

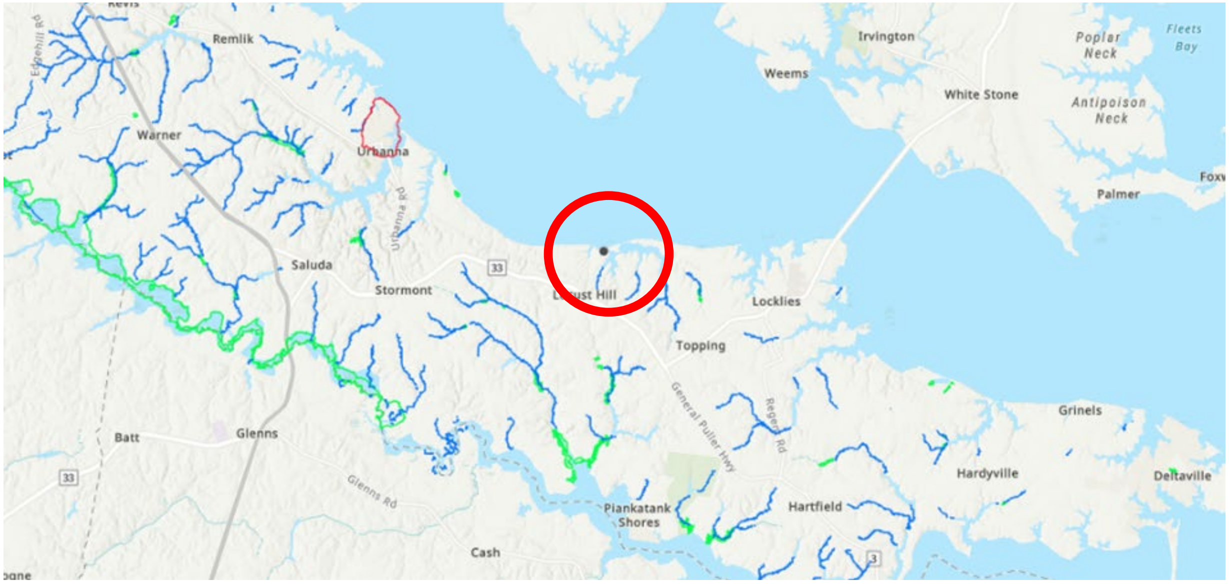


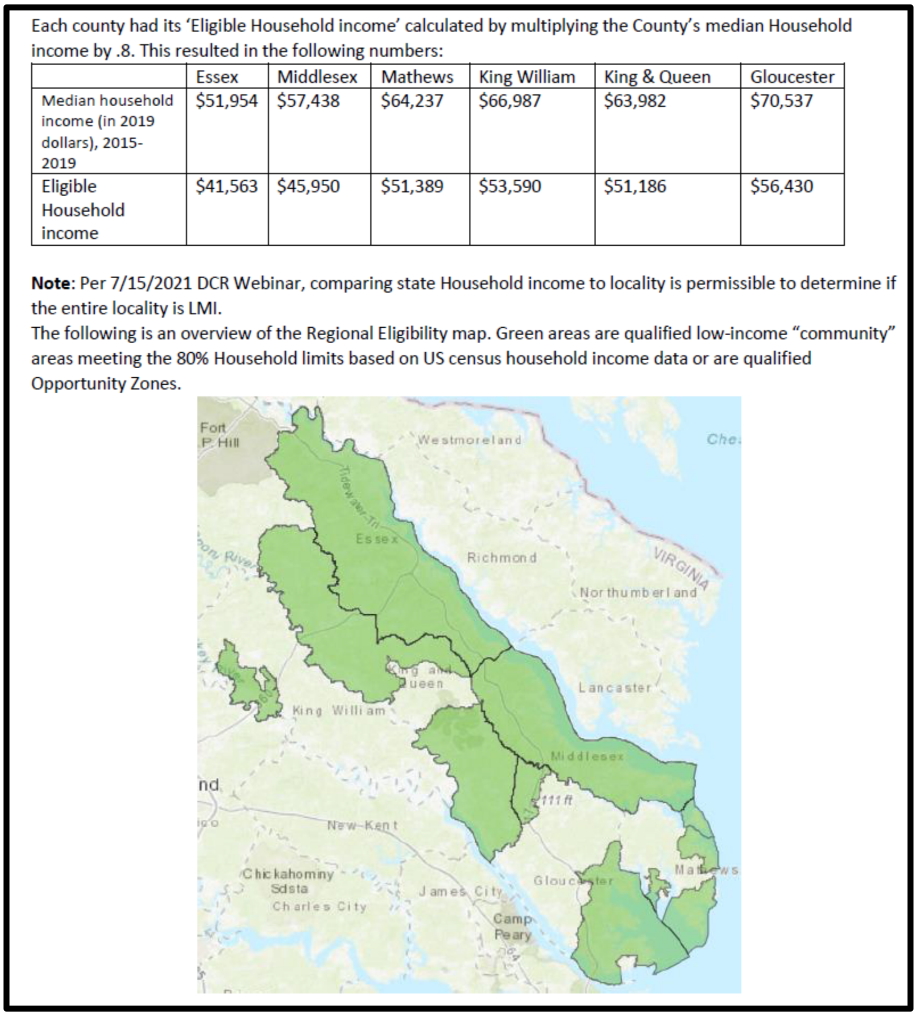
Figure 5. Parcel Map of Project Location

Population Information

Middlesex County is located in the central portion of Virginia's Middle along the Rappahannock River. Middlesex County has approximately 135 miles of shoreline. Based on 2020 Census Data, Middlesex County's population totals 10,625 (**Figure 2**).

According to DCR guidelines, the county is considered a low-income geographic area. In **Figure 6**, the green areas depict qualified low-income "community" areas meeting the 80% Household limits based on US census household income data[1] or are qualified Opportunity Zones.

Figure 6. Map of Middle Peninsula Low Income Qualifying Geographic Areas



Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Please see **Figure 7** for a detailed map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

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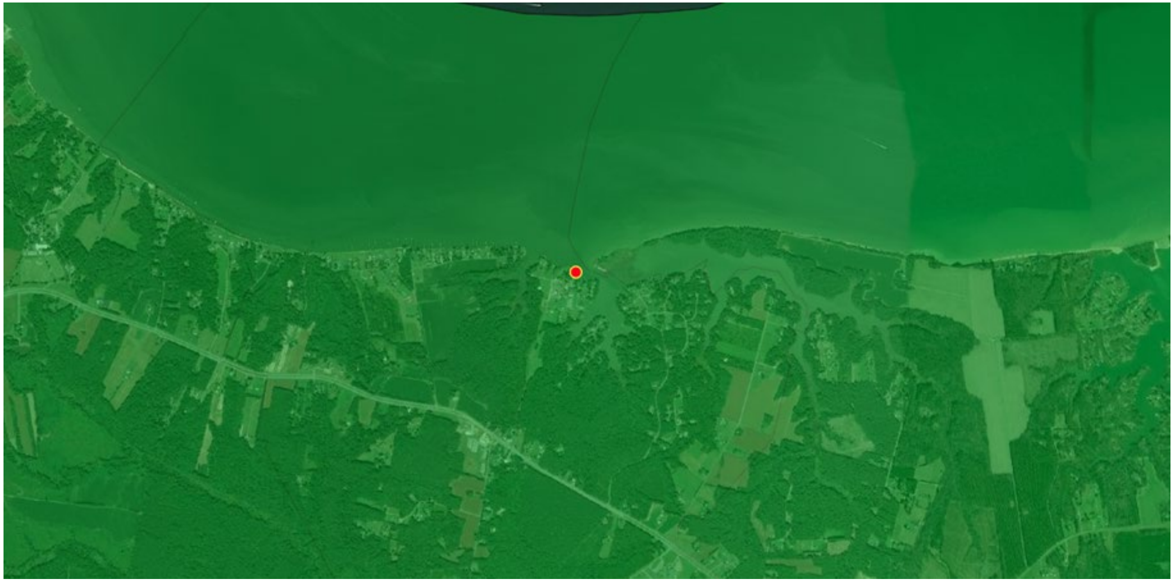
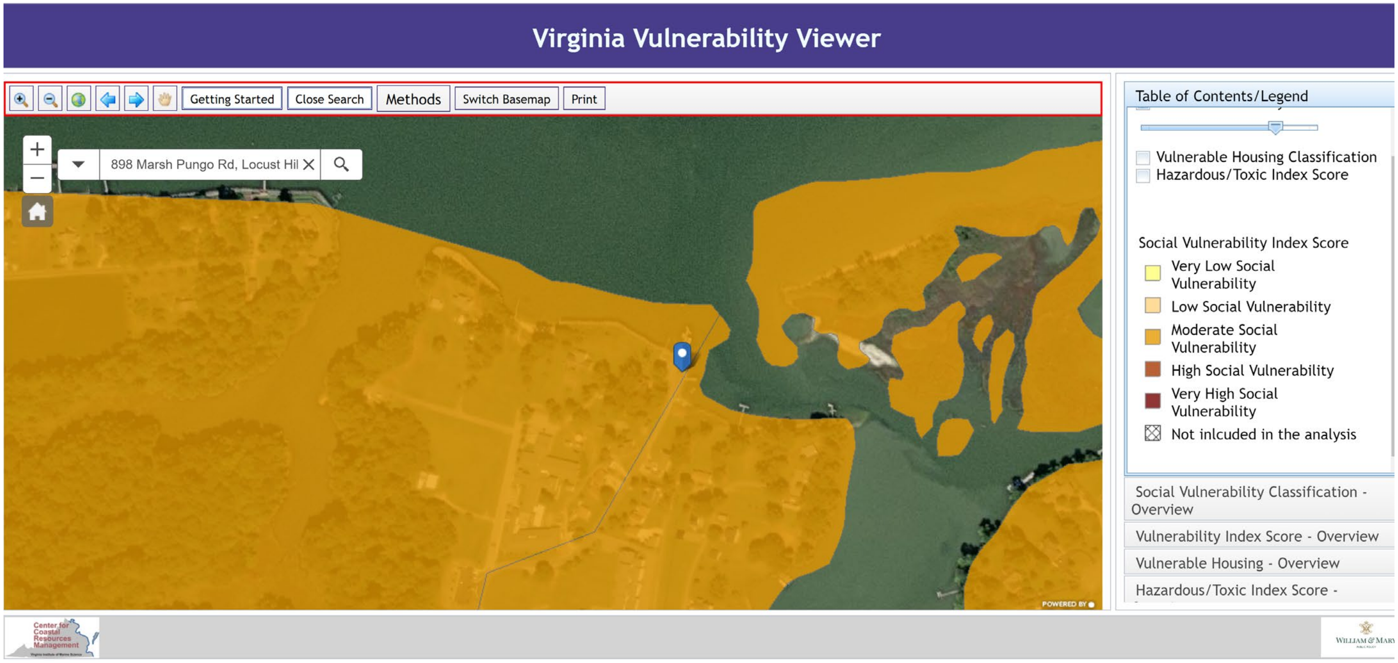
[1] Based upon 2015-2019 U.S. Census American Community Survey data available on January 4, 2022, when CFPF Round 3 opened; 2016-2020 ACS data was not released until March 17, 2022.

Figure 7. Map of the Project Location within in the Green Low-Income Area



With respect to social vulnerability, according to ADAPTVA's Social Vulnerability Index Score, this project location has a Social Vulnerability Index Score of 0.2, classified as Moderate Social Vulnerability (**Figure 8)**

Figure 8. ADAPTVA Social Vulnerability Index Score Viewer

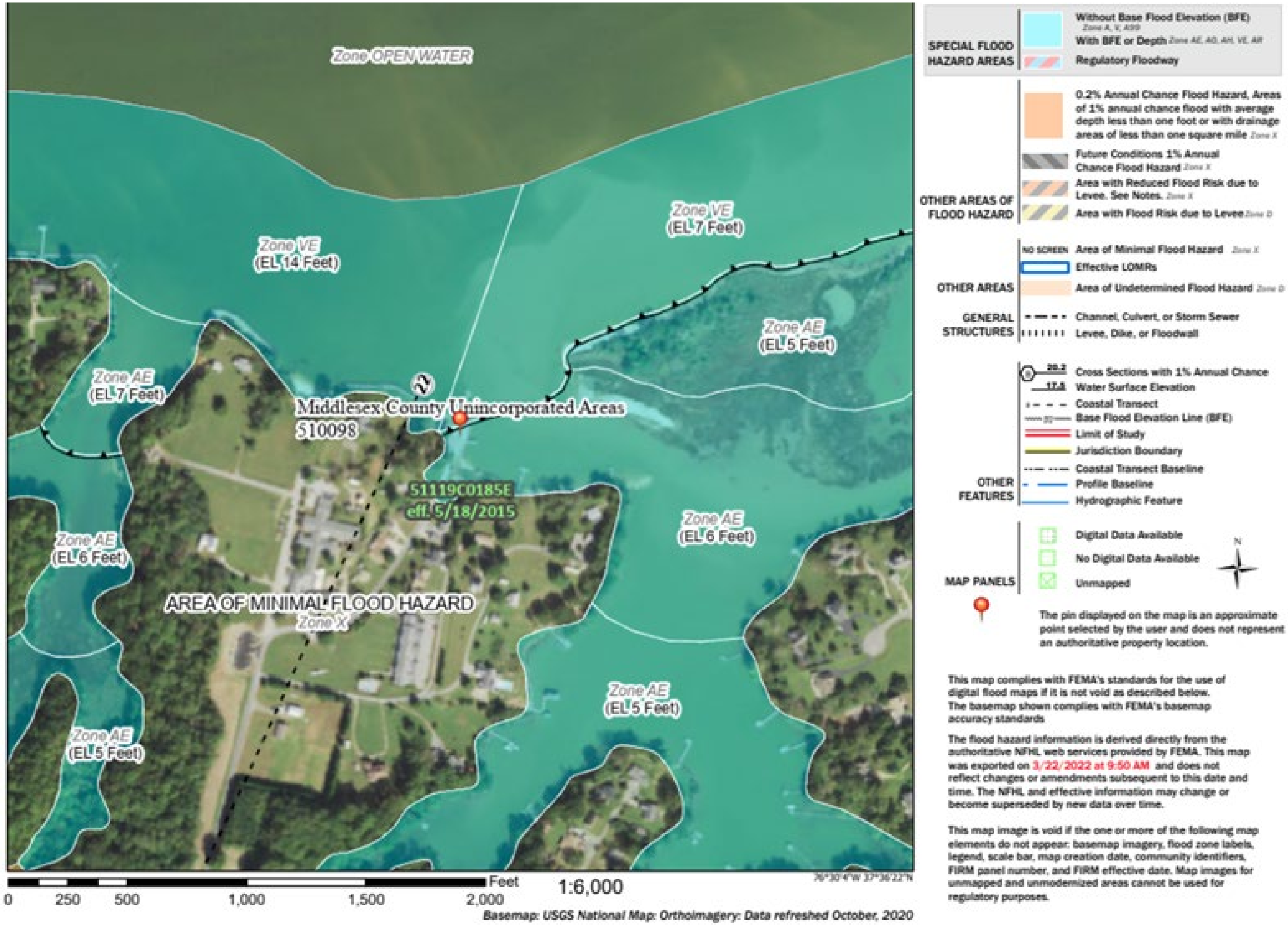


898 Marsh Pungo Rd, Locust Hil

Flood Risk Information

The entirety of the site (898 Marsh Pungo Road, Locust Hill, VA 23092, 37.61005, -76.50619) is located within a mapped floodplain, with portions located within FEMA Flood Zones AE and VE (**Figure 9**). Middlesex County's Planning and Zoning Department administers the requirements of the NFIP program, and the County's Floodplain Management Ordinance may be accessed at the following link: https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF?bidId=

Figure 9. Map of FEMA Flood Zones



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/22/2022 at 9:50 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Due to the project site's proximity to the water and low elevation, the site has an extensive history of experiencing extreme weather events that have resulted in significant impacts to infrastructure and the environment. For example, the project location has long been, and continues to be, impacted by tropical, sub-tropical, and Nor'easter events (**Attachment 3**). According to NOAA's Coastal Flood Mapper, this project location is at the highest risk of coastal flooding (**Figure 10**). Collectively, these reoccurring and storm-related events have contributed to erosion and shoreline loss at site.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)

NEED FOR ASSISTANCE

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex counties, as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened FTE staff. MPPDC staff consists of an Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, and clerical support staff; a Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, and Emergency Planner are co-operative procured; Housing, Community Development Planner and Public Relations staff are hourly.

The Planning District staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scales - from grants in excess of $1,000,000 to small grants. MPPDC is an entrepreneurial-based government agency with an annual operating budget ranging from $750,000 to more than $1,000,000. Annually, the MPPDC manages 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software and other software (e.g., GIS, Microsoft Office) as required and/or necessitated by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance, as well as other areas determined by the Commission. MPPDC has more than 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission, no audit findings have occurred.

Whiting Creek is a key access point for recreational and commercial seafood fishing as well as access to water and beach fronts. And as noted above, the site is currently constrained, and current improvements will serve to improve access and use of the site. The site's boat ramp is subject to shoaling, and there is shoreline erosion, compounded by other site conditions contributing to sedimentation within Whiting Creek. The objectives of these improvements are meant to align with the Middlesex Public Access Plan, completed in recent years, by allowing for a public use of access points with a private residential section to coexist with properly delineated boundaries indicated by signage, fencing, and other structures.

Existing site conditions (**Figure 11**) serve to limit usability of the landing, a key access point to the Rappahannock River, thereby negatively impacting recreation and commercial seafood activities. According to the Middle Peninsula Dredging Implementation Plan, Whiting Creek requires dredging in order to "establish navigable depths to provide safe navigation for commercial and recreational vessels". Therefore, studying and completing a dredge design for the materials from the creek bed and ensuring beneficial reuse of the sediments will increase access for boats and commercial interests into Whiting Creek.

Additionally, as the study and implementation of a shoreline solution will reduce erosion of the property this will reduce flood risks at the project site. Without the erosion protection measures proposed, the land, habitat and public infrastructure will continue to be compromised, resulting in degradation of the environment and loss of public assets. Stormwater resilience remains the biggest weakness of the Whiting Creek Landing site. The area around the Whiting Creek Landing site is prone to erosion from weather events as evidenced by neighboring living shoreline and shoreline protection features. Any category of storm surge will hit the Whiting Creek site, depositing sediment in the creek eroding the shoreline, precluding access. Moreover, rising sea levels will have a negative impact on the property, increasing the potential for shoreline erosion and loss of public assets.

Finally, it is important to note that Whiting Creek is a Condemned Shellfish Area; this applies to bivalve molluscan shellfish since they may concentrate bacteria and viruses from the water, and this designation would benefit from water quality improvements offered by advancing dredging of the creek and shoreline and stormwater best management practices.

Figure 11. Photos of Existing Site Conditions.

Whiting Creek Boat Ramp to be targeted for improvement in the proposed beneficial reuse design.

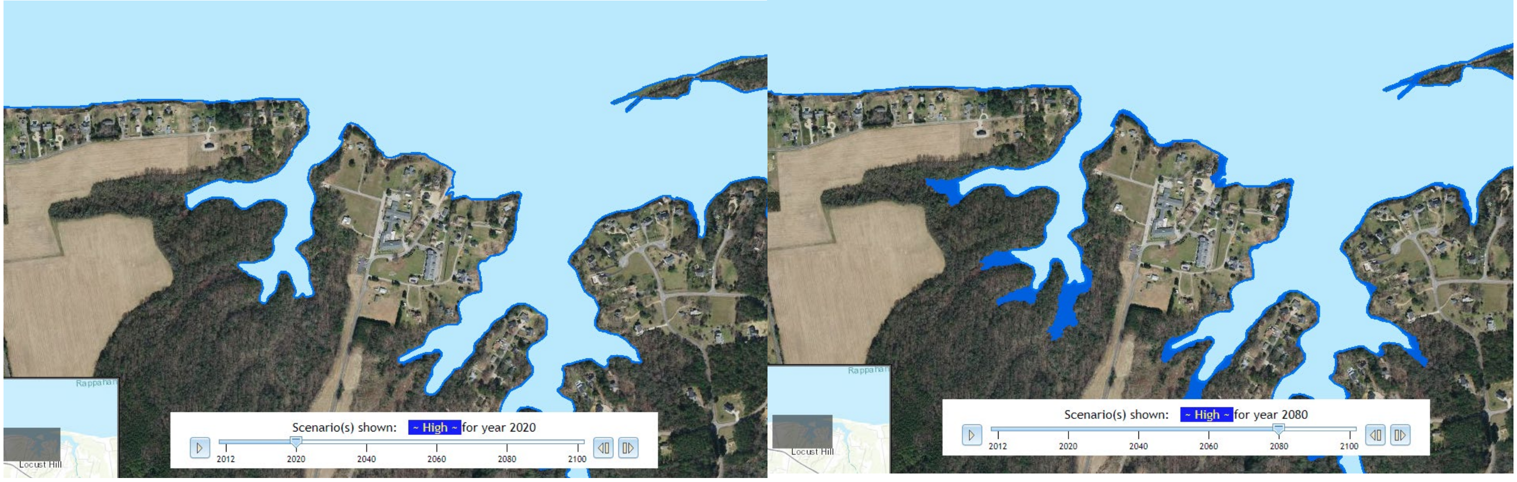
Shoreline protection improvements, initiated after the Jan. 4, 2022 opening of CFPF Round 3; photo taken March 1, 2022

Eroded shoreline at project site from fishing pier prior to improvements. Note commercial fishing boat and active use by recreational and commercial boaters.

Shoreline protection improvements, initiated after the Jan. 4, 2022 opening of CFPF Round 3; photo taken March 1, 2022

Figure 12 illustrates flood levels combined with sea-level rise and their effects on the site. Notably, floods in 50 years pose an issue to the many structures on site; key construction techniques will need to be employed to retrofit each structure in order to mitigate the effects of exceptional floods and sea level rise 50 years and out.

Figure 12. Sea Level and Flood Elevation



Sea Level for 2020 *Sea Level Projection for 2080*

The need for assistance is two-fold. **First, Middlesex County is near the Chesapeake Bay and numerous tidal rivers that contribute to the area's high risk to coastal flooding, sea-level rise, and storm surge.** Based on tidal gauge data from the Virginia Institute of Marine Science (VIMS), relative sea-level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Middlesex County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds as storm surge. When a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide".

Nor'easters, like hurricanes and tropical storms, can dump heavy amounts of rain and sediment, and produce hurricane-force winds that push large amounts of seawater inland. A strong indicator that Middlesex County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, Middlesex County had 429 repetitive loss properties with claims topping $44 Million. The county has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on its communities. This project will therefore build on local efforts moving toward a more resilient community.

Second, this project location is primed for co-benefits derived from shoreline erosion mitigation efforts.
The proposed application of shoreline protection features, boat ramp improvements, and a Whiting Creek dredge design provides strategic protection of the infrastructure and landscape at this point of interest. For example, the proposed improvements will facilitate multiple, simultaneous activities that will contribute to economic growth in the area while fostering innovation.

Business Development
The potential of increased tourism drawn to the recreational site is significant. Visitors seeking access to local waterways could be drawn to activities available at Whiting Creek Landing, supporting the local economy with outside revenue in their pursuits. The project proposes and includes a newly constructed bulkhead, study to investigate the shoaling of the boat ramp, shoreline erosion, and sedimentation within Whiting Creek, and study and design for dredging Whiting Creek with beneficial reuse of sediments. Close proximity to recreational opportunities has increasingly become a factor in where businesses decide to locate. The provision of a public access site with enhanced amenities thus has the potential to drive continued economic growth through business development in the area. Moreover, the site is inventoried in the Middle Peninsula's Working Waterfront Inventory, and the boat ramps and fishing pier provide key access to the waterways for commercial seafood fishing industries.

Community Scale Benefits
Due to the multitude of public investment for shoreline protection and flood research and innovation, we believe this site meets the test of "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk." The Whiting Creek Landing site serves as one of the Commonwealth's best chances to innovate shoreline resilience projects in "live time" so that all of coastal Virginia can benefit. MPPDC believes that proposing resilience projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels.

Further, the Whiting Creek Public Landing Site is an important access point in Middlesex County, to both the Rappahannock River and Chesapeake Bay, as acknowledged by the Middle Peninsula Public Access Master Plan and Middlesex County Public Access Site Assessment Report; however, use of the site in limited due to lack of parking, and access and usability are potentially limited by a need for dredging.

ALTERNATIVES

The submission of alternatives is not applicable in this application. Nature-based and hybrid solutions are anticipated, and the project cost is less than $3 million.

GOALS AND OBJECTIVES

This proposal will develop a comprehensive strategy to increase resilience of the site against multiple shoreline erosion inputs while providing co-benefits that foster resilience at the Whiting Creek Landing. The focused goals and objects of the project are as follows:

Goal 1: Improve public access to local coastal waterways.

- Objective A: Increase public access to Whiting Creek and the Rappahannock River with improved conditions and mitigation of recurrent and repetitive flooding using a nature-based approach on site.
- Objective B: Enhance quality of life for local residents and visitors alike through recreation, educational and cultural opportunities, and commercial fishing at the point of interest.
- Objective C: Leverage improved public access and coastal resiliency for economic growth within Middlesex County.

Goal 2: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Mitigate recurrent and repetitive flooding alongside storm surge and sea level rise using natural and nature-based solutions that benefit people and the economy as well as the environment.
- Objective B: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.
- Objective C: Enhance the resilience of public infrastructure, ensuring longer-term viability.

Goal 3: Transferability to other communities.

- Objective A: Model natural and nature-based solutions for coastal sites exploring development potential.
- Objective B: Foster innovative research and solutions-oriented studies on site focused on coastal adaptation and mitigation for external transfer.
- Objective C: Improve the implementation of Fight the Flood as a model program to be replicated in other communities within the region and/or Commonwealth.

The MPPDC expects the following results and benefits of the completed project:

1. **Foster economic growth in the area over the useful life of site infrastructure and most likely, beyond. at the project location**. Enabling public access to this county asset while ensuring its sustainability will protect and enhance the area's recreational economies and has the potential to positively impact related commercial endeavors.

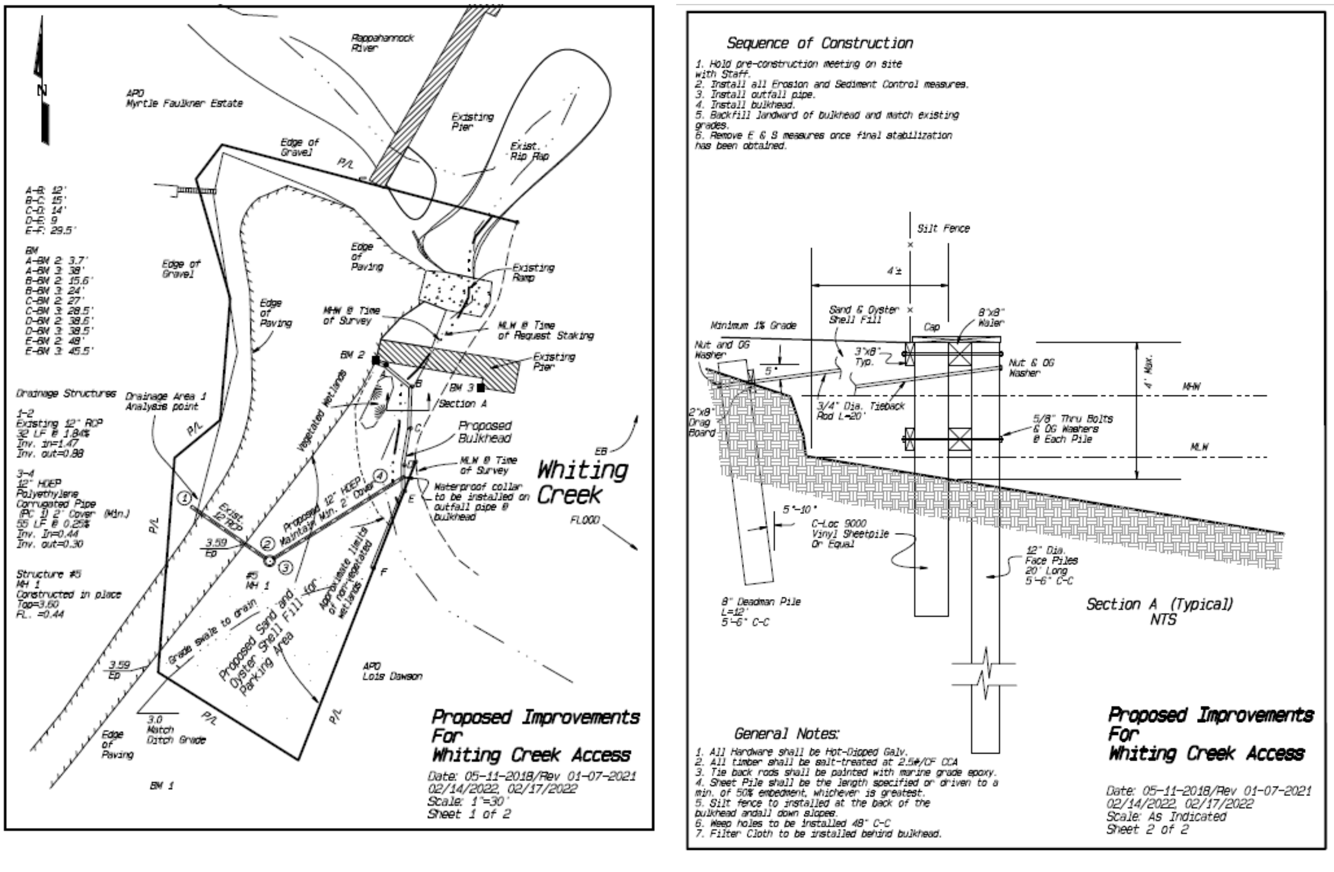
2. **Prevent loss of property without cementing an alternative.** Building resilient structures and facilities at the project site as outlined will help prevent loss of property and property value, while capitalizing on the useful life of the site as much as possible.

3. **Provide ecosystem services to the community toward increased quality of life.** Increased public access to support recreational and economic opportunities leverage the provisioning and services associated with the site's natural resources, services that provide benefits to and increase the quality of life of users.

APPROACH, MILESTONES, AND DELIVERABLES

The project involves the scope of the existing permitted and initiated project (after January 4, 2022) to construct and backfill 80 feet of vinyl sheet-pile bulkhead, extending a maximum of four feet channelward of mean low water into Whiting Creek, to expand the public parking area and improve public access to an existing boat ramp (see **Figure 13)** for project plans and scope of work). A second phase will involve a study of the site to investigate the shoaling of the boat ramp, shoreline erosion, and sedimentation within Whiting Creek and opportunities for dredging and beneficial reuse of dredged materials. The study will be used to develop designs for identified solutions and to fund the implementation of physical solutions.

Figure 13. Permitted Site Plans for Shoreline and Parking Improvements at the Whiting Creek Landing



Proposed Improvements For Whiting Creek Access

Date: 05-11-2018/Rev 01-07-2021
02/14/2022, 02/17/2022
Scale: 1"=30'
Sheet 1 of 2

Sequence of Construction

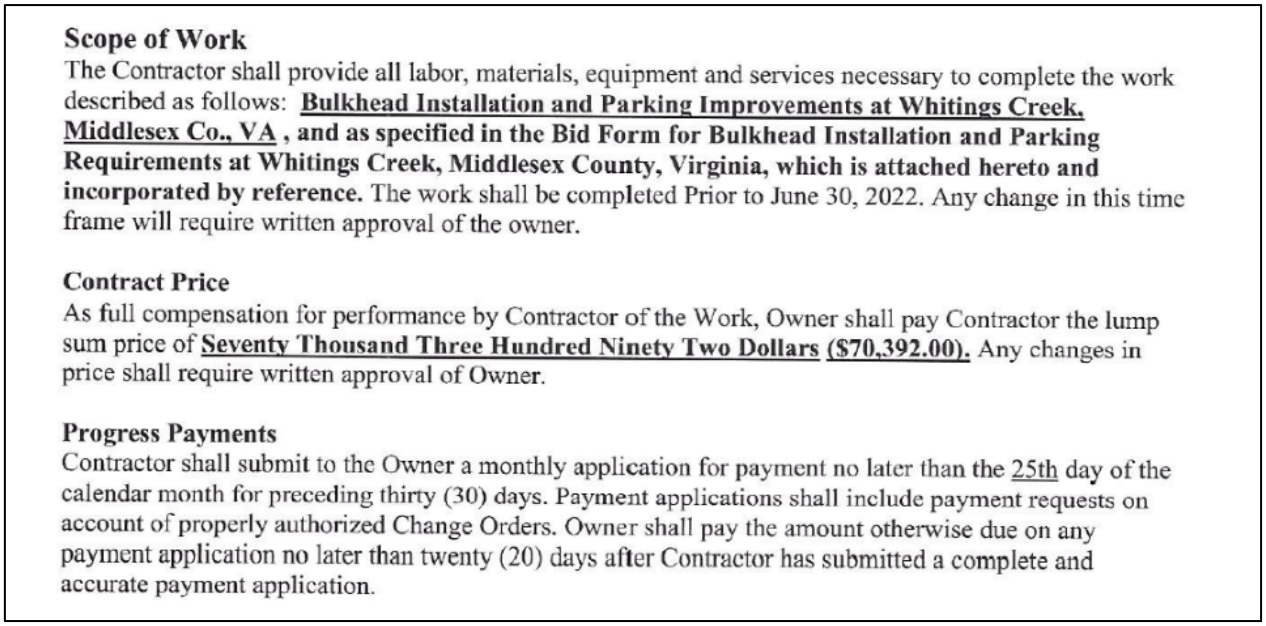
1. Hold pre-construction meeting on site with Staff.
2. Install all Erosion and Sediment Control measures.
3. Install outfall pipe.
4. Install bulkhead.
5. Backfill landward of bulkhead and match existing grades.
6. Remove E & S measures once final stabilization has been obtained.

General Notes:

1. All Hardware shall be Hot-Dipped Galv.
2. All timber shall be salt-treated at 2.5#/CF CCA
3. Tie back rods shall be painted with marine grade epoxy.
4. Sheet Pile shall be the length specified or driven to a min. of 50% embedment, whichever is greatest.
5. Silt fence to installed at the back of the bulkhead andall down slopes.
6. Weep holes to be installed 48" C-C
7. Filter Cloth to be installed behind bulkhead.

Proposed Improvements For Whiting Creek Access

Date: 05-11-2018/Rev 01-07-2021
02/14/2022, 02/17/2022
Scale: As Indicated
Sheet 2 of 2



Scope of Work

The Contractor shall provide all labor, materials, equipment and services necessary to complete the work described as follows: **Bulkhead Installation and Parking Improvements at Whitings Creek, Middlesex Co., VA , and as specified in the Bid Form for Bulkhead Installation and Parking Requirements at Whitings Creek, Middlesex County, Virginia, which is attached hereto and incorporated by reference.** The work shall be completed Prior to June 30, 2022. Any change in this time frame will require written approval of the owner.

Contract Price

As full compensation for performance by Contractor of the Work, Owner shall pay Contractor the lump sum price of **Seventy Thousand Three Hundred Ninety Two Dollars ($70,392.00).** Any changes in price shall require written approval of Owner.

Progress Payments

Contractor shall submit to the Owner a monthly application for payment no later than the 25th day of the calendar month for preceding thirty (30) days. Payment applications shall include payment requests on account of properly authorized Change Orders. Owner shall pay the amount otherwise due on any payment application no later than twenty (20) days after Contractor has submitted a complete and accurate payment application.

Virginia Department of Wildlife Resources owns the public boat ramp, while the County manages the site. The project will occur within the regulatory floodplain identified as the AE and VE Zones. New construction in this zone will result in a ‘no-rise’ scenario meaning that construction activities will not increase the risk of flooding to new or existing structures

The principal tasks and milestones are as follows:

- Construction and backfill of bulkhead, expansion of parking area and improvement of access to existing ramp;
- Site study to investigate shoaling of boat ramp, shoreline erosion, and sedimentation within Whiting Creek; and
- Study of dredging opportunities and design of beneficial reuse of dredged materials.

The expected timeline for the project milestones, and deliverables, is as follows:

Year 1/Months 1-12 - Bulkhead Construction; Site Evaluation & Study

- Months 1-6: Bulkhead construction and completion (initiated during Spring 2022 after the January 4, 2022 Round 3 start date and to be completed prior to June 30, 2022). Initiate necessary channel characterization surveys (bathymetric, LiDAR, sediment grain size and chemical sampling, as necessary) with VIMS Shoreline Studies Program or other Virginia academic institution.
- Months 6-12: Finalize dredging and beneficial reuse project design plans and develop draft Joint Permit Application.

RELATIONSHIP TO OTHER PROJECTS

While the specific proposed project bears no direct relationship to specific past, future, or future resilience projects, the project does relate to larger regional resilience efforts. For more than 40 years, the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (e.g., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR in August of 2021. This Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents. These documents frame the foundation and implementation of the Middle Peninsula flood protection approach and are indirectly and directly supported by specific regional planning documents each approved by federal, regional, and/or local partners as required by statute.

Other plans and resources integral to the implementation of the Flood Resiliency Plan include:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan - FEMA and Middle Peninsula locality, approved 2016 (MPPDC Website)
    - This overarching project provides updates every five years on the hazards within the region; it identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – MPPDC, approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – MPPDC, approved annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design - MPPDC Commission, approved June 2020; Chairman approved update 8/6/21
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program - Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

The MPPDC has a history of continuous work on flooding and coastal resiliency topics, as described in **Attachment 5**. These projects have built upon each other to establish within the MPPDC a solid foundation of regional expertise in flooding and coastal resiliency. Now, given this history of accumulated information and knowledge, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One such effort, launched in 2020 following the Commission's authorization, was developed in response to emerging flood challenges. This effort, the **Middle Peninsula Fight the Flood (FTF) Program**, leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built and natural environments with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. MPPDC staff have partnered with private property owners registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that their outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN

A maintenance plan is not applicable in this application. The proposed project is to develop a nature-based design solution and its cost does not require ongoing operation and future maintenance.

CRITERIA

Describe how the project meets each of the applicable scoring criteria contained in ***Appendix B*** *and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application.* ***Appendix B*** *must be completed and submitted with the application.*

For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**

    - Yes; the applicant is a regional planning district commission.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**

- Yes; the MPPDC's DCR-approved resilience plan may be accessed at the following link: https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**

   - Yes; please see **Attachment 1**

4. **Has the applicant provided evidence of an ability to provide the required match funds?**

   - Yes; please see the match commitment letter in **Attachment 1**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**

   - Yes

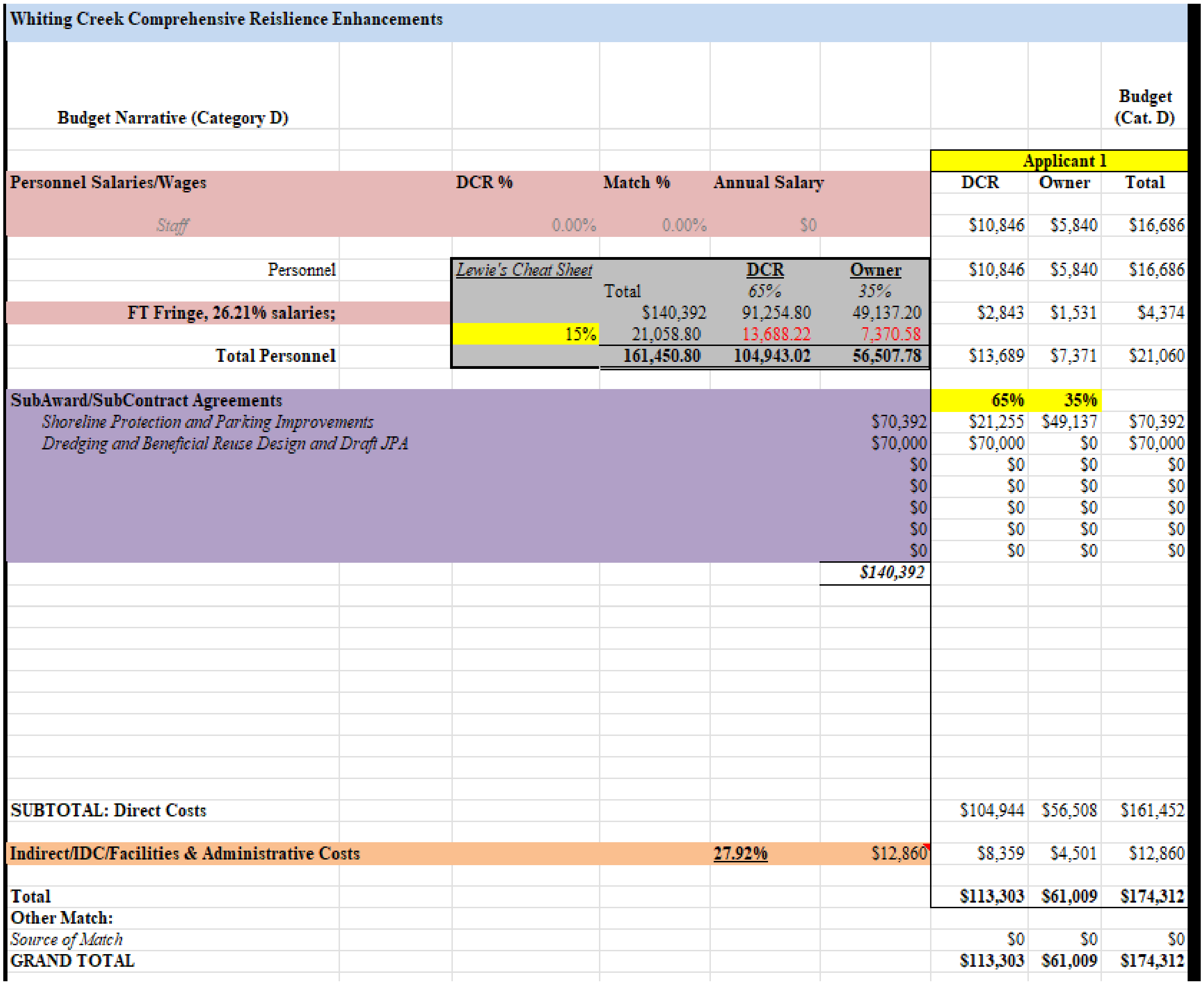
BUDGET NARRATIVE

ESTIMATED TOTAL PROJECT COST

Based upon the identified scope of work, the estimated total project cost is $174,312. This total estimate is based upon the following estimated cost breakdowns:

- Shoreline Protection and Parking Improvements Construction: $70,392
- Dredging and Beneficial Reuse Design and Draft JPA Development: $70,000

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY23 is 26.21% and comprised of: Health Insurance – 48.58%, Retirement – 18.06%, Workers Comp – 0.28%, Social Security – 28.55%, Life Insurance – 4.39%, Unemployment – 0.14%. Direct charges are costs associated with overall projects costs consistent with general accounting principles. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.92%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)-Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.



Whiting Creek Comprehensive Reislience Enhancements								
Budget Narrative (Category D)								**Budget (Cat. D)**
						Applicant 1		
Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$0		$10,846	$5,840	$16,686
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$10,846	$5,840	$16,686
			Total	*65%*	*35%*			
FT Fringe, 26.21% salaries;			$140,392	91,254.80	49,137.20	$2,843	$1,531	$4,374
		15%	21,058.80	13,688.22	7,370.58			
Total Personnel			**161,450.80**	**104,943.02**	**56,507.78**	$13,689	$7,371	$21,060
SubAward/SubContract Agreements						**65%**	**35%**	
Shoreline Protection and Parking Improvements					$70,392	$21,255	$49,137	$70,392
Dredging and Beneficial Reuse Design and Draft JPA					$70,000	$70,000	$0	$70,000
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$0	$0	$0	$0
					$140,392			
SUBTOTAL: Direct Costs						$104,944	$56,508	$161,452
Indirect/IDC/Facilities & Administrative Costs				27.92%	$12,860	$8,359	$4,501	$12,860
Total						**$113,303**	**$61,009**	**$174,312**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$113,303**	**$61,009**	**$174,312**

AMOUNT OF FUNDS REQUESTED

The total amount of requested grant assistance is $113,303, or 65% of total project costs, as the project is located in and serves a low-income geographic area and the project results in hybrid solutions. These funds, combined with local match, would be used for the services identified above.

AMOUNT OF CASH FUNDS AVAILABLE

Middlesex County will appropriate the requisite 35% or $61,009 in required local cash match funds, to be combined with the $113,303 in grant assistance to equal the total estimated project cost. The County’s match commitment letter is included as **Attachment 1**.

AUTHORIZATION TO REQUEST FUNDING

The authorization to request funding is included as **Attachment 1**.

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration			☑ Yes ☐ No
Applicant Name:	**Middle Peninsula Planning District Commission**		
Scoring Information			
Criterion		**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)			
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.			
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.		**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.		**45**	**45**
1.b. any other nature-based approach		**40**	
All hybrid approaches whose end result is a nature-based solution		**35**	
All other projects		**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)			
Very High Social Vulnerability (More than 1.5)		**15**	
High Social Vulnerability (1.0 to 1.5)		**12**	
Moderate Social Vulnerability (0.0 to 1.0)		**8**	8
Low Social Vulnerability (-1.0 to 0.0)		**0**	
Very Low Social Vulnerability (Less than -1.0)		**0**	

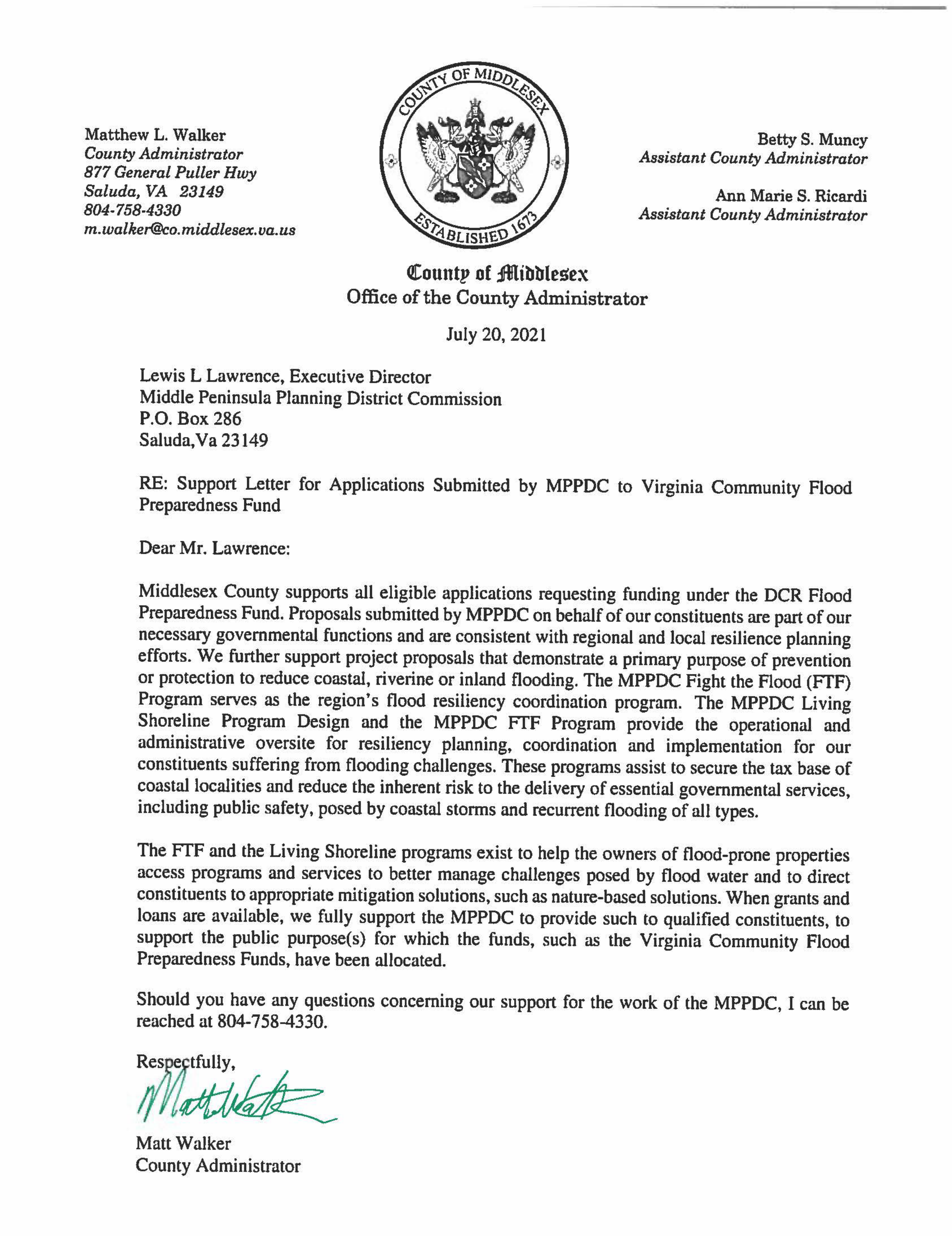
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		88

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from [ADAPT VA's Virginia Vulnerability Viewer]()	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Attachment 1: Community Support/Match Commitment/Authorization Letter



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Betty S. Muncy
Assistant County Administrator

Ann Marie S. Ricardi
Assistant County Administrator

County of Middlesex
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda,Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

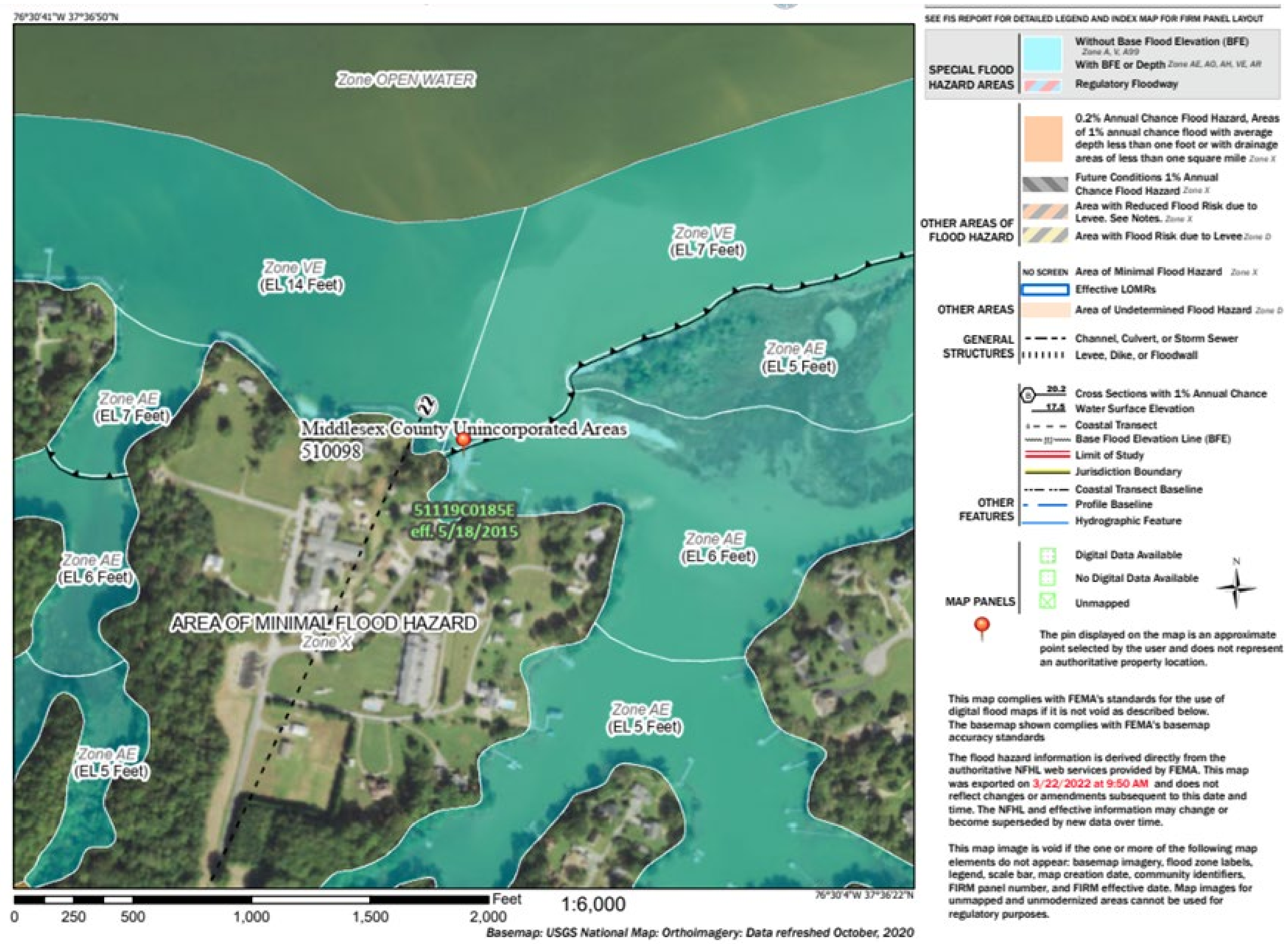
The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker
County Administrator

Attachment 2: Project Location FIRMette



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/22/2022 at 9:50 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 3: List of historic hurricanes impacting the project area 1851 to present per NOAA.

Hurricane List

Search Filter Criteria

Location: 37.61005, -76.50619

Categories: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS

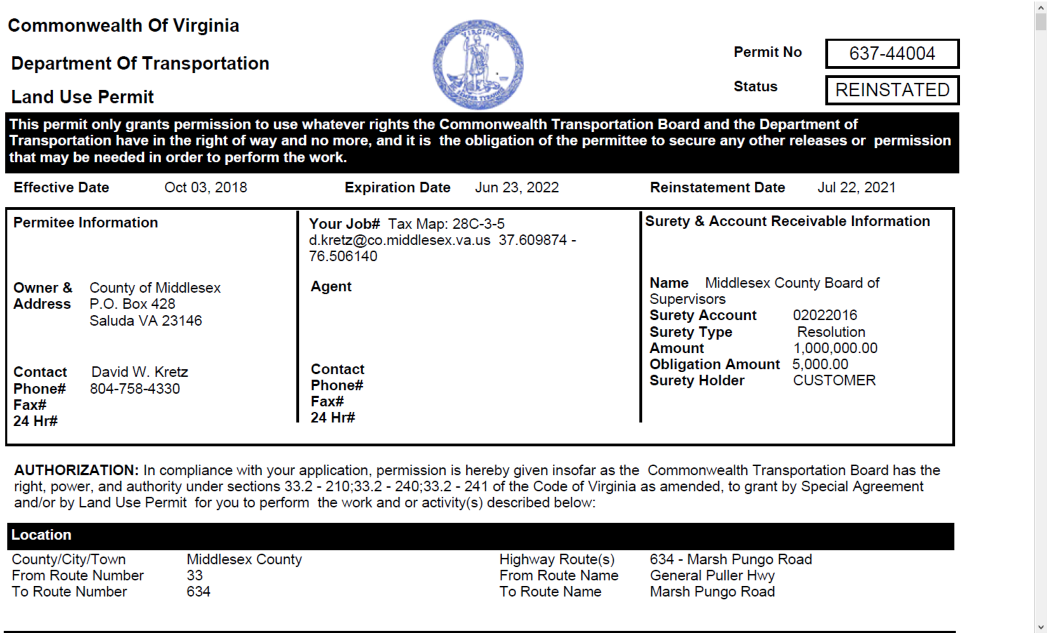
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1

GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2

UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3

UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

Attachment 4: Middlesex Point Beach Park JPA, Design, and Permit Package



Commonwealth Of Virginia

Department Of Transportation

Land Use Permit

Permit No	637-44004
Status	REINSTATED

This permit only grants permission to use whatever rights the Commonwealth Transportation Board and the Department of Transportation have in the right of way and no more, and it is the obligation of the permittee to secure any other releases or permission that may be needed in order to perform the work.

Effective Date	Oct 03, 2018	**Expiration Date**	Jun 23, 2022	**Reinstatement Date**	Jul 22, 2021

Permitee Information

Owner & Address County of Middlesex
P.O. Box 428
Saluda VA 23146

Contact David W. Kretz
Phone# 804-758-4330
Fax#
24 Hr#

Your Job# Tax Map: 28C-3-5 d.kretz@co.middlesex.va.us 37.609874 -76.506140

Agent

Contact
Phone#
Fax#
24 Hr#

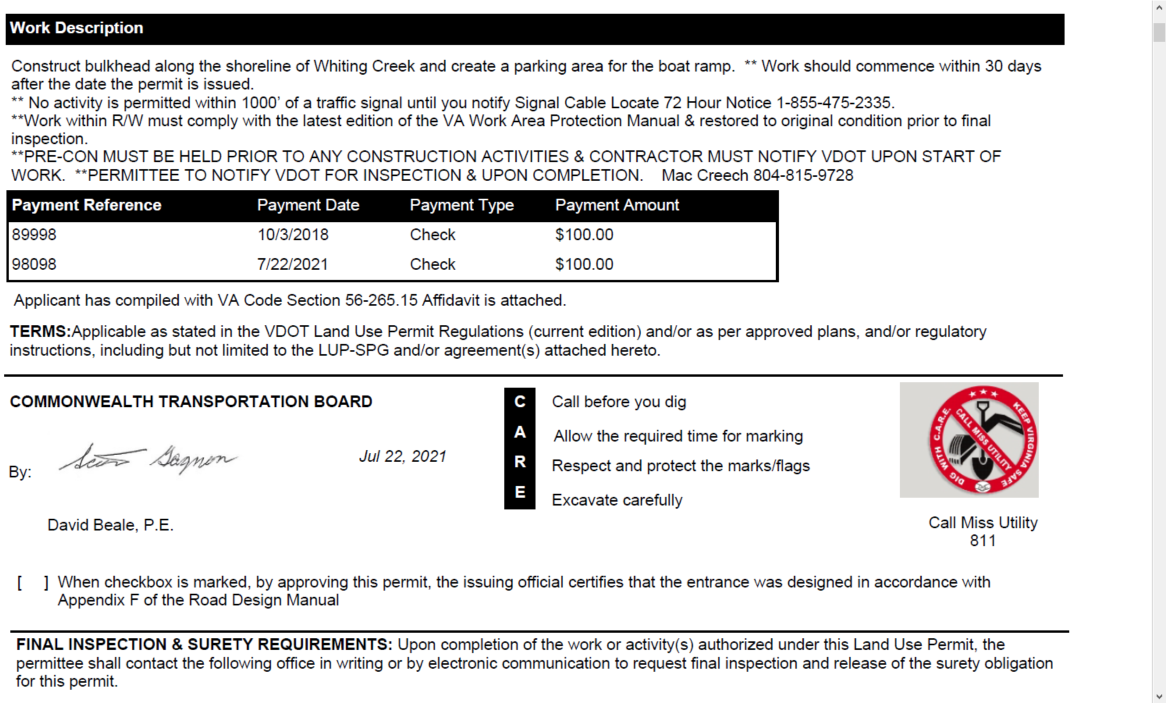
Surety & Account Receivable Information

Name Middlesex County Board of Supervisors
Surety Account 02022016
Surety Type Resolution
Amount 1,000,000.00
Obligation Amount 5,000.00
Surety Holder CUSTOMER

AUTHORIZATION: In compliance with your application, permission is hereby given insofar as the Commonwealth Transportation Board has the right, power, and authority under sections 33.2 - 210;33.2 - 240;33.2 - 241 of the Code of Virginia as amended, to grant by Special Agreement and/or by Land Use Permit for you to perform the work and or activity(s) described below:

Location

County/City/Town	Middlesex County	Highway Route(s)	634 - Marsh Pungo Road
From Route Number	33	From Route Name	General Puller Hwy
To Route Number	634	To Route Name	Marsh Pungo Road



Work Description

Construct bulkhead along the shoreline of Whiting Creek and create a parking area for the boat ramp. ** Work should commence within 30 days after the date the permit is issued.
** No activity is permitted within 1000' of a traffic signal until you notify Signal Cable Locate 72 Hour Notice 1-855-475-2335.
**Work within R/W must comply with the latest edition of the VA Work Area Protection Manual & restored to original condition prior to final inspection.
**PRE-CON MUST BE HELD PRIOR TO ANY CONSTRUCTION ACTIVITIES & CONTRACTOR MUST NOTIFY VDOT UPON START OF WORK. **PERMITTEE TO NOTIFY VDOT FOR INSPECTION & UPON COMPLETION. Mac Creech 804-815-9728

Payment Reference	Payment Date	Payment Type	Payment Amount
89998	10/3/2018	Check	$100.00
98098	7/22/2021	Check	$100.00

Applicant has compiled with VA Code Section 56-265.15 Affidavit is attached.

TERMS: Applicable as stated in the VDOT Land Use Permit Regulations (current edition) and/or as per approved plans, and/or regulatory instructions, including but not limited to the LUP-SPG and/or agreement(s) attached hereto.

COMMONWEALTH TRANSPORTATION BOARD

By: Scott Gagnon *Jul 22, 2021*

David Beale, P.E.

C Call before you dig
A Allow the required time for marking
R Respect and protect the marks/flags
E Excavate carefully

Call Miss Utility
811

[ ] When checkbox is marked, by approving this permit, the issuing official certifies that the entrance was designed in accordance with Appendix F of the Road Design Manual

FINAL INSPECTION & SURETY REQUIREMENTS: Upon completion of the work or activity(s) authorized under this Land Use Permit, the permittee shall contact the following office in writing or by electronic communication to request final inspection and release of the surety obligation for this permit.

Attachment 5: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)
The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
Phase 2: Climate Change III: Initiating Adaptation Public Policy Development
Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a HAZUS assessment of hurricane wind, sea level rise* (i.e., Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc., staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal

land use management/water quality and Onsite Sewage Disposal System (OSDS) and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

MPPDC Round 3 CFPF New Applications

2 messages

Curt Smith <csmith@mppdc.com> Fri, Apr 8, 2022 at 11:46 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Lewis Lawrence <llawrence@mppdc.com>, Jackie Rickards <jrickards@mppdc.com>, Heather Modispaw <Hmodispaw@mppdc.com>, "Howard-cooper, Wendy" <wendy.howard-cooper@dcr.virginia.gov>

Greetings,

The MPPDC is respectfully submitting five proposals for consideration under Round 3. These projects were requested by our member jurisdictions as projects of highest priority with regards to flood mitigation and resilience needs. The projects are located on and involve publicly-owned property and infrastructure and were identified as sites with the greatest potential for community scale benefits within the locality/region.

The proposals may downloaded via the following links:

- CID510071_GloucesterCounty_Public_CFPF.doc.pdf
- CID510098_MiddlesexCounty_Public_CFPF.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-1.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-2.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-3.pdf

We thank you in advance for your consideration. Please contact me directly should you have any questions.

Best,

Curt

Curtis Smith
Deputy Director
Middle Peninsula Planning District Commission
Cell: 804-384-7509
125 Bowden Street, Saluda, VA 23149
Web: www.mppdc.com
Email: csmith@mppdc.com

CFPF, rr <cfpf@dcr.virginia.gov> Fri, Apr 8, 2022 at 11:52 AM
To: Curt Smith <csmith@mppdc.com>

Curt,

Are these applications in addition to the eight already submitted?
[Quoted text hidden]

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

Gloucester Point Beach Park
Resilience Site Design and Construction

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund – Round 3 Application
Flood Prevention and Protection Project

PROJECT TITLE: Gloucester Point Beach Park - Resilience Site Design and Construction

Name of Local Government: Middle Peninsula Planning District Commission

Category of Grant Being Applied for (check one):

____Capacity Building/Planning __X__ Project ___Study

NFIP/DCR Community Identification Number (CID): Gloucester County (510071)

If a state or federally recognized Indian tribe, Name of tribe: NA

Name of Authorized Official: Lewis Lawrence, Executive Director

Signature of Authorized Official: ______________________________

Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 Cell Phone Number: (____) ________________
Email Address: llawrence@mppdc.com

Contact Person (If different from authorized official): Jackie Rickards
Mailing Address (1): PO Box 286
Mailing Address (2): 125 Bowden Street
City: Saluda **State:** VA **Zip:** 23149
Telephone Number: (804) 758-2311 **Cell Phone Number:** (215) 264-6451
Email Address: jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ___

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ **Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**

☐ **Wetland restoration.**

☑ **Floodplain restoration.**

☐ **Construction of swales and settling ponds.**

☑ **Living shorelines and vegetated buffers.**

☐ **Structural floodwalls, levees, berms, flood gates, structural conveyances.**

☑ **Storm water system upgrades.**

☑ **Medium and large-scale Low Impact Development (LID) in urban areas.**

☐ **Permanent conservation of undeveloped lands identified as having flood resilience value by Conserve Virginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.**

☐ **Dam restoration or removal.**

☐ **Stream bank restoration or stabilization.**

☑ **Restoration of floodplains to natural and beneficial function.**

☐ **Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.**

Location of Project (Include Maps): Gloucester County, Gloucester Point

NFIP Community Identification Number (CID#) (See appendix F): 510071

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): Zones AE and VE

Flood Insurance Rate Map Number(s) (If Applicable): 51073C0257F

Total Cost of Project: $1,276,332

Total Amount Requested: $829,616

SCOPE OF WORK NARRATIVE

INTRODUCTION

This proposal is requesting funding for a project to improve the site-wide resilience of the Gloucester Point Beach Park located in Gloucester County at 1255 Greate Road. The project involves three distinct elements which will represent a site-wide resilience strategy: 1) Stormwater Study and Designs, 2) Boat Ramp Design, and 3) Building Demolition and Reconstruction. An approximately 5-acre publicly owned site, the Park has been in operation for 40 years and is at a gateway to the County crossing the York River on the Coleman Memorial Bridge from Yorktown. While the Park's facilities are aging, maintenance and long-term viability of the Park are impacted by ever increasing effects of coastal and tidal influences, resulting in site flooding and drainage issues, and compromising the maintenance and usability of the Park's facilities. In addition, the boat ramp requires a redesigning effort that improves its resiliency against shoaling and sediment deposition. The new design would help slow or prevent sediment from entering the ramp, and other new, complementary structures can help redirect sand to bypass the pier and enter deeper water where it is not detrimental to access at the ramp.

FEMA, the Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula Planning District Commission (MPPDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program (www.FightTheFloodVA.com). To that end, this proposal is a partnership between the MPPDC and Gloucester County (see Community Support Letter, **Attachment 1**).

- A link or copy to the approved MPPDC resilience plan: https://fighttheflood va.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf
- Middle Peninsula All Hazards Mitigation Plan (2016): https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf
- Gloucester County Comprehensive Plan: https://www.gloucesterva.info/DocumentCenter/View/5777/2016-Gloucester-County-Comprehensive-Plan

This project is consistent with multiple objectives and strategies outlined within the Regional All-Hazards Mitigation Plan. Relevant strategies include the following:

- Objective 1.1: Provide protection for future development to the greatest extent possible.

- Strategy 1.1.1: Reduce or eliminate flood damage to residential/business structures that are highly vulnerable for continual flood damage.
- Strategy 1.1.3: Protect public buildings and public infrastructure from flood waters resulting from 100-year flood storm events.
- Strategy 1.3.1: Mitigation projects that will result in protection of public or private property from natural hazards.

PROJECT INFORMATION

Project Description

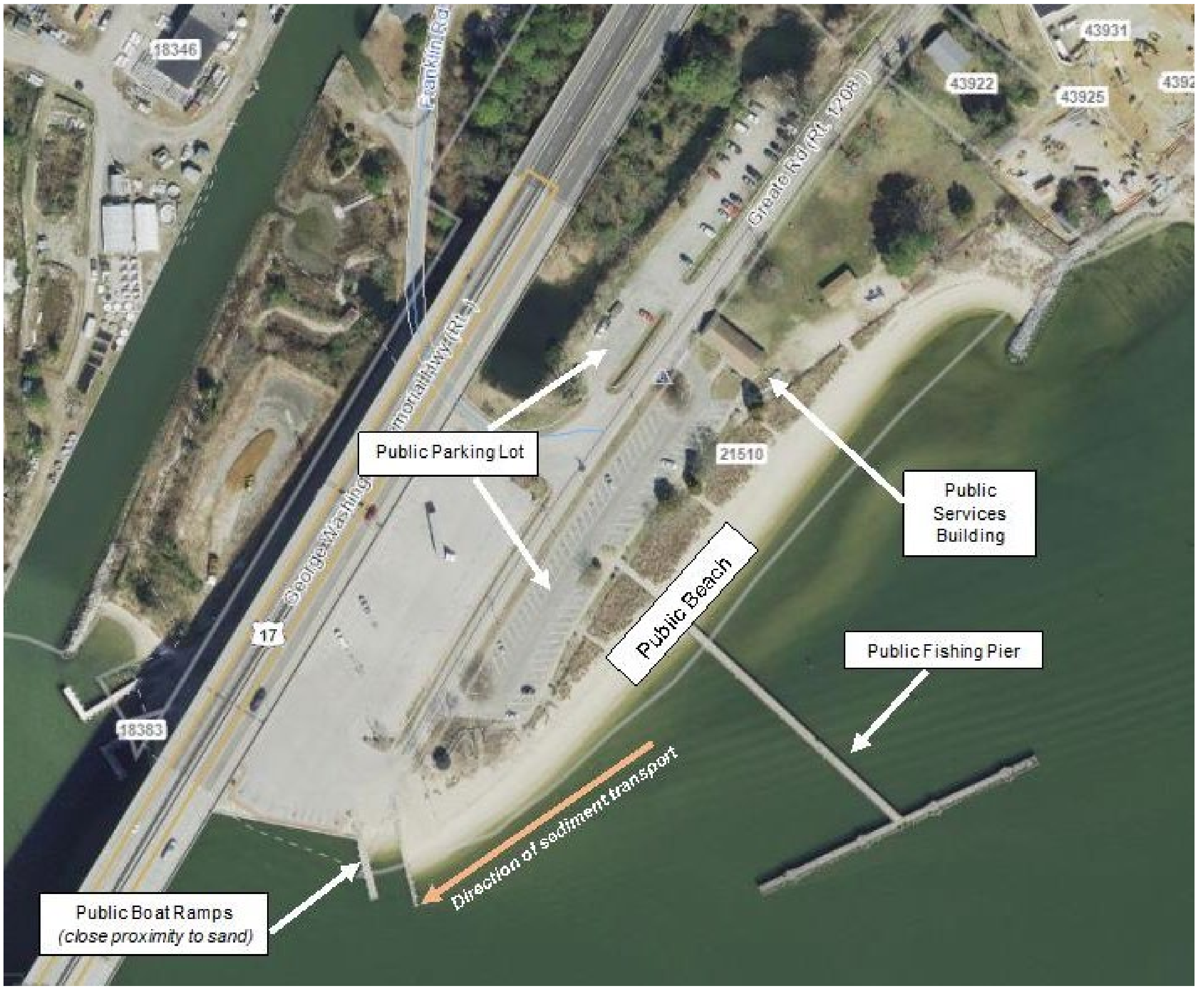
Gloucester Point Beach Park (**Figure 1**) is an extremely visible and popular recreational site, as well as a hub for commercial seafood activity, supporting fishing, boating, beach and general recreational activities. The 5-acre property includes a 2,000 square foot building that houses public restroom facilities, staff storage and a concession room, an accessible shoreline, free public fishing pier, two boat landings, a playground, paved parking areas, and open green space.

As noted in the *Introduction*, while the Park's facilities are aging, maintenance and long-term viability of the Park are impacted by ever increasing effects of coastal and tidal influences, resulting in site flooding and drainage issues, and compromising the maintenance and usability of the Park's facilities. The Park consistently floods during heavy rains and larger storms. The building located on the site is over 40 years old and has been damaged several times in storms, the playground has deteriorated and is being removed for safety reasons, and boat landings are compromised by shoaling. Drainage and updated facilities need to be addressed to protect the property and ensure continued viability.

Like many aging park facilities, amplified by the effects of coastal and tidewater influences, drainage and maintenance concerns at the Park are increasing and the time has come to invest in upgrades and improvements to the Park grounds and facilities to ensure resilience and preparedness against the increase in the frequency and magnitude of natural hazards.

The proposed project involves an overall evaluation and study of the site with respect to stormwater and flooding impacts, site surveying and environmental assessment, development of design plans for the site and facilities taking into account programming and service needs, with a focus on resilience goals and objectives, to include civil engineering, landscaping, and architectural services, demolition and reconstruction of the services building located on the site, and development of designs for the boat ramp to lessen the deposit of sediment.

Figure 1. Gloucester Point Beach Park Existing Conditions



Priorities of this project include addressing site drainage and ponding issues, building flooding issues, and impacts to the site's pier and boat landings. The proposed project will rescue and enhance a currently existing outdoor recreation site, and the improvement of site conditions will also result in economic benefits in the area, such as increased retail sales for bait and gas, restaurant sales, and support for commercial seafood industries.

With respect to the boat ramp located within the Park, this feature is currently experiencing persistent shoaling and sediment deposition due to the configuration of the ramp in relation to adjacent piers. In effect, the project would include developing a new, resilient design for the ramp that would be an extension between the ramp and the beach or new structures that can be placed at the end of the pier. The reconfigured design of the ramp can help slow or prevent sediment from entering the ramp and new structures can help with redirect sand to bypass the pier and enter deeper water where it is not detrimental to access at the ramp.

For the existing 2,000 square foot building which houses public restroom facilities, staff storage, and a concession room, the proposal involves the demolition of this building and replacement with a similar, but considerably more resilient facility, with flood resistant features such as drop-in flood gates at entrances, outlets above base flood elevation where possible, and elevated HVAC mechanical equipment. Under FEMA's Hazard Mitigation Assistance (HMA) Program, FEMA recognizes developing projects that include "total or partial demolition" which results in the "construction of code-compliant and hazard-resistant structures" to be an approved and cost-efficient flood mitigation activity. Consequently, it is proposed that DCR funding will be utilized in a manner that is intended to align with and achieve outcomes consistent with FEMA's HMA program principles and approved flood mitigation activities. To that end, the proposed building will meet or exceed local, state and federal regulatory floodplain requirements. The new structures will also meet American Disability Act design requirements to allow non-ambulatory and other patrons to safely and easily enjoy the Park's features.

Project Location Information

The Middle Peninsula is the second of three large peninsulas on the western shore of Chesapeake Bay in Virginia, as seen in **Figure 2**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 3**.

Figure 2. Middle Peninsula Geographic Area

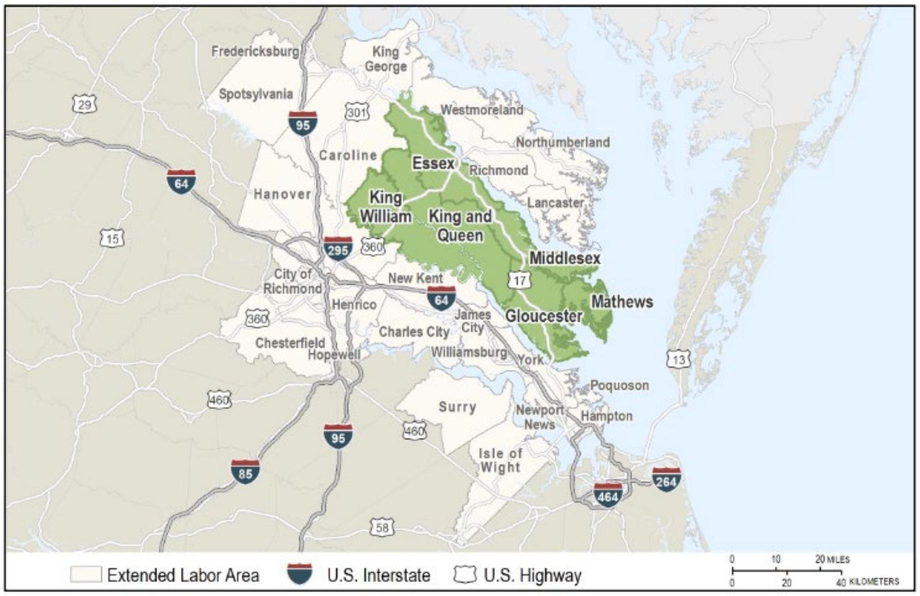
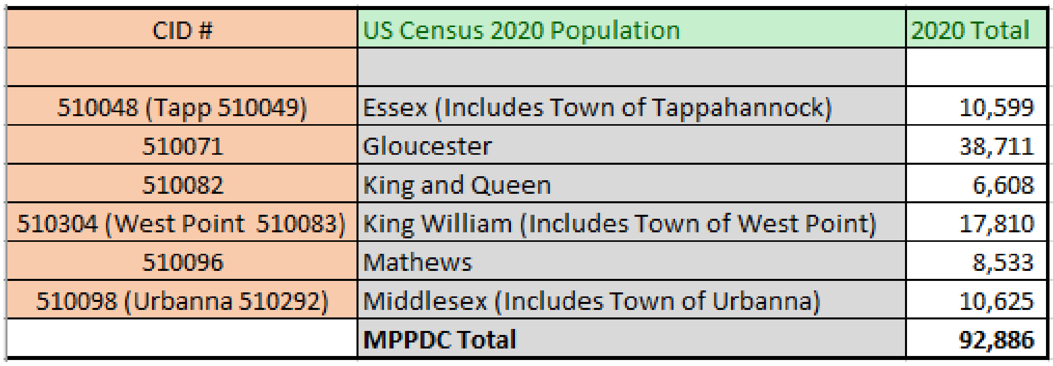


Figure 3. Middle Peninsula Population



CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	MPPDC Total	**92,886**

The project proposes to study and assess site conditions and develop designs to enhance the resiliency of Gloucester Point Beach Park, an approximately 5-acre property located in Gloucester County on the York River, at the southern entrance to the County from Yorktown and adjacent to the Virginia Institute of Marine Science. A partnership exists with the Virginia Department of Wildlife Resources which manages one of the public boat ramps. (**Figures 4 and 5**).

Figure 4. County Map of Project Location

Figure 5. Parcel Map of Project Location

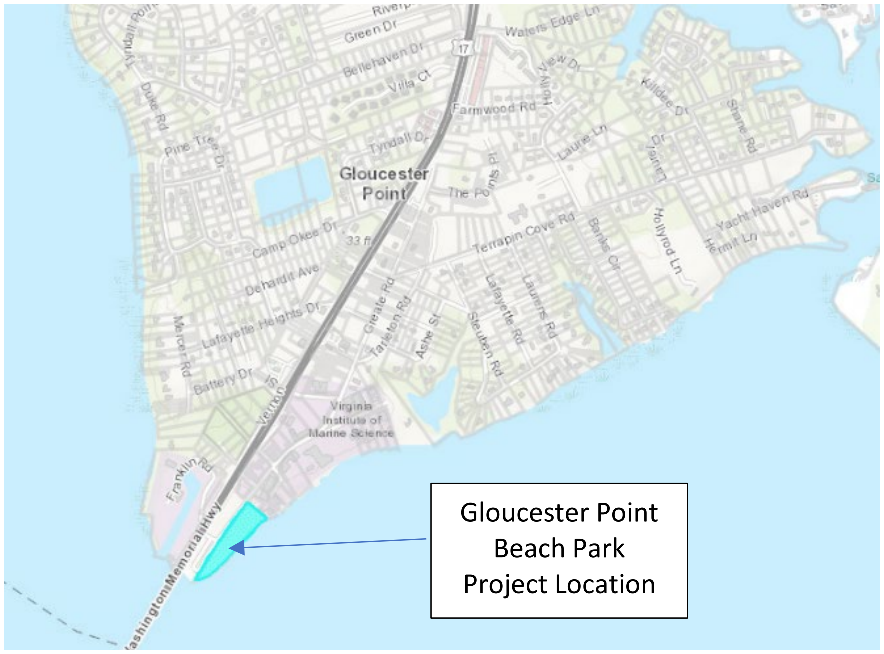
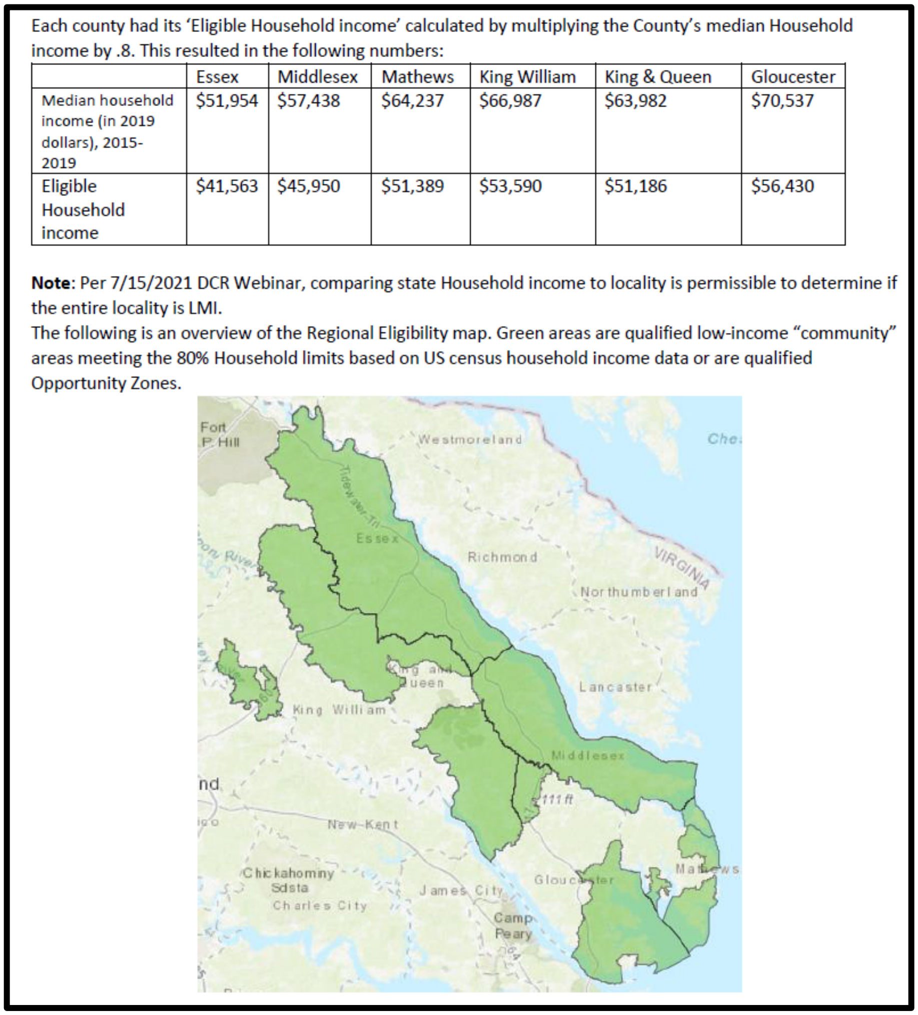


Figure 5. Map of Middle Peninsula Low Income Qualifying Geographic Areas


Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	$51,954	$57,438	$64,237	$66,987	$63,982	$70,537
Eligible Household income	$41,563	$45,950	$51,389	$53,590	$51,186	$56,430

Note: Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

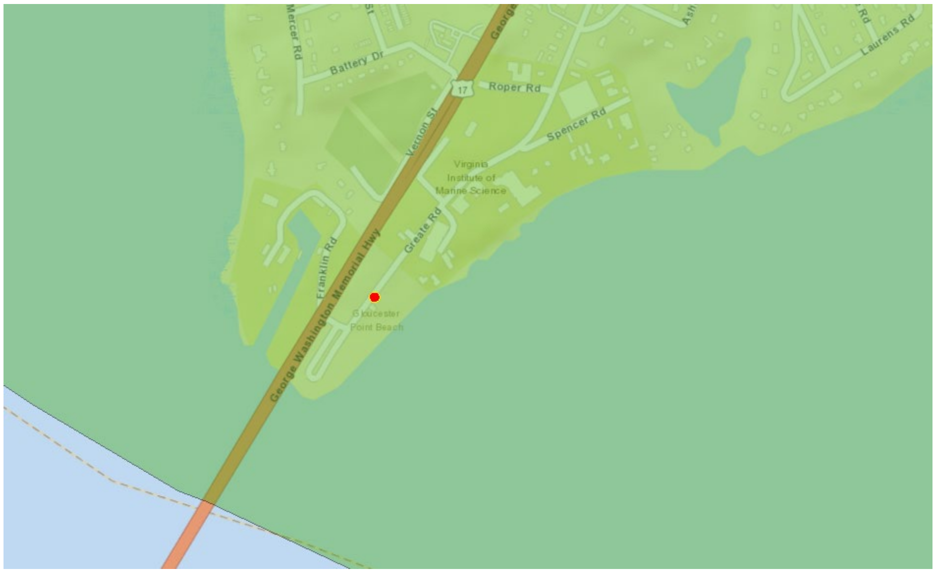
The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

Population Information

Gloucester County is located at the southern tip of the Middle Peninsula and is an agriculture, forestry and water-based economy. The County is comprised of 218 square miles of land and 296 miles of shorelines. Based on 2020 Census Data, Gloucester County's population totals 38,711, making it the largest of the six Middle Peninsula localities (**Figure 3**).

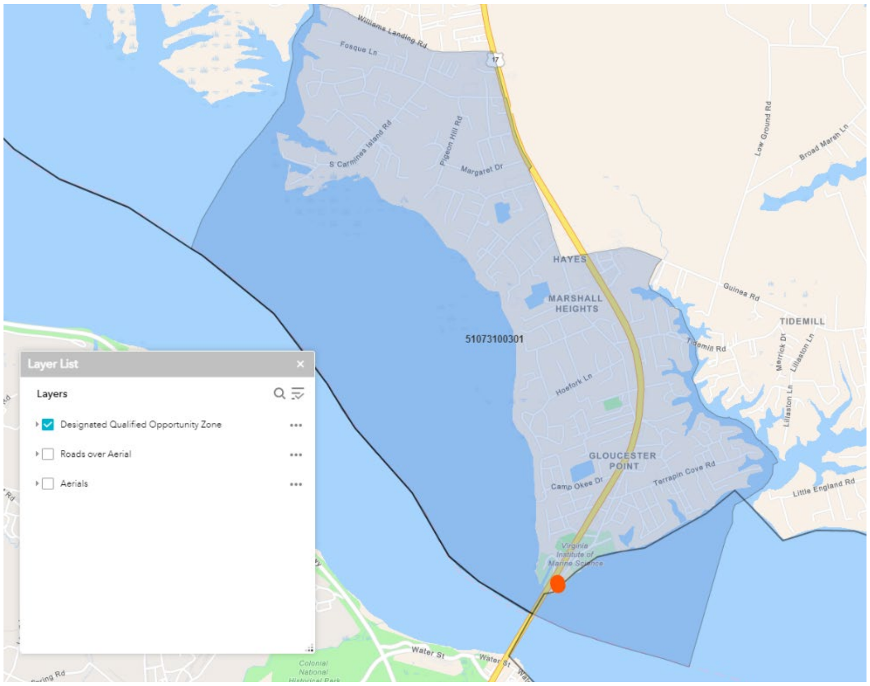
According to DCR guidelines, a portion of the county is considered a low-income geographic area. In **Figure 5**, the green areas depict qualified low-income “community” areas meeting the 80% Household limits based on US census household income data[1] or are qualified Opportunity Zones.

Figure 6. Map of the Project Location (red dot) within in the Green Low-Income Area



Please see **Figure 6** (above) and **Figure 7** (right) for detailed maps of the project location showing the green low-income area overlay and Designated Opportunity Zone, respectively. This shows that the project location is within the low-income area and a Designated Opportunity Zone.

Figure 7. Map of the Project Location (red dot) within Designated Opportunity Zone



Layer List

Layers

☑ Designated Qualified Opportunity Zone

☐ Roads over Aerial

☐ Aerials

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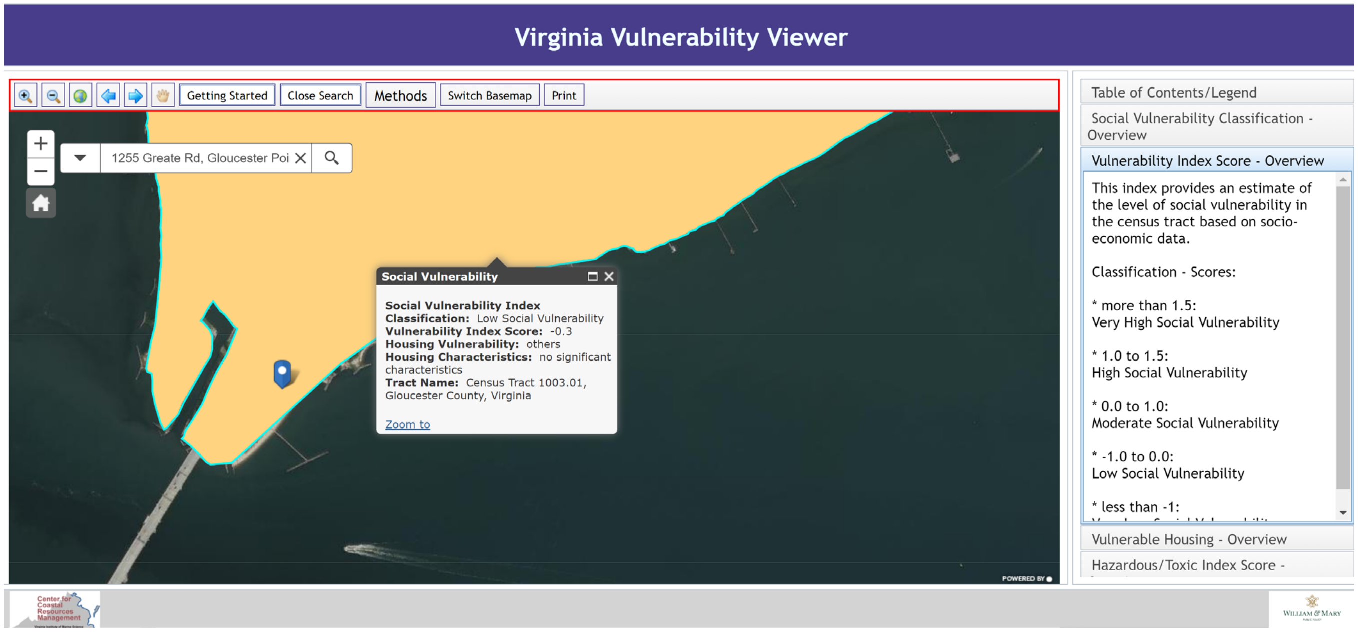
[1] Based upon 2015-2019 U.S. Census American Community Survey data available on January 4, 2022, when CFPF Round 3 opened; 2016-2020 ACS data was not released until March 17, 2022.

With respect to social vulnerability, according to ADAPTVA's Social Vulnerability Index Score, this project location has a Social Vulnerability Index Score of -0.3, classified as Low Social Vulnerability (**Figure 8)**

Figure 8. ADAPTVA Social Vulnerability Index Score Viewer



Social Vulnerability

Social Vulnerability Index
Classification: Low Social Vulnerability
Vulnerability Index Score: -0.3
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 1003.01, Gloucester County, Virginia

Zoom to

This index provides an estimate of the level of social vulnerability in the census tract based on socio-economic data.

Classification - Scores:

* more than 1.5:
Very High Social Vulnerability

* 1.0 to 1.5:
High Social Vulnerability

* 0.0 to 1.0:
Moderate Social Vulnerability

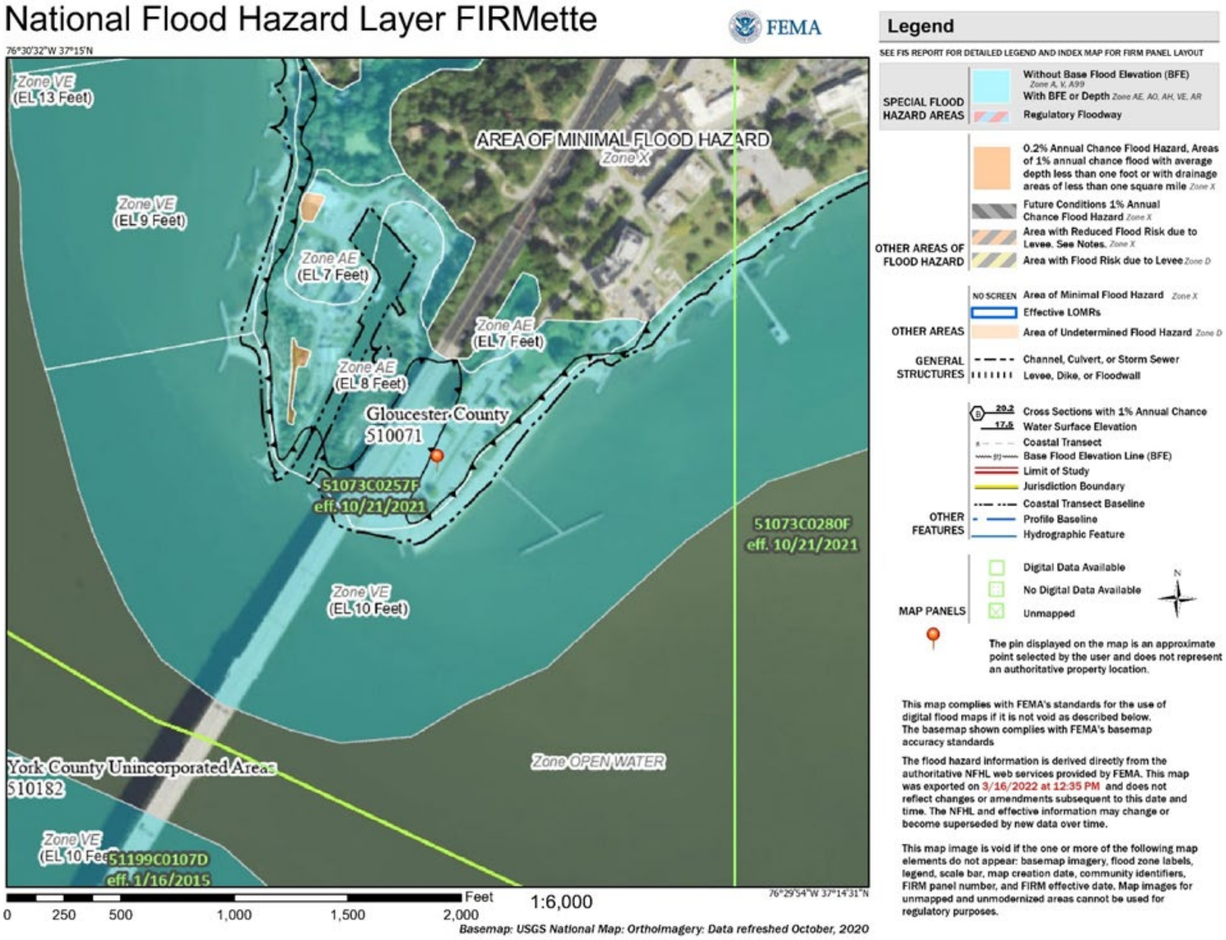
* -1.0 to 0.0:
Low Social Vulnerability

* less than -1:

Flood Risk Information

The entirety of the site (1255 Greate Road, Gloucester Point, VA 23062, 37.24634, -76.50287) is located within a mapped floodplain, with portions located within FEMA Flood Zones AE and VE (**Figure 9**). Gloucester County's Building and Engineering Department administers the requirements of the NFIP program, and the County's Floodplain Management Ordinance may be accessed at the following link: http://gloucestercounty-va.elaws.us/code/coor_ch8.5

Figure 9. Map of FEMA Flood Zones



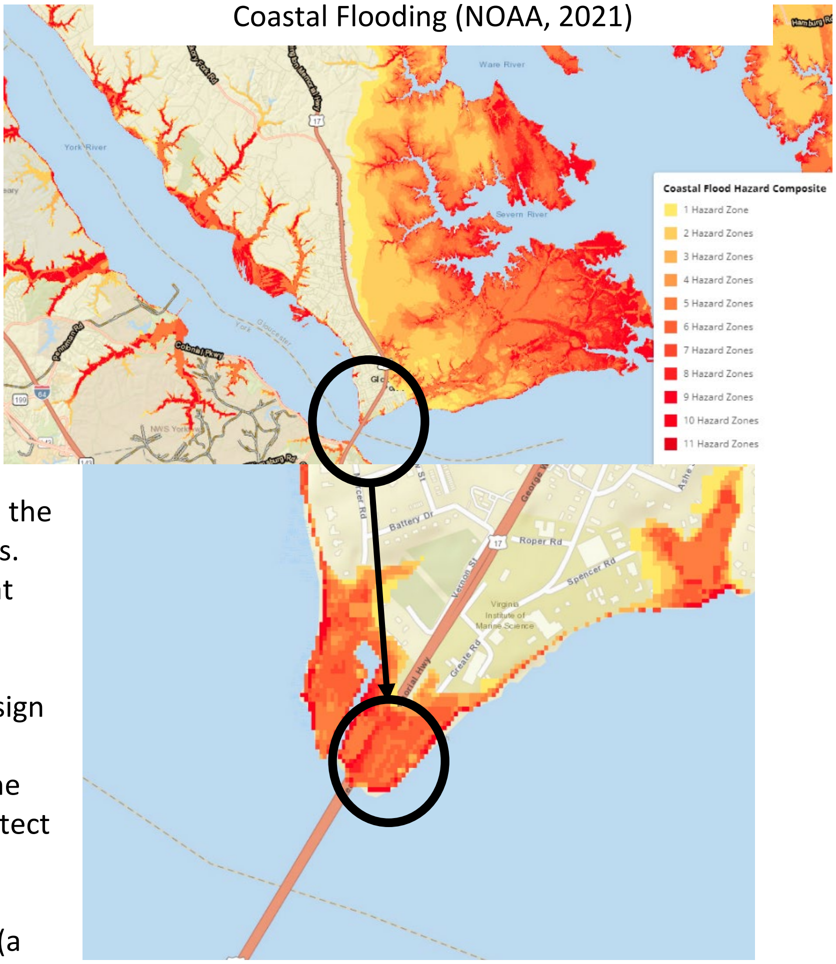
As noted in the *Introduction* and represented in photographs contained herein, the project site is impacted by ever increasing effects of coastal and tidal influences, resulting in site flooding and drainage issues. Due to the project site's adjacency to the York River and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. For example, the project location has long been, and continues to be, impacted by tropical, sub-tropical, and Nor'easter events. **Attachment 3** lists 87 storm events dating to 1851 in the general project location. According to NOAA's Coastal Flood Mapper, this project location is at the highest risk of coastal flooding (**Figure 10**).

Since 2003 there have been at least 7 significant coastal events resulting in flooding impacts to the services building:

- Hurricane Isabel in 2003, resulting in 5' of water in the building,
- a nor-easter in 2005 resulting in 3' of water in the building,
- a nor'easter in 2010,
- a nor'easter in June 2011,

- Hurricane Irene in August 2011 that resulted in 1’ of water in the building,
- a nor’easter in 2012,
- and a coastal storm in October 2015.

Figure 10. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



The damage from Hurricane Isabel in 2003 was extensive, likely the storm of record in the Park’s 40-year existence. In addition to approximately 5’ of water in the building, the storm ripped up the Park’s pier, pushed the stage through one of the services building’s cinderblock walls (**Figure 13**) and damaged the playground.

Despite not being named storm events, the site is subjected to regular flooding events, that result in damages, although perhaps not to the degree of the aforementioned events. With nearly every nor’easter the boat landing, parking lot, and park flood. During other smaller storms, water ponds within the park and lots. A design is needed to achieve the goals of stormwater management, to keep the Park as usable as possible and to protect the expensive infrastructure and amenities. While flood insurance is maintained for the services building (a claim was filed for approximately $47,000 in 2003 due to Hurricane Isabel) retaining the building in a condition that is subject to flooding impacts is not the best way to manage resilience long term, subjecting the County, its taxpayers, and even state and federal taxpayers to incremental and varying costs.

NEED FOR ASSISTANCE

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex counties, as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened FTE staff. MPPDC staff consists of an Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, and clerical support staff; a Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, and Emergency Planner are co-operative procured; Housing, Community Development Planner and Public Relations staff are hourly.

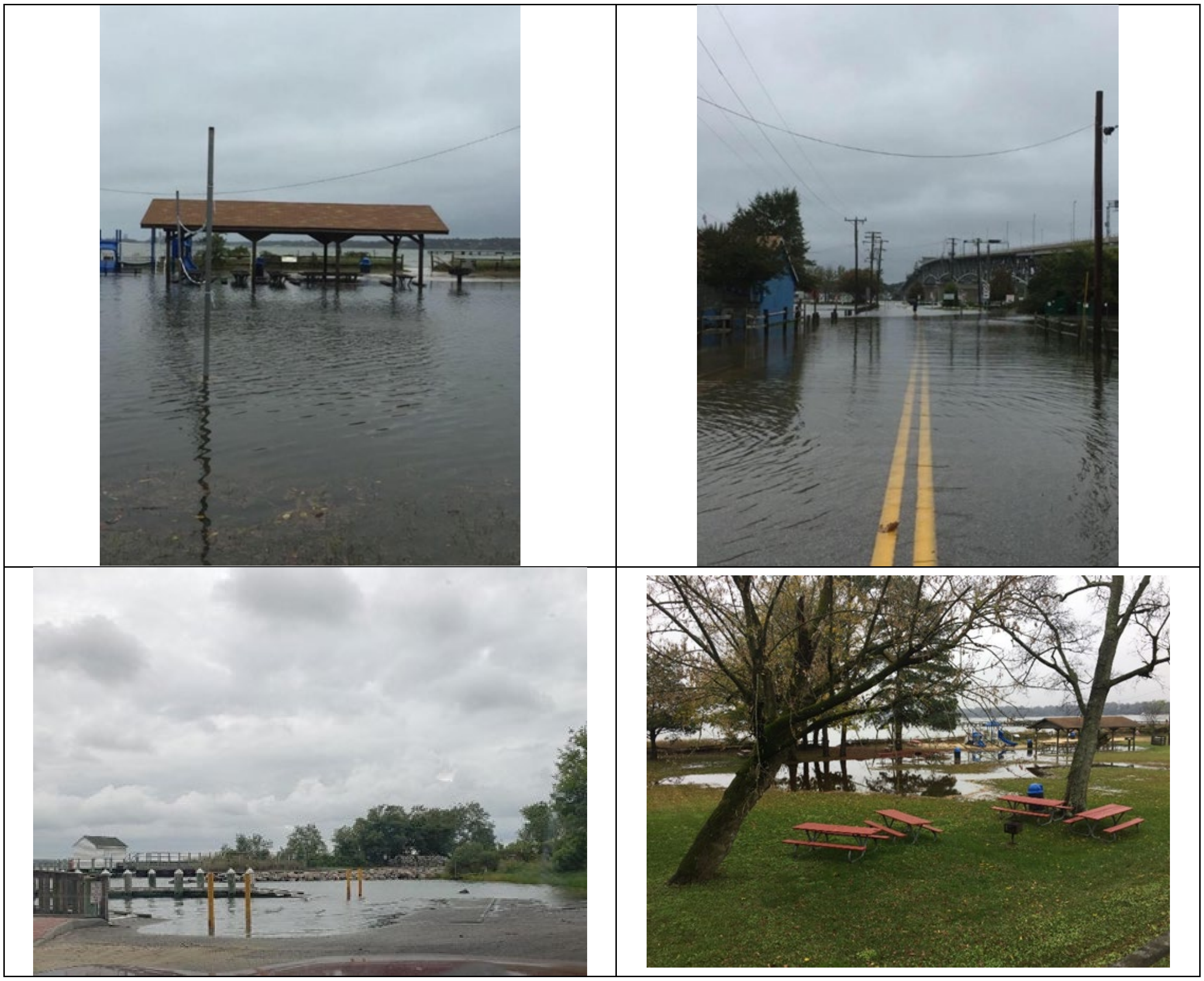
The Planning District staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scales - from grants in excess of $1,000,000 to small grants. MPPDC is an entrepreneurial-based government agency with an annual operating budget ranging from $750,000 to more than $1,000,000. Annually, the MPPDC manages 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software and other software (e.g., GIS, Microsoft Office) as required and/or necessitated by different grants. The MPPDC operates service centers in the topical areas of: coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance, as well as other areas determined by the Commission. MPPDC has more than 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission, no audit findings have occurred.

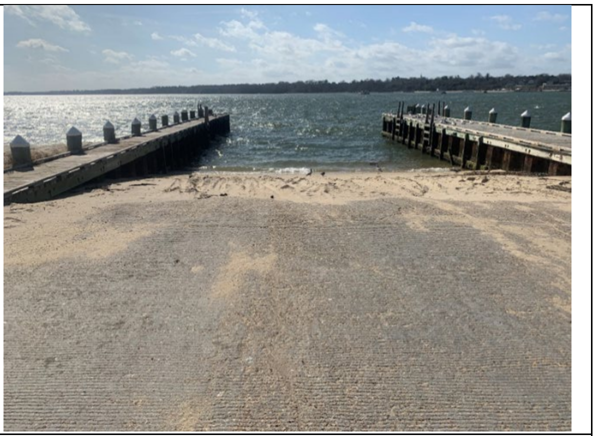
As noted, the Gloucester Point Beach Park serves as a popular and important recreational and economic resource. The Park was consistently ranked as *Very Important* in the 2016 Needs Assessment conducted by GreenPlay, LLC, wherein open-ended comments note that the beach needs to be cleaned up and improved, and general improvements ranked very high as a general maintenance note for the County. In 2019, ecotourism in the Middle Peninsula region including $33.1 million total impact, which increased by about 13.5 percent from 2014. Ecotourism in the region includes: aquaculture tours, canoeing and kayaking tours, oyster harvesting tours, and wildlife charter cruises. Recent growth suggests ecotourism is an emerging opportunity in the region as sales grew at an average annual rate of 3.2 percent between 2014 and 2019. For Gloucester County specifically, the marine economy (i.e., businesses dependent on marine resources) accounts for 11.4 percent of the total employment in the County, generating approximately $19 million in wages (according to NOAA Coastal County snapshots). It should also be noted that these economic activities are more significant during the peak season, such as warmer weather months. Despite continued maintenance of the facilities, the long-term viability of the site is in question without a resilience focused design intervention and the retrofitting and reconstruction of certain facilities.

Presently, there is no managed drainage in the Park, and during periods of heavy rain or storms, the park holds water, limiting and preventing use, including parking. The boat ramp experiences persistent shoaling and sediment deposition due to the current configuration of the ramp and adjacent piers which limits access and is in need of a more resilient design to protect from increased storm events and recurrent shoaling. Specifically, the shoaling is occurring from sediment moving along the shoreline at the public beach area at the site. The current pier adjacent to the ramp catches much of the sediment however, the current design is resulting in the sediment bypassing the pier where it is filling in the ramp. A design is needed to slow or prevent sand entering the boat ramp. It is known that there is deep water near the foot of the ramp and a plausible design would be to reconfigure the pier or deploy rock or concrete structures which would allow for greater trapping and blocking capacity of sand. Additionally, a reconfigured design could allow for any sand that does bypass the pier to be redirected into deeper water where it is not detrimental to access at the ramp and could even provide for improved gradient and reduced drop off into deep water at beyond the foot of the ramp.

The park is one of the first things seen from the bridge when entering Gloucester, and without this project it will become an eyesore and a monumental loss for the economy of Gloucester County and the Middle Peninsula. **Figure 11** illustrates present site conditions, including instances of flooding and the vulnerability of facilities.

Figure 11. Photos of Project Site Existing Conditions

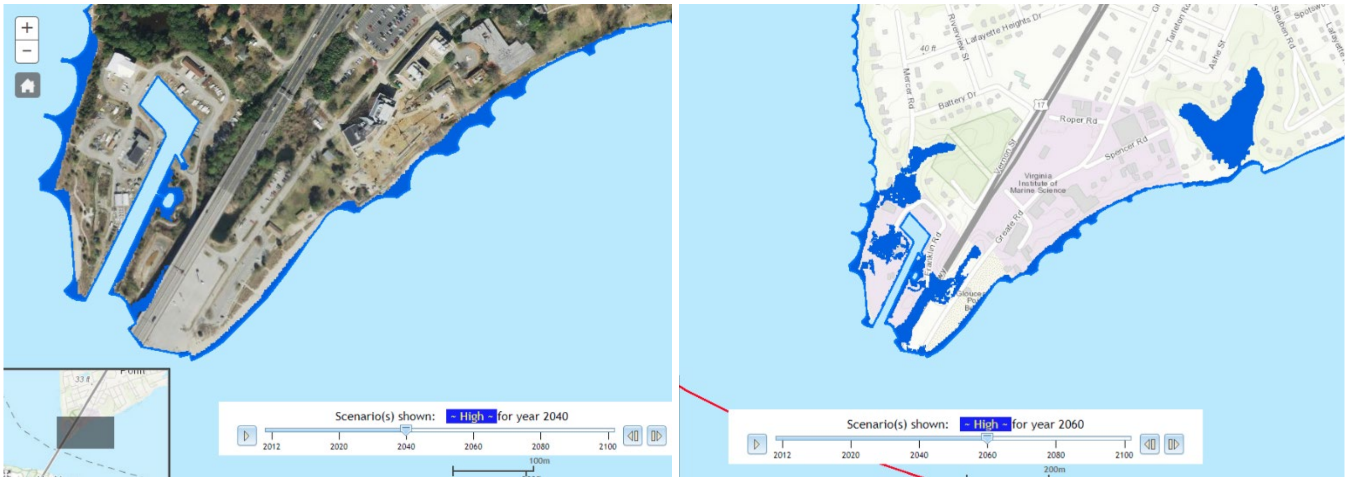




Without considering design interventions and construction proposed, the site and public infrastructure will be compromised, resulting in degradation of the site and loss of public assets. Flooding propensity remains the biggest weakness of Gloucester Point Beach Park. The area around the Gloucester Point Beach Park site is prone to frequent flooding and lies within the floodplain of the York River. Any category of storm will flood the site, damaging the property and precluding access. Moreover, rising sea levels will have a negative impact on the property, inching the water closer to the site's active resources, increasing the likelihood of significant flooding.

Figure 12 illustrates flood levels combined with sea-level rise and their effects on the site. Notably, floods in 50 years pose an issue to the many structures on site; key construction techniques will need to be employed to retrofit each structure in order to mitigate the effects of exceptional floods and sea level rise 50 years and out.

Figure 12. Sea Level and Flood Elevation



Projection for 2040 Sea Levels *Projection for 2060 Sea Levels*

The need for assistance is two-fold. First, Gloucester County is near the Chesapeake Bay and numerous tidal rivers that contribute to the area’s high risk to coastal flooding, sea-level rise, and storm surge. Based on tidal gauge data from the Virginia Institute of Marine Science (VIMS), relative sea-level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region, which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Gloucester County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm’s winds as storm surge. Strong East and Northeast winds in Gloucester County can push water from the Chesapeake Bay into the mouth of the York and Rappahannock rivers, as well as Mobjack Bay, flooding much of the county’s low-lying areas (MPPDC, 2005). When a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a “storm tide”. In Gloucester County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below (FEMA 1987, 6). If a severe hurricane were to make landfall during high tide, an additional 1.2 feet of water would be added to the highest storm surge possible, potentially creating a storm tide of 16.2 feet (Rygel, 2005).

Nor’easters, like hurricanes and tropical storms, can dump heavy amounts of rain and produce hurricane-force winds that push large amounts of seawater inland. The public services building itself has suffered from four to five different hurricane and nor’easter events that have led to flooding issues in the building. Other issues rose from long-term exposure to flooding issues have led to the deterioration of the entire playground structure by breaking down toys sooner than expected. The most significant flood damages to the site resulted from Hurricane Isabel in 2003 (see **Figure 13**). The storm created a new record of damages to the site’s 40-year history, flooding the public services building with up to 5’ of water. In addition, the storm ripped through the fishing pier, pushed the stage through the cinderblock wall of the public services building, and severely damaged the children’s playground.

Figure 13. Aftermath Conditions of Hurricane Isabel (2003)

According to a recent study conducted by the Center for Coastal Resources Management, a one-and-a-half-foot rise in sea level coupled with a three-foot storm surge - similar to what would be experienced in a strong tropical storm - would lead to 13% of Gloucester County’s land mass being flooded – including 118 miles of roads. Notably, only 3% of this projected flood area is currently developed.

A strong indicator that Gloucester County is experiencing the impact of coastal hazards (i.e., flooding, hurricanes, sea-level rise, and storm surge) is the number of repetitive loss and severe repetitive loss claims submitted by residents and businesses to FEMA. As of 2015, Gloucester County had 147 repetitive loss properties with claims topping $3.3 Million and 13 severe repetitive loss properties with claims totaling nearly $1.9 Million. The county has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on its communities. This project will therefore build on local efforts moving toward a more resilient community.

Second, this project location is primed for co-benefits derived from flood mitigation efforts. While the proposed application of flood resilient facilities and implementation of stormwater drainage will facilitate the flow of stormwater toward new drainage features, providing increased public access to the infrastructure at this point of interest, secure public access and the sustainability of site infrastructure has implications that will reverberate throughout the community. Strategic protection of the infrastructure and landscape at this point of interest will, for example, facilitate multiple, simultaneous activities that will contribute to economic growth in the area while fostering innovation.

Business Development

The potential of continued and increased tourism drawn to the recreational site and continued and enhanced accessibility for commercial users at the boat ramp are significant. Visitors seeking a variety of outdoor activities could be drawn to activities available at Gloucester Point beach Park, supporting the local economy with outside revenue in their pursuits. The project proposes demolishing and replacing an existing structure with public restroom facilities, storage for park staff and a separate room for concession operations. Close proximity to recreational opportunities has increasingly become a factor in where businesses decide to locate. The provision of a public access site with enhanced amenities thus has the potential to drive continued economic growth through business development in the area. Moreover, the boat ramps and fishing pier provide key access to the waterways for commercial seafood fishing industries. Lastly, VIMS' faculty endeavors offer the potential for research and development on site leading to new start-up businesses within the county. Notably, the MPPDC and Gloucester County Economic Development Authority are actively identifying resilience and water management-related businesses as a strategy to actively expand existing businesses and recruit new ones to the region and county.

Community Scale Benefits

Due to the multitude of public investment for flood research and innovation, we believe this site meets the test of "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk." The Gloucester Point Beach Park site serves as one of the Commonwealth's best chances to innovate flood projects in "live time" so that all of coastal Virginia can benefit.

ALTERNATIVES

The submission of alternatives is not applicable in this application. Nature-based and hybrid solutions are anticipated, and the project cost is less than $3 million.

GOALS AND OBJECTIVES

This proposal will develop a comprehensive strategy to increase resilience of a site against multiple flooding inputs while providing co-benefits that foster resilience at the Gloucester Point Beach Park. The focused goals and objects of the project are as follows:

Goal 1: Improve public access to local coastal waterways.

- Objective A: Increase public access to the York River with improved conditions and mitigation of recurrent and repetitive flooding using a nature-based approach on site.
- Objective B: Enhance quality of life for local residents and visitors alike through recreation, educational and cultural opportunities, and commercial fishing at the point of interest.
- Objective C: Leverage improved public access and coastal resiliency for economic growth within Gloucester County.

Goal 2: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Mitigate recurrent and repetitive flooding alongside storm surge and sea level rise using natural and nature-based solutions that benefit people and the economy as well as the environment.
- Objective B: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.
- Objective C: Enhance the resilience of public infrastructure, ensuring longer-term viability.

Goal 3: Transferability to other communities.

- Objective A: Model natural and nature-based solutions for coastal sites exploring development potential.
- Objective B: Foster innovative research and solutions-oriented studies on site focused on coastal adaptation and mitigation for external transfer.
- Objective C: Improve the implementation of Fight the Flood as a model program to be replicated in other communities within the region and/or Commonwealth.

The MPPDC expects the following results and benefits of the completed project:

1. **Foster economic growth in the area over the useful life of site infrastructure and most likely, beyond.** Enabling public access to this county asset while ensuring its sustainability will protect and enhance the area's recreational economies and has the potential to positively impact related commercial endeavors.

2. **Prevent loss of property without cementing an alternative.** Building resilient structures and facilities at the project site as outlined will help prevent loss of property and property value, while capitalizing on the useful life of the site as much as possible.

3. **Provide ecosystem services to the community toward increased quality of life.** Increased public access to recreational, educational and cultural opportunities leverage the provisioning and cultural services associated with the site's natural resources, services that provide benefits to safety, health and well-being for all visitors.

APPROACH, MILESTONES, AND DELIVERABLES

As noted, the intent of this project is to enhance the resilience of the Park by addressing persistent and increasing flooding impacts, which have compromised on-going maintenance activities and long-term viability of the Park. The project would involve an overall evaluation and study of the site with respect to stormwater and flooding impacts, site surveying and environmental assessment, development of design plans for the site and facilities taking into account programming and service needs, with a focus on resilience goals and objectives, to include civil engineering, landscaping, and architectural services, and demolition and reconstruction of the services building located on the site. This plan will include nature-based and hybrid mitigation designs where possible, and will utilize and integrate sustainable planning, design, environmental management and engineering practices that capitalize on natural features while allowing for floodwater inundation and reducing the exposure to public facilities, promoting adaptation and resilience in the process. Ultimately, the project will ensure continued access and usability of the site, with developed designs and construction addressing and accounting for flooding and impacts of sea-level rise.

As referenced above, the principal tasks and milestones are as follows:

- Stormwater Flooding Resilient Study and Design: Evaluation and study of the site with respect to stormwater and flooding impacts including site improvement designs and cost estimates;
- Boat Ramp Resilient Design and Cost Estimates;
- Resilience Enhancements for Building to include:
  - Site surveying and environmental assessment;
  - Development of design plans for the site and facilities, to include civil engineering, landscaping, and architectural services;
  - Demolition and reconstruction of the services building located on the site; and

A partnership exists with the Virginia Department of Wildlife Resources, which manages one of the public boat ramps and will be engaged in the design and implementation of the project. With respect to the replacement building, designs will incorporate drop-in flood gates to protect the interior, and if funding is sufficient, the project will exceed requirements for waterproofing and dry floodproofing by including these design features above the 100-year flood level to the greatest extent possible in order to prepare for the effects of sea level rise. The project will occur within the AE regulatory floodplain with a base flood elevation of 8’. New construction in this zone will result in a ‘no-rise’ scenario, meaning that construction activities will not increase the risk of flooding to new or existing structures.

The proposed activities will comply with all regulatory and permitting authorities. Additionally, the proposed project construction will occur near existing dunes and dune grasses. Construction activities will be designed to prevent damage to dunes and dune grasses by including additional perimeter fencing around the dunes and restricting any excavation work such that no dunes are destabilized. A coastal sand beach and shoreline exists on the other side of the dune (seaward side of the dune) and shall not be disturbed by construction activities related to this project.

The expected timeline for the project milestones, and deliverables, is as follows:

Year 1/Months 1-12 - Site Evaluation and Design

- Months 1-8: Occurring contemporaneously, the site will be surveyed, an environmental assessment will be performed, and the site will be evaluated and studied with respect to stormwater and flooding impacts. Deliverables will include a site survey and reports on the environmental assessment and stormwater/flooding studies.
- Months 7-12: Design plans for the site and facilities will be developed. Design plans will include engineering and landscape plans for the site, as well as architectural plans for the reconstructed building.

Year 2/Months 12-24 - Site Development

- Months 13-16: Based upon design plans and costs estimates, the County will consider prioritization and programming of site improvements beyond building demolition and reconstruction.
- Months 16-24: Site development activities will be initiated, to principally focus on demolition and reconstruction of the Park's services building.

Year 3/Months 24-30 - Project Completion

- Months 24-30: Site development activities, including building reconstruction, will be completed.

RELATIONSHIP TO OTHER PROJECTS

While the specific proposed project bears no direct relationship to specific past, future, or future resilience projects, the project does relate to larger regional resilience efforts. For more than 40 years, the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (e.g., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR in August of 2021. This Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents. These documents frame the foundation and implementation of the Middle Peninsula flood protection approach and are indirectly and directly supported by specific regional planning documents each approved by federal, regional, and/or local partners as required by statute.

Other plans and resources integral to the implementation of the Flood Resiliency Plan include:

Long Term Planning

- Middle Peninsula All Hazard Mitigation Plan - FEMA and Middle Peninsula locality, approved 2016 (MPPDC Website)
    - This overarching project provides updates every five years on the hazards within the region; it identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – MPPDC, approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – MPPDC, approved annually

Short Term Implementation

- Middle Peninsula Planning District Commission Fight the Flood Program Design - MPPDC Commission, approved June 2020; Chairman approved update 8/6/21
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program - Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

The MPPDC has a history of continuous work on flooding and coastal resiliency topics, as described in **Attachment 4**. These projects have built upon each other to establish within the MPPDC a solid foundation of regional expertise in flooding and coastal resiliency. Now, given this history of accumulated information and knowledge, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One such effort, launched in 2020 following the Commission's authorization, was developed in response to emerging flood challenges. This effort, the **Middle Peninsula Fight the Flood (FTF) Program**, leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built and natural environments with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. MPPDC staff have partnered with private property owners registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that their outcomes will help the Commonwealth meet the goals set forth in the planning framework.

MAINTENANCE PLAN

A maintenance plan is not applicable in this application. The proposed project is to develop a nature-based design solution and its cost does not require ongoing operation and future maintenance.

CRITERIA

Describe how the project meets each of the applicable scoring criteria contained in ***Appendix B*** *and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application.* ***Appendix B*** *must be completed and submitted with the application.*

For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**

    - Yes; the applicant is a regional planning district commission.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**

    - Yes; the MPPDC's DCR-approved resilience plan may be accessed at the following link: https://fighttheflooodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**

    - Yes; please see **Attachment 1**

4. **Has the applicant provided evidence of an ability to provide the required match funds?**

    - Yes; please see **Attachment 1**

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**

    - Yes

BUDGET NARRATIVE

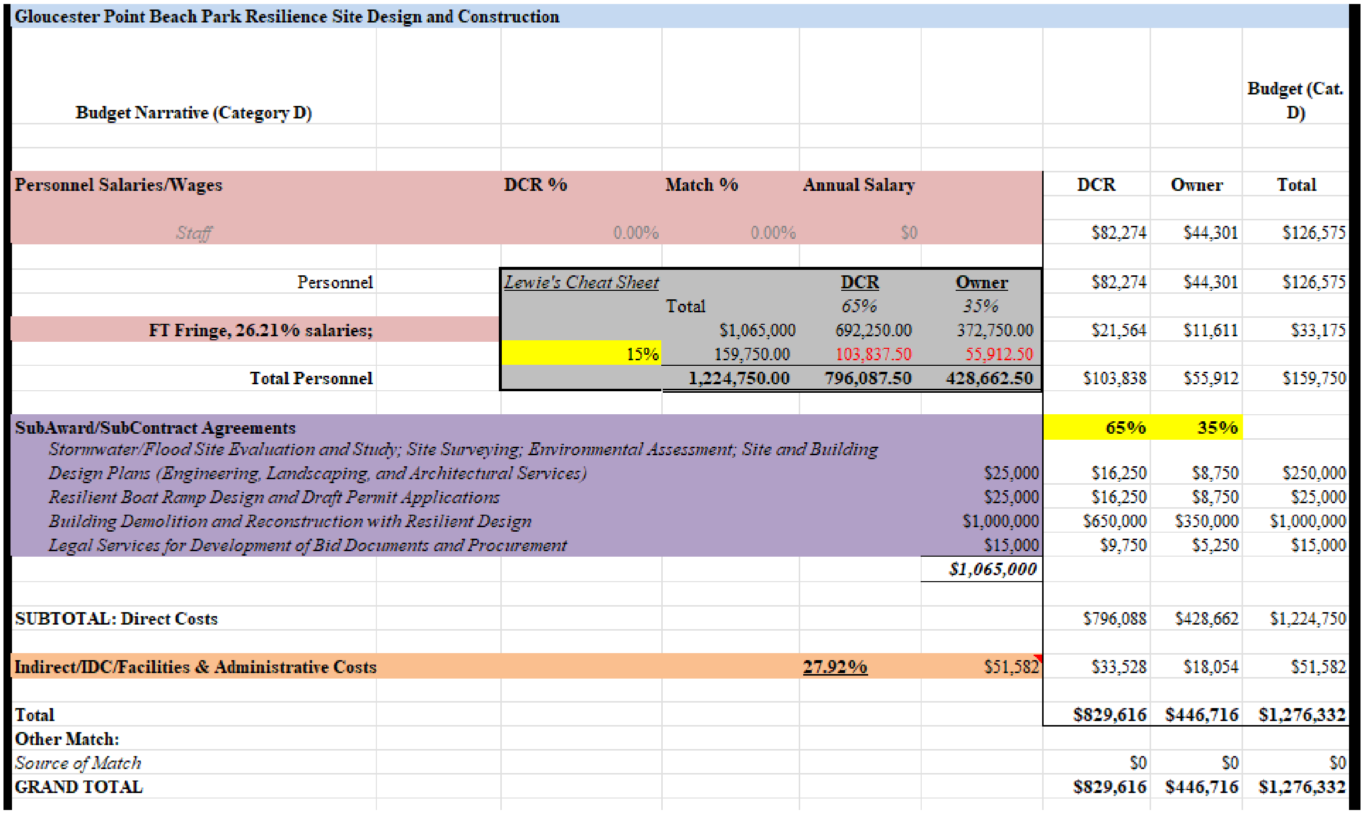
ESTIMATED TOTAL PROJECT COST

Based upon the identified scope of work, the estimated total project cost is $1,276,332. This total estimate is based upon the following estimated cost breakdowns:

- Stormwater/Flood Site Evaluation and Study; Site Surveying; Environmental Assessment; Site and Building Design Plans (Engineering, Landscaping, and Architectural Services): $25,000
- Boat Ramp Resilient Design and Development of Necessary Draft Permit Applications: $25,000
- Demolition and Reconstruction of Building: $1,000,000
- Legal Services for Development of Bid Documents and Procurement: $15,000

Please note, the estimated costs for Stormwater/Flood Site Evaluation and Study; Site Surveying; Environmental Assessment; Site and Building Design Plans services is based upon a proposal for such services provided by Timmons Group, dated September 10, 2021, and attached as **Attachment 5**, which resulted is the production of schematic design plans (30%) only.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY23 is 26.21% and comprised of: Health Insurance – 48.58%, Retirement – 18.06%, Workers Comp – 0.28%, Social Security – 28.55%, Life Insurance – 4.39%, Unemployment – 0.14%. Direct charges are costs associated with overall projects costs consistent with general accounting principles. MPPDC also prepares an indirect cost (IDC) plan annually per 2 CFR 200 Appendix VII. Following annual audit, the plan is submitted to NOAA for acceptance. MPPDC's IDC rate has a basis of Modified Total Direct Costs (MTDC), with a planned rate of 27.92%. IDC is only applied to the first $25,000 of each contract. IDC calculated on MTDC (modified total direct cost)-Personnel, supplies, travel, and first $25,000 of each subcontract, etc.; excludes equipment.



Gloucester Point Beach Park Resilience Site Design and Construction								
Budget Narrative (Category D)								Budget (Cat. D)
Personnel Salaries/Wages		**DCR %**	**Match %**	**Annual Salary**		**DCR**	**Owner**	**Total**
Staff		0.00%	0.00%	$0		$82,274	$44,301	$126,575
Personnel		*Lewie's Cheat Sheet*		**DCR**	**Owner**	$82,274	$44,301	$126,575
			Total	*65%*	*35%*			
FT Fringe, 26.21% salaries;			$1,065,000	692,250.00	372,750.00	$21,564	$11,611	$33,175
		15%	159,750.00	103,837.50	55,912.50			
Total Personnel			**1,224,750.00**	**796,087.50**	**428,662.50**	$103,838	$55,912	$159,750
SubAward/SubContract Agreements						**65%**	**35%**	
Stormwater/Flood Site Evaluation and Study; Site Surveying; Environmental Assessment; Site and Building Design Plans (Engineering, Landscaping, and Architectural Services)					$25,000	$16,250	$8,750	$250,000
Resilient Boat Ramp Design and Draft Permit Applications					$25,000	$16,250	$8,750	$25,000
Building Demolition and Reconstruction with Resilient Design					$1,000,000	$650,000	$350,000	$1,000,000
Legal Services for Development of Bid Documents and Procurement					$15,000	$9,750	$5,250	$15,000
					$1,065,000			
SUBTOTAL: Direct Costs						$796,088	$428,662	$1,224,750
Indirect/IDC/Facilities & Administrative Costs				**27.92%**	$51,582	$33,528	$18,054	$51,582
Total						**$829,616**	**$446,716**	**$1,276,332**
Other Match:								
Source of Match						$0	$0	$0
GRAND TOTAL						**$829,616**	**$446,716**	**$1,276,332**

AMOUNT OF FUNDS REQUESTED

The total amount of requested grant assistance is $829,616, or 65% of total project costs, as the project is located in an opportunity zone and serves a low-income geographic area and the project results in hybrid solutions. These funds, combined with local match, would be used for the services identified above.

AMOUNT OF CASH FUNDS AVAILABLE

Gloucester County will appropriate the requisite 35% or $446,716 in required local cash match funds, to be combined with the $829,616 in grant assistance to equal the total estimated project cost. The County's match commitment letter is included as **Attachment 1**.

AUTHORIZATION TO REQUEST FUNDING

The authorization to request funding is included as **Attachment 1**.

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Middle Peninsula Planning District Commission**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	**Middle Peninsula Planning District Commission**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☑ Wetland restoration, floodplain restoration ☑ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☑ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (**Based on ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		80

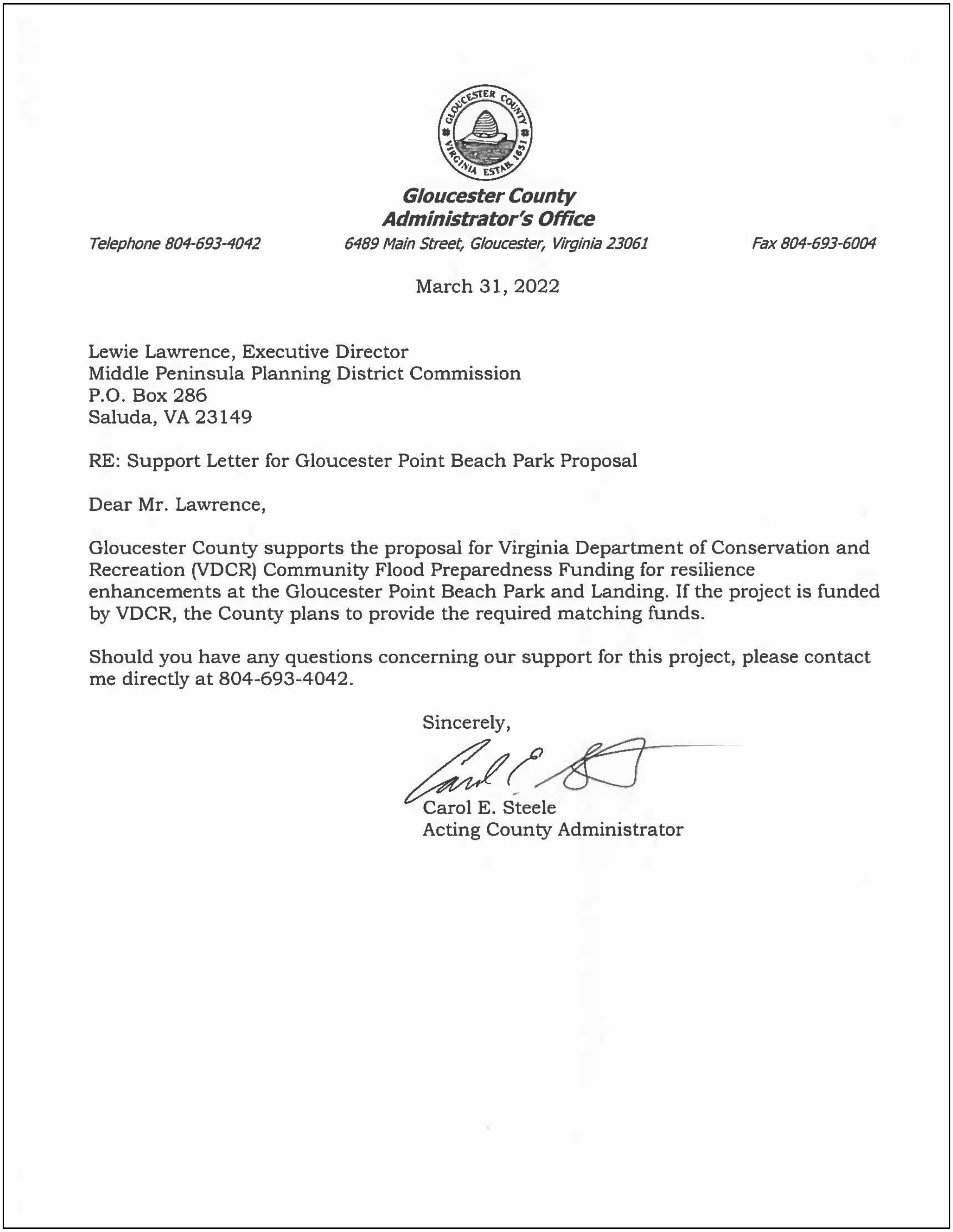
Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Attachment 1: Community Support/Match Commitment/Authorization Letter



Gloucester County
Administrator's Office
Telephone 804-693-4042 *6489 Main Street, Gloucester, Virginia 23061* *Fax 804-693-6004*

March 31, 2022

Lewie Lawrence, Executive Director
Middle Peninsula Planning District Commission
P.O. Box 286
Saluda, VA 23149

RE: Support Letter for Gloucester Point Beach Park Proposal

Dear Mr. Lawrence,

Gloucester County supports the proposal for Virginia Department of Conservation and Recreation (VDCR) Community Flood Preparedness Funding for resilience enhancements at the Gloucester Point Beach Park and Landing. If the project is funded by VDCR, the County plans to provide the required matching funds.

Should you have any questions concerning our support for this project, please contact me directly at 804-693-4042.

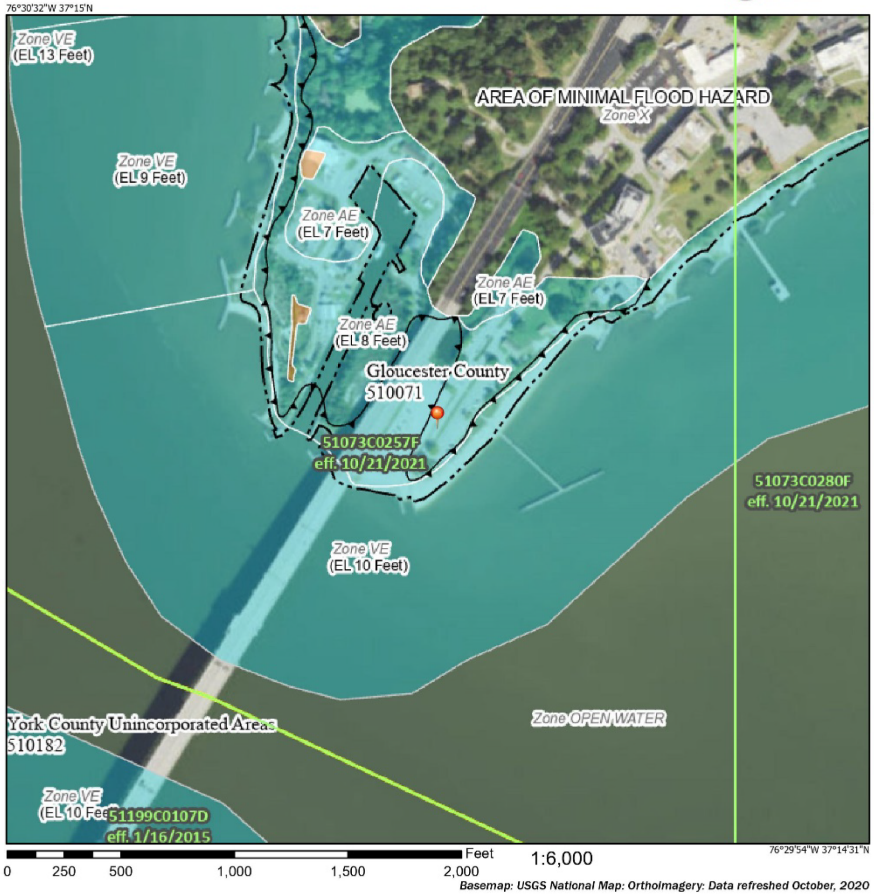
Sincerely,

Carol E. Steele
Acting County Administrator

Attachment 2: Project Location FIRMette

National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	▨	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	▨	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	▨	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	☐	Effective LOMRs
	▨	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— - - -	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2	Cross Sections with 1% Annual Chance
	17.5	Water Surface Elevation
	8 - - -	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	-·-·-	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

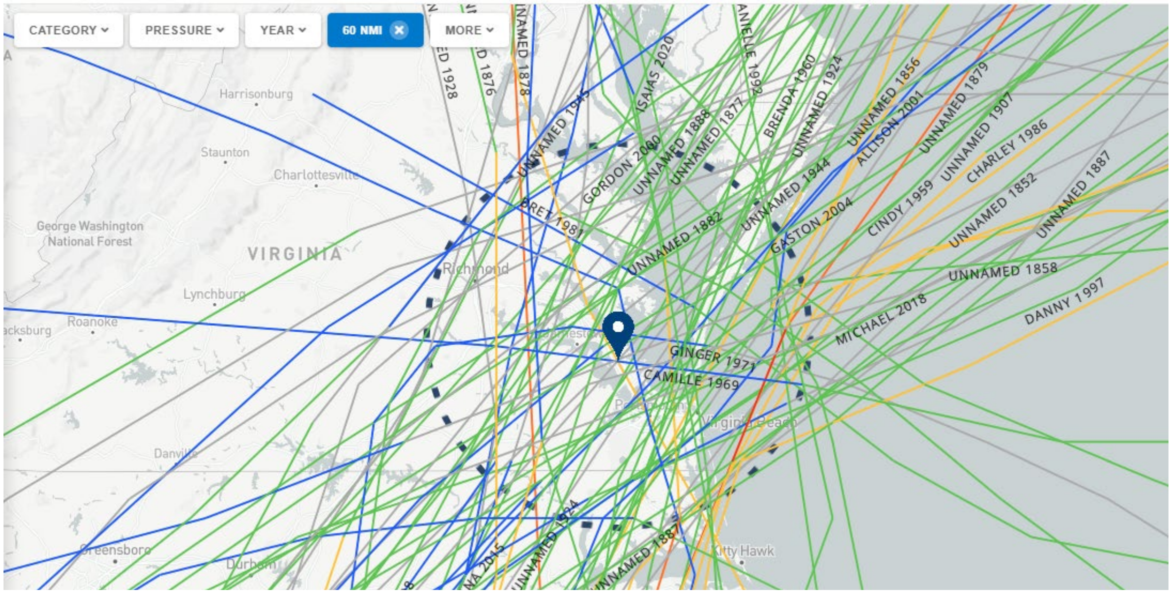
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/16/2022 at 12:35 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 3: List of historic hurricanes impacting the project area 1851 to present per NOAA.

Hurricane List



Search Filter Criteria

Location: 37.247474, -76.501672

Categories queried: H5, H4, H3, H2, H1, TS, TD, ET
Months: ALL
Years: ALL
El Niño-Southern Oscillation (ENSO): ALL
Minimum Pressure (mb) below: 1150
Include Unknown Pressure Rating: TRUE
Buffer Distance: 60
Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ISAIAS 2020(P)	Jul 23, 2020 to Aug 05, 2020	75	987	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
HELENE 2000	Sep 15, 2000 to Sep 25, 2000	60	986	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01,	60	996	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
	1981			
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
CLEO 1964	Aug 20, 1964 to Sep 11, 1964	130	938	H4
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
UNNAMED 1956	Oct 14, 1956 to Oct 19, 1956	55	996	TS
IONE 1955	Sep 10, 1955 to Sep 27, 1955	120	938	H4
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1949	Sep 11, 1949 to Sep 14, 1949	45	-1	TS
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	Sep 04, 1916 to Sep 07, 1916	45	-1	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
NOT_NAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1893	Jun 12, 1893 to Jun 20, 1893	65	-1	H1
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1887	Oct 09, 1887 to Oct 22, 1887	75	-1	H1
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
NOT_NAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
NOT_NAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
NOT_NAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
NOT_NAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
NOT_NAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
NOT_NAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS
UNNAMED 1851	Aug 16, 1851 to Aug 27, 1851	100	-1	H3

Attachment 4: Flood Prevention Project and its Relevance to Other Projects

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

Climate Change & Sea Level Rise (2009 to 2012)

The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

> *Phase 1:* Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public
> *Phase 2:* Climate Change III: Initiating Adaptation Public Policy Development
> *Phase 3:* Phase 3 Climate Change: Initiating Adaptation Public Policy Development

Emergency Management - Hazard Mitigation Planning (2009 to Present): Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a HAZUS assessment of hurricane wind, sea level rise* (i.e., Mean High Higher Water and the NOAA 2060 intermediate-high scenario), *and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

Land and Water Quality Protection (2014): In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc., staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

Department of Conservation and Recreation Stormwater Management (2014)
The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

Stormwater Management-Phase II (2014): MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

Mathews County Rural Ditch Enhancement Study (2015): In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

Drainage and Roadside Ditching Authority (2015): This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

Living Shoreline Incentive Program (2016 to present)
In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines

over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to $10,000 can be financed for up to 5 years (60 months). Loans over $10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is $1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~$500,000 in VRA loan funding and ~$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job $14,000- $180,000. MPPDC oversees all aspects (planning, financing, constriction, and loan servicing) of these projects from cradle to grave.

Mathews County Ditch Project - VCPC White Papers (2017): This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

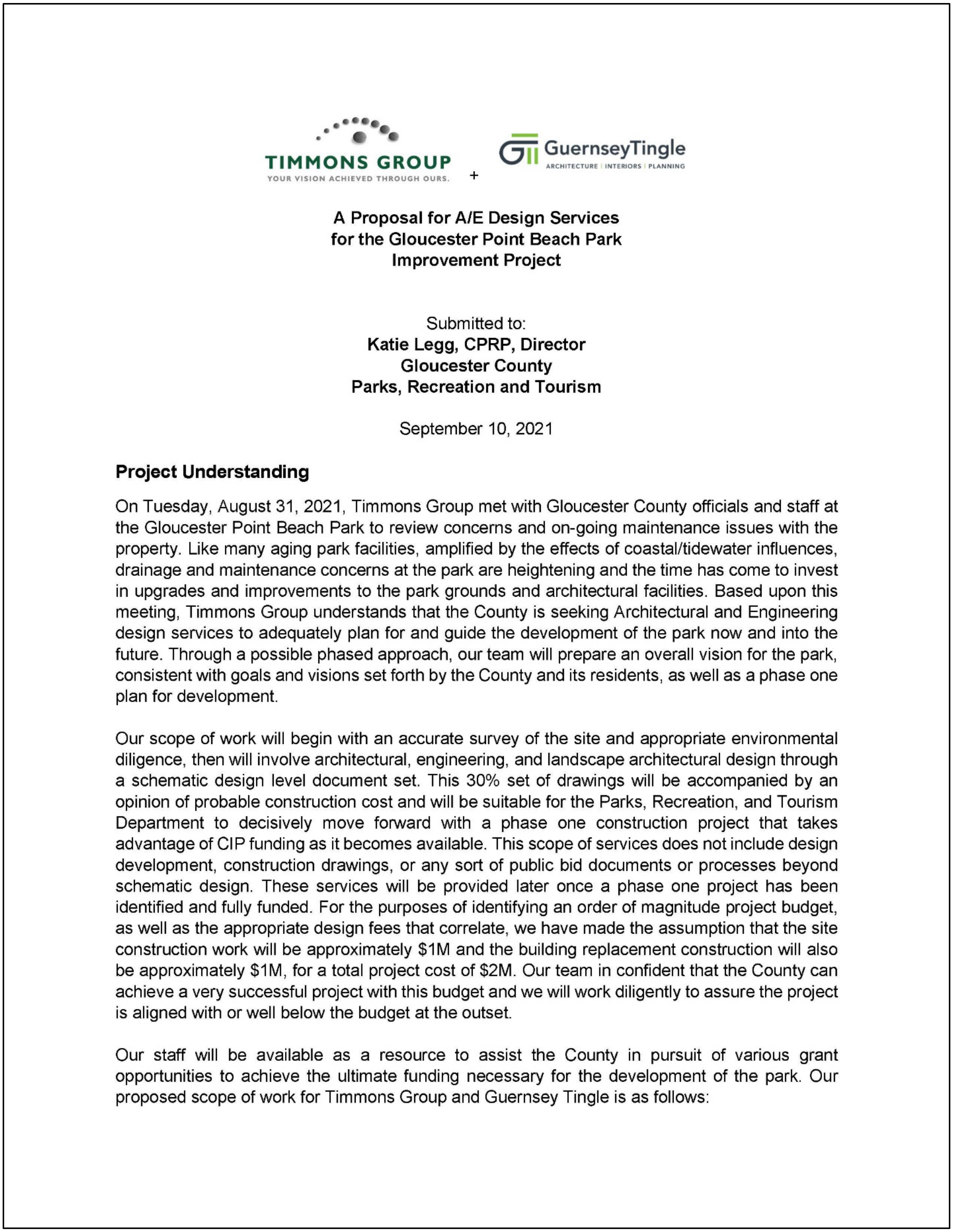
Mathews County Ditch Mapping and Database Final Report (2017): This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

Virginia Stormwater Nuisance Law Guidance (2018): This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018): VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

Fight the Flood Program (2020): The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines

Attachment 5: Timmons Group Proposal, September 10, 2021



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.
+
GuernseyTingle
ARCHITECTURE | INTERIORS | PLANNING

A Proposal for A/E Design Services
for the Gloucester Point Beach Park
Improvement Project

Submitted to:
Katie Legg, CPRP, Director
Gloucester County
Parks, Recreation and Tourism

September 10, 2021

Project Understanding

On Tuesday, August 31, 2021, Timmons Group met with Gloucester County officials and staff at the Gloucester Point Beach Park to review concerns and on-going maintenance issues with the property. Like many aging park facilities, amplified by the effects of coastal/tidewater influences, drainage and maintenance concerns at the park are heightening and the time has come to invest in upgrades and improvements to the park grounds and architectural facilities. Based upon this meeting, Timmons Group understands that the County is seeking Architectural and Engineering design services to adequately plan for and guide the development of the park now and into the future. Through a possible phased approach, our team will prepare an overall vision for the park, consistent with goals and visions set forth by the County and its residents, as well as a phase one plan for development.

Our scope of work will begin with an accurate survey of the site and appropriate environmental diligence, then will involve architectural, engineering, and landscape architectural design through a schematic design level document set. This 30% set of drawings will be accompanied by an opinion of probable construction cost and will be suitable for the Parks, Recreation, and Tourism Department to decisively move forward with a phase one construction project that takes advantage of CIP funding as it becomes available. This scope of services does not include design development, construction drawings, or any sort of public bid documents or processes beyond schematic design. These services will be provided later once a phase one project has been identified and fully funded. For the purposes of identifying an order of magnitude project budget, as well as the appropriate design fees that correlate, we have made the assumption that the site construction work will be approximately $1M and the building replacement construction will also be approximately $1M, for a total project cost of $2M. Our team in confident that the County can achieve a very successful project with this budget and we will work diligently to assure the project is aligned with or well below the budget at the outset.

Our staff will be available as a resource to assist the County in pursuit of various grant opportunities to achieve the ultimate funding necessary for the development of the park. Our proposed scope of work for Timmons Group and Guernsey Tingle is as follows:

Base Scope of Services

Survey Services

Timmons Group's licensed land surveyor will prepare a design and topographic survey that will be used in the planning and preliminary design of the park improvements. Anticipated scope of work includes the following:

- Topographic survey in with Horizontal Datum based on the VA. State Plane Coord.- South Zone (NAD 1983) Gloucester County Survey Control Mark Data. RTK GPS will be used to localize to the datum.
- Elevations for the project will be expressed in feet and based on the Gloucester County Survey Mark Data, which refers to NAVD 88. The vertical control will be established by conventional differential leveling methods from Station 180. If this station is destroyed an additional fee may be required. A temporary benchmark will be placed on site.
- Boundary of record will be tied to existing onsite boundary monumentation. A full boundary survey and intensive easement research is not included herein.
- Underground utilities will be based on Miss Utility markings and visible field located structures only.
- Location of visible gravity sanitary sewer main line manholes will be shown with rim elevation. Where accessible and visible within the manhole pipe invert elevations, pipe sizes and pipe material will be shown within the survey area. Visible cleanouts will be shown on the survey, however, invert elevations for cleanouts cannot be field determined.
- Location of visible water valves, hydrants and visible meters will be shown within the survey areas.
- Location of visible storm drainage main manholes will be shown with rim elevation. Where accessible and visible within the manhole pipe invert elevations, pipe sizes and pipe material will be shown within the survey area. Visible cleanouts will be shown on the survey, however, invert elevations for cleanouts and roof drains cannot be field determined.
- Cross sections and spot elevations will be provided at approximately 50' stations. One- foot contours will be provided. Items such as, but not limited to ditches, edge of pavement, edge of concrete, buildings, curbing, fences, etc. will be located.

Environmental Services

Timmons Group's environmental scientists will perform field work necessary for the planning and preliminary design of the park improvements. Anticipated scope of work includes the following:

- Wetland Delineation
- Wetland Confirmation
- Resource Protection Area Determination

Park Programming, Planning, and Design

Timmons Group's landscape architecture and planning team will work with the County through a series of meetings, site visits, and visioning exercises to program and plan the park improvements. Anticipated scope of work includes the following:

- Park Site and Building Programming
- County and Stakeholder Design Charrettes
- Preliminary Park Planning and Design
- Park Phasing Plan

(2) meetings on site or in-person are included in this task as well as up to (3) virtual meetings.

Civil Engineering Schematic Design

Timmons Group's Civil Engineers will prepare schematic design (30%) plans to show all site plan layout, grading and drainage, stormwater management, erosion and sediment control, and utility design elements. Anticipated scope of work includes the following:

- 30% Existing conditions and demolition plans
- 30% Site layout plans
- 30% Grading and drainage plans, including preliminary drainage study
- 30% Stormwater management plans
- 30% Erosion and sediment control plans
- 30% Utility plans
- 30% Notes, details, and specifications pertaining to the work above

(2) meetings on site or in-person are included in this task as well as up to (3) virtual meetings.

Landscape Architectural Schematic Design

Timmons Group's Landscape Architects will prepare schematic design (30%) plans to show all park playground, shelter, furnishing, and landscape design elements. Anticipated scope of work includes the following:

- 30% Specialty hardscape layout and material plans
- 30% Site furnishing plans
- 30% Landscape plans
- 30% Site lighting/photometric plans
- 30% Notes, details, and specifications pertaining to the work above

(2) meetings on site or in-person are included in this task as well as up to (3) virtual meetings.

Architectural Schematic Design (Subconsultant Guernsey Tingle)

Timmons Group will partner with Guernsey Tingle to prepare complete preliminary architectural drawings for the project. Anticipated scope of work includes the following:

- 30% Architectural plans including floor plans and 3D model
- 30% Structural engineering plans related to the building scope
- 30% Plumbing plans related to the building scope
- 30% Mechanical engineering plans related to the building scope
- 30% Electrical engineering plans related to the building scope

(1) meeting on site or in-person are included in this task as well as up to (3) virtual meetings.

Reimbursable Expenses Budget

This task will cover incidental reimbursable expenses related to the design process (i.e., printing, mileage, parking, etc.)

Proposed Fee

We propose to provide the services outlined above on a fixed fee basis.

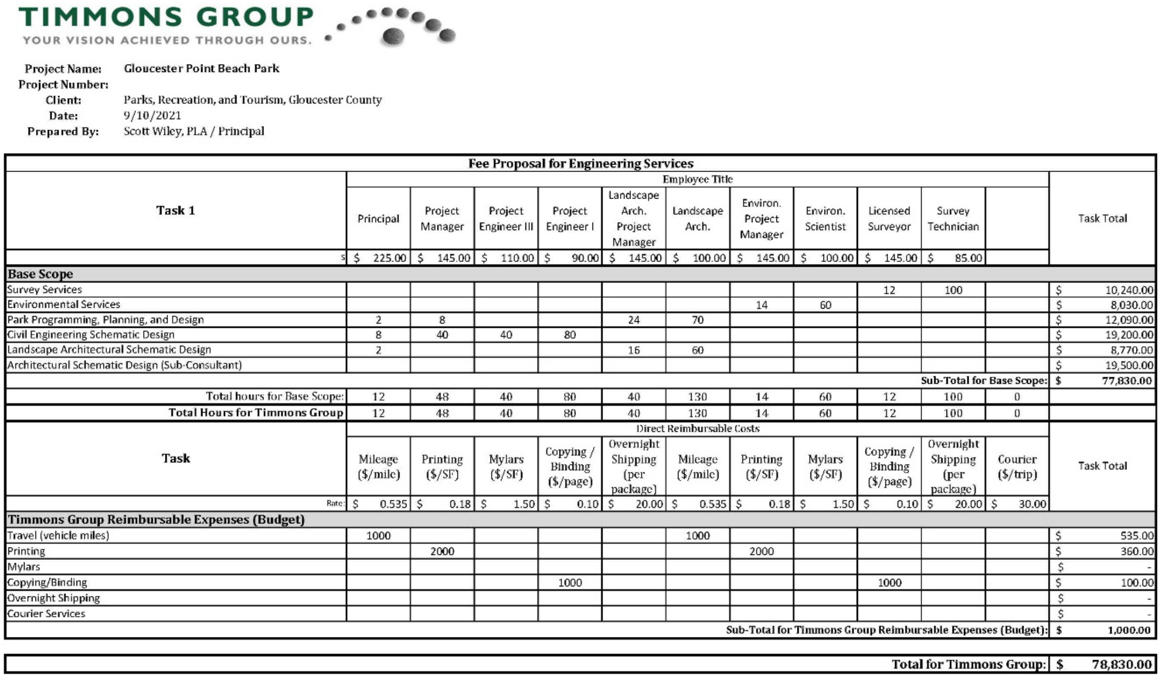
Survey Services	$	10,240.00
Environmental Services	$	8,030.00
Park Programming, Planning, and Design	$	12,090.00
Civil Engineering Schematic Design	$	19,200.00
Landscape Architectural Schematic Design	$	8,770.00
Architectural Schematic Design (Subconsultant Guernsey Tingle)	$	19,500.00
Reimbursable Expenses Budget	$	1,000.00
Total:	**$**	**78,830.00**

Items not included in the Scope of Services of this Agreement:

Timmons Group will not perform the following services under this Agreement. At the request of the Client, these services can be added for an additional fee, but are not included in this Agreement.

1. SUE / Underground Utility Designation
2. Traffic Analysis/Studies
3. Geotechnical Investigation or Studies
4. Design Development and Construction Documents for Site or Building Scope
5. Agency Review Meetings or other Coordination
6. LEED Design Calculations or Planning
7. Maintenance of Traffic Plans, Traffic Analysis or Studies
8. Irrigation Design
9. Design of Off-site improvements for Roads or Utilties
10. Envrionmental Permits, Perennial Stream Assessments and/or Flow Determinations, Historical Resource Coordination, Mitigation Design, Wetland Impact Permitting/Permit Compliance, Environmental Abatement, Corps of Engineers or DEQ permits, VSMP/RSMP permitting, WQIA – Major or Minor
11. Permit/Application Fees unless authoirzied as a reimbursable expense above and beyond current reimbursable budget
12. Private Utility Location, Design, Coordination, or Relocation (i.e. power, cable, fiber, telephone, etc.)
13. Post-approval Changes to the Schematic Design Plans
14. Easement and R/W plats and vacations, Additional Right of Way or Easement Acquisition, Private Road Certification
15. Special inspections, materials testing, construction management, construction inspection

Attachment A: Scope of Work Understanding



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Project Name: Gloucester Point Beach Park
Project Number:
Client: Parks, Recreation, and Tourism, Gloucester County
Date: 9/10/2021
Prepared By: Scott Wiley, PLA / Principal

Fee Proposal for Engineering Services

	Employee Title											
Task 1	Principal	Project Manager	Project Engineer III	Project Engineer I	Landscape Arch. Project Manager	Landscape Arch.	Environ. Project Manager	Environ. Scientist	Licensed Surveyor	Survey Technician		Task Total
$	$ 225.00	$ 145.00	$ 110.00	$ 90.00	$ 145.00	$ 100.00	$ 145.00	$ 100.00	$ 145.00	$ 85.00		
Base Scope												
Survey Services									12	100		$ 10,240.00
Environmental Services							14	60				$ 8,030.00
Park Programming, Planning, and Design	2	8			24	70						$ 12,090.00
Civil Engineering Schematic Design	8	40	40	80								$ 19,200.00
Landscape Architectural Schematic Design	2				16	60						$ 8,770.00
Architectural Schematic Design (Sub-Consultant)												$ 19,500.00
											Sub-Total for Base Scope:	**$ 77,830.00**
Total hours for Base Scope:	12	48	40	80	40	130	14	60	12	100	0	
Total Hours for Timmons Group	12	48	40	80	40	130	14	60	12	100	0	

	Direct Reimbursable Costs											
Task	Mileage ($/mile)	Printing ($/SF)	Mylars ($/SF)	Copying / Binding ($/page)	Overnight Shipping (per package)	Mileage ($/mile)	Printing ($/SF)	Mylars ($/SF)	Copying / Binding ($/page)	Overnight Shipping (per package)	Courier ($/trip)	Task Total
Rate:	$ 0.535	$ 0.18	$ 1.50	$ 0.10	$ 20.00	$ 0.535	$ 0.18	$ 1.50	$ 0.10	$ 20.00	$ 30.00	
Timmons Group Reimbursable Expenses (Budget)												
Travel (vehicle miles)	1000					1000						$ 535.00
Printing		2000					2000					$ 360.00
Mylars												$ -
Copying/Binding				1000					1000			$ 100.00
Overnight Shipping												$ -
Courier Services												$ -
											Sub-Total for Timmons Group Reimbursable Expenses (Budget):	**$ 1,000.00**

Total for Timmons Group:	**$ 78,830.00**

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

MPPDC Round 3 CFPF New Applications

2 messages

Curt Smith <csmith@mppdc.com> Fri, Apr 8, 2022 at 11:46 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Lewis Lawrence <llawrence@mppdc.com>, Jackie Rickards <jrickards@mppdc.com>, Heather Modispaw <Hmodispaw@mppdc.com>, "Howard-cooper, Wendy" <wendy.howard-cooper@dcr.virginia.gov>

Greetings,

The MPPDC is respectfully submitting five proposals for consideration under Round 3. These projects were requested by our member jurisdictions as projects of highest priority with regards to flood mitigation and resilience needs. The projects are located on and involve publicly-owned property and infrastructure and were identified as sites with the greatest potential for community scale benefits within the locality/region.

The proposals may downloaded via the following links:

- CID510071_GloucesterCounty_Public_CFPF.doc.pdf
- CID510098_MiddlesexCounty_Public_CFPF.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-1.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-2.doc.pdf
- CID510096_MathewsCounty_Public_CFPF-3.pdf

We thank you in advance for your consideration. Please contact me directly should you have any questions.

Best,

Curt

Curtis Smith
Deputy Director
Middle Peninsula Planning District Commission
Cell: 804-384-7509
125 Bowden Street, Saluda, VA 23149
Web: www.mppdc.com
Email: csmith@mppdc.com

CFPF, rr <cfpf@dcr.virginia.gov> Fri, Apr 8, 2022 at 11:52 AM
To: Curt Smith <csmith@mppdc.com>

Curt,

Are these applications in addition to the eight already submitted?
[Quoted text hidden]

Virginia Community Flood Preparedness Fund Application

Flood Resilience Master Plan & Staffing

April 2022

PRINCE WILLIAM
COUNTY

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Prince William County, VA

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

_____ **Project**

_____ **Study**

NFIP/DCR Community Identification Number (CID) 510119

If a state or federally recognized Indian tribe, Name of tribe ________________

Name of Authorized Official: Elijah Johnson, Acting County Executive

Signature of Authorized Official:

Mailing Address (1): 1 County Complex Court

Mailing Address (2): ________________

City: Woodbridge **State:** VA **Zip:** 22192

Telephone Number: (703) 792-6600 **Cell Phone Number:** (____) ________

Email Address: ejohnson@pwcgov.org

Contact Person (If different from authorized official): Brian Misner, Emergency Management Coordinator

Mailing Address (1): 3 County Complex Court

Mailing Address (2): Mailstop EA710

City: Woodbridge **State:** VA **Zip:** 22192

Telephone Number: (703) 792-5828 **Cell Phone Number:** (703) 853-3197

Email Address: bmisner@pwcgov.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☒ Floodplain Staff Capacity.

☒ Resilience Plan Development

- ☒ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☒ Resource assessments, planning, strategies and development.
  - ☒ Policy management and/or development.
  - ☒ Stakeholder engagement and strategies.

Location of Project (Include Maps): Countywide Planning and Capacity Building - All

NFIP Community Identification Number (CID#):(See appendix F 510119

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Countywide Project-All

Flood Insurance Rate Map Number(s) (If Applicable): Countywide Project-All

Total Cost of Project: $1,698,304.90

Total Amount Requested $1,360,000

Virginia Community Flood Preparedness Fund Application

Section #1: Scope of Work Narrative

April 2022

PRINCE WILLIAM
COUNTY

Capacity Building and Planning Narrative

Project Type

Development of a Flood Resilience Master Plan and Associated Staffing for Prince William County, VA

Project Overview

Flooding and flash flooding routinely occur in Prince William County (PWC) impacting many neighborhoods and commonly traveled roads. Flooding has been identified as one of the highest risk hazards for PWC in the Northern Virginia Hazard Mitigation Plan. The PWC Office of Emergency Management (PWC EM) coordinates the PWC Hazard Mitigation Workgroup which focuses on building resilience to threats and hazards that have the potential to impact the PWC community through coordination and implementation of whole community, cross-sector projects, and planning efforts to increase community resilience.

The Virginia Community Flood Preparedness Fund (CFPF) was established to provide support for regions and localities across Virginia to reduce the impacts of flooding. The CFPF is managed by the Virginia Department of Conservation and Recreation (DCR) and empowers communities to complete vulnerability assessments and develop and implement action-oriented approaches to bolster flood preparedness and resilience. PWC's Hazard Mitigation Workgroup has recommended that this funding be used to retain a consultant that will develop *Flood Resilience Master Plan* that integrates historical data, stakeholder projects, and mitigation concepts to enhance our community's resilience to floods. To support implementation of the master plan and enhance coordination among stakeholders, the grant will also include funding for three (3) full-time date-certain salary and benefit employees, a Hazard Mitigation Program Coordinator and a Hazard Mitigation Program Administrative Specialist in the Office of Emergency Management, and a Flood Resilience Coordinator in the Department of Public Works. Finally, enhanced coverage of rainfall, flood stage, discharge, and water quality sensors will help validate planning assumptions and fill data gaps to justify future projects and grant applications.

The completion of this project will result in a comprehensive planning and capacity building effort that meets the Resilience Plan criteria outlined in the CFPF Grant Manual, as follows:

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
5. Is based on the best available science, and incorporates climate change, sea level rise, and storm surge (where appropriate), and current flood maps.

Project Background

The County participates in the Northern Virginia Hazard Mitigation Plan (NOVA HMP), as required by 44 CFR 201.6 to maintain eligibility for Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) and other post-disaster federal financial assistance. The PWC Hazard Mitigation Workgroup was established in 2017 to implement the PWC-specific mitigation strategies outlined in the NOVA HMP. The Workgroup is facilitated by PWC EM and includes representatives from the Departments of Public Works, Development Services, Transportation, Information Technology, Parks, Recreation, and Tourism (DPRT), Public Safety Communications, Police (PD), the Fire and Rescue System (FRS), and the Virginia Department of Transportation (VDOT). Additional agencies and partners, such as utility or transportation providers, the School Division, town representatives and others are consulted on hazard-specific and project-specific strategies, as they are identified.

To date, the Workgroup has utilized a project management framework to coordinate efforts around specific grant programs and individual mitigation strategies. As flooding is one of the top hazards in PWC, recent efforts have focused on collecting data on flood stage elevations in flood-prone areas, providing enhanced warning about imminent flooding conditions, and increasing participation in the National Flood Insurance Program (NFIP). Examples of recent initiatives include:

> **Automated Flood Warning System (AFWS)** - To obtain more data on flood-prone areas, the Office of Emergency Management is coordinating implementation of the county's Automated Flood Warning System (AFWS). To date, AFWS sensors have been installed at 14 of the most vulnerable flooding locations within the County and has provided key data to inform future planning efforts for Transportation, DPRT and informed flood emergency response protocols for PWC PD, FRS, PWC EM, and VDOT.
>
> **Flood Insurance Awareness** – The County participates in the NFIP, along with the Community Rating System (CRS), a voluntary incentive program recognizes and encourages community floodplain management practices that exceed the minimum requirements of the NFIP. In advance of the County's recent five-year renewal site visit, the workgroup coordinated with stakeholder groups to implement stormwater management standards, flood and dam emergency response plans, robust community outreach efforts, and other activities. These efforts will yield additional flood insurance premium rate discounts for policyholders in the County.

While the County's existing hazard mitigation workgroup has been successful in coordinating and implementing small projects for specific grant opportunities, there are insufficient staff resources to continue to build sustainable planning capacity and develop a local mitigation framework that coordinates mitigation strategy implementation in a cohesive, comprehensive, and holistic way.

Capacity Building and Planning Scope of Work Requirements

The following are the objectives of the scope of work for this project, as outlined in the CFPF Grant Manual:

1. **Assess Capacity Needs and Assets**
    a. Prince William County has identified the following resource needs:
        i. **Financial**: – Development and adoption of a resilience plan is required before the County can apply for project-based funding from the CFPF. No funding is available or planned in the FY2022 or FY2023 budgets to support the development of a resilience plan or the related staff support requested in this application.
        ii. **Human:** – As a rapidly growing community, the County's existing staff positions in floodplain and watershed management are focused on the backlog of stormwater maintenance issues and review of new development. In addition, the County's Emergency Management program does not have sufficient staff resources to facilitate a whole-community, stakeholder-driven mitigation framework. Given these circumstances, the County is seeking CFPF funding to implement a Mitigation Program Coordinator, a Flood Resilience Coordinator, and a Hazard Mitigation Program Administrative Specialist for three years.
        iii. **Technical Assistance:** The County is seeking CFPF funding to retain an outside consultant to develop a flood resilience master plan. The fiscal and human capital constraints above do not allow for the development of a resilience plan with existing resources.
        iv. **Training:** Based on the strategies outlined in the Flood Resilience Master Plan will be implemented by the Mitigation Program Coordinator and Administrative Specialist as a component of the Ready Prince William community engagement program.
    b. This project will enhance program management and whole-community engagement to build capacity for hazard mitigation and flood resilience efforts with three (3) date-certain salary and benefit employees for the functions of a Hazard Mitigation Program Coordinator, a Flood Resilience Coordinator, and a Hazard Mitigation Program Administrative Specialist. Currently, all hazard mitigation and flood mitigation functions are divided up among existing staff, with no single full-time employee assigned as the comprehensive program manager for hazard mitigation and flood mitigation. In addition, this project will utilize contractual services to hire consultants to assist in the development and implementation of a PWC Flood Resilience Master Plan that will serve as the overall framework to guide hazard mitigation projects and flood resilience efforts for the next 10 years. Every component of this project seeks to increase and strength the collective knowledge, skills, and abilities of PWC to increase flood resilience and hazard mitigation efforts for the whole community.
    c. PWC EM coordinates all hazard mitigation grant applications and tracks federal and state grant funding opportunities as they apply to identified projects in the NOVA Hazard Mitigation Plan. This process will continue with the development and implementation of the PWC Flood Resilience Plan. The addition of a Hazard Mitigation Program Coordinator

position will allow us to expand participation in the Hazard Mitigation Workgroup, to key public-private partnerships, community organizations, and other whole-community partners that have a role in increasing flood resiliency in PWC.

   d. The outcome and recommended actions from the flood resilience master plan will be used to inform the County's Comprehensive and Strategic plans at their next scheduled revisions. Master plan recommendations will also be integrated into the County's mitigation strategies under the Northern Virginia Hazard Mitigation Plan and will complement the County's ongoing participation in the NFIP Community Rating System.

2. **Goals and Objectives**

   PWC Mitigation Workgroup members have identified the need for a combined planning effort as county agencies, regional partners, and private sector businesses are working relatively independently of one another to increase flood resilience in PWC. Departments and stakeholders are developing agency-specific mitigation strategies for the next five to ten years – many of which are project-oriented and in need of future funding. The CFPF is a permanent revolving fund that allows for project proposals but requires an approved resilience plan before the County can apply for or receive funding from the "project" category.

   To align these efforts with the action-oriented nature of the CFPF, the whole-community principles of the County's Emergency Management program and the needs of the County's floodplain and stormwater management functions, the Office of Emergency Management and Department of Public Works will apply for a CFPF project with the following goals, objectives and deliverables:

   a. To develop and implement a PWC Flood Resilience Master Plan that will serve as the overall framework to guide hazard mitigation projects and flood resilience efforts for the next 10 years. Effective mitigation begins with a comprehensive understanding of risk based on vulnerability to threats and hazards. This planning framework will consolidate relevant planning efforts, policy, regulatory requirements, and flood event data to ensure unity of effort in ongoing and emerging risks relating to flooding in the greater Prince William area.
   b. To enhance program management and whole-community engagement to build capacity for Hazard Mitigation and flood resilience efforts with three date-certain salary and benefit employees. These programs do not currently have positions or funding available to support the increased workload of managing contractors, coordinating with stakeholders, monitoring the implementation of mitigation strategies, and building long-term capacity in the PWC Hazard Mitigation Program. This project will build Hazard Mitigation and flood resilience planning capacity for the following functions:
      i. Hazard Mitigation Program Coordinator – Office of Emergency Management. This position will:
         1. Coordinate with the selected consultant to develop and implement the Master Plan.
         2. Develop and synchronize a local PWC Mitigation Framework with the Northern Virginia Hazard Mitigation Plan, the CRS program, the AFWS, and the Ready Prince William preparedness program.

        3. Manage the PWC Hazard Mitigation Workgroup and enhance coordination with other groups, such as the Local Emergency Planning Committee (LEPC), private sector partners, and non-profit organizations to increase whole-community coordination of all threats and hazards.
        4. Develop projects and manage the application and award lifecycle for state and local hazard mitigation grant opportunities.
    ii. Flood Resilience Coordinator – Department of Public Works. This position will:
        1. Coordinate with the selected consultant to develop and implement the Master Plan.
        2. Provide programmatic support to flood resilience and climate adaptation studies and develop strategies to mitigate flood risk in flood-prone areas.
        3. Work closely with the Hazard Mitigation Program Coordinator to implement findings of the Master Plan as it relates to floodplain and stormwater management.
        4. Evaluate related policies, procedures, and regulations and make recommendations on alternatives that will improve the community's resilience to flooding.
    iii. Hazard Mitigation Program Administrative Specialist – Emergency Management. This position will:
        1. Assist the Hazard Mitigation Program Coordinator with administrative functions relating to the CFPF grant, including, but not limited to preparing meeting notes, maintaining records, monitoring project timelines, and other requests for administrative assistance.
        2. Coordinate hazard mitigation grant administrative duties including maintaining budget, expense details, quarterly status reports, and other grant-specific requirements.
        3. Monitoring all project activities to ensure compliance with grant requirements and County procurement and grants management policies and procedures.
        4. Assist with hazard mitigation and flood awareness outreach activities to include as serving as the single point of contact for citizen inquiries.
c. Enhance coverage of rainfall, flood stage, discharge, and water quality sensors to support flood detection and warning efforts and the County's Municipal Separate Storm Sewer System (MS4) permit and Virginia Stormwater Management Program (VSMP) regulations.

3. Stakeholder Identification, Outreach and Education Strategies

Engaged Partnerships and Inclusiveness is identified as one of the four guiding principles for mitigation outlined in FEMA's National Mitigation Framework. The Framework notes that "Mitigation is advanced through the actions of many groups to collectively reduce risk vulnerability to the whole community." This project seeks to increase the coordination and partnerships that already existing in the community to enhance flood resilience and hazard mitigation priorities, where applicable, by bringing in partners and members of the community that have not traditionally been involved in the PWC Hazard Mitigation Workgroup.

The PWC Hazard Mitigation Workgroup is facilitated by PWC EM and currently includes representatives from the Departments of Public Works, Development Services, Transportation, Information Technology, Parks, Recreation, and Tourism (DPRT), Public Safety Communications, Police (PD), the Fire and Rescue System (FRS), and the Virginia Department of Transportation (VDOT). Additional agencies and partners, such as utility or transportation providers, the School Division, town representatives and others are consulted on hazard-specific and project-specific strategies, as they are identified.

This project will support enhanced stakeholder identification, outreach and education strategies by hiring dedicated staff to build a Mitigation Framework with a focus on flood resilience efforts. A major component of the mitigation framework will be to expand the existing PWC Hazard Mitigation program to incorporate additional stakeholders and provide opportunities for integrating resilience and preparedness messaging and programs with PWC's existing *Ready Prince William* community outreach and engagement program. In addition, PWC will leverage existing partnerships with key community leaders and organization to provide flood resilience information and overall hazard mitigation information and education to their constituents through their existing communications platforms including newsletters, town hall meetings, Facebook, Twitter, and Nextdoor.

A comprehensive outreach and engagement strategy will be developed as part of the development of the PWC Flood Resilience Master Plan. This will include staff actively engaging with stakeholders from the four incorporated towns within PWC, staff from the cities of Manassas and Manassas Park, key private stakeholders who have a role in flood mitigation to expand their knowledge and understanding of mitigation, flooding impacts in PWC, and how their agency may assist in reducing risk and increasing resilience to flooding by enhancing existing projects and programs. Stakeholder interviews, workshops, and surveys will be utilized to identify current and future projects, unmet needs, and ideas to organize priorities and develop a comprehensive Master plan that reflects the projects and desires by the community and stakeholders in PWC.

4. Implementation Plan and Timeline

Upon notification of award, PWC EM will identify a grant project manager to coordinate project deliverables, including hiring of personnel, procuring contractual services, and procurement and installation of flood sensors to aid in the development of the Flood Resilience Master Plan. Assuming an anticipated award date of June 1, 2022, the project period of performance will be June 2022 – June 2025.

Key programmatic roles and responsibilities of the three staff positions will be ongoing throughout the period of performance to ensure continuous program development and improvements. The following is an estimated timeline and approach for the implementation of key deliverables in this project.

Timeframe	**Milestones/Deliverables**
April 8, 2022	CFPF Round 3 Applications Due
June 2022	Anticipated Award
June-August 2022	Hiring of the three staff positions
June-September 2022	Identification of sites and selection of equipment for flood sensors
July-September 2022	Detailed contract scope of work for PWC Flood Resilience Master Plan developed and contractor selected
August-December 2022	PWC Mitigation Framework Development
September -December 2022	Installation of Flood Sensors
October 2022 – July 2023	PWC Flood Resilience Master Plan development process including: research and gathering of existing plans, collection of data from flood sensors, policies and procedures, stakeholder outreach for unmet needs and ideas for future projects, and first draft development.
September 2023	Master Plan completed
October 2023-May 2025	Plan Implementation and revision based on Mitigation program needs
May-June 2025	Project Closeout

5. Responsible parties for capacity building and/or plan development process

The 2022 VA CFPF grant funding, program elements, contract support, Hazard Mitigation Program Coordinator, and the Hazard Mitigation Program Administrative Specialist will be managed by PWC EM to ensure the PWC Mitigation Framework, with particular focus on flood resilience, is maintained and enhanced to ensure cross-sector, whole community partnerships are leveraged to maximize all resources and future funding for mitigation efforts in PWC. The Flood Resilience Program Manager will report to Public Works with oversight from PWC EM. These three positions are date certain positions and will no longer exist when the grant expires three years after the award date. In addition, PWC EM will serve as the fiduciary agency for this grant funding. The PWC Hazard Mitigation Workgroup will serve as the core planning team for the development of the PWC Flood Resilience Master Plan.

6. Performance Outputs and Measures

Performance outputs and measures for this project will be based on specific project elements:

- PWC Flood Resilience Master Plan – The key performance output for this deliverable will be the completion of a final plan that is actionable, integrating all known, relevant plans, projects, policies and procedures, identifies specific projects for implementation including identification of any necessary funding. Specific metrics for the success of the recommendations of this plan will include the development of a flood mitigation story map that identifies problem areas, projects, and successful mitigation outcomes for each area. This story map will allow real-time tracking of the success of specific strategies and actions, while also identifying the number of projects identified and completed.

- Three staff positions – Key performance outcomes and measures will be based on position roles, responsibilities and program expectations, with successful completion of assigned projects and program areas.
- Flood Sensors – The key performance measure for this portion of the project will be the successful installation and receipt of real-time data based on information gathered during the planning process.

In addition, in PWC, all projects must be tied to the impact it will make toward meeting the goals and strategies outlined in the Strategic Plan. One of the goals of the PWC 2021-2024 Strategic Plan is *Environmental Conservation*. Within this goal, objective EC-5, *reduce and mitigate the impacts of flooding in communities*, contains the following action strategies:

- EC5: B. Continue to update maps and monitor flood prone locations in the county.
- EC5: C. Work with local, state, and federal agencies to identify funding for projects that would reduce or eliminate the risk of repetitive flooding.
- EC5: D. Work with emergency management agencies to create and implement flood risk education programs.

Development and implementation of a flood resilience master plan and enhanced coordination of hazard mitigation and flood resilience efforts directly supports strategies EC5 B, C, and D. While the County's existing hazard mitigation workgroup has been successful in coordinating and implementing small projects for specific grant opportunities, there are insufficient staff resources to continue to build sustainable planning capacity and develop a local mitigation framework that coordinates mitigation strategy implementation in a cohesive, comprehensive, and holistic way. If awarded, the grant will support three (3) date-certain salary and benefit employees, a Hazard Mitigation Program Manager and a Hazard Mitigation Program Administrative Specialist in PWC EM, and a Flood Resilience Manager in PWC Public Works, to implement the recommendations of the *Master Plan,* building long-term sustainable planning capacity and directly coordinate projects and partnerships to implement these strategic plan objectives.

Another goal of the 2021-2024 Strategic Plan is *Safe and Secure Community*. Within this goal, objective SS-4, *continued and enhanced preparation for and response to public health and other emergencies* details the need for adequate coordination between PWC EM and whole-community partners.

Enhancing coverage of rainfall, flood stage, and discharge sensors directly supports flood detection and warning efforts by providing the National Weather Service with timely, accurate data about flood conditions in the County. The availability of timely, accurate, and relevant alerts will support SS-4 key performance indicator 5: increase percentage of residents who subscribe to PWC emergency notifications, because residents will be more likely to subscribe to notifications that are relevant to them.

7. Plan Maintenance

The grant supports the initial hire of three staff positions for the full 36-month project period of performance. During this time, each position will develop, maintain, and improve assigned program areas to ensure the program will continue to be operational beyond the grant period of performance. These positions will also create necessary program standard operating procedures and frameworks to allow for the continuation of activities even if these positions do not receive additional funding. PWC EM will continue to seek administrative support for the implementation of project activities in future hazard mitigation funding opportunities and, as part of future budget processes.

The initial Flood Resilience Master Plan will develop a 10-year implementation plan as part of its scope of work, including the identification of future projects, anticipated timelines, and eligible funding sources, if applicable. The PWC Hazard Mitigation Workgroup will use the Master Plan as a tool to continue to prioritize and manage ongoing program efforts and all recommendations and projects will be incorporated into the PWC Jurisdictional Annex of the Hazard Mitigation Plan mitigation actions. This plan will be the strategic and operational backbone for the next 10 years of flood mitigation and resilience activities across the County.

Supporting Documentation and Information

1. Comprehensive Plan

Prince William's current comprehensive plan was last adopted in October 2017, with revisions underway.The plan is available at http://www.pwcva.gov/CompPlan includes several areas thatare addressed by this proposal:

  i. Safe and Secure Communities
  ii. Environmental Conservation
  iii. Mobility

Of note, there are many residential structures that are constructed within 100-year floodplains that pre-date the County's comprehensive planning and land use regulations, thus this project will allow a the PWC Hazard Mitigation Workgroup to explore flood impact and related resilience

2. PWC Strategic Plan

The County's 2021-2024 Strategic Plan is the short-term tool that is used to enact comprehensive planning priorities. The plan is available at: https://www.pwcva.gov/strategic-plan.

3. Social Vulnerability Index Score

- According to ADAPT Virginia's Social Vulnerability Index, all of Prince William County's Census Tracts fall under the "Not Socially Vulnerable" classification, except for Census Tract 9005.02 near Opitz Boulevard and Route 1, which has a "High Social Vulnerability" classification due to urban/suburban socio-economic characteristics, and very high nursing home populations. This area experiences intermittent flash flooding and will be a highlighted area in the Flood Resilience Master Plan to identify mitigation actions, projects, and strategies for ongoing flood risk reduction. A past obstruction here in 2011 resulted in approximately 145 mobile homes and 16 apartments affected by flooding. An adjacent mobile home community resides in a floodway and 100-year floodplain.

4. **PWC Floodplain Ordinance** available at: https://library.municode.com/va/prince_william_county/codes/code_of_ordinances?nodeId=CH32ZO

5. **Hazard Mitigation Plan**

   Prince William County is part of the 2017 Northern Virginia Hazard Mitigation Plan, which was adopted by the PWC Board of County Supervisors on June 20, 2017. The County's Approval Letter from FEMA is attached. The plan is available at http://www.pwcgov.org/government/dept/FR/OEM/Documents/NHMP_2017.pdf

   The Northern Virginia Hazard Mitigation Plan is currently under revision with an estimated adoption date of Fall 2022. There is a current delay in the planning process due to the extreme circumstances and emergency management staff time required to respond to the COVID-19 disaster. In accordance with 44 C.F.R. § 201.6 (a)(1), PWC falls under the exception to the Local Hazard Mitigation Plan (LHMP) requirement due to the extraordinary circumstances relating to significant disruption from declared disasters and other events that have impact PWC's ability to complete the planning process within the required timeframe. Extraordinary circumstances exist when a determination is made by the Applicant and FEMA that the proposed project is consistent with the priorities and strategies identified in the State or Tribal (Standard or Enhanced) Mitigation Plan and that the jurisdiction meets at least one of the criteria outlined in the FEMA Unified Hazard Mitigation Assistance Guidance 2015. When project funding is awarded under extraordinary circumstances, the Recipient shall acknowledge in writing to the grant administrator that a plan will be completed within 12 months of the subaward.

   PWC's letter of extraordinary circumstances with additional details is attached to this application. Due to these extraordinary circumstances, PWC is requesting that DCR provide an exception to the Hazard Mitigation Plan requirement for this grant application as this plan will be completed this fall; during the initial stages of the 36-month CFPF grant period of performance and within the required 12-month timeframe outlined in 44 C.F.R. § 201.6 (a)(1).

PRINCE WILLIAM COUNTY

FIRE & RESCUE SYSTEM
Chief Timothy L. Keen

April 7, 2022

Wendy Howard-Cooper
Director, Dam Safety and Floodplain Management
Department of Conservation and Recreation
60 East Main Street, 24th Floor
Richmond, Virginia 23219

RE: Virginia Community Flood Preparedness Fund Grant Extraordinary Circumstances Exception request for Prince William County's Flood Resilience Master Plan and Staffing Grant Application

Dear Ms. Howard-Cooper;

Due to the extraordinary circumstances of the COVID-19 pandemic, Prince William County (PWC) will not meet the Hazard Mitigation Plan prerequisite for our Virginia Community Flood Prevention Fund grant application for a Flood Resilience Master Plan and Staffing. Revisions to the 2017 Northern Virginia Hazard Mitigation Plan are well underway, however the plan has lapsed as of April 1, 2022. Concurrent with the process outlined in 44 C.F.R. § 201.6 (a)(1) for federal hazard mitigation awards, Prince William County requests that the Department of Conservation and Recreation (DCR) grant an exception to the Local Hazard Mitigation Plan (LHMP) requirement due to the following extraordinary circumstances:

- The County has been determined to have had insufficient capacity due to lack of available staffing or necessary expertise to satisfy the mitigation planning requirement prior to the current VA CFPF grant application deadline due to the following events:
    - Public Health Emergency (COVID-19) March 12, 2020 – Present (EM-3448-VA)
    - April 2, 2020: COVID, DR-4515-VA
        - Delaying in the LHMP development due to telework transitioning, reduced workforce focus (Pandemic Response) and new Virtual Engagement Plan implementation.
- The County has experienced significant disruption from declared disasters and other events that have impacted PWC's ability to complete the LHMP planning process prior to award or final approval of a project award for the VA CFPF for PWC's Flood Resilience Master Plan and Staffing project. Please find the following events which have caused this disruption:
    - Several flooding emergencies throughout 2019
    - Public Health Emergency (COVID-19) March 12, 2020 – Present (EM-3448-VA)
    - April 2, 2020: COVID-19, DR-4515-VA
    - Feb. 11, 2021: anticipated winter weather, Executive Order number 76 (2021); FEMA-4602-DR-VA. State and federal declaration
    - May 9, 2021: Colonial pipeline shutdown (Regional Emergency/Federal Motor Carrier Safety Administration)
    - Jan. 20, 2022: severe winter weather, Executive Order number 12 (2022); State declaration

Prince William County's Flood Resilience Master Plan and Staffing project is consistent with the priorities and strategies identified in the 2018 Virginia State Hazard Mitigation Plan, the 2017 PWC Comprehensive Plan, the County's 2021-2024 Strategic Plan, and is an essential component to our community's hazard mitigation and flood resilience efforts.

To remedy this situation and meet the FEMA extraordinary circumstance requirements, Prince William County has participated in the Northern Virginia (NOVA) Multi-Jurisdictional HMP planning process, will be submitting the NOVA Multi-Jurisdictional HMP in September 2022 for review and approval by VDEM and FEMA, and is prepared to adopt the NOVA Multi-Jurisdictional HMP within 90 days of receipt of the FEMA Approval Pending Adoption (APA) letter.

We understand if this exception is granted, the NOVA Multi-Jurisdictional HMP must be approved by FEMA and adopted by Prince William County within 12 months of the date of our VA CFPF award or final/conditional approval. Moreover, we understand that if this does not occur, a Virginia CFPF grant award for a Flood Resilience Master Plan and Staffing may be terminated, and any costs incurred after the notice of termination may not be reimbursed by DCR.

If you have any additional questions about these extraordinary circumstances, please do not hesitate to contact me via bmisner@pwcgov.org or 703-792-5627.

Sincerely,

Brian Misner

Brian Misner
Emergency Management Coordinator

Virginia Community Flood Preparedness Fund Application

Section #2: Budget Narrative

April 2022

PRINCE WILLIAM
COUNTY

Planning and Capacity Building Budget Narrative

The estimated total project cost is $1,698,304.90. The total amount of funds requested from the fund is 1,360,000 to be used to fund three staff positions, contract support to develop the *PWC Flood Resilience Master Plan*, and purchase and installation of the flood gauges for data integration into the plan and subsequent projects.

Grant Cost Estimates

Detailed cost estimates are shown below:

Description	Estimated Cost	Notes
PWC Flood Resilience Master Plan	$250,000	The estimated cost based on contractual services engagement for plan development services in year one and technical assistance with plan revision and maintenance in years two and three
Hazard Mitigation Program Manager	$352,490	Annual salary and benefits are estimated to be $117,497 for a three-year estimated total of $352,490. Costs are based off mid-point hiring range for PWC Position Classification: C-42 Senior Emergency Management Specialist
Flood Resilience Coordinator	$425,140	Annual salary and benefits are estimated to be $141,714 for a three-year estimated total of $425,140. Costs are based off mid-point hiring range for PWC Position Classification: C-45 Principal Engineer
Hazard Mitigation Program Administrative Specialist	$81,515	Annual salary and benefits are estimated to be $81,515 for a three-year estimated total of $242,515. Costs are based off mid-point hiring range for PWC Position Classification: B-23 Administrative Specialist
Flood Sensors	$87,500	Estimated costs of equipment and installation for these efforts, to include the first three years These costs are based off small, rapidly deployable flood sensors that PWC is participating in a pilot with Virginia Department of Emergency Management (VDEM) and the Department of Homeland Security.

In-Kind Match

The CFPF requires a 25% local match for all planning and capacity-building projects, totaling $339,661 for this application. Existing projects from the PWC Stormwater Management Fund, managed by the Department of Public Works, will be utilized as the local match. The fund is used to facilitate stream restoration, stormwater management facility retrofits, culvert modifications, channel improvements, and drainage improvements within countywide watersheds to reduce flooding and erosion problems and/or improve water quality. The specific project to be used for the match for this project is a major stream restoration project on Powell's Creek. These activities are eligible mitigation activities under the CFPF and complement the anticipated projects and strategies that will be developed in the *PWC Flood Resilience Master Plan.*

Virginia Community Flood Preparedness Fund Application

Section #3:
Scoring Criteria & Checklist

April 2022

PRINCE WILLIAM
COUNTY

Capacity Building and Planning Eligible for Consideration		☒ **Yes** ☐ **No**
Applicant Name:	Prince William County, VA	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	55
Development of a new resilience plan.	**55**	55
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development.	**40**	40
Stakeholder engagement and strategies.	**25**	25
Goal planning, implementation and evaluation.	**25**	25
Long term maintenance strategy.	**25**	25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on **ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		302

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Virginia Community Flood Preparedness Fund Application

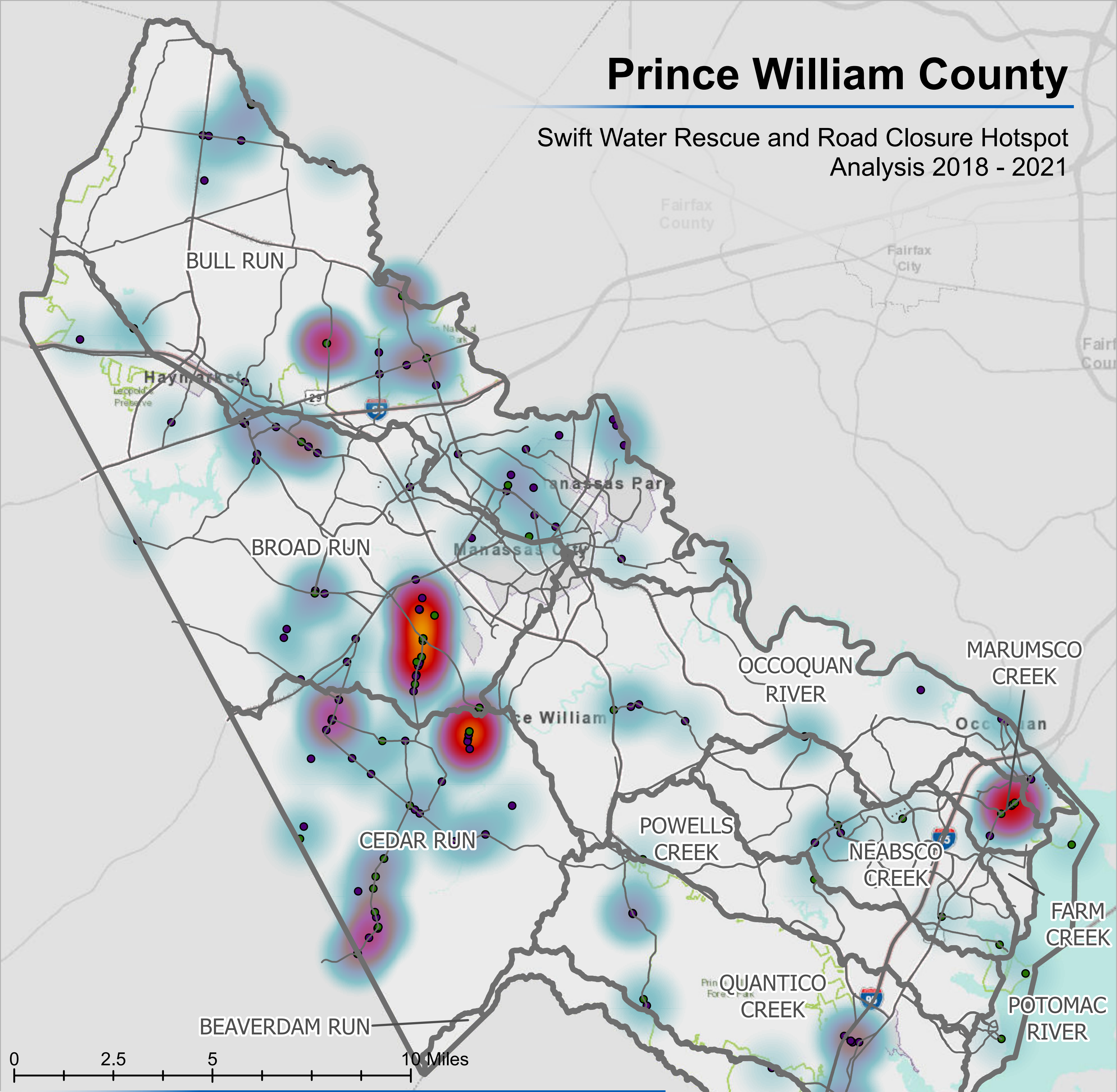
Section #4: County Map

April 2022

PRINCE WILLIAM
COUNTY

Prince William County

Swift Water Rescue and Road Closure Hotspot Analysis 2018 - 2021



- ● Swift Water Rescue Calls
- ● Road Closures

▭ Watershed Boundaries

— Streets

Sparse

Dense

PRINCE WILLIAM GIS

Department of Fire & Rescue
Communications & Information
Technology
5 County Complex Court, Suite 285
Prince William, VA 22192-5308

N

4/6/2022 2:34 PM
djm6840a

GIS Development Group

Virginia Community Flood Preparedness Fund Application

Section #5: Board of County Supervisors Resolution Authorization for Application

April 2022

PRINCE WILLIAM
COUNTY

MOTION: **BAILEY**

SECOND: **FRANKLIN**

April 5, 2022
Regular Meeting
Res. No. 22-169

RE: **AUTHORIZE A GRANT APPLICATION TO THE 2022 VIRGINIA COMMUNITY FLOOD PREPAREDNESS FUND GRANT FOR THE DEVELOPMENT OF A PRINCE WILLIAM COUNTY FLOOD RESILIENCE MASTER PLAN AND CONTINGENT UPON GRANT AWARD, ACCEPT, BUDGET, AND APPROPRIATE UP TO $1,360,000 IN ANTICIPATED GRANT REVENUES**

ACTION: **APPROVED**

WHEREAS, one of the highest natural risks to affect Prince William County (PWC) according to the 2018 Northern Virginia Hazard Mitigation Plan is flooding and flash flooding; and

WHEREAS, The PWC Office of Emergency Management (PWC EM) coordinates the PWC Hazard Mitigation Workgroup which focuses on building capacity and resilience to threats and hazards that have the potential to impact the PWC community through coordination and implementation of whole community, cross-sector projects, and planning efforts to increase community resilience; and

WHEREAS, The Virginia Department of Conservation and Recreation (DCR) manages the Virginia Community Flood Preparedness Fund (CFPF) to provide support for regions and localities across Virginia to reduce the impacts of flooding through empowering communities to complete vulnerability assessments and develop and implement action-oriented approaches to bolster flood preparedness and resilience; and

WHEREAS, DCR has solicited applications for competitive awards through three (3) eligible categories: planning and capacity building, flood prevention and protection studies, and projects. The fund prioritizes the availability of funding for localities to develop and implement a comprehensive, whole community approach to flood preparedness and resilience to ensure coordinated mitigation efforts are maintained and enhanced by all stakeholders; and

WHEREAS, PWC's Hazard Mitigation Workgroup has recommended that this funding be used to retain a consultant that will develop a Flood Resilience Master Plan that integrates historical data, stakeholder projects, and mitigation concepts to enhance our community's resilience to floods. To support implementation of the master plan, increase long-term planning capacity, and enhance coordination among stakeholders, the grant will also include funding for three (3) full-time date-certain salary and benefit employees, a Hazard Mitigation Program Coordinator, and Hazard Mitigation Program Administrative Specialist in the Office of Emergency Management, and a Flood Resilience Coordinator in the Department of Public Works. Finally, enhance coverage of rainfall, flood stage, discharge, and water quality sensors will help validate planning assumptions and fill data gaps to justify future projects and grant applications; and

WHEREAS, the PWC EM was notified in January 2022 that DCR will be accepting applications for the CFPF grant, with a competitive application including a signed Prince William Board of County Supervisors (Board) resolution approving the application be submitted to DCR no later than April 8, 2022; and

WHEREAS, if awarded, the grant period of performance will be three (3) years after date of award; and

WHEREAS, the grant budget will be established on a reimbursement basis; and

WHEREAS, the CFPF grant requires a 25% funding match for all planning and capacity-building projects, totaling $339,661 for this application. Two (2) stream restoration projects funded by the PWC Stormwater Management Fund, managed by the Department of Public Works, will be utilized as the local match for this grant. These project activities funded by the PWC Stormwater Management Fund are eligible mitigation activities under the CFPF and complement the anticipated projects and strategies that will be developed in the Master Plan; and

WHEREAS, Katie Kitzmiller, Deputy Emergency Management Coordinator, will be the grant project coordinator; and Susan Sablinski, Fire and Rescue Administrative Services Division Chief, will be the grant fiscal agent;

NOW, THEREFORE, BE IT RESOLVED that the Prince William Board of County Supervisors hereby authorizes the grant application for the 2022 Virginia Community Flood Preparedness Fund for the development of a Prince William County Flood Resilience Master Plan and contingent upon grant award, accepts, budgets, and appropriates up to $1,360,000 in anticipated grant revenue;

BE IT FURTHER RESOLVED that the Prince William Board of County Supervisors hereby authorizes that the Acting County Executive, or designee, will serve as the signatory on all necessary documents to carry out the requirements of the grant as approved to form by the County Attorney’s Office upon notification of award.

Votes:
Ayes: Angry, Bailey, Boddye, Franklin, Lawson, Vega, Wheeler
Nays: None
Absent from Vote: None
Absent from Meeting: Candland

For Information:
Fire and Rescue System Chief

ATTEST: Andrea P. Madden
Clerk to the Board

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

2022 CFPF Prince William County Application Submission

1 message

Kitzmiller, Katie <KKitzmiller@pwcgov.org> Fri, Apr 8, 2022 at 12:00 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Misner, Brian M." <BMisner@pwcgov.org>

Good Morning,

Please find our attached application package for the development of a Flood Resilience Master Plan and Staffing in Prince William County. If you have any questions, or need additional information, please do not hesitate to reach out to us. We appreciate the opportunity to apply for this grant program.

V/R,

Katie

Katie Kitzmiller, CEM, MPS, MIA

Deputy Emergency Management Coordinator

Office: 703.792.7047 | Cell: 571.359.3501

kkitzmiller@pwcgov.org

Prince William County Government

Office of Emergency Management

3 County Complex Court, Prince William, VA 22192

www.pwcgov.org/ready | Twitter | Facebook

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Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Town of Blacksburg

Category of Grant Being Applied for (check one):

_X_ **Capacity Building/Planning**

_____ **Project**

_____ **Study**

NFIP/DCR Community Identification Number (CID) 510100

If a state or federally recognized Indian tribe, Name of tribe __________

Name of Authorized Official: Marc Verniel, Town Manager

Signature of Authorized Official:

Mailing Address (1): 300 South Main St.

Mailing Address (2): PO BOX 90003

City: Blacksburg **State:** VA **Zip:** 24062-9003

Telephone Number: (540) 443-1300 **Cell Phone Number:** (____) ________

Email Address: mverniel@blacksburg.gov

Contact Person (If different from authorized official): Kafi Howard, Town Engineer

Mailing Address (1): 300 South Main St.

Mailing Address (2): PO BOX 90003

City: Blacksburg State: VA Zip: 24062-9003

Telephone Number: (540) 443-1354 Cell Phone Number: (____) ________

Email Address: khoward@blacksburg.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☒ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): **All areas located within the municipal boundaries of the Town of Blacksburg.**

NFIP Community Identification Number (CID#):(See appendix F **510100**

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☐ No **Community-Wide**

Flood Zone(s) (If Applicable): **Community-Wide**

Flood Insurance Rate Map Number(s) (If Applicable): **51121C0040C, 5112C0045C, 51121C0127C 51121C0131C, 5112C0132C, 51121C0129C 51121C0133C, 5112C0134C, 51121C0141C & 51121C0142C**

Total Cost of Project: **$100,000**

Total Amount Requested **$75,000**

Scope of Work Narrative (Town of Blacksburg Resilience Plan):

Summary

The Town of Blacksburg desires to establish a Resilience Plan analyze to study existing and future flood hazards for riverine and stormwater flooding as affected by the projected rainfall change due to climate change. The study will provide the Town with a baseline of information with which to inform and guide future *policy development*, community programs and regulatory structure. This Resilience plan will be the first step toward the goal to address and adapt in the future to maintain climate sustainability.

The Resilience Plan shall consist of the following:

- Technical Study of the current vulnerabilities specific to the Town of Blacksburg;
- Analysis of the future flooding hazards based upon anticipated changes in flood frequency;
- Estimate impacts to Town resources, critical sectors and infrastructure;
- Identify areas with social vulnerability that could become disproportionately impacted;
- Establish a toolbox of project types that could aid in addressing regional needs; and
- Provide a list of resources to aid in the future adaptability to new project types and data metrics.

Goals and Objectives:

The Town of Blacksburg has identified in the Comprehensive Plan that climate vulnerability, adaptation and resiliency is part of our Town plan for the future, we need to gather data to provide our leadership with the most accurate analysis of risk and cost effective options for solutions. Our goal with this Resilience Plan is to get a better understanding of how Blacksburg is vulnerable in the changing climate of the future using the best available data and climate modeling anticipated for our region. This plan will meet the following criteria:

- It is project-based with projects focused on flood control and resilience.
- It incorporates nature-based infrastructure to the maximum extent possible.
- It includes considerations of all parts of a local government regardless of socioeconomics or race.
- It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
- It is based on the best available science and incorporates climate change and current flood maps.

Stakeholder Identification, Outreach and Education Strategies

The Town of Blacksburg's list of stakeholders are the following:

- Town Council of the Town of Blacksburg
- Town Administration
- Departments of Planning and Engineering
- Sustainability Department

Parties Responsible for Plan Development Process

The Town's Department of Engineering and GIS will be responsible for the plan development process. This will occur in conjunction with the Planning and Sustainability departments.

Performance Outputs and Measures
The completion of a Town Resilience Plan would be a measure of success for this initial effort. This plan will provide for a baseline of information with which to inform and guide future policy development, community programs and regulatory structure.

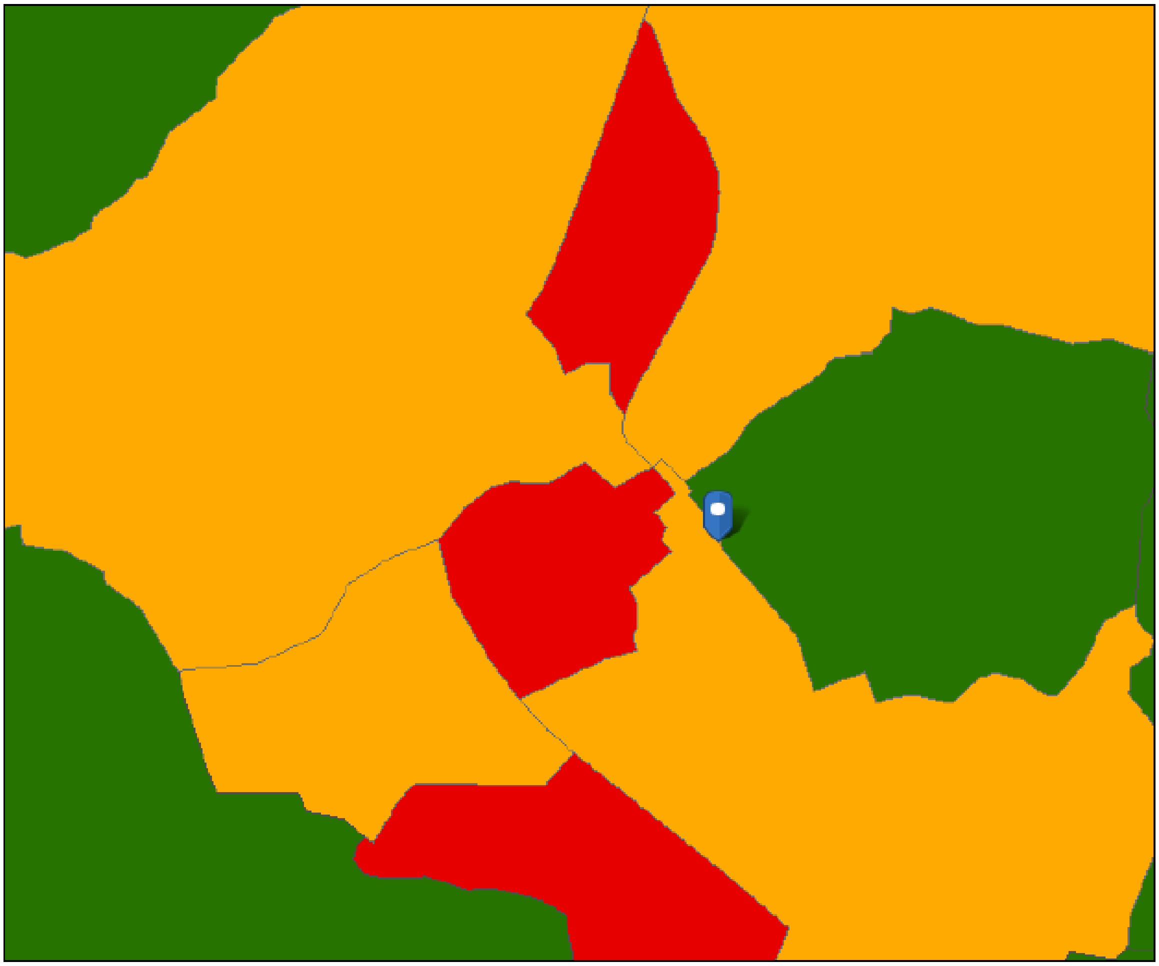
Plans for Maintaining Capacity over the Long-Term
The Town plans to utilize this Resilience Plan as a working document and starting point for future policy development. As new information becomes available, this plan will be updated to reflect the new information. Changes can be made to the guidance as the available science changes and methods for protection and adaptation becomes more robust.

Supporting Documentation:
Floodplain Ordinance:
https://library.municode.com/va/blacksburg/codes/code_of_ordinances?nodeId=CO_APXAORNO1137BLZOOR_ARTIIIDIST_DIV24FHFLOVDI

Hazard Mitigation Plan:
https://nrvrc.org/hazardmitigation/

Comprehensive Plan:
https://www.blacksburg.gov/departments/departments-l-z/planning-and-building/comprehensive-plan

Solical Vulnerability Index Score (Town of Blacksburg) – Identified as Medium, although there are areas of High and Low within the jurisdictional boundaries. The predominant score is Medium.



April 8, 2022

Social Vulnerability Classification

- 🟥 High Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟩 Not Socially Vulnerable
- ▨ Not included in the analysis

1:72,224

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management

Virginia Institute of Marine Science

ADAPTVA

Budget Narrative (Town of Blacksburg Resilience Plan):

Summary
The Town of Blacksburg desires to establish a Resilience Plan analyze to study existing and future flood hazards for riverine and stormwater flooding as affected by the projected rainfall change due to climate change. The study will provide the Town with a baseline of information with which to inform and guide future *policy development*, community programs and regulatory structure. This Resilience plan will be the first step toward the goal to address and adapt in the future to maintain climate sustainability.

Estimated Total Project Cost
The Town estimates the project cost for a Resilience Plan will be approximately $100,000. This estimate provides for the engagement of a Consulting Firm to provide the Town with the following information: (1) A technical study of the current vulnerabilities specific to the Town of Blacksburg, (2) an analysis of the future flooding hazards based upon anticipated changes in flood frequency, (3) an estimation of impacts to Town resources, critical sectors and infrastructure, (4) the identification of areas with social vulnerability that could become disproportionately impacted, (5) the establishment of a toolbox of project types that could aid in addressing regional needs; and (6) list of resources to aid in the future adaptability to new project types and data metrics.

Amounts of Funds Requested:
The Town of Blacksburg is requesting **$75,000** grant assistance from the Fund. This will be paid directly to the Consulting Firm for the generation of the complete Resilience Plan that meets the criteria listed above. The Town is prepared to provide a match of **$25,000** for this Resilience Plan.

RESOLUTION 4-___-22

A RESOLUTION SUPPORTING THE TOWN'S VIRGINIA COMMUNITY FLOOD PREPAREDNESS GRANT APPLICATION FOR 2022

WHEREAS, the Council of the Town of Blacksburg desires to submit an application for the 2022 Virginia Community Flood Preparedness Fund in an amount of $100,000 through the Virginia Department of Conservation and Recreation and the Virginia Resources Authority;

WHEREAS, funds from the Virginia Community Flood Preparedness Fund are dedicated solely for the purposes of enhancing flood prevention or protection in Virginia, so the Town must use such funds primarily for the purpose of implementing flood prevention and protection projects and studies in areas that are subject to recurrent flooding as confirmed by a certified floodplain manager;

WHEREAS, the Town acknowledges climate change and its consequences and desires to base its decision making on the best available science, and it pledges to work to identify and address socioeconomic inequalities and to enhance equity through adaptation and protection efforts;

WHEREAS, the Council agrees that the Virginia Community Flood Preparedness Grant requires a 25% match with local funds for planning grants; and

WHEREAS, these funds are requested for the development of a Town of Blacksburg Resilience Plan in which the Town will utilize community and regional scale planning to the maximum extent possible, seeking region specific approaches tailored to the needs of individual communities.

NOW, THEREFORE, BE IT RESOLVED by the Council of the Town of Blacksburg that the Council acknowledges the preceding recitals and hereby expresses its support for the Town's application for the allocation of funds in the amount of $25,000 through the Virginia Community Flood Preparedness Grant Program.

____
Mayor

ATTEST:

____
Town Clerk

Date of Adoption: ___________________________

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Town of Blacksburg, Virginia**	
	Eligibility Information	
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	✓
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		*N/A*
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	✓
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☑ Yes ☐ No
Applicant Name:	**Town of Blacksburg, Virginia**

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	55	
Development of a new resilience plan.	55	55
Resource assessments, planning, strategies and development.	45	
Policy management and/or development.	40	
Stakeholder engagement and strategies.	25	
Goal planning, implementation and evaluation.	25	
Long term maintenance strategy.	25	
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	15	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	15	
High Social Vulnerability (1.0 to 1.5)	12	
Moderate Social Vulnerability (0.0 to 1.0)	8	8
Low Social Vulnerability (-1.0 to 0.0)	0	
Very Low Social Vulnerability (Less than -1.0)	0	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	10	
No	0	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	10	10
No	0	
10. Does this project provide "community scale" benefits?		
Yes	20	20
No		
Total Points		93

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Town of Blacksburg Grant Request for Resilience Plan - 510100

1 message

Kafi Howard <KHoward@blacksburg.gov> Fri, Apr 8, 2022 at 11:55 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Dear Department,

Please accept this attached Grant Request for the development of a Resilience Plan for the Town of Blacksburg. We have included all materials in the attached application document. Please let me know if you have any questions.

Thanks

Kafi

Kafi Howard, Town Engineer

Town of Blacksburg

400 S Main St

Blacksburg, VA 24060

khoward@blacksbPurg.gov

(540) 443-1354

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DICKENSON COUNTY BOARD OF SUPERVISORS

Board of Supervisors
PEGGY KISER, CHAIRWOMAN
Ervinton District

JOSH EVANS, VICE-CHAIRMAN
Willis District

RON PETERS
Sandlick District

RHONDA SLUSS
Clintwood District

SHELBIE WILLIS
Kenady District

County Administrator
LARRY BARTON

County Attorney
WILLIAM J. STURGILL

Of Counsel/Economic Development Advisor to the Board
CLARENCE E. "BUD" PHILLIPS

P.O. Box 1098, Clintwood, VA 24228
Telephone: (276) 926-1676
Fax: (276) 916-1649

818 Happy Valley Drive, Clintwood, VA

Ms. Wendy Howard-Cooper
Division Director
Virginia Department of Conservation and Recreation
600 East Main St.
Richmond, VA 23219

Re: Application for the 2022 Virginia Community Flood Preparedness Fund.

Dear Ms. Howard-Cooper

Dickenson County is pleased to submit an application for the 2022 Virginia Community Flood Preparedness Fund.

In our proposal, we have outlined:

I. Scope of Project

II. An abundance of expertise to complete this project.

III. That Dickenson County has the resources to maintain accurate records and provide information to the appropriate officials.

We look forward to an opportunity to share with you in more detail our ideas for making your project a success.

Sincerely yours,

Larry Barton
Dickenson County Administrator

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Dickenson County Virginia

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

X **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510253

If a state or federally recognized Indian tribe, Name of tribe No

Name of Authorized Official: Larry Barton

Signature of Authorized Official:

Mailing Address (1): 818 Happy Valley Dr.

Mailing Address (2): P.O. Box 1098

City: Clintwood **State:** Virginia **Zip:** 24228

Telephone Number: (276) 926-1675 **Cell Phone Number:** (276) 345-2052

Email Address: lbarton@dickensonva.org

Contact Person (If different from authorized official): Chris Rakes

Mailing Address (1): 818 Happy Valley Dr.

Mailing Address (2): P. O. Box 733

City: Clintwood **State:** Virginia **Zip:** 24228

Telephone Number: (276) 926-1673 **Cell Phone Number:** (276) 365-6336

Email Address: crakes@dickensonva.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☑ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☑ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☑ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☑ Stream bank restoration or stabilization.
- ☑ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): Center to Northeastern part of Dickenson County VA "see project map"

NFIP Community Identification Number (CID#):(See appendix F 510253

Is Project Located in an NFIP Participating Community? ■ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ■ Yes ☐ No

Flood Zone(s) (If Applicable): A & AE

Flood Insurance Rate Map Number(s) (If Applicable): 51051C0145 D

Total Cost of Project: $ 2,232,415.00

Total Amount Requested $ 2,232,415.00

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	✓
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required **Match waiver applied for.**	✓

Project Eligible for Consideration	✓ **Yes** ☐ **No**
Applicant Name:	**Dickenson County Virginia**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	50
✓ Wetland restoration, floodplain restoration ✓ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ✓ Stream bank restoration or stabilization. ✓ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		138

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	■ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	■ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	■ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	■ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ■ N/A
A link to or a copy of the current hazard mitigation plan	■ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	■ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	■ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ■ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	■ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☐ Yes ☐ No ■ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ■ N/A

Table of Contents

Scope of Project

Dickenson County proposes to provide improvements to the floodplain areas along the Russell Fork River and Lick Creek Special Flood Hazard A and/or AE zones. Dickenson County will work to achieve our goals that are within the Dickenson County Flood Resilience Plan. This project will work separately from the U. S. Army Corps of Engineers 202 "USACE 202 program" program that is currently underway. To be edible for the USACE 202 program qualifying properties must have the lowest living floor at or below the level of the 1977 flood and occupied. Since within the project area the 1977 flood level is 2 feet higher than the 1% annual flood chance, many homes do not qualify for the 202 program. This grant will target those houses along with houses that have unsuitable foundations. All items within this project will be conducted under the requirements of the Dickenson County's Floodplain Ordinance along with State and Federal regulations. These improvements will be as follows:

1. Acquire properties which may cause an increased flood impact and are within the Special Flood Hazard A or AE zones through voluntary acquisition. See the map of the project area.
    a. Demolish acquired properties after the required asbestos testing and possible asbestos abatement.
    b. Remove all debris from site along with outbuildings.
    c. Fill in foundations and basements with material for site if possible, preventing any elevation of the ground surface.
    d. Plant grasses and other native vegetation. Approximately 100 feet away for the ordinary high water mark we intend on planting perennial vegetation that will also serve as a food source for the native wildlife.

2. Where feasible and where the cost is less than the acquisition cost, flood proof the structures. Where elevation is used or any elevation is established it will consist of, FEMA Base Flood Elevation or the April 1977 flood elevation whichever is greater, plus an additional 1 foot Freeboard.
    a. Elevate structures on a reinforced engineered foundation with flood openings meeting or exceeding the FEMA Technical Bulletin 1, 2 & 11 requirements.
    b. Elevate all mechanical and HVAC equipment.
    c. Provide safe, code approved access to the elevated property.

3. Where land is acquired either through USACE acquisition or through the Virginia Community Flood Preparedness Fund. Also where landowners give permission to access the river banks across their properties.
    a. Perform streambank restoration as needed, removing falling trees and debris that would endanger proper river flow in the event of a heavy rains or flooding.
    b. Without getting equipment into the river, remove debris and items that will constrict natural water flow. This will conducted only after receiving approval from USACE and Virginia Fish & Wildlife Services. Relocation of the Big Sandy

    Crayfish (Cambarus callainus) may be required within some areas, but this disturbance will be keep to a minimum.
  c. Remove berms or other obstructions that may prevent or slow flood waters from entering these areas. This will allow for the flood waters to have additional storage.
  d. Plant native vegetation as needed along the river bank to stabilize eroding soils.
  e. Approximately 100 feet away for the ordinary high water mark we intend on planting perennial vegetation that will also serve as a food source for the native wildlife.

4 Abandoned structures the owners are unreachable or unresponsive, Dickenson County may invoke our Ordinance to Compel the Repair or Removal of Buildings "Ordinance Book 1 Page 753".
  a. Demolish derelict properties after the required asbestos testing and possible asbestos abatement.
  b. Remove all debris from site along with unstable outbuildings.
  c. Fill in foundations and basements with material for site if possible, preventing any elevation of the ground surface.
  d. Plant grasses and other native vegetation.
  e. If access is obtained to the river banks, perform item #3 Streambank restoration.

Dickenson County's Floodplain Ordinance:
https://dickensonva.org/DocumentCenter/View/2505/Dickenson-County-Virginia-Floodplain-Ordinance-2020
USACE 202 Source: https://www.lrh.usace.army.mil/Missions/Dickenson-County/
Additional USACE 202 Source: http://dcva.link/corp
USACE General Plan Nonstructural Project Appendix V Dickenson County, Virginia Levisa Fork Basin Source:
http://dcva.link/vol1
http://dcva.link/vol2
http://dcva.link/vol3
http://dcva.link/vol4
http://dcva.link/vol5
http://dcva.link/vol6
Ordinance Bool 1 Page 753 Source: http://dcva.link/ord
Dickenson County Flood Resilience Plan Link: http://dcva.link/resplan

Experience with prior grants

Dickenson County has vast experience with different types of grants. We have successfully completed multimillion dollar grants with combined funding sources such as ARC, DHCD, Rural Development, AML, etc. Several of these grants involved in working in and around rivers and streams.

Qualifications and experience of the individuals leading this project

Dickenson County staff will work closely with the Virginia Department of Conservation and Recreation and others contracted as needed to help administrator this program. We will coordinate tasks and avoid duplication of staff and services. Our availability of person-power enables our County to assign quality people to the task consistently from project start to final close out. Our employee that will be heading up this project is Chris Rakes see his bio below:

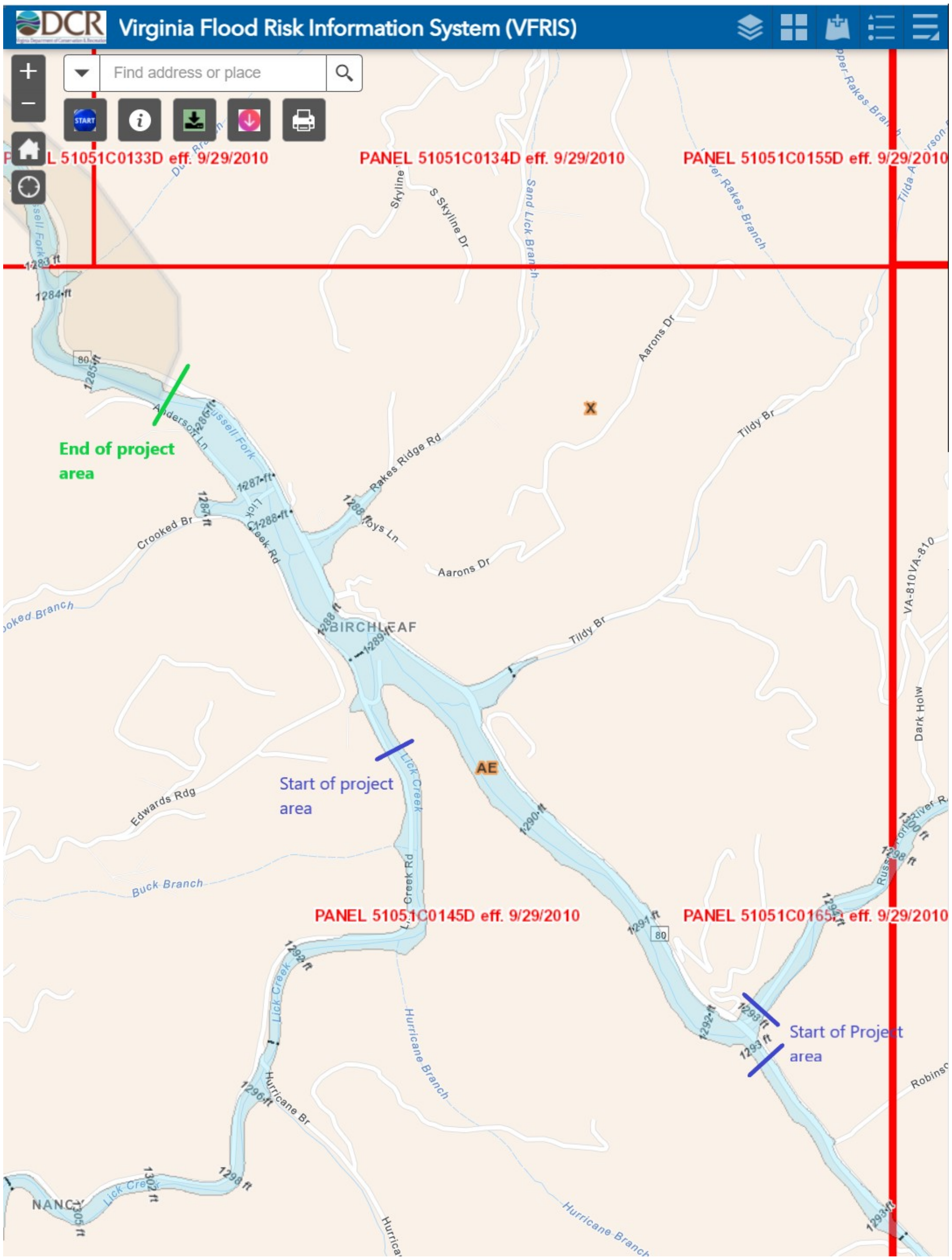
Larry K. Barton, CPA – County Administrator
Mr. Barton has been employed for Dickenson County for 1 ½ years. As County Administrator, he is responsible for all day-to-day activities of the County, including budget, economic development, grant administration, and supervision of staff.
Mr. Barton has been a Certified Public Accountant for the past 21 years, and has spent his career in finance and administration. Before becoming the County Administrator for Dickenson County, Mr. Barton served 5 years as Chief Financial Officer for Dickenson County Public Schools and worked 24 years in private industry before that.

Chris Rakes — Building Official / Erosion and Control Specialist
Mr. Rakes has been employed with Dickenson County for 6 years. He is Dickenson County's Certified Building Official, Certified Erosion and Sediment Control Combined Administrator. Before becoming the Building Official for Dickenson County, Mr. Rakes worked for 23 years as for a Non-Profit organization and 10 years as a licensed contractor before that. He is a Certified Floodplain Manager, Certified Erosion & Sediment Control Administrator and a Certified Building Official. He is a Virginia Licensed Asbestos Inspector and performs asbestos testing on Dickenson County properties.

Ability to maintain accurate records and provide information to appropriate officials

Dickenson County has a very capable staff to ensure that accurate records are maintained and that information is provided to the appropriate officials in an accurate, timely basis. We have worked with many grants over the years from various funding agencies, and have experience in this field. Mr. Barton will be overseeing the project finances, and has a staff of 4 in his office that are well versed in grant administration.

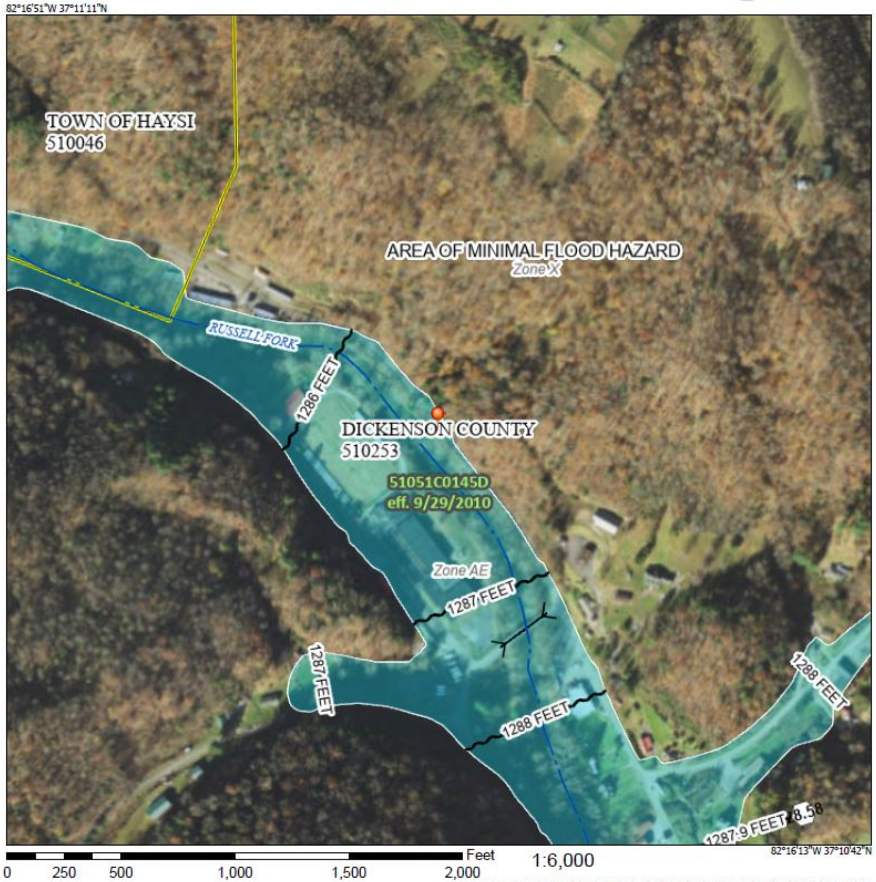
Maps



The project area will consist of only the A & AE Zones within the project area. The project area will start at the blue marks on the map near the intersection of Sandlick Rd. / Russell Fork River Rd and 0.75 mile up Lick Creek Rd. Ending at the green mark, at the Town of Haysi jurisdictional boundary.

National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

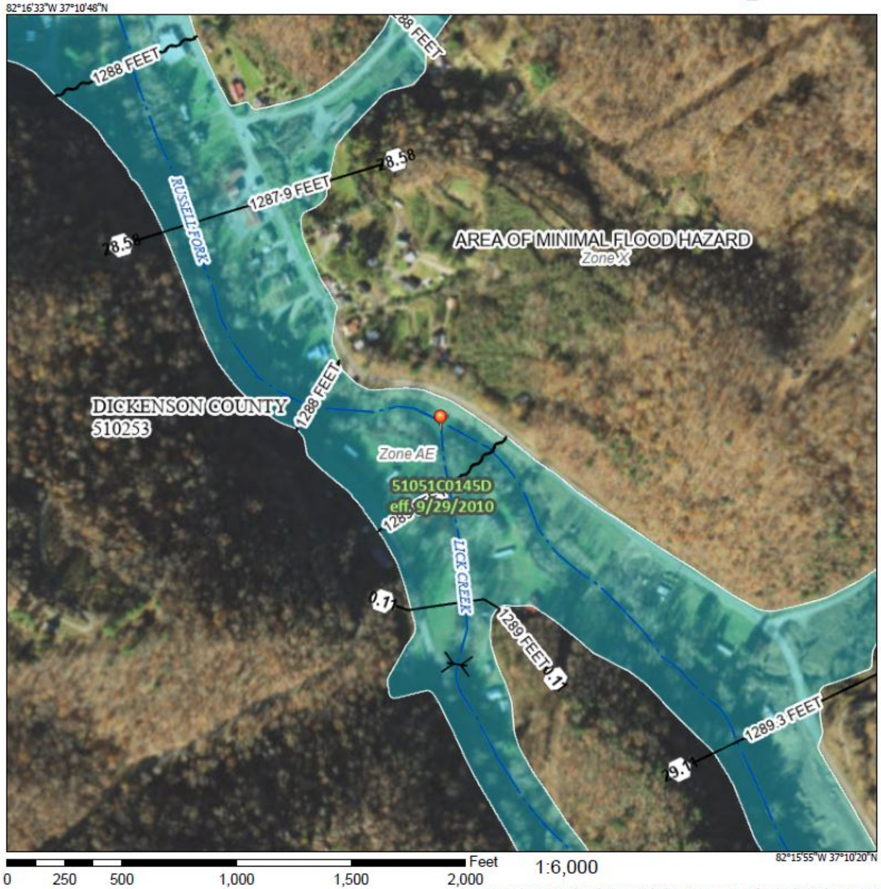
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/4/2022 at 1:20 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
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- Digital Data Available
- No Digital Data Available
- Unmapped

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/4/2022 at 1:19 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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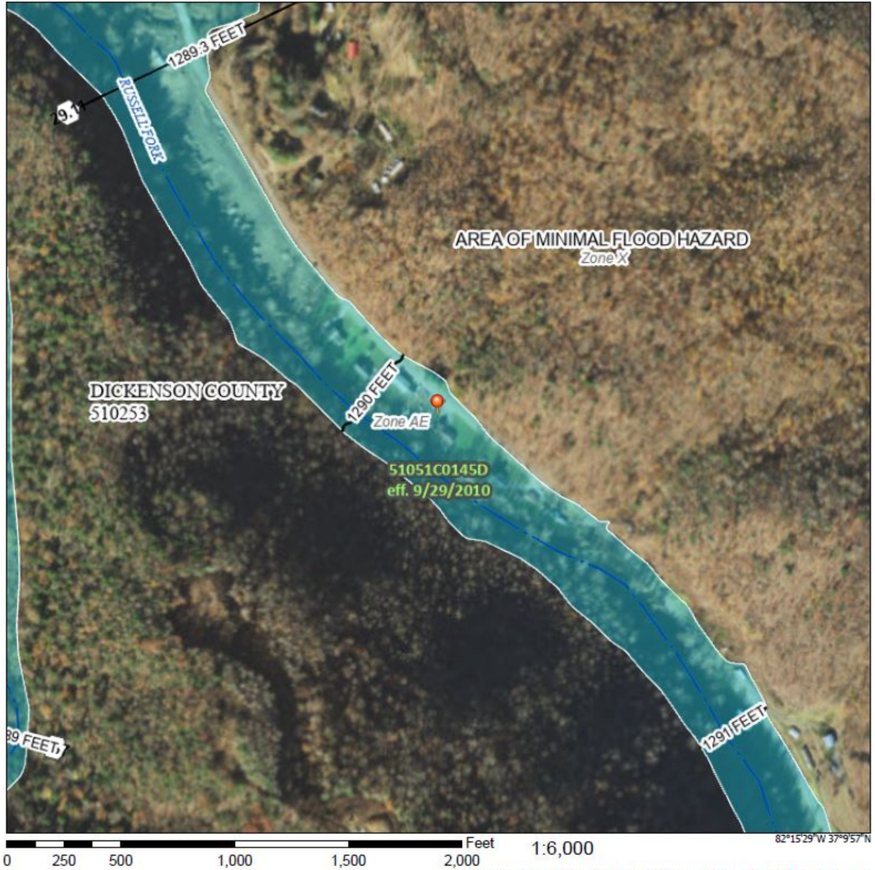
National Flood Hazard Layer FIRMette

82°16'7"W 37°10'26"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	▭	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	ı ı ı ı ı ı ı	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	━━	Limit of Study
	━━	Jurisdiction Boundary
	— — —	Coastal Transect Baseline
	— —	Profile Baseline
	──	Hydrographic Feature
MAP PANELS	⬚	Digital Data Available
	⬚	No Digital Data Available
	☒	Unmapped

N

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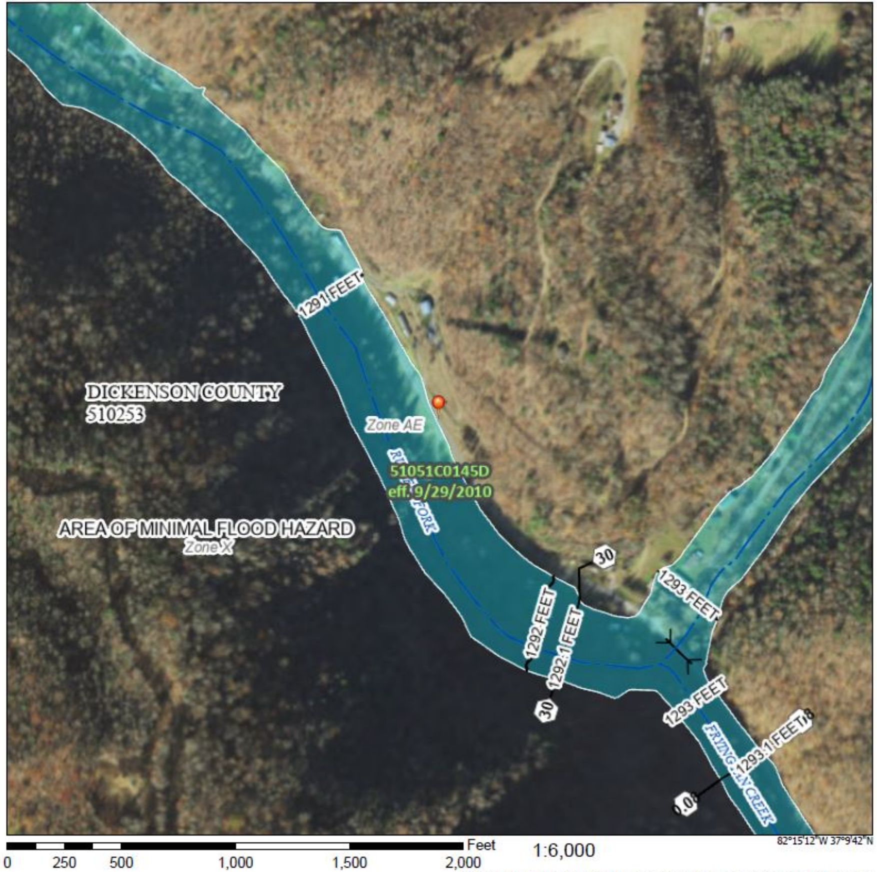
National Flood Hazard Layer FIRMette

82°15'49"W 37°10'11"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

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Population affected by this project.

Approximately 53 structures are located within the project area.
Of those 41 is residential, 11 are business's and 1 is an Elementary School
With an estimated population of 110 people living within this area with many more working in the project area.

The population of people effected downstream of this project that could also see flood relief form this project would exceed a thousand. This area would include The Town of Haysi Virginia, Elkhorn City Kentucky and many homes in between.

Historic Flooding Data & hydrologic studies.

Since 1977, Dickenson County has had 11 federally-declared disasters due to severe storms and/or flooding.

Year of Declaration Date	Declaration Title	Disaster Number
1977	Severe Storms & Flooding	530
1984	Severe Storms & Flooding	707
1993	Severe Winter Storm	3112
1994	Severe Ice Storms & Flooding	1014
1996	Blizzard of 96 (Severe Snow Storm)	1086
2000	Severe Winter Storms	1318
2001	Severe Storms & Flooding	1386
2002	Severe Storms & Flooding	1406
2003	Severe Winter Storm, Record/Near Record Snowfall, Heavy Rain, Flooding, and Mudslide	1458
2006	Severe Storms, Tornadoes, and Flooding	1655
2010	Severe Winter Storm and Snowstorm	1874

Source; https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties

The only type of hydrologic studies in Dickenson County Virginia is the flood insurance study revised on September 29, 2010, and the US Army Corps of Engineers July 2003 Detail Project Report.

Source: http://dcva.link/fema
UAACE 2003 Report http://dcva.link/vol1
http://dcva.link/vol2
http://dcva.link/vol3
http://dcva.link/vol4
http://dcva.link/vol5
http://dcva.link/vol6

Matching funds Wavier for Dickenson County Virginia.

The USACE 202 project could provide Dickenson County with matching funds as the work is very similar in nature. However all of this funding is Federal dollars.
The economy has not been good for Dickenson County would be an understatement.
Attached is a letter asking for the Virginia Community Flood Preparedness Fund
Match to be waived.

Maintenance Plan

All properties acquired will be returned to a natural state. All plants use in the on these properties and stream restoration will be native and ubiquitous to Dickenson County. The permanent plants will be perennial and once finished no further maintenance will be needed.

Dickenson County Nonstructural Project through the USACE "202 project"

The USACE 202 project included 225 structures that was eligible for voluntary flood proofing or acquisition. Relocation of three schools are also included with this project including one within our intended project area. To be edible for the USACE 202 program qualifying properties must have the lowest living floor at or below the level of the 1977 flood and occupied. Since within this project area the 1977 flood level is 2 feet higher than the 1% annual flood chance, many homes do not qualify for the 202 program. This grant will target those houses along with houses that have unsuitable foundations that are in the A & AE Zones.

USACE 202 Source: https://www.lrh.usace.army.mil/Missions/Dickenson-County/
Additional USACE 202 Source: http://dcva.link/corp

Links to current plans that are not attached.

Dickenson County's Comprehensive Plan 2014
https://dickensonva.org/DocumentCenter/View/2504/DC-Comprehensive-Plan-2014

Hazard Mitigation Plan
https://dickensonva.org/DocumentCenter/View/2506/Hazard-Mitigation-Plan

Dickenson County Virginia

2022 Virginia Community Flood Preparedness Fund Purposed Budget

Addresses	Addresses	Property Aquestion or Flood proofing	Land Aquestion	* Demo/or Remove Structures	Stream Bank Restoration & Floodplain Restoration	Appraisal, deed search, management and other legal cost
113 Mayberry Dr.	Birchleaf VA 24220	$ 30,000.00	$ 24,000.00	$ 13,500.00	$ 12,000.00	$ 5,700.00
3748 Sandlick Rd.	Birchleaf VA 24220	$ 150,000.00	$ 24,000.00	$ 67,500.00	$ 12,000.00	$ 5,700.00
3772 Sandlick Rd.	Birchleaf VA 24220	$ 68,000.00	$ 24,000.00	$ 30,600.00	$ 12,000.00	$ 5,700.00
3600 Sandlick Rd.	Birchleaf VA 24220	$ 95,000.00	$ 24,000.00	$ 42,750.00	$ 12,000.00	$ 5,700.00
3548 Sandlick Rd.	Birchleaf VA 24220	$ 65,000.00	$ 24,000.00	$ 29,250.00	$ 12,000.00	$ 5,700.00
3276 Sandlick Rd.	Birchleaf VA 24220	$ 55,000.00	$ 18,000.00	$ 24,750.00	$ 9,000.00	$ 5,700.00
3246 Sandlick Rd.	Birchleaf VA 24220	$ 94,000.00	$ 24,000.00	$ 42,300.00	$ 12,000.00	$ 5,700.00
3224 Sandlick Rd.	Birchleaf VA 24220	$ 250,000.00	$ 48,000.00	$ 112,500.00	$ 24,000.00	$ 5,700.00
3190 Sandlick Rd.	Birchleaf VA 24220	$ 245,000.00	$ 48,000.00	$ 110,250.00	$ 24,000.00	$ 5,700.00
2880 Sandlick Rd.	Birchleaf VA 24220	$ 28,000.00	$ 300,000.00	$ 12,600.00	$ 84,000.00	$ 5,700.00
2818 Sandlick Rd.	Birchleaf VA 24220	$ 30,000.00	$ 12,000.00	$ 13,500.00	$ 6,000.00	$ 5,700.00
2802 Sandlick Rd.	Birchleaf VA 24220	$ 35,000.00	$ 18,000.00	$ 15,750.00	$ 9,000.00	$ 5,700.00
200 Fletcher and Edwards Dr.	Birchleaf VA 24220	$ 70,000.00	$ 24,000.00	$ 31,500.00	$ 12,000.00	$ 5,700.00
214 Fletcher and Edwards Dr.	Birchleaf VA 24220	$ 225,000.00	$ 28,800.00	$ 101,250.00	$ 14,400.00	$ 5,700.00
2494 Sandlick Rd.	Birchleaf VA 24220	$ 185,000.00	$ 24,000.00	$ 83,250.00	$ 12,000.00	$ 5,700.00
2444 Sandlick Rd.	Birchleaf VA 24220	$ 120,000.00	$ 30,000.00	$ 54,000.00	$ 15,000.00	$ 5,700.00
2424 Sandlick Rd.	Birchleaf VA 24220	$ 72,000.00	$ 18,000.00	$ 32,400.00	$ 9,000.00	$ 5,700.00

2398 Sandlick Rd.	Birchleaf VA 24220	$ 25,000.00	$ 30,000.00	$ 9,000.00	$ 15,000.00	$ 5,700.00
2392 Sandlick Rd.	Birchleaf VA 24220	$ 182,000.00	$ 24,000.00	$ 81,900.00	$ 12,000.00	$ 5,700.00
2382 Sandlick Rd.	Birchleaf VA 24220	$ 58,000.00	$ 18,000.00	$ 26,100.00	$ 9,000.00	$ 5,700.00
2370 Sandlick Rd.	Birchleaf VA 24220	$ 210,000.00	$ 36,000.00	$ 94,500.00	$ 18,000.00	$ 5,700.00
2366 Sandlick Rd.	Birchleaf VA 24220	$ 16,000.00	$ 12,000.00	$ 7,200.00	$ 6,000.00	$ 5,700.00
2352 Sandlick Rd.	Birchleaf VA 24220	$ 184,000.00	$ 24,000.00	$ 82,800.00	$ 12,000.00	$ 5,700.00
2342 Sandlick Rd.	Birchleaf VA 24220	$ 29,000.00	$ 12,000.00	$ 13,050.00	$ 6,000.00	$ 5,700.00
2288 Sandlick Rd.	Birchleaf VA 24220	$ 63,000.00	$ 18,000.00	$ 28,350.00	$ 9,000.00	$ 5,700.00
256 Rakes Ridge Rd.	Birchleaf VA 24220	$ 315,000.00	$ 48,000.00	$ 141,750.00	$ 12,000.00	$ 5,700.00
219 Lick Creek Rd.	Birchleaf VA 24220	$ 22,000.00	$ 12,000.00	$ 9,900.00	$ 6,000.00	$ 5,700.00
223 Lick Creek Rd.	Birchleaf VA 24220	$ 24,000.00	$ 12,000.00	$ 10,800.00	$ 6,000.00	$ 5,700.00
577 Lick Creek Rd.	Birchleaf VA 24220	$ 33,000.00	$ 12,000.00	$ 14,850.00	$ 18,000.00	$ 5,700.00
585 Lick Creek Rd.	Birchleaf VA 24220	$ 36,000.00	$ 12,000.00	$ 16,200.00	$ 18,000.00	$ 5,700.00
Properties acquired through the USACE 202 program					$ 180,000.00	$ 5,700.00
* Includes asbestos abatement budget may be adjusted between addresses according to Asbestos abatement cost.						
Sub Totals		$ 3,014,000.00	$ 982,800.00	$ 1,354,050.00	$ 617,400.00	$ 176,700.00
Total	$ 6,144,950.00					
Participation Percent		35%	30%	30%	60%	60%
Purposed amounts		$ 1,054,900.00	$ 294,840.00	$ 406,215.00	$ 370,440.00	$ 106,020.00
Total Purposed amount	$ 2,232,415.00	20%	Match	$ 446,483.00		

DICKENSON COUNTY BOARD OF SUPERVISORS

Board of Supervisors
PEGGY KISER, CHAIRWOMAN
Ervinton District

JOSH EVANS, VICE-CHAIRMAN
Willis District

RON PETERS
Sandlick District

RHONDA SLUSS
Clintwood District

SHELBIE WILLIS
Kenady District

County Administrator
LARRY BARTON

County Attorney
WILLIAM J. STURGILL

Of Counsel/Economic Development Advisor to the Board
CLARENCE E. "BUD" PHILLIPS

P.O. Box 1098, Clintwood, VA 24228
Telephone: (276) 926-1676
Fax: (276) 916-1649

818 Happy Valley Drive, Clintwood, VA

Virginia Community Flood Preparedness Fund

Match Waiver

April 5, 2022

I would like to request a waiver for the local match on our Virginia Community Flood Preparedness Fund application.

Pre-wavier amounts:	
Total project cost	$2,232,415.00
Total required match 20%	$446,483.00

*Purposed in-kind local match amounts:	
Local Demolition & Building permit fees	$375.36
Labor for Asbestos testing pre-demo	$4,500.00
Erosion & Sediment Control permits	$642.60
Total local match	$5,517.96

*Based on 10 properties being demolished or flood proofed, up to 9 homes needing asbestos testing before demo, and 18 properties requiring Erosion & Sediment permits.

Documentation of request of Waiver for Local Match Money:

Dickenson County, Virginia has one of the lowest poverty rates in the State of Virginia. According to the US Census Bureau 19.3% of the people in Dickenson County is in poverty compared to 9.2% statewide.

Dickenson County has the lowest Median household income (in 2020 dollars), 2016-2020 of all the Counties in the Commonwealth of Virginia.
Data Source:
https://www.census.gov/quickfacts/fact/table/dickensoncountyvirginia,VA/PST045221

The Russell Fork River, for which this project is targeting, flows through the Breaks Interstate Park. There are camp sites along this river and more could be added to help increase our economy through tourism. This will especially help the Town of Haysi Virginia which has suffered two catastrophe floods, first in January 1957, with flood waters around eight feet inside the buildings on Main Street. In April 1977 the Town experienced another flood that damaged ever building and business on Main Street with approximately nine feet of flood waters inside the buildings. Floods are the most common natural disaster. Each year, about 200 Americans die because of floods and flood damage throughout the Nation exceeds 3 billion dollars. It is estimated that one inch of water in a home can cause up to $25,000.00 in damage. Due to changing climate conditions becoming more flood resilient is more crucial now that ever before.

Dickenson County borders the Commonwealth of Kentucky, which the Russell Fork River flows into. Flood prevention in Virginia along the Russell Fork River will benefit thousands of people not only in Virginia but also in Kentucky.

Larry Barton
Dickenson County Administrator

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Dickenson County's application for the 2022 Virginia Community Flood Preparedness Fund

1 message

Chris Rakes <crakes@dickensonva.org> Fri, Apr 8, 2022 at 11:46 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Larry Barton <lbarton@dickensonva.org>

Dickenson County is pleased to apply for the 2022 Virginia Community Flood Preparedness Fund.

Attached is our application.
If you have any questions please let myself or Larry Barton know.

Larry Barton's email address is: lbarton@dickensonva.org

Thanks

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Dickenson County Certified Floodplain Manager
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INLET CAPACITY AND NEW INLET PROGRAM

Grant Application

CITY OF ALEXANDRIA, VIRGINIA

Community Flood Preparedness Fund Round 3

April 8, 2022

Inlet Capacity and New Inlet Program

The City of Alexandria (City) is applying for grant assistance under the Virginia Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF) Round 2 ‘Project’ category to help mitigate flooding in Alexandria, Virginia. The project, *Inlet Capacity and New Inlet Program (“Inlet Program”)*, will build on existing efforts undertaken with the Flood Action Alexandria initiative, launched in 2021, to help improve the resiliency of the City against increased precipitation and flash flooding events caused by climate change. The *Inlet Program* will improve drainage through increased stormwater inlet capacity by enlarging exiting inlets and building new inlets leading to pipes with adequate conveyance capacity. This approach allows for greater surface runoff to enter the pipe system and mitigate flooding.

The *Inlet Program* seeks to identify undersized inlets and identify locations for new inlets that will improve the efficiency of the City’s storm sewer system. The *Inlet Program* also will incorporate the design and construction of both upgrading existing storm sewer inlets and the installation of new inlets, within “pilot” neighborhoods.

The City will take a “watershed approach” to developing the Inlet Program by systematically identifying inlet capacity within two of the City’s eight local watersheds: Hooff’s Run and Four Mile Run. The approach will be applied to identify, design, and implement needed increases to the storm sewer inlet capacity for neighborhoods within these two watersheds. The *Inlet Program* will be replicable across the remaining six watersheds and corresponding neighborhoods (see Figure 1).

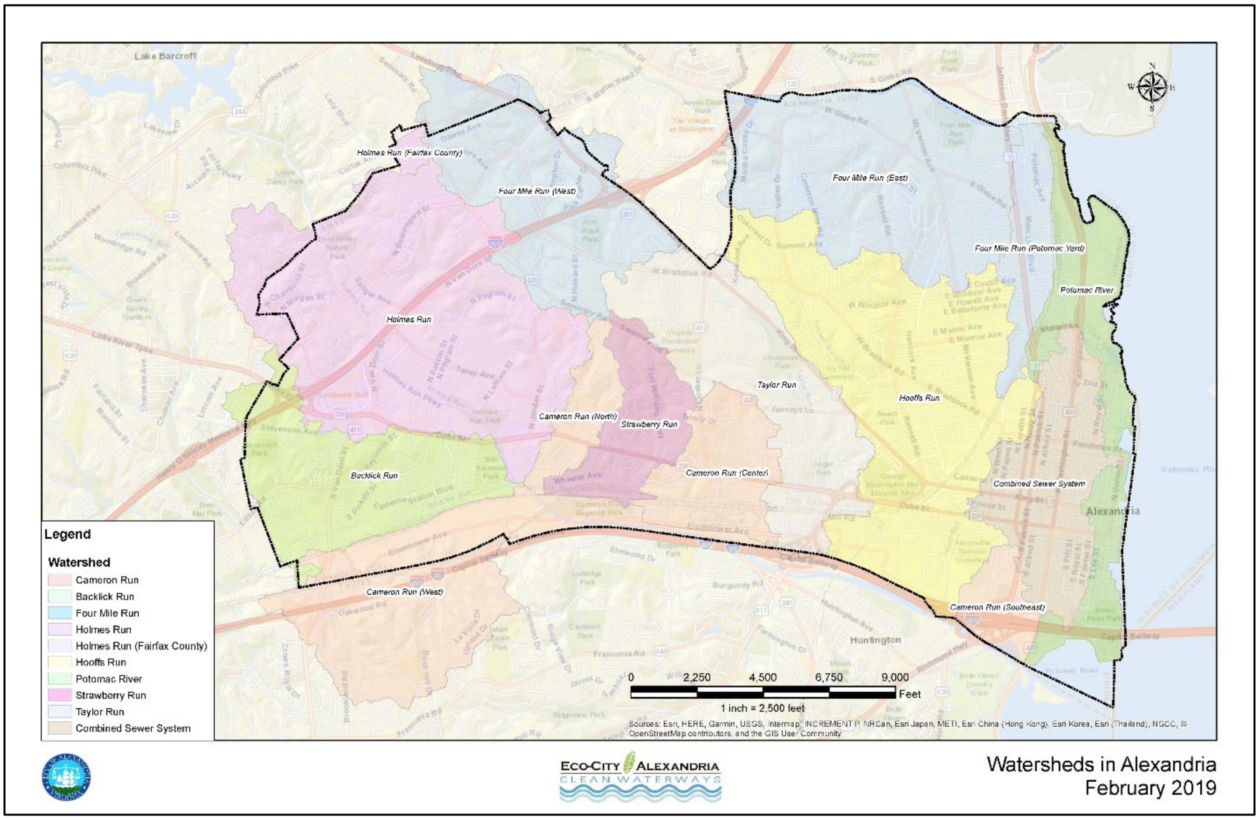


Figure 1. City of Alexandria's Local Watersheds

Virginia DCR approved the City of Alexandria's Resilience Plan September 10, 2021. The City has integrated flood mitigation and resilience goals across areas of the local government, with flood resilience a priority addressed holistically through master planning, environmental planning, small area planning, waterfront planning, and capital project planning and implementation, and this project will advance the priorities identified in these various plans. The City has established requirements for development controls in the floodplain through zoning and the local floodplain ordinance. The City's Transportation and Environmental Services Department (T&ES) is implementing resilient stormwater system upgrades informed by the City of Alexandria Storm Sewer Capacity Analysis (CASSCA), neighborhood investigations, and making spot improvements to high priority flood risk areas, along with accelerated frequent operations and maintenance under the Flood Action Alexandria program. Additionally, the City understands the importance of engaging with communities in high-risk areas impacted by frequent urban flooding events. The City performed neighborhood investigations and meeting with residents following a series of intense storm events driven by climate change that caused urban flooding in 2019, 2020 and 2021. The City launched a flood mitigation grant program in August 2021 for property owners to make improvements to, and protect, their private property through flood barrier implementation and structural adaptations. In 2019, the City released an update to the Environmental Action Plan with a roadmap for climate mitigation and resilience activities, accompanied by the Energy and Climate Change Task Force. These initiatives are grounded by the City's new Equity ordinance, which commits to addressing racial, social, and economic disparities in all areas of local government. The project proposed in this application fulfil the requirements and support the goals of each of these resilience planning efforts and accelerate the City's efforts to deliver flood mitigation measures for the Arlandria area of Alexandria.

1. Project Information

The City of Alexandria is a dense, highly urban community with over 200 miles of roadways and 185 miles of storm sewer pipe. Inlets allow stormwater to enter the storm sewer network and are found in various states of good repair across the City. Increasing inlet capacity enables more stormwater to enter the network which helps to prevent ponding which leads to increased flooding as storms become more intense and severe. Another issue with undersized inlets is runoff bypass in which the inlets get overwhelmed at one spot and flood, transferring some of that excess runoff to other undersized inlets, causing worse flooding at those locations. Additionally, the City of Alexandria Storm Sewer Capacity Analysis (CASSCA) model completed in 2016 included the baseline assumption that all inlets operate at the same capacity however, we have observed on-the-ground this is not the case and the full storm sewer pipe capacity may be underutilized, a critical factor during severe flooding. Figures 2-4 show various inlets across the City. Increasing inlet capacity and adding new inlets is a cost-effective and time efficient way to ensure the full capacity of the storm sewer network is optimized. Inlets are located within the City's Right-of-Way and require no additional acquisitions, easements, nor other private property negotiations. Typically, an inlet project is under construction from one-to-two weeks, weather dependent and causes less road closures and other neighborhood disturbances in other typical infrastructure projects. Incorporating green infrastructure into these projects, where feasible, seeks to improve the overall resilience of the neighborhood, watershed, and City.

Figure 2. Image of Inlet in City of Alexandria

Figure 3. Image of Inlet in City of Alexandria

Figure 4. Image of Inlet in City of Alexandria

The *Inlet Project* will first analyze the capacity of the storm sewer network in Hooff's Run and Four Mile Run watersheds. Inlet capacity will be evaluated with the hydraulic modeling using XP-SWMM for the current 10-year 24-hour design storm to determine whether the inlets possess the necessary capacity and CCTV investigations will be performed to determine if there were any structural failures within the pipes. To get a better understanding of how the storm drain inlets may contribute to the flooding in the neighborhood, a spread analysis of the existing inlets may be performed.

The Inlet Program builds off a "proof of concept" undertaken by City consultants in the aftermath of severe storm events in 2019 and 2020. The Park Fairfax neighborhood, within the Four Mile Run watershed, reported severe flooding from flash floods. Developed in the 1940s as housing for the post-World War II workforce, the Park Fairfax neighborhood is located south of Four Mile Run with Martha Custis Drive serving as its north, west, and south boundaries and Gunston Road serving as its east boundary. Within this neighborhood are privately owned townhomes and condominiums, and the Charles Barrett Elementary School at the northern boundary along Martha Custis Drive. During storm events, flooding primarily occurs along Martha Custis Drive and Holmes Lane which is the lowest point in the neighborhood. Seventy-five (75) inlets were identified in the Park Fairfax neighborhood alone (see Figure 5).

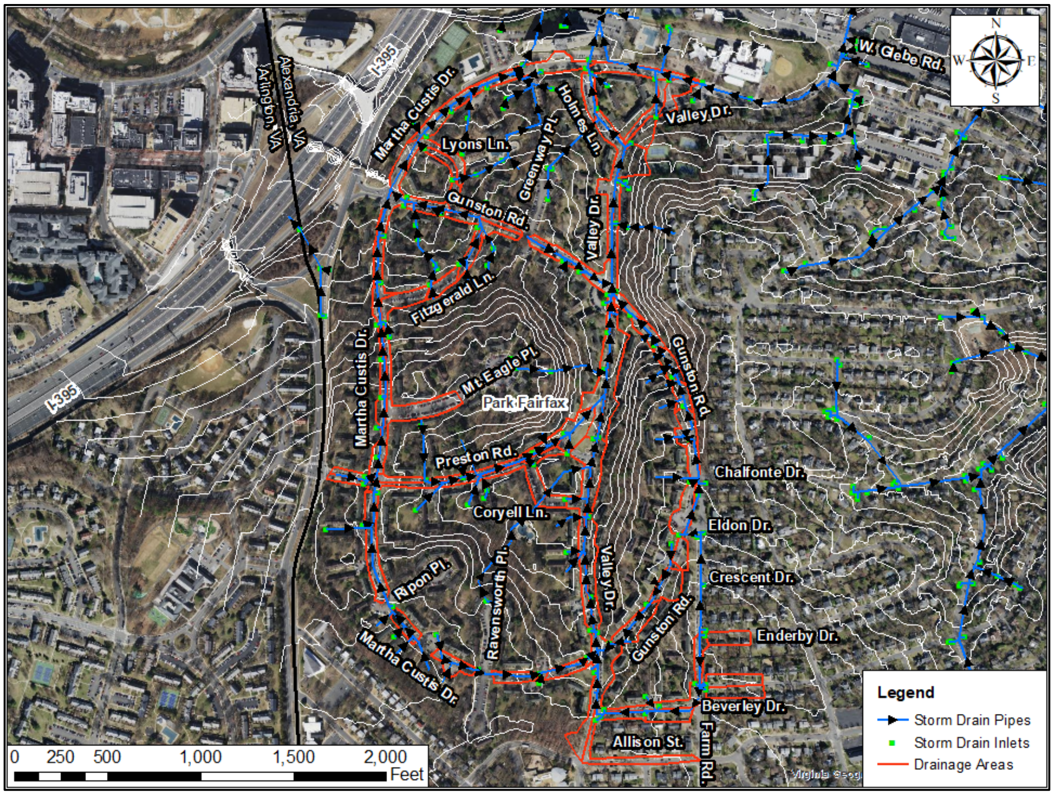


Figure 5. Inlets in Park Fairfax

The City anticipates potentially piloting permeable gutters and other types of green infrastructure, where feasible, in coordination with the *Inlet Program*. For example, permeable gutters (Figure 6) allow water to pass through and offer a way to reduce impervious surface in this neighborhood and the City. Currently the City does not own any permeable gutter systems. Figure 7 and 8 show other types of green infrastructure which may be under consideration.

Figure 6. Permeable Concrete Gutter Installation

Figure 7. Green Infrastructure

Figure 8. Tree Box Filters

a) Population and Equity

Alexandria has a population of 159,467 (U.S. Census Bureau, 2020) and is the densest city in Virginia with a population density of about 9,460 people per square mile. The median household income in Alexandria is currently $120,000; 80% of this is $96,000. For the purposes of this proposal, the population and social vulnerability index are based on the two watersheds of focus for the *Inlet Program* through this grant application: Four Mile Run and Hooff's Run watersheds (see Figure 9). The average score is -0.98 (removing duplicates) which is considered Very Low, however there is one census tract ranked as "Moderate" and one ranked as "High". Two census area (2001.06 and 2012.03) have median household income less than 80%.

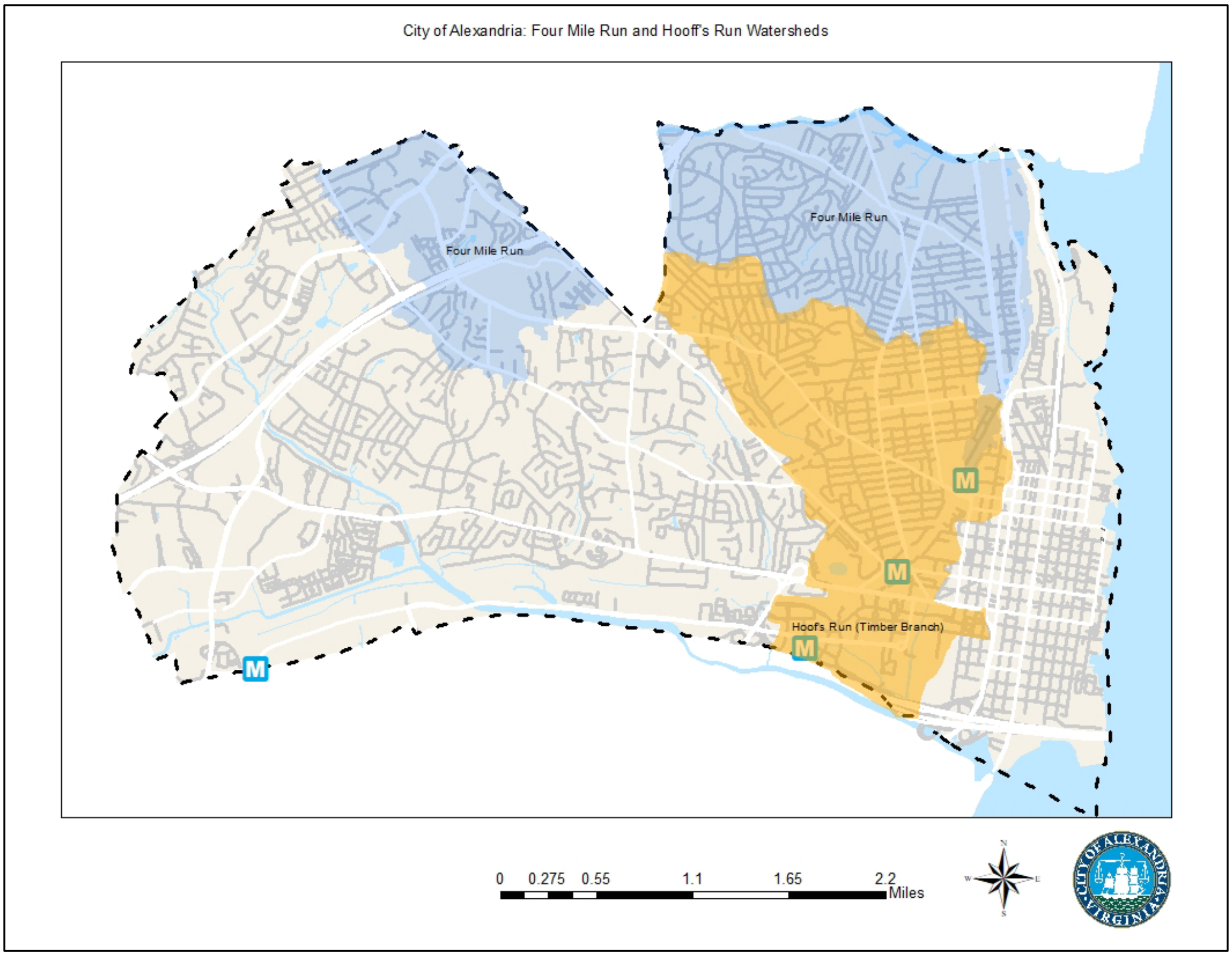


Figure 9. Four Mile Run and Hooff's Run Watersheds

Four Mile Run Watershed

Four Mile Run watershed within the City is 2,307.54 acres with a population of 77,080. The Social Vulnerability Index Scores and Index Classification for Census Tracts that intersect with Hooff's Run are included in Table 1. Four Mile Run also includes a Federal Opportunity Zone, ID 51510201203.

Table 1. Social Vulnerability Classification for Census Tracts in Four Mile Run Watershed

Census Tract ID	Social Vulnerability Classification	Vulnerability Index Score
2001.02	Low	-0.7
2001.05	Low	-0.9
2001.06	Moderate	0.3
2001.07	Very Low	-1.6
2002.01	Low	-0.7
2003	Not Socially Vulnerable	-0.5
2009	Not Socially Vulnerable	-1.1
2010	Very Low	-1.6
2011	Very Low	-1.6
2012.02	Very Low	-1.2
2012.03	High	1.1
2012.04	Low	-0.5
2013	Low	-0.9
2014	Very Low	-1.1
2016	Low	-0.8
2018	Very Low	-1.6

Hooff's Run Watershed

Hooff's Run, also incorporates Timberbranch, and has an area of 1,618.86 acres with a population of 77,080. The Social Vulnerability Index Scores and Index Classification for Census Tracts that intersect with Hooff's Run are included in Table 2.

Table 2. Social Vulnerability for Census Tracts in Hooff's Run watershed

Census Tract ID	Index Classification	Vulnerability Index Score
2007.01	Very Low	-2.4
2007.02	Very Low	-1.8
2008.01	Very Low	-1.0
2008.02	Low	-0.6
2009	Very Low	-1.1
2013	Low	-0.9
2014	Very Low	-1.1
2015	Low	-0.3
2016	Low	-0.8
2019	Very Low	-2.1

b) Historic Flooding Data and Hydrologic Studies Projecting Flood Frequency

The City is experiencing more frequent and severe flash flooding from extreme precipitation events which have occurred more frequently in the last few years. These flash flood events damage residential and commercial properties, impact critical assets, and cause day-to-day disruptions and economic losses. The City has experienced several major flooding events since 2019, including July 8, 2019, July 23, 2020, September 10, 2020, and most recently August 15, 2021 and September 16, 2021. These events are characterized between 50 to 500-year level rainstorm events. The City's Intensity-Duration-Frequency (IDF) curves developed in the 1980's were compared to other localities in the region and available climate predictions during the CASSCA study completed in 2016, and were found to be more conservative than many surrounding localities' design storms, more conservative than the NOAA Atlas-14, and were found to compare favorable to climate predictions available in 2016. The City is currently planning to further analyze these local IDF curves in comparison to regional efforts and more recent climate predictions.

The August and September 2021 storms were recorded by recently installed rain gauges that expand the City's gauge network to gather more localized storm information. Actual accumulation of over 5-inches in two hours, to be between 100 and 500-year level rain when compared to the statistical expectations derived for the City's curves developed in the 1980's for the City, which are more conservative than NOAA's predictions for the region. Meaning, what NOAA would call a 12-hour 25-year rainfall, Alexandria would call it closer to a 15-year rainfall.

c) Ability of Alexandria to Provide its Share of the Project Cost

In response to these recurring flooding events, in May 2021 the City Council unanimously adopted an ordinance to double our Stormwater Utility Fee with a 50% increase in the rate for the May 2021 billing and an additional 50% increase in the rate for the October billing to significantly increase local resources available for investments in our storm sewer infrastructure. The development of the FY 2022 – FY 2031 Stormwater Management Utility Ten Year Plan for funding of operating and capital improvement program (CIP) costs, included the identification and funding schedule for 11 top priority flooding mitigation capacity projects that include a mix of storage, conveyance, and green infrastructure. The 10-Year Plan also includes annually increasing funding for spot improvement projects and increased maintenance activities citywide. The Stormwater Utility Fee, paid by all property owners in the City (including non-taxable properties), will enable an acceleration of major capacity projects and spot improvement projects, an increase in channel maintenance, new state-of-good repair investments, property owner grants, and new staffing in support of these projects. The City confirms that it can cover the Cost Share required for this project with funding identified in the FY 2022 CIP Stormwater Sewer Spot Improvement program.

d) Alexandria is an Active Participant in the National Flood Insurance Program

The City began participating in the regular phase of Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) on May 8, 1970. The City is recognized for exceeding the goals of the NFIP Community Rating System (CRS) program. Alexandria is one of two Virginia localities to achieve a Class 6 rating. As a result, residents and businesses purchasing flood insurance for properties in Alexandria are eligible to receive up to a 20% discount on flood insurance premiums. The City also has established a Floodplain Ordinance to regulate development and redevelopment in the floodplain. More information is available on the City's Flood Map webpage. Flood maps for the Four Mile Run and Hooff's Run watershed are shown as Figures 10 - 12.

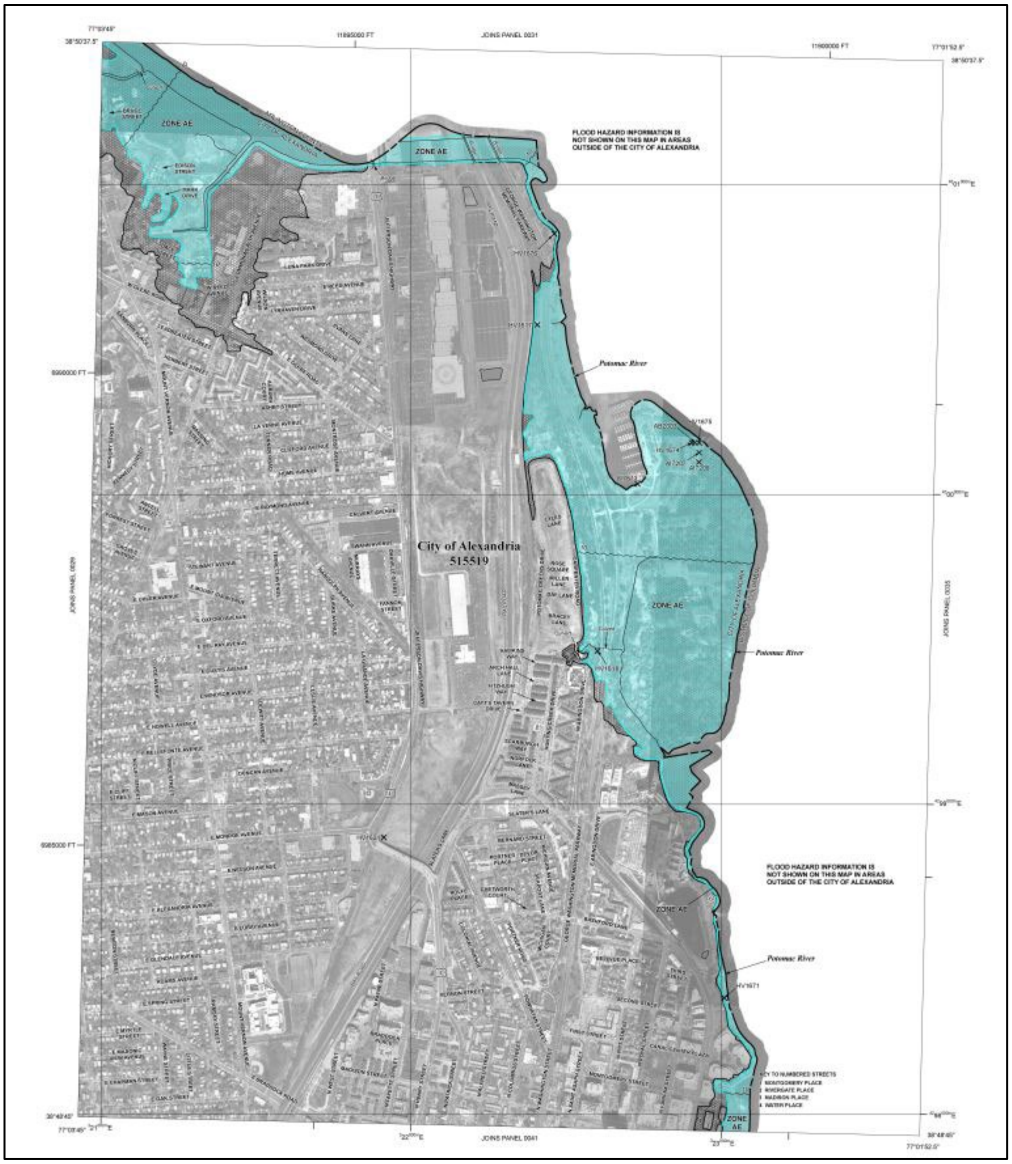


Figure 10. FEMA Map 5155190033E

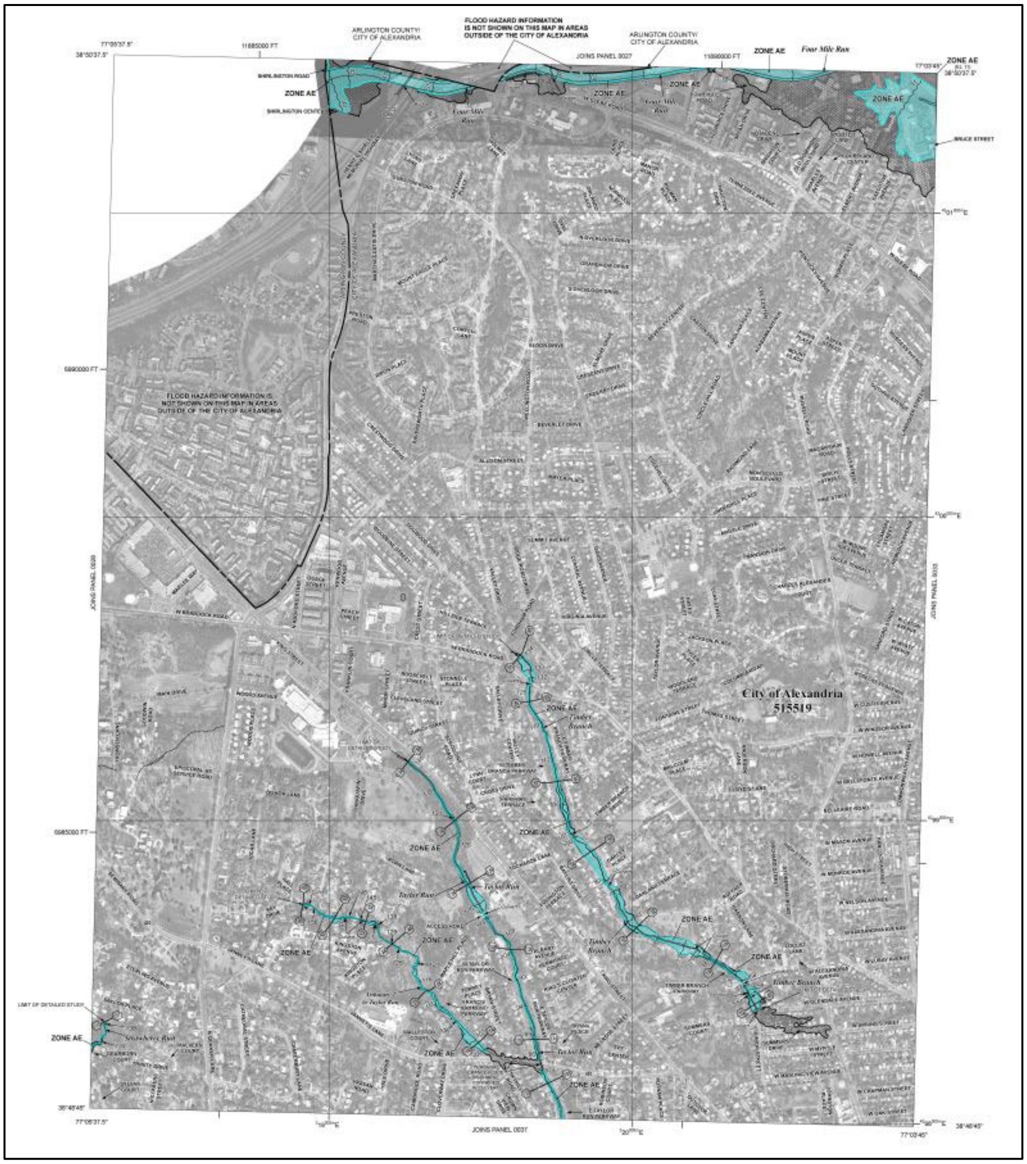


Figure 11. FEMA Map 5155190029E

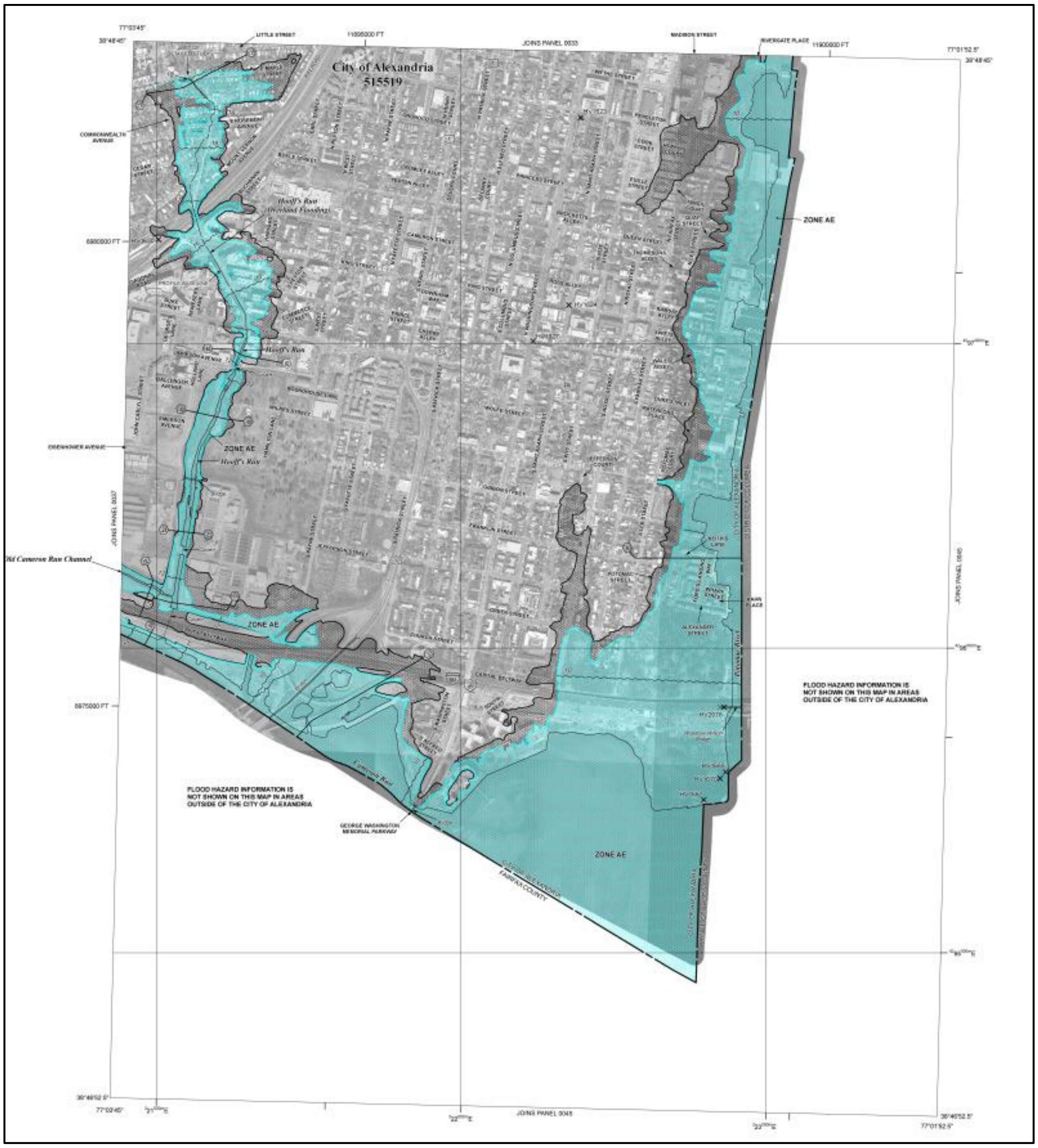


Figure 12. FEMA Map 5155190041E

Repetitive loss is defined by any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. A severe repetitive loss is defined by a family residence that has had four or more claims of more than $5,000 or at least two claims that cumulatively exceed the building value as defined by the Flood Insurance Reform Act of 2004. There were 12 repetitive loss sites in Alexandria as of 2015, of which six are residential and six are non-residential. These 12 repetitive loss sites have experienced a collective 30 losses, with a total payment of $1,871,287 as described in the 2017 Northern Virginia Hazard Mitigation Plan. A more updated list of repetitive losses across the City is forthcoming but preliminary assessment indicates more than 35 properties, more than triple that of 2015.

e) Other Necessary Information to Establish Project Priority

The Northern Virginia Hazard Mitigation Plan identified flooding as one of Alexandria's predominant hazards due to riverine, precipitation, tidal, and storm surge flooding. The Hazard Mitigation Plan ranked natural hazards for Alexandria using historical weather-related events based on the Storm Event Database by NOAA's NCDC1. Hazards were ranked using a semi-quantitative scoring system that involved grouping the data values (normalized to account for inflation) based on statistical methods (see Figure 13). This method prioritizes hazard risk based on a blend of quantitative factors extracted from National Climatic Data Center and other available data sources. The parameters considered include:

- Historical occurrences;
- Vulnerability of population in the hazard area; and
- Historical impact, in terms of human lives and property and crop damage.

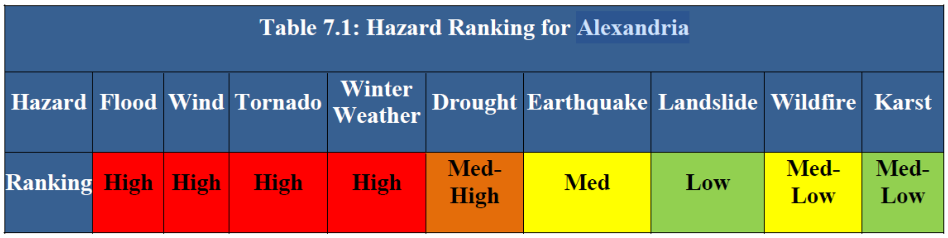


Table 7.1: Hazard Ranking for Alexandria

Hazard	Flood	Wind	Tornado	Winter Weather	Drought	Earthquake	Landslide	Wildfire	Karst
Ranking	High	High	High	High	Med-High	Med	Low	Med-Low	Med-Low

Figure 6. Hazard Ranking, Northern Virginia Hazard Mitigation Plan, 2017

Alexandria's watersheds have a significant percentage of impervious surfaces. Forty-three percent of the City's surface area is comprised of roads, buildings, parking lots, and sidewalks. Impervious surface contributes to the accumulation of stormwater because water is not able to convey and recharge. This type of flooding threatens the continuous operation of roads, emergency access, and property during precipitation events.

Critical Facilities located within the Four Mile Run and Hooff's Run watersheds include four fire stations; eight public schools; two libraries; three health facilities; and City facilities (parks, recreation centers, etc.) and offices.

2. Need for Assistance

The City has the staff and resources (SWM/SWU CIP), BSEGS 5 rating, CRS Class 6, to implement this project as soon as funding became available. DCR's financial support will help create a more resilient Alexandria while enhancing and improving the City's built infrastructure within Hooff's Run and Four Mile Run watersheds.

a) Goals and Objectives

The purpose of this project is to help mitigate flooding across the City of Alexandria by identifying and increasing inlet capacity with the support of green infrastructure. This project will address local area flooding where inlet capacity is insufficient, as well as facilitate upstream improvements in the drainage area by ensuring adequate conveyance to support future upgrades and ensuring the full capacity of the storm sewer pipe is utilized. The City cost-share for the project will be funded through the FY 2022 – FY 2031 Stormwater Management CIP under the Storm Sewer Spot Improvement program.

b) Approach, Milestones, and Deliverables

The City of Alexandria's *Inlet Program* will work to identify and correct systemic deficiencies with the City's inlets due to the increased strain placed on the public systems from climate change. In tandem, the

City plans to incorporate green infrastructure solutions where possible and cost effective. These green infrastructure solutions have the added benefit of beautification of the local area and align with the City's 2040 Environmental Action Plan. Upon completion of the pilot inlet projects, the project approach will be modified to account for lessons learned and applied to a series of subsequent neighborhoods with the ultimate goal of helping to mitigate the impacts of severe storms and flash flooding in the City.

The City anticipates utilizing a contractor/consultant team to analyze the inlets in Four Mile Run and Hooff's Run watershed in a similar fashion to what was done in the Park Fairfax neighborhood referenced in Section 1. The analysis will be developed into a report with recommendations for new and upgraded inlets as well as opportunities for green infrastructure. The Project Management Team overseeing the Inlet Program consists of experts from Transportation and Environmental Services Stormwater Management Division as the project sponsor and the Department of Project Implementation providing project management in project delivery, along with City consultants. In consultation with the contractor, the Project Management Team will select up to 75 new and/or upgraded inlets to focus on within these two watersheds. These inlets will be designed and constructed under one or more "Contracts" to streamline the effort. Green infrastructure will be included in these on-the-ground projects where feasible as determined by the Project Management Team.

Additional details on the project delivery approach and project teaming will be detailed in a project management plan developed by the City. The City's project management plan is a living document that is continually updated through the life of the project. Input from the design contractor and construction manager will be included in the document as the project progresses. At a minimum, project management plan will clearly identify the projects scope, team member roles and responsibilities, critical stakeholders, project risks and the project procurement plan.

The City's Engineer of Record Contract or an equivalent existing procured agreement will be utilized to develop contract documents including design plans, construction specifications, and costs estimates. A basis of design report and public rendering of impacts and improvements may be included to support the green infrastructure aspect of the project, contingent on the design development process. The City expects that the inlet construction work in the pilot area will be performed using a contractor that is already under contract with the City procured per state requirements.

Table 3 summarizes project milestones for the *Inlet Program* and Table 4 summarizes the deliverables.

Table 3. Milestones

Milestone	Date
Watershed Inlet Analysis focused on Four Mile Run and Hooff's Run	FY2023, Q1 – Q2
Report Writing and Recommendations	FY2023, Q3
Pilot Inlet Project Selection for Implementation	FY2023, Q3 – Q4
Pilot Project Planning	*FY2024, Q1*
Design Services Task Order	*FY2024, Q2*
Design Phase	*FY2024, Q2*
Construction Purchase Order and NTP	*FY2024, Q3*
Construction	*FY2024, Q4, FY2025, Q1*
Post-Construction	*FY2025, Q2*
Evaluation of Pilot Inlet Projects: Success and Lessons Learned	FY2025, Q2 – Q3
Final Inlet Report	FY2025, Q4

Table 4. Milestones and Deliverables

Milestone	Deliverable
Project Planning	• Project Charter • Project Management Plan • Project Work Breakdown Structure • Project Schedule
Watershed Inlet Analysis focused on Four Mile Run and Hooff's Run Task Order	• Task Order Request based on existing contract • Task Order approval • Purchase Order and Notice to Proceed
Watershed Inlet Analysis focused on Four Mile Run and Hooff's Run Report and Prioritization	• Analysis on Four Mile Run and Hooff's Run • Recommendations for inlet upsizing and new inlets • Recommendations for incorporating green infrastructure, where feasible
Design Services Task Order	• Task Order Request based on existing contract • Task Order approval • Purchase Order and Notice to Proceed
Design Phase	• Design Plans Sketch and/or 30% and Final Design • Construction Specifications at Final Design • Basis of Design including Hydraulic Calculations at 30% and Final Design • Cost Estimate at 30% and Final Design
Construction Procurement	• Invitation to Bid at contract award • Contractor Proposal at contract award • Purchase Order at contract award
Construction/Post Construction	• Sign & Sealed As-builts following project close out • Site photographs following project close out
Watershed Inlet Analysis focused on Four Mile Run and Hooff's Run Final Deliverables	• Report finalized based on project work and Team feedback • Materials and methods, including analysis and data, able to be applied to other flood-prone watersheds and neighborhoods in the City

3. Relationship to Other Projects

The City has experienced repeated and increasingly frequent flooding from storm events, with several large severe storm event occurring in 2019 and 2020. These events lead to the development of the Flood Action Alexandria initiative. Information gathered via the City's 311 response center regarding flooding complaints and inquiries in addition to the 2016 City of Alexandria Storm Sewer Capacity Analysis (CASSCA) study provided a roadmap for City staff to undertake neighborhood investigations. Increasing inlet capacity and adding new inlets, especially in areas experiencing frequent and severe flooding impacts from climate change will help create a more resilient Alexandria.

The *Inlet Program* falls within the City's Flood Action Alexandria initiative. The Spot Improvement Program includes a 10-year, $28.4 million capital improvement plan focused delivering small to medium sized capital projects at the watershed sub-basin and neighborhood scale across the City. The proposed project for funding will increase the resiliency for residents in the Hooff's Run and Four Mile Run watersheds, and the City of Alexandria as the *Inlet Program* will be replicable to other watersheds. This is a critical need given the City's sensitivity to climate change induced severe storm events caused by rising global temperatures and increased humidity.

4. Maintenance Plan

City sewer infrastructure 'state of good repair' program maintenance objectives includes inspection and maintenance on a rotating 3-5 year service schedule. The City also performs inspection and maintenance in response to Alex311 service requests an in advance of forecasted storm events. The initial work will be inspected regularly early on to ensure proper functioning prior to the routine, rotating schedule being implemented. More information is available on the City's Sewer Maintenance webpage.

5. Criteria

This project scoring criteria is found in Appendix B.

Budget Narrative

The *Inlet Capacity and New Inlet Program* is budgeted for design and construction for a total cost of $1,528,000. The City respectfully requests 50% of the total project cost to be covered by this grant: $764,000. This project is anticipated to also provide nature-based green infrastructure solutions.

The project cost share is funded by the City through the FY 2022 CIP Stormwater Sewer Spot Improvement program.

Cost Category	City of Alexandria Match	DCR CFPF Request	Total
Personnel	$0	$0	$0
Fringe Benefits	$0	$0	$0
Travel	$0	$0	$0
Equipment	$0	$0	$0
Supplies	$0	$0	$0
Contractual	$764,000	$764,000	$1,528,000
Construction	$0	$0	$0
Other	$0	$0	$0
Total Direct Charges	$0	$0	$0
Indirect Charges	$0	$0	$0
Totals	**$764,000**	**$764,000**	**$1,528,000**

Appendix A – Application Form

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Alexandria, VA

Category of Grant Being Applied for (check one):

____Capacity Building/Planning

_X____Project

_____Study

NFIP/DCR Community Identification Number (CID): CID515519

If a state or federally recognized Indian tribe, Name of tribe: No

Name of Authorized Official: Jesse Maines, PMP

Signature of Authorized Official: ________________

Mailing Address (1): 2900 Business Center Drive

Mailing Address (2): ____

City: Alexandria **State:** VA **Zip:** 22314

Telephone Number: 703.746.4643 **Cell Phone Number:** 571.414.8237

Email Address: jesse.maines@alexandriava.gov

Contact Person (If different from authorized official): Jessica Lassetter

Mailing Address (1): **2900 Business Center Drive**

Mailing Address (2): ____

City: Alexandria State: VA Zip: 22314

Telephone Number: 703.746.4127 Cell Phone Number: 703.915.5695

Email Address: jessica.lassetter@alexandriava.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.

X Storm water system upgrades.

☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): Four Mile Run and Hooff's Run Watersheds

NFIP Community Identification Number (CID#): See appendix F CID515519

Is Project Located in an NFIP Participating Community? X Yes ☐ No

Is Project Located in a Special Flood Hazard Area? **X Yes** □ No

Flood Zone(s) (If Applicable): **AE**

Flood Insurance Rate Map Number(s) (If Applicable): **5155190033E and 5155190029E and 5155190041E**

Total Cost of Project: **$1,528,000**

Total Amount Requested **$764,000**

Appendix B – Scoring Criteria

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**City of Alexandria, VA**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	**X Yes** **☐ No**
Applicant Name:	**City of Alexandria, VA**

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	**35**
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	0

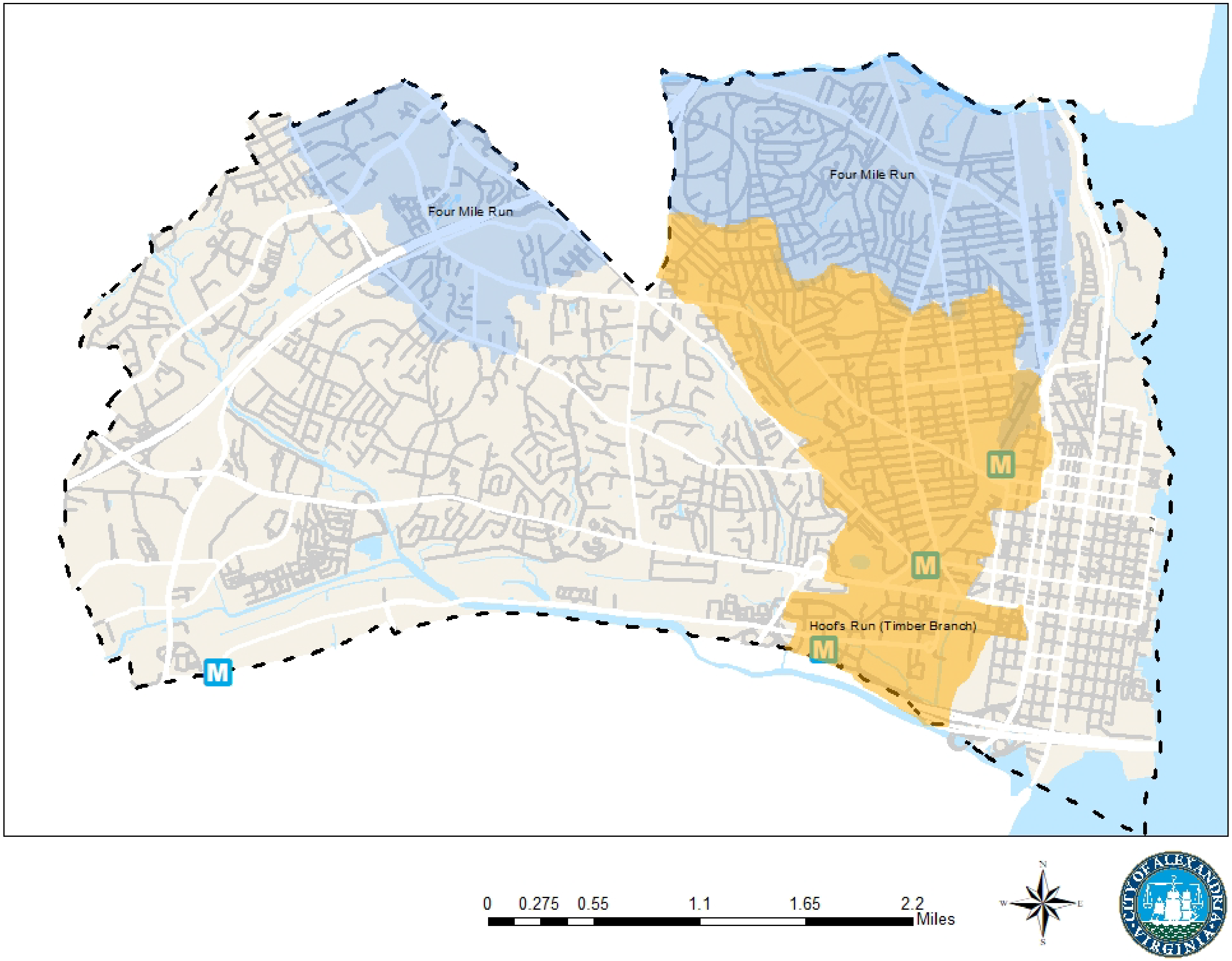
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		70

Appendix C – Project Vicinity Map

CID515519_CityofAlexandria_CFPF-2

PROJECT VICINITY MAP

City of Alexandria: Four Mile Run and Hooff's Run Watersheds



Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID515519_CityofAlexandria_CFPF-2

1 message

Jessica Lassetter <jessica.lassetter@alexandriava.gov> Fri, Apr 8, 2022 at 10:48 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Jesse Maines <Jesse.Maines@alexandriava.gov>

Good morning –

Attached, please find the City of Alexandria CFPF Round 3 grant application. This is the second of two grant applications we are submitting this round. The other application was emailed earlier this morning.

Thank you so much for allowing the City the opportunity to apply to this highly valuable program to help enhance our community resilience and mitigate the impacts of flooding.

Sincerely,

Jessica

Jessica E. B. Lassetter, MNR

Senior Environmental Specialist/CE III

City of Alexandria, Virginia

Transportation & Environmental Services

Office Phone Number (703.746.4127)

Cell Phone Number (703.915.5695)

alexandriava.gov

CID515519_CityofAlexandria_CFPF-2.pdf
4331K

Virginia Community Flood Preparedness Fund Grant Application

April 8, 2022

Hydrology and Hydraulic Studies of Floodplains to update FEMA Flood Insurance Rate maps (FIRMS) for the Town of Front Royal

Town of Front Royal

Town of Front Royal, Virginia

Town of Front Royal

102 East Main Street

Front Royal, VA 22630

Phone: 540-635-8007

1.Community Information and Grant Application Category

The Town of Front Royal is located within a Virginia Opportunity Zone (Census Tract ID: 51187020601)

Community Identification Number (CID #): 510167 – Town of Front Royal, Warren County

Virginia Vulnerability Social Index- Front Royal, VA: 0.2

Grant Category: B. Studies

1.1 Introduction

The Town of Front Royal (Warren County, VA) is located within the Shenandoah River Watershed a major contributing member of the Potomac River, and ultimately the Chesapeake Bay. Front Royal was one of the first areas of the Shenandoah Valley to become occupied by European settlements, due to the confluence of the South Fork and the North Fork Shenandoah Rivers, which served as a main point of commerce in the Valley. (**Fig. 1**). Besides the North and South Fork of the Shenandoah River, Cabin Run, Leach Run and Happy Creek, there are watersheds within the Town limits, which contribute to significant flooding.

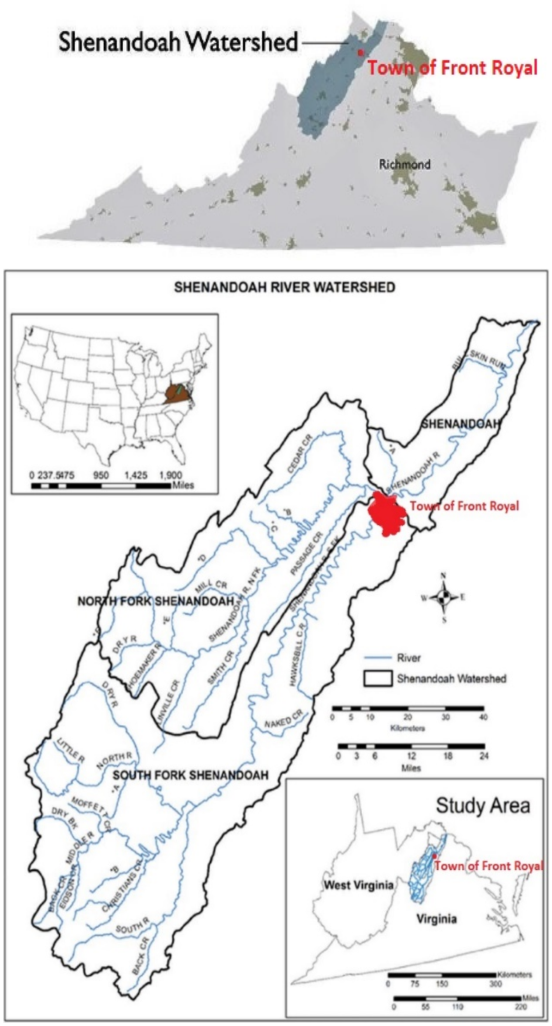


Fig. 1. *Town of Front Royal location within the Shenandoah Watershed.*

The South Fork Shenandoah River begins at the confluence of the North River and South River near Port Republic and flows north 97 miles to meet the North Fork Shenandoah at the Town of Front Royal. The South Fork Shenandoah watershed covers 1,659 square miles. Much of the western boundary of the Town abuts the South Fork, while a small northern portion abuts the North Fork of the Shenandoah. The Town is located at within -78.2205 to -78.1414 longitude and 38.8919 to 38.9538 latitude. Based on census of 2020, the population is 15,011.

There are 1,329 parcels in Front Royal (~25% of total households) that are susceptible to being severely affected by flooding (see **Fig. 2** for the FEMA Flood Hazard Layer). Although flood risk can never be eliminated, communities can develop policies to help minimize impacts to the public during floods, through an updated flood study of the major watersheds within the community.

With the planning tools of a modern and relevant flood study, more informed decisions in the extent of flood risk within the community can be realized. The National Flood Insurance Program allows communities to develop planning tools to reduce the risk of flooding, which also allow for lower flood insurance costs that can be shared with the community.

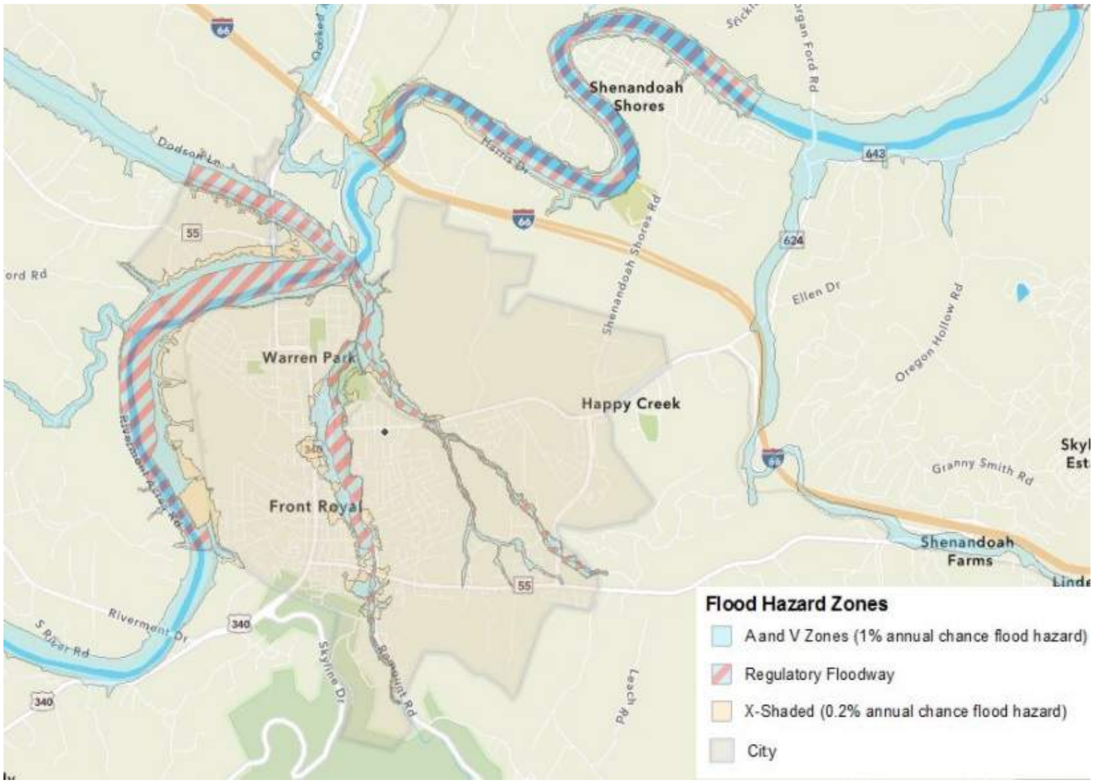
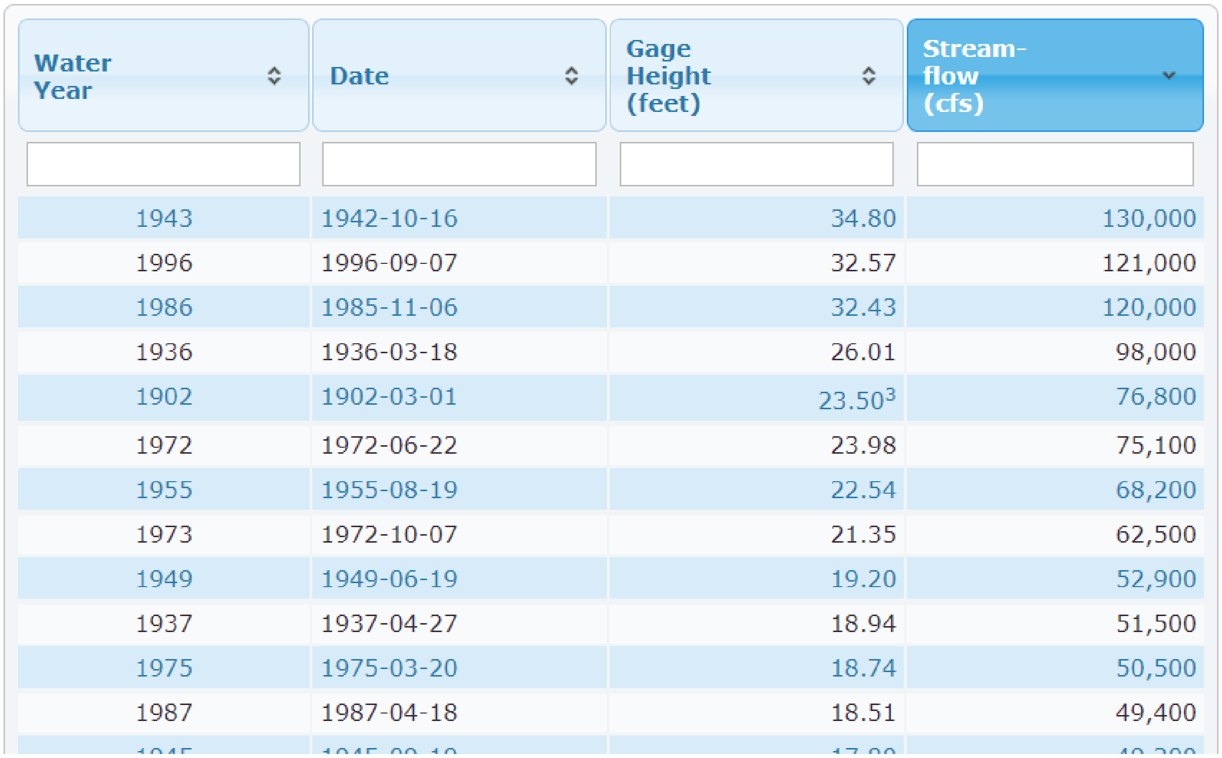


***Fig. 2** FEMA's National Flood Hazard Layer (NFHL) at Town of Front Royal*

The current Flood Insurance Rate Map (FIRM) shows the flood zones at the Town of Front Royal are 51187C0103C, 51187C0104C, 51187C0108C, 51187C0110C, 51187C0111C, 51187C0112C, 51187C0115C, 51187C0116C, 51187C0117C and 51187C0118C. Most of the flood zone delineations were initially evaluated in 1974 and the flood hazard boundary map revised in 1976 and then in 1988 the entire study was converted to the North American Vertical Datum of 1988 (NAVD 88) but it has not been updated since then. Thus, the hydrology and hydraulics evaluations of the special flood hazard areas (SFHAs) has not been re-evaluated for over 45 years.

1.2 The Impacts of Historical Floods

The Shenandoah River has contributed to major flood events, historically speaking. The five largest flood events on record, have occurred in 1943, 1996, 1986, 1936, and 1902.



Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1943	1942-10-16	34.80	130,000
1996	1996-09-07	32.57	121,000
1986	1985-11-06	32.43	120,000
1936	1936-03-18	26.01	98,000
1902	1902-03-01	23.50[3]	76,800
1972	1972-06-22	23.98	75,100
1955	1955-08-19	22.54	68,200
1973	1972-10-07	21.35	62,500
1949	1949-06-19	19.20	52,900
1937	1937-04-27	18.94	51,500
1975	1975-03-20	18.74	50,500
1987	1987-04-18	18.51	49,400

Fig. 3 *Peak Annual Flow (cfs) SF Shenandoah River at Front Royal, VA*

In September 2003, flooding was reported in Shenandoah Farms along the Warren County border. The following roads closed by high water included Happy Creek Road, Route 55 East, Free Land Road, Morgan Hollow Road, and Newton Road. The South Fork of the Shenandoah River rose above its flood stage of 12 feet at Front Royal caused the worst flooding in over 20 years which led to inundate many homes and businesses and force many evacuations along the river. The high density of urban and suburban development within this watershed, including a high percentage of impervious surfaces, have significantly contributed to the severity of this and other more recent flooding events. The frequent and larger flooding events in the past century were primarily a result of the pronounced increase in precipitation from 1930 to 2018. The average annual precipitation for Virginia is increasing at a rate of more than 1 inch every 10 years. In fact, the frequency of days having one inch of rainfall has nearly doubled.

1.3 The Necessity of this Study Flood risks each year are increasing due to a number of climatic, environmental, and planning related changes. The risks related to floods also disproportionately impact low-income residents more than higher income residents. This is recognized by the Virginia Department of Environmental Quality statement on climate, as "impacts of climate change, which not only affect the environment, but also human health".

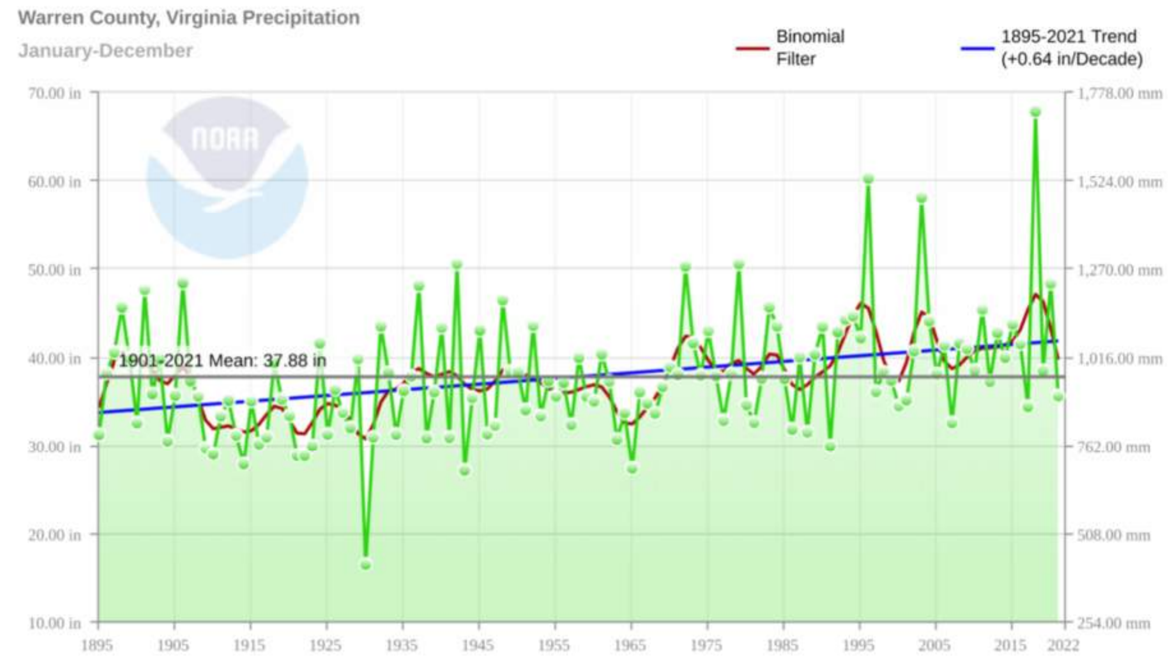


__Fig. 4__ Warren County, VA Annual Precipitation Trend (1895-2021)

While the Town of Front Royal is located many hundreds of miles inland of any tidal waters of the Atlantic Ocean and Chesapeake Bay, the influence of climate change does directly influence many climatic weather conditions here. Above, is a trend analysis of the recorded annual precipitation from 1895 to 2021. Whereby, when averaging the annual rainfall from 1895 to 2021, the past century has a trend of annual precipitation increasing 0.64 inch per decade (**Fig. 4**). It is easy to observe in the above graphic that occurrence and magnitude of recorded annual precipitation is increasing within the last 40 years. In **Fig. 5**, below, the trend analysis of the recorded annual precipitation for a shorter time period of 1977 to 2021 shows the trend of annual precipitation increasing 1.22 inch per decade. Considering precipitation directly contributes to stream flow, an increase in annual precipitation and intensity of events will require flood studies of the major streams within the Town of Front Royal limits to be updated to ensure flood mapping is up to date and future planning for growth is properly informed of the flood risks around major floodplain areas.

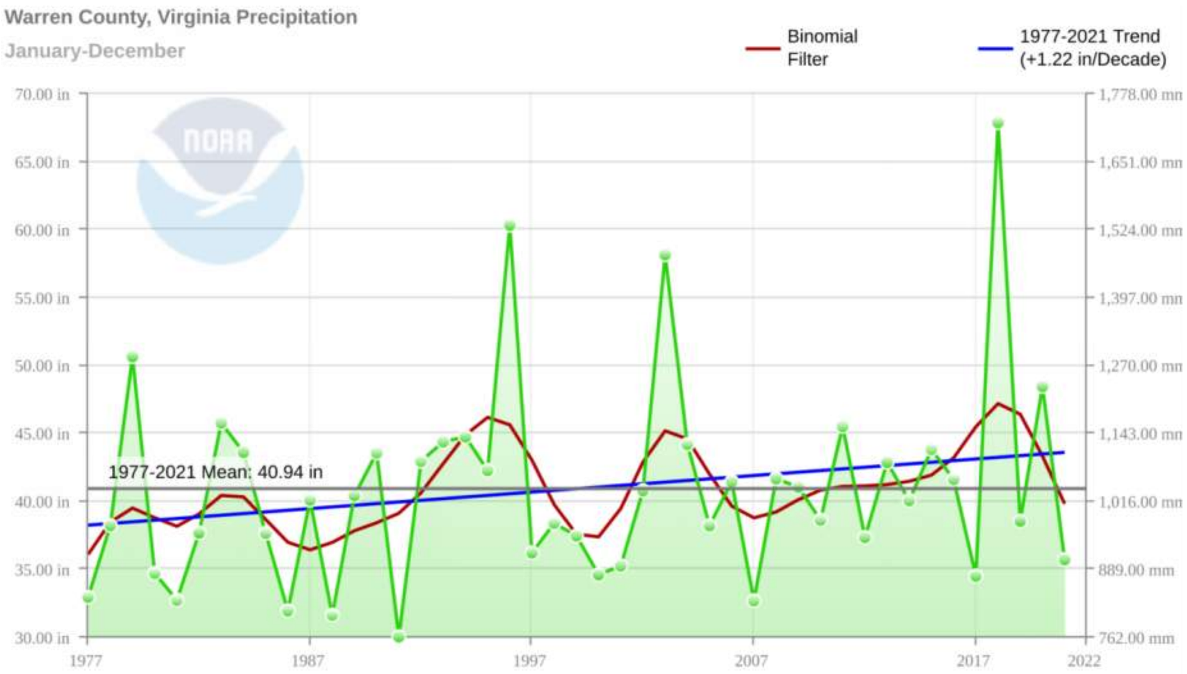


Fig. 5 *Warren County, VA Annual Precipitation Trend (1977-2021)*

Changing environment means higher sea levels, new weather patterns, and stronger storms. As the atmosphere warms, there is more evaporation, and consequently, more water available when it rains. A warmer atmosphere also means warmer oceans, which can intensify flooding from hurricanes and offshore storms. Sea level rise also increases coastal flood risks, as higher sea levels mean there is more water available when high tides and coastal storms cause flooding. Adaptation at the local, state, and federal levels is often more effective and cost-efficient than individual efforts, but each plays an important role in reducing physical and financial flood risks. Town of Front Royal is considered a low-income community since the median household income ($51.9 K)[1] is less than 70% of the state median household income ($74.2 K)[2]. The area is also located within the moderate social vulnerability range according to the Virginia vulnerability viewer[3].

The current FIRMs showing the Special Flood Hazard Areas (SFHA) flood zones (A, AE and X) for the Town of Front Royal were prepared mostly in 1988. Accordingly, the updated rainfall data

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[1] U.S. Census, https://www.census.gov/quickfacts/fact/table/frontroyaltownvirginia/INC110219

[2] U.S. Census, https://www.census.gov/quickfacts/fact/table/VA,US/INC1102193

[3] https://cmap2.vims.edu/SocialVulnerability/SocioVul_SS.html

should be applied to do the hydrology and hydraulic modeling and assessment to revise the FIRMs in the region.

A recent hydrologic and hydraulic analysis was performed for a possible bridge replacement for the 8th street bridge over Happy Creek, a FEMA Zone AE floodplain. The Town's civil engineering consultant, RK&K, requested the effective flood analysis from FEMA for Happy Creek observed a number of items in the effective study which highlights a need to revisit the floodplain analysis in the Town. The first item of concern is the hydrology used for flood study on Happy Creek was derived from a statistical analysis of a gauge along Happy Creek, which no longer exists. Secondly, the gauge record for this former gauge was only for 28 years (1949 to 1977). Generally, good engineering practice indicates statistical based analysis of gauges should use closer to 50 years of gauge record to accurately derive the correct flow values to be used to establish the 100-year flood event, or 1% return interval. RK&K also highlighted to the Town that a comparison of the gauge record for Happy Creek versus the historical gauge record of the South Fork of Shenandoah River, an active USGS gauge (01631000), would indicate the Happy Creek gauge missed the top five flood events recorded on the SF Shenandoah River (1943, 1996, 1986, 1936, and 1902).

2. Scope of Work Narrative - Studies

The hydrologic and hydraulic analyses for the Flood Insurance Study (FIS), dated July 15 1988, was prepared by the USGS for the Federal Emergency Management Agency (FEMA) under Inter-Agency Agreement No. EMW-84-1548. This work was completed in June 1986. The hydraulic analyses for the streams were conducted by approximate methods in the Town of Front Royal which were determined through using the USGS WSPRO computer program.

1. *<u>Specific type of study proposed including whether the study is new or updates a prior study:</u>*
   New spatially distributed hydrological and hydraulic models will be developed for the watersheds and main streams within the Town of Front Royal. Specifically, the study will utilize HEC-HMS using NOAA Atlas 14 rainfall distribution curves applicable to the Town's zone and associated rainfall depths published in NOAA Atlas 14. The hydraulic model will be a 1-D HEC RAS model. The model will include the river structure and geometry allowing an analysis of the historical behavior of the watershed-river system. Furthermore, the model will continuously map the flood extent for the river floodplain during the past events as well as for specific scenarios (e.g., 25-yr event). This tool will then be used to provide recommendations on flood mitigation and planning. The project will be a steppingstone for a real time forecasting tool, which not only predicts the stage levels at selected locations, but also the areas that are predicted to be inundated and accordingly all the FIRMs will be updated. Successful fulfilment of the proposed project will also enable the community to apply for indexing in CRS, which will allow for lower flood insurance premiums to be made available to properties located within the regulated floodplains.

2. *Relationship of Study to the local Government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual:*

   The proposed study will investigate the highly flood prone areas in the Town through various flooding scenarios using the developed hydrology and hydraulic models. It will re-establish floodplain limits and magnitudes within the Town's study limits. We will then propose site appropriate rainwater management solutions which will built into sites, corridors, or neighborhoods without requiring significant space. Any rainwater capture and treatment facilities will enable predicted flood flows to be maintained or decreased over time, especially with any in-fill and re-development projects. Thereby reducing future damage related to flooding, especially properties located in flood prone areas of the Town. **Fig. 6** depicts examples of nature-based rainwater management solutions which will be considered in this study.

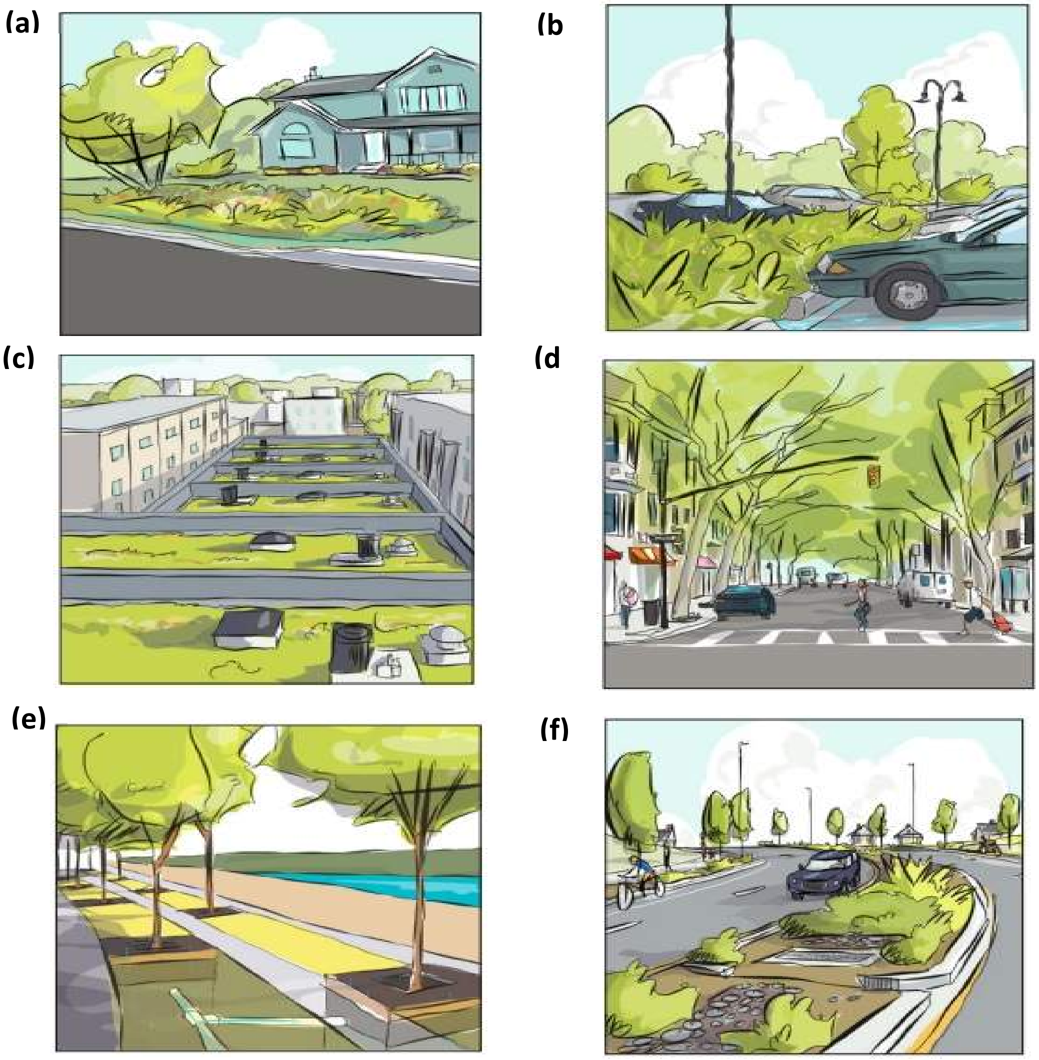


Fig. 6*(a) Rain Gardens, (b) Vegetated Swales, (c) Green Roofs, (d) Tree Canopy, (e) Tree Trenches and (f) Garden Streets.*

3. *Qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications:*
   The Town of Front Royal Manager, Steven Hicks, oversees all the Town's operations and employees. Some of the more specific responsibilities of this office include but are not limited to: Preparation of the annual budget; Preparation of Town Council agendas; Authorization of notices; Authorization of specific permits; Updating the Front Royal website; Updating the Town Code; and preparing a Quarterly Newsletter to Citizens. He also oversees the Planning Department, which is responsible for updating, administering, and enforcing the floodplain ordinance within the Town. The planning department will utilize an engineering consultant with specialized experience in conducting FEMA Letters of Map Revision (LOMR), utilizing HEC HMS and HEC RAS, with interfacing in the GIS environment for floodplain and floodway mapping to FEMA standards.

4. *The expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach:*
   Currently, there is no available local flood protection resilience plan. The proposed restudy will provide a complete hydrology and hydraulic model of the special hazard areas. The output data set can be used by Warren County for upstream and downstream portions of Shenandoah River, Happy Creek, and Leach Run. Moreover, the updated flood data can be utilized by neighboring upstream and downstream communities, which also have outdated studies.

5. *If applicable, how the study may improve Virginia's flood protection and prevention abilities in a statewide context:*
   The modeling methodology and application procedures in this study will revise and re-establish the floodplain based on updated FIRMs to maintain compliance with the NFIP and to incorporate higher standards that may reduce the risk of flood damage. This also enables the community to join a voluntary incentive CRS program that recognizes and encourages community floodplain management practices exceeding the minimum requirements of the NFIP. Currently, over 1,500 communities participate nationwide in the program. In CRS communities, flood insurance premium rates are discounted reflecting the reduced flood risk resulting from the community's efforts. The efforts seek to address the three goals of the program: reduce and avoid flood damage to insurable property, strengthen and support the insurance aspects of the National Flood Insurance Program, and foster comprehensive floodplain management.

2.1 Deliverables and outcomes

1. ***A validated GIS-based watershed/*****river** ***model for the Town of Front Royal***: This model will be used for further flood impact studies and sensitivity analysis related to planned development encroachments near floodplains.

2. ***Assessment of the watershed issues using the developed model***
We will investigate the updated flood zones and effect of the nearby structures on heavily affected regions, as vulnerability assessments and propose action-oriented approaches, to bolster flood preparedness and nature-based resilience solutions.

3. ***Final report***: It will summarize the application, calibration, and validation of the hydrological/hydraulic model to the Town of Front Royal and discuss the implications of the model results and recommendations for flood mitigation and nature-based solutions. All the FEMA Flood Insurance Rate Maps, Flood Profiles, Discharge Tables, and FIS narratives within the Town will need to be updated. The modeling methodology and application procedures will utilize industry standard models and techniques, future engineers and planners can continue to utilize for the foreseeable future.

Application in real-time forecasting and emergency management

The validated model will be able to predict the extent of the flood for any rainfall scenario in the past or future. In this study, we will simulate historical events and floods with different return periods (2-yr, 10-yr, 25-yr, 50-yr, 100-yr and 500-yr), however, the development and maintenance of a real-time web-based forecasting model needs additional analysis and study. Accordingly, for the next phase, this can be done based on the work that will be developed in this study.

Stakeholder process, coordination, and management plan

With the development of new flood mapping and studies, a public notice and public hearing regarding the new flood maps will be anticipated.

3. Approach, Milestones, and Deliverables

The expected duration of the project is 20 months with the following schedule:

1. ***Start* (July 1, 2022)**

2. ***Integrated watershed/river model development* (October 2022):** The US Army Corp of Engineers, Hydrological Engineering Center, Hydrological Modeling System and River Analysis System, integrated to ArcGIS, will be used for this task.

3. ***Incorporation of hydraulic structures in the models* (December 2022):** An advantage of the modeling systems is its ability to include river and watershed structures. The detail geometry of each structure is necessary for this step. During this task, hydraulic structures will be incorporated in the model.

4. ***Validations against historical events*** **(January 2023):** Using historical rainfall and runoff data at gauging stations, the models will be first calibrated for a portion of the data and then will be validated against the rest of the data.

5. ***Simulation of extreme events and sensitivity analysis*** **(February 2023):** By employing the validated model, predictions of the top ranked extreme events and 10/25/50/100/500-yr water levels will be provided at selected gauging stations. Other scenarios which might be of interest of stakeholders will be also modeled.

6. ***Writing the report and delivery of the final model*** **(February 2023):** For the development and validation of watershed and river models, many types of data are required including watershed Digital Elevation Model, land use, soil type, rainfall data, river geometry (Cross Sections), geometry of river/watershed structures, and stream flow data. This project will use the most recent available data; no surveying or field data will be included in this effort.

7. ***Coordination with FEMA for Approval of FIRMS (*****March 2023*****):*** Submit to FEMA LOMR package for updated hydrology and hydraulic modeling, mapping, floodway analysis.

8. ***Public Outreach (*****May 2023):** Conduct a public hearing regarding the update FEMA maps for final approval. This will include a public notice in the local newspaper to review the updated maps.

9. ***Obtain official FEMA Approval of update mapping and hydrology (*****December 2023):** With approval of the updated mapping and study, the project close out will be conducted with supporting documentation archived by the Town of Front Royal Planning Department.

8.Budget

The anticipated budget for this study is $100,000. The use of these funds will be used to procure the professional services of the Town’s engineering consultant to perform the hydrologic and hydraulic analysis, with updated flood insurance mapping, and GIS shapefiles of the revised floodplains.

- **Estimated Total Cost: $100,000**
- **Amount of Funds Requested from the Fund: $90,000**
- **Amount of cash funds available: $10,000**
    - **Authorization to request funding is attached in Appendix D-8- Authorization to request funding from the Fund from governing body of the local government**

Appendices:

Appendix A: Application Form for Grant Request

Appendix B: Scoring Criteria for studies

Appendix C: Checklist for All Categories

Appendix D: Supporting Documentation

1. Detailed map of the project area (s)
2. FIRMette of the project Area(s)
    a. FIRM Panels:
        i. 51187C0103C, 51187C0104C, 51187C0108C, 51187C0110C, 51187C0111C, 51187C0112C, 51187C0115C, 51187C0116C, 51187C0117C and 51187C0118C
3. Historic flood damage data and/or images
4. Copy of current floodplain ordinance
5. Link to current hazard mitigation plan
6. Link to current comprehensive plan
7. Social vulnerability index scores for project area
8. Authorization to request funding from the Fund from governing body of the local government

Appendix A: Application Form for Grant Requests for All Categories

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Town of Front Royal, VA

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

X **Study**

NFIP/DCR Community Identification Number (CID) 510167

If a state or federally recognized Indian tribe, Name of tribe______________________________

Name of Authorized Official: Steven Hicks

Signature of Authorized Official:

Mailing Address (1): 102 East Main Street

Mailing Address (2): ____

City: Front Royal **State:** VA **Zip:** 22630

Telephone Number: (540) 635-8007 **Cell Phone Number:** (____) ________________

Email Address: shicks@frontroyalva.com

Contact Person (If different from authorized official): Lauren Kopishke

Mailing Address (1): 102 East Main Street

Mailing Address (2): ____________________

City: Front Royal **State:** VA **Zip:** 22630

Telephone Number: (540) 635-4236 **Cell Phone Number:** (____) ____________

Email Address: lkopishke@frontroyalva.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☒ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☒ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☒ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☒ Studies and Data Collection of Statewide and Regional Significance.

☒ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Town of Front Royal, VA- See Appendix D-1

NFIP Community Identification Number (CID#):(See appendix F 510167

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Zones A, AE, and X

Flood Insurance Rate Map Number(s) (If Applicable): 51187C0103C, 51187C0104C, 51187C0108C, 51187C0110C, 51187C0111C, 51187C0112C, 51187C0115C, 51187C0116C, 51187C0117C and 51187C0118C

Total Cost of Project: $100,000

Total Amount Requested $90,000

Appendix B: Scoring Criteria for Studies

Appendix B: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration		X **Yes** **No**
Applicant Name:	**Town of Front Royal**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	30
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	15
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	35
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☒ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	45
○ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☒ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	45
☒ Flash flood studies and modeling in riverine regions of the state.	**45**	45
☒ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	45

☒ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	45
☒ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	50
☒ Regional hydrologic and hydraulic studies of floodplains.	**45**	45
☒ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	40
○ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	10
No	**0**	
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	
Total Points		468

Appendix C: Checklist All Categories

APPENDIX C: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

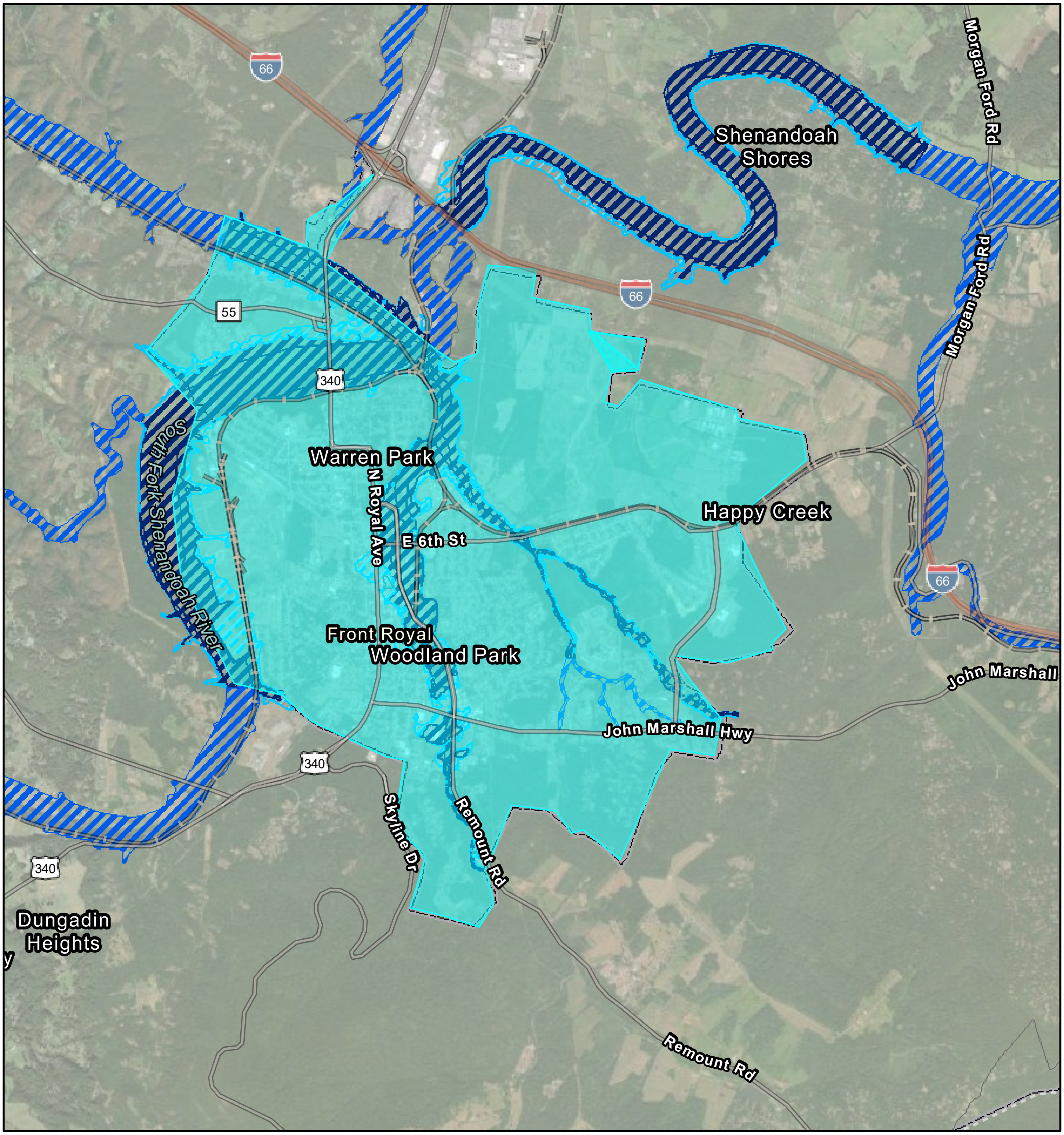
Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Appendix D: Supporting Documentation

9. Detailed map of the project area (s)
10. FIRMette of the project Area(s)
    a. FIRM Panels:
        i. 51187C0103C, 51187C0104C, 51187C0108C, 51187C0110C, 51187C0111C, 51187C0112C, 51187C0115C, 51187C0116C, 51187C0117C and 51187C0118C
11. Historic flood damage data and/or images
12. Copy of current floodplain ordinance
13. Link to current hazard mitigation plan
14. Link to current comprehensive plan
15. Social vulnerability index scores for project area
16. Authorization to request funding from the Fund from governing body of the local government

1. Detailed map of the project area (s)

Front Royal Study Limits



April 6, 2022

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

🟦 Flood Study Limits

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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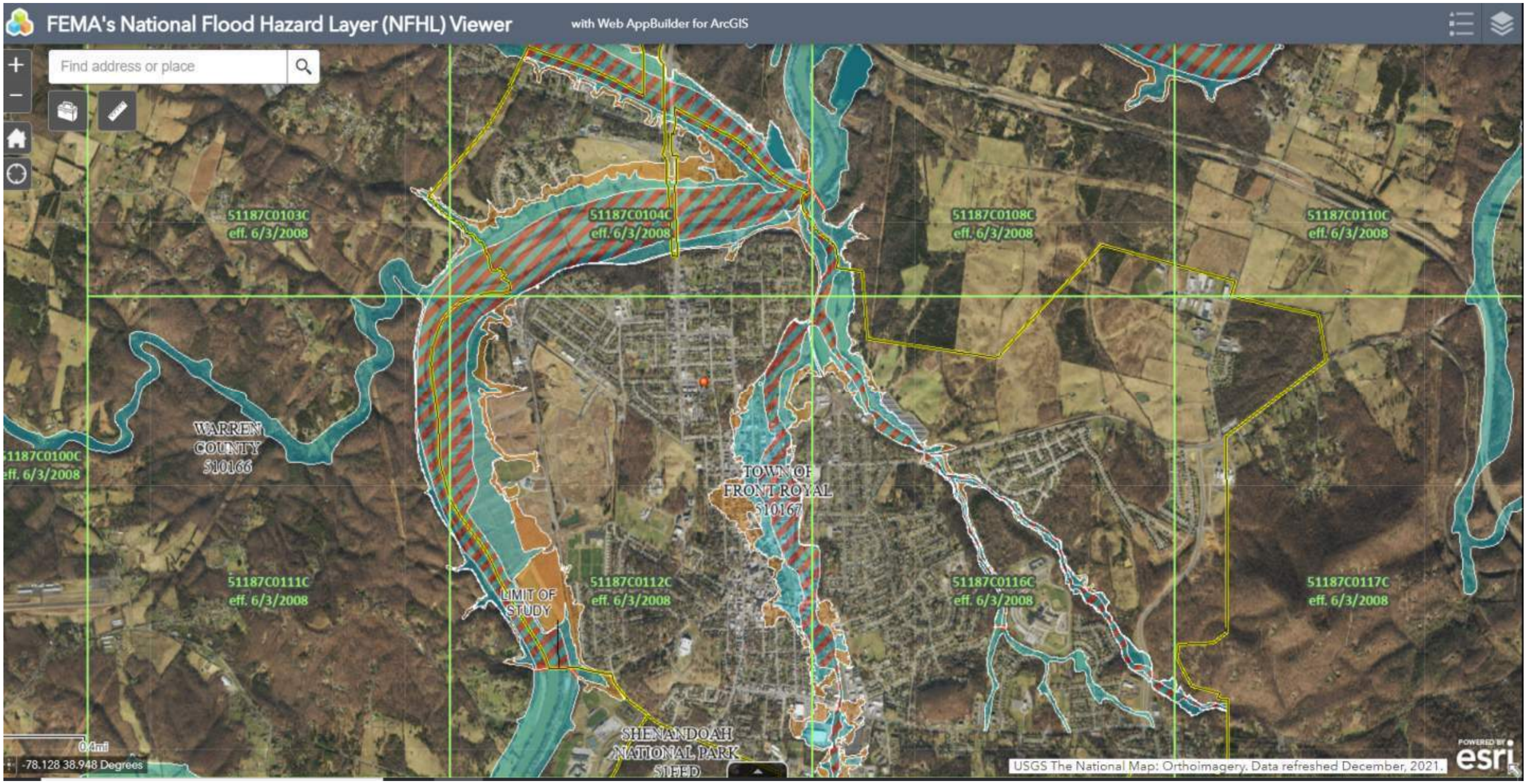
FEMA's National Flood Hazard Layer (NFHL) Viewer
with Web AppBuilder for ArcGIS
Find address or place
51187C0103C eff. 6/3/2008
51187C0104C eff. 6/3/2008
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51187C0110C eff. 6/3/2008
51187C0100C eff. 6/3/2008
WARREN COUNTY 510166
TOWN OF FRONT ROYAL 510167
51187C0111C eff. 6/3/2008
LIMIT OF STUDY
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51187C0117C eff. 6/3/2008
SHENANDOAH NATIONAL PARK 51FED
0.4mi
-78.128 38.948 Degrees
USGS The National Map: Orthoimagery. Data refreshed December, 2021.
POWERED BY esri

NOTES TO USERS

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East-West Highway
Spring, Maryland 20910
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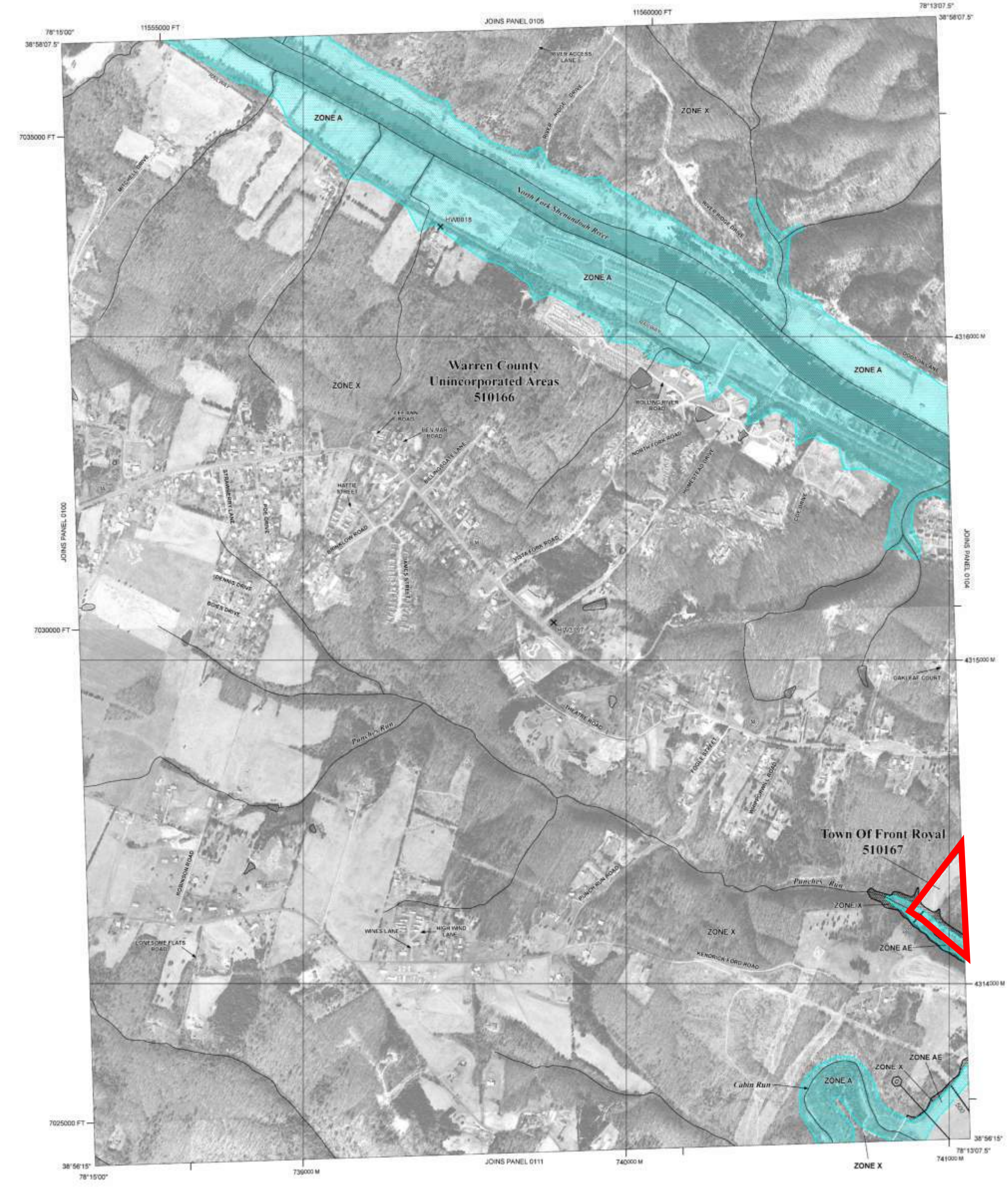

LEGEND

🟦 SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT T INUNDATION BY THE 1% ANNUAL CHANCE FLOO

The 1% annual chance flood (100-year flood), also known as the base flood, is the has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard area subject to flooding by the 1% annual chance flood. Areas of special Flood Haz Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the wa elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Ba Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain depths determined. For areas of alluvial fan flooding, veloc determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annu flood by a flood control system that was subsequently decertified. indicates that the former flood control system is being restored protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Fed protection system under construction; no Base Flood El determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Ba Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Ba Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be of encroachment so that the 1% annual chance flood can be carried without substantia in flood heights.

▒ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance average depths of less than 1 foot or with drainage areas le square mile; and areas protected by levees from 1% annual chanc

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodpla
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard A

───	1% annual chance floodplain boundary
───	0.2% annual chance floodplain boundary
- - -	Floodway boundary
— — —	Zone D boundary
●●●●●●●	CBRS and OPA boundary
◀	Boundary dividing Special Flood Hazard Areas of diffe Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone, in feet*

* Referenced to the North American Vertical Datum of 1988

Ⓐ——Ⓐ	Cross section line
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87°07'45", 32°22'30"	Geographic coordinates referenced to the North Americ of 1983 (NAD 83)
4276000 M	1000-meter Universal Transverse Mercator grid values, z
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DX5510 ×	Bench mark (see explanation in Notes to Users secti FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Comm History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance ag the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0103C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY, VIRGINIA
AND INCORPORATED AR

PANEL 103 OF 250
(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0103
WARREN COUNTY	510166	0103

Notice to User: The **Map Number** shown belo used when placing map orders; the **Communi** shown above should be used on insurance app the subject community.

MAP NU
51187C

EFFECTIVE
JUNE 3

Federal Emergency Management

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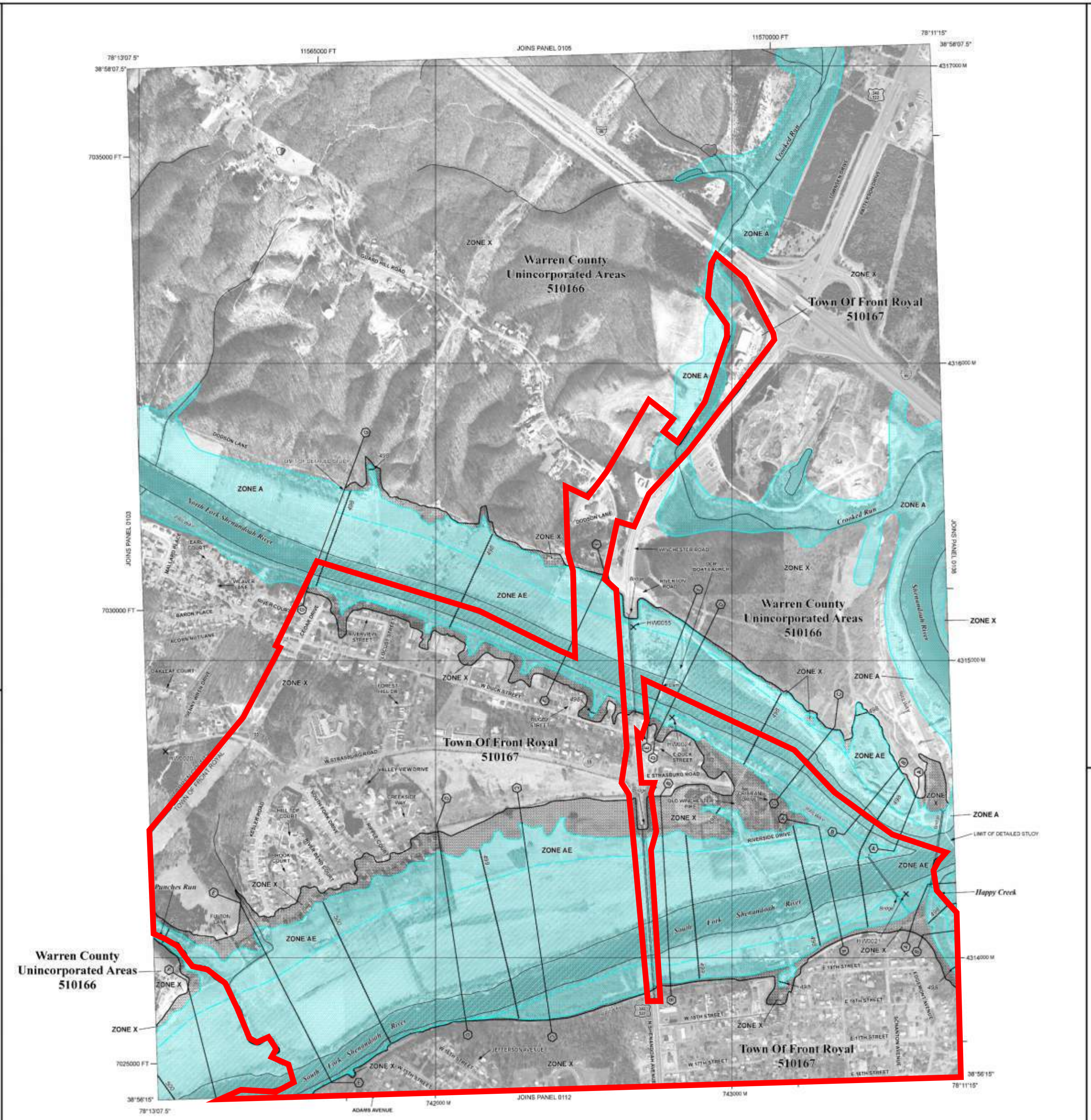

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PANEL 0104C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY,
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PANEL 104 OF 250
(SEE MAP INDEX FOR FIRM PANEL L

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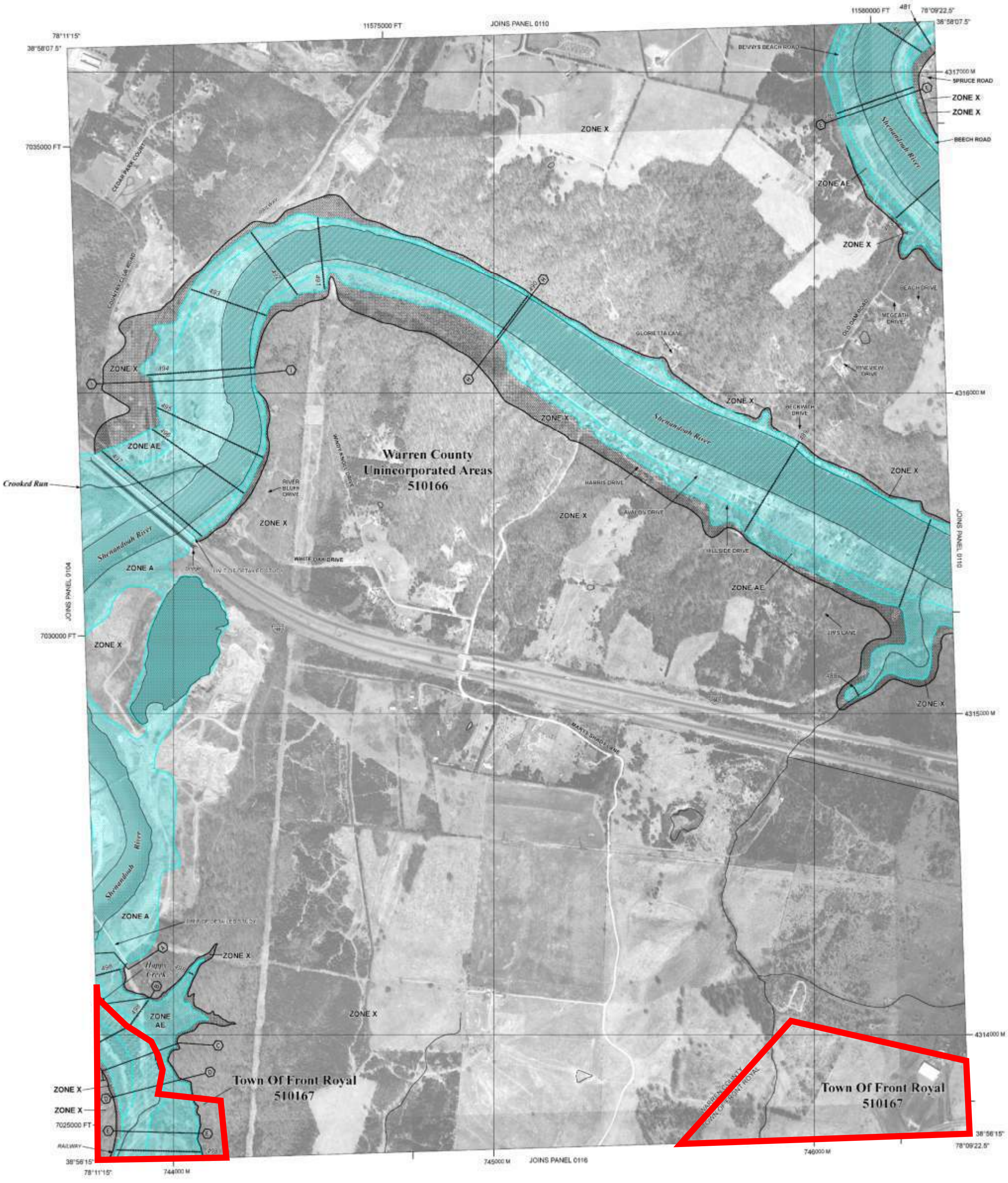

LEGEND

🟦 SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT T
INUNDATION BY THE 1% ANNUAL CHANCE FLOO

The 1% annual chance flood (100-year flood), also known as the base flood, is the
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ZONE A	No Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annu flood by a flood control system that was subsequently decertified. indicates that the former flood control system is being restored t protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Fed protection system under construction; no Base Flood El determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Ba Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Ba Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be
of encroachment so that the 1% annual chance flood can be carried without substantia
in flood heights.

▩ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance average depths of less than 1 foot or with drainage areas le square mile; and areas protected by levees from 1% annual chan

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodpla
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard A

———	1% annual chance floodplain boundary
———	0.2% annual chance floodplain boundary
— — —	Floodway boundary
—— —— –	Zone D boundary
●●●●●●●●	CBRS and OPA boundary
◄	Boundary dividing Special Flood Hazard Areas of diffe Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; in feet*

* Referenced to the North American Vertical Datum of 1988

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87°07'45", 32°22'30"	Geographic coordinates referenced to the North Americ of 1983 (NAD 83)
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DX5510 ×	Bench mark (see explanation in Notes to Users secti FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Comm
History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance ag
the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0108C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY,
VIRGINIA
AND INCORPORATED AR

PANEL 108 OF 250

(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0108
WARREN COUNTY	510166	0108

Notice to User: The **Map Number** shown below
used when placing map orders; the **Communi**
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MAP NU
51187C

EFFECTIVE
JUNE 3

Federal Emergency Management

NOTES TO USERS

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areas not in Special Flood Hazard Areas may be protected by **flood structures**. Refer to Section 2.4 "Flood Protection Measures" of the nsurance Study report for information on flood control structures for this ion.

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Reference System Division
l Geodetic Survey, NOAA
pring Metro Center
ast-West Highway
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13-3191

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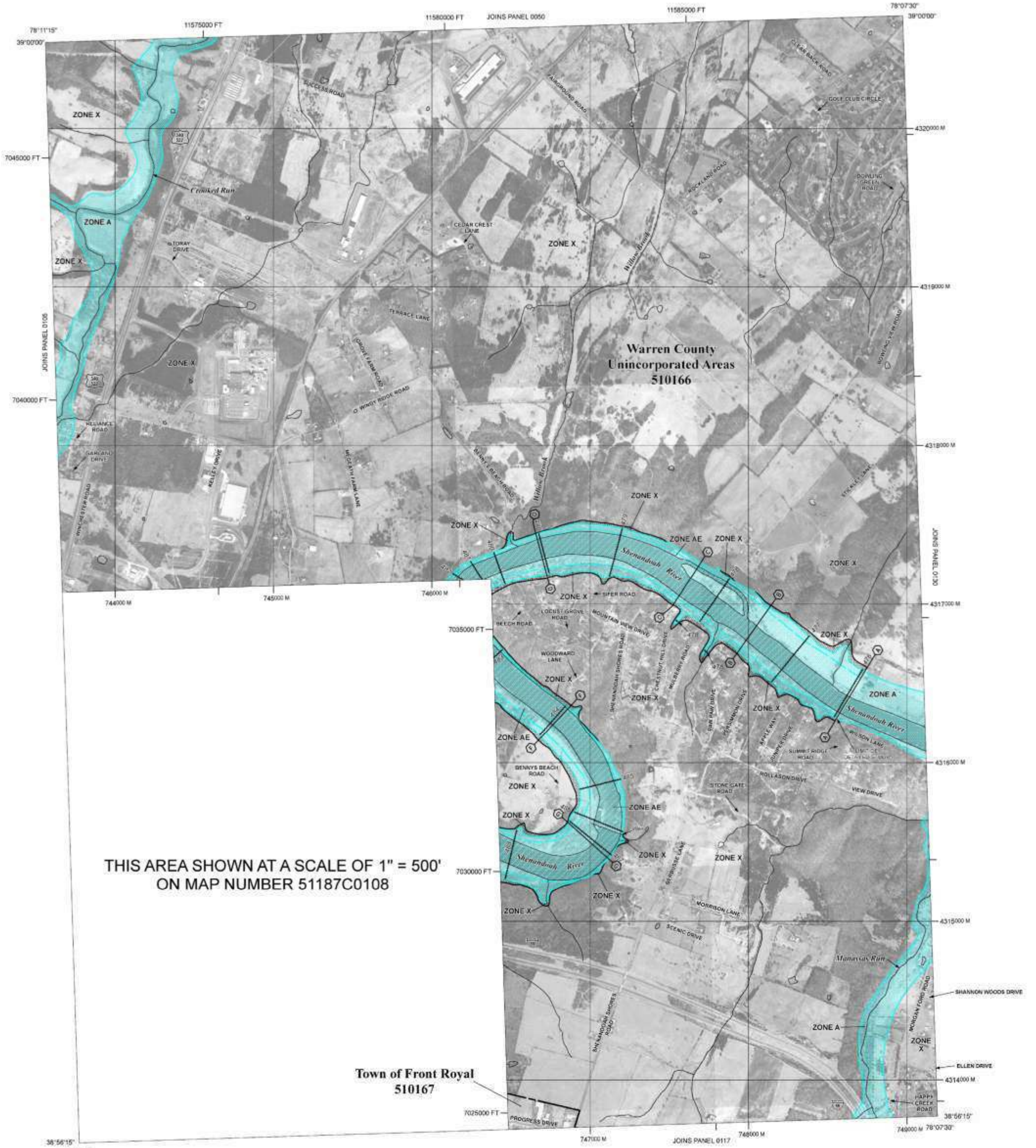

LEGEND

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The 1% annual chance flood (100-year flood), also known as the base flood, is the has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard area subject to flooding by the 1% annual chance flood. Areas of special Flood Haz Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the w elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
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ZONE V	Coastal flood zone with velocity hazard (wave action); no B Elevations determined.
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▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be of encroachment so that the 1% annual chance flood can be carried without substantial in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance average depths of less than 1 foot or with drainage areas le square mile; and areas protected by levees from 1% annual chan

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodpla
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard A

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
••••••••••••••••••	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of diffe Flood Elevations, flood depths or flood velocities.
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(EL 987)	Base Flood Elevation value where uniform within zone; in feet*

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• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Comm History table located in the Flood Insurance Study report for this jurisdiction.

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0110C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY,
VIRGINIA
AND INCORPORATED AR

PANEL 110 OF 250
(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0110
WARREN COUNTY	510166	0110

Notice to User: The **Map Number** shown belo used when placing map orders; the **Communit** shown above should be used on insurance appl the subject community.

MAP NU
51187C

EFFECTIVE
JUNE 3

Federal Emergency Management

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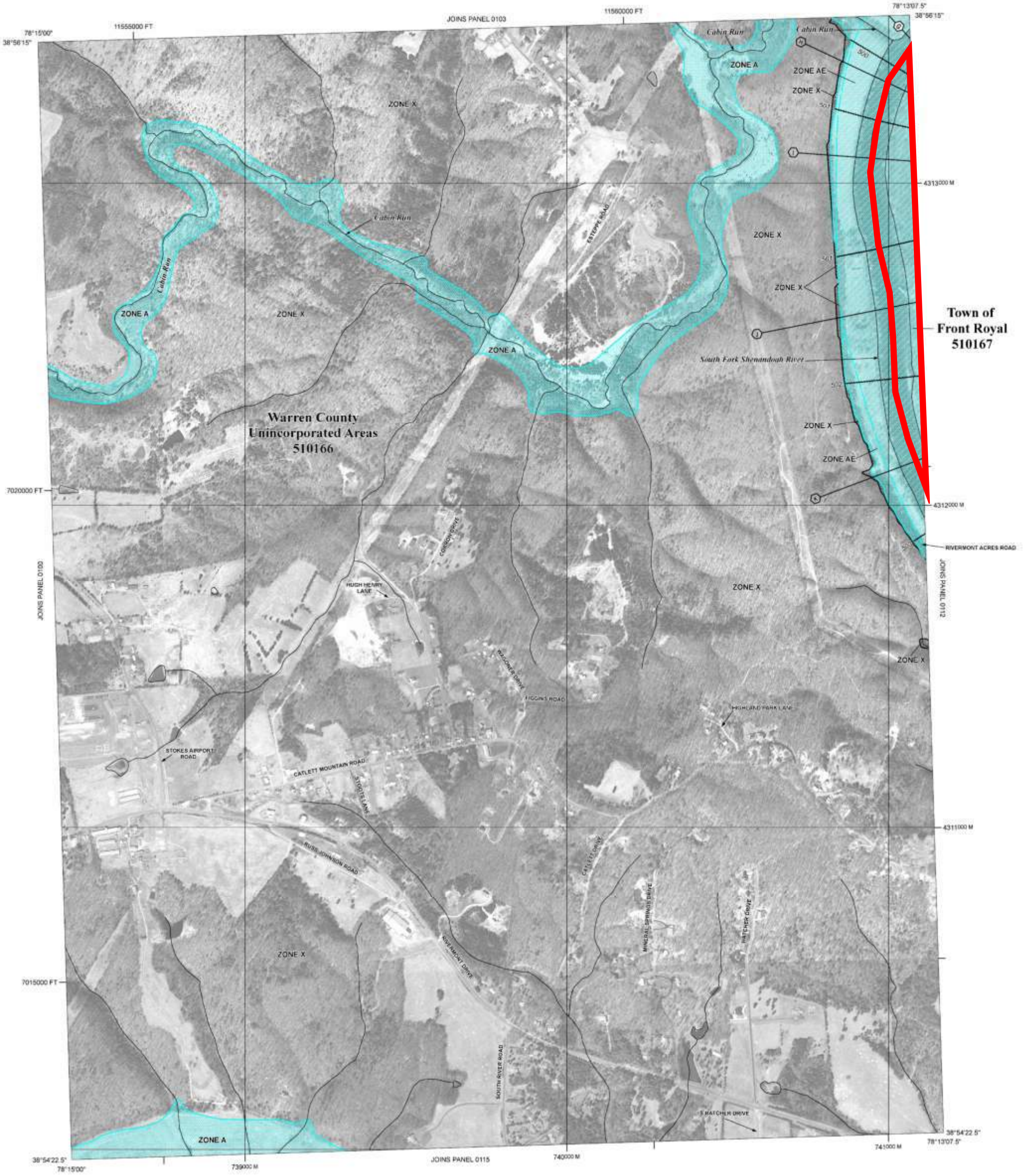

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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0111C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY, VIRGINIA
AND INCORPORATED AR

PANEL 111 OF 250
(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0111
WARREN COUNTY	510166	0111

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MAP NU
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EFFECTIVE
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Federal Emergency Management

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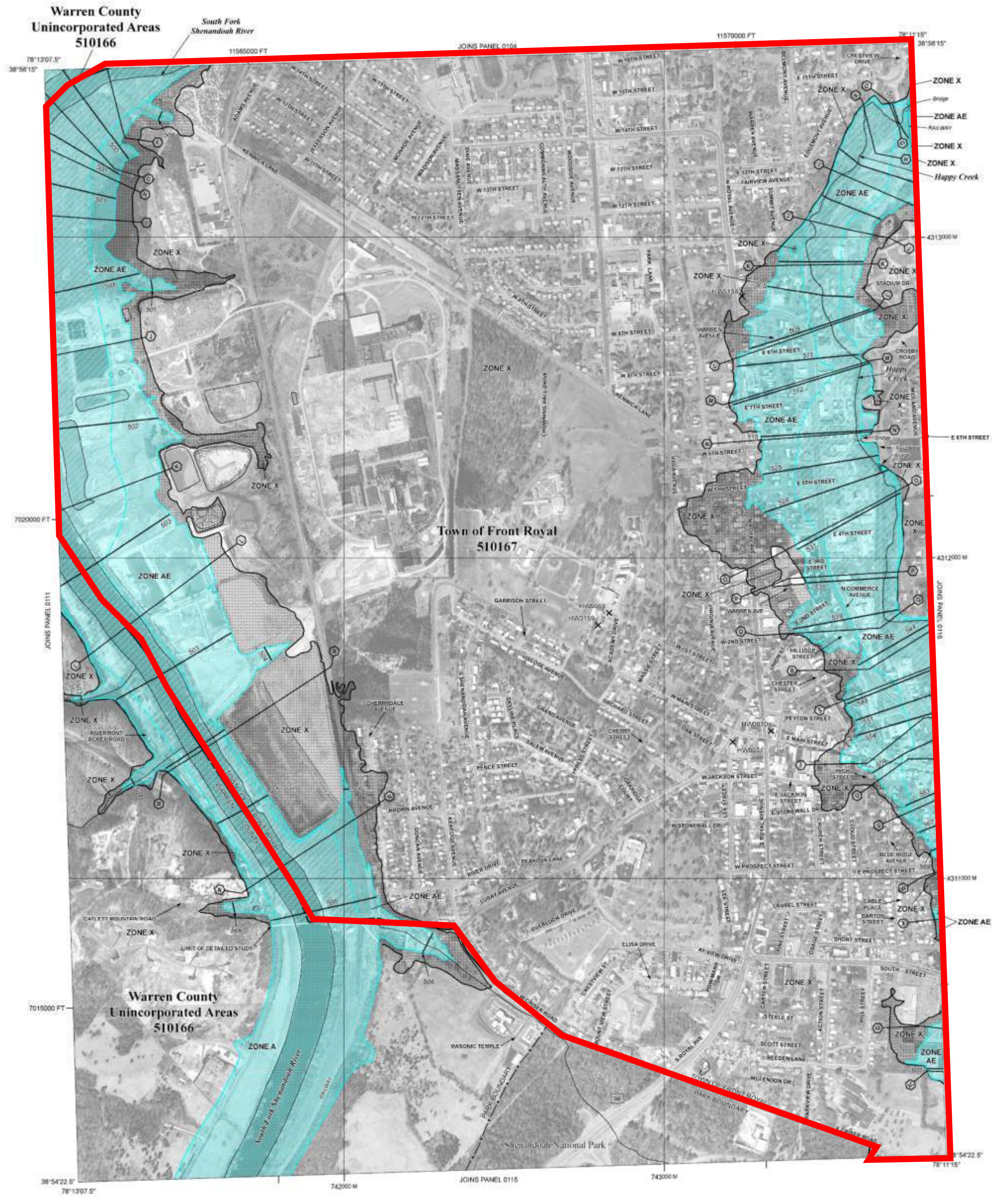

LEGEND

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ZONE VE	Coastal flood zone with velocity hazard (wave action); Ba Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be of encroachment so that the 1% annual chance flood can be carried without substantia in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance f average depths of less than 1 foot or with drainage areas le square mile; and areas protected by levees from 1% annual chan

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodpla
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard A

———	1% annual chance floodplain boundary
———	0.2% annual chance floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
•••••••••	CBRS and OPA boundary
◀	Boundary dividing Special Flood Hazard Areas of diffe Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone, in feet*

* Referenced to the North American Vertical Datum of 1988

Ⓐ——Ⓐ	Cross section line
㉓----㉓	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North Americ of 1983 (NAD 83)
4276000 M	1000-meter Universal Transverse Mercator grid values, z
600000 FT	5000-foot grid ticks: Virginia State Plane coordin system (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users secti FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Comm History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance ag the National Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0112C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY,
VIRGINIA
AND INCORPORATED AR

PANEL 112 OF 250

(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0112
WARREN COUNTY	510166	0112

Notice to User: The **Map Number** shown below used when placing map orders; the **Communit** shown above should be used on insurance appl the subject community.

MAP NU
51187C

EFFECTIVE
JUNE 3

Federal Emergency Management

NOTES TO USERS

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Reference System Division
l Geodetic Survey, NOAA
pring Metro Center
ast-West Highway
pring, Maryland 20910
13-3191

in current elevation, description, and/or location information for **bench** shown on this map, please contact the Information Services Branch of the l Geodetic Survey at **(301) 713-3242**, or visit its website at vw.ngs.noaa.gov/.

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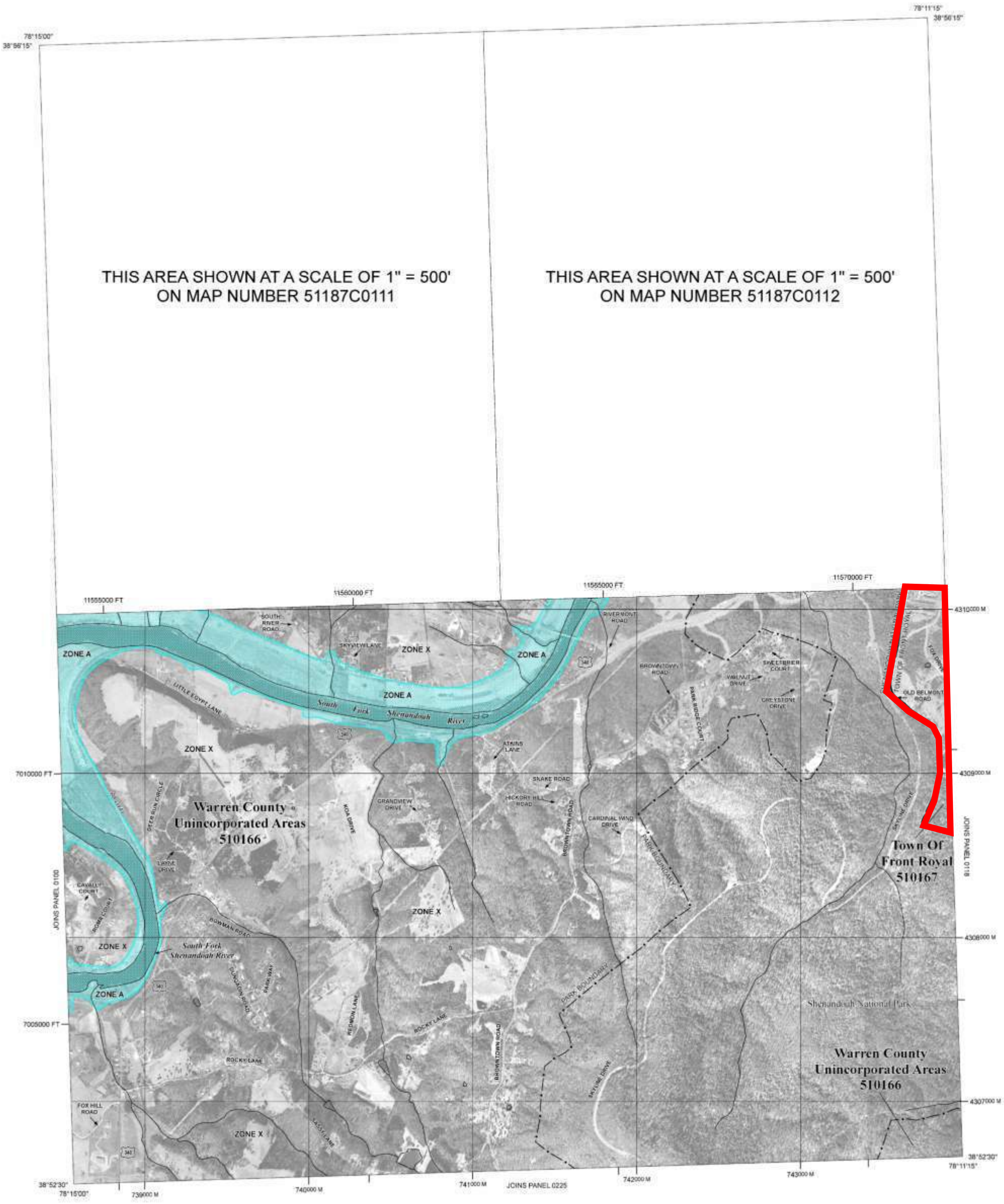

LEGEND

▨ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT T INUNDATION BY THE 1% ANNUAL CHANCE FLOO

The 1% annual chance flood (100-year flood), also known as the base flood, is the has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard area subject to flooding by the 1% annual chance flood. Areas of special Flood Haz Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the wa elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Ba Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain depths determined. For areas of alluvial fan flooding, veloc determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annu flood by a flood control system that was subsequently decertified. indicates that the former flood control system is being restored t protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Fede protection system under construction; no Base Flood El determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Ba Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Ba Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be of encroachment so that the 1% annual chance flood can be carried without substantia in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance average depths of less than 1 foot or with drainage areas le square mile; and areas protected by levees from 1% annual chanc

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodpla
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▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard A

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of diffe Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; in feet*

* Referenced to the North American Vertical Datum of 1988

(A)—(A)	Cross section line
(23)----(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North Americ of 1983 (NAD 83)
4276 000 M	1000-meter Universal Transverse Mercator grid values, z
600000 FT	5000-foot grid ticks: Virginia State Plane coordir system (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users secti FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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To determine if flood insurance is available in this community, contact your insurance ag the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0115C

FIRM
FLOOD INSURANCE RATE M
WARREN COUNTY, VIRGINIA
AND INCORPORATED ARE

PANEL 115 OF 250
(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0115
WARREN COUNTY	510166	0115

Notice to User: The **Map Number** shown belo used when placing map orders; the **Communi** shown above should be used on insurance appl the subject community.

MAP NU
51187C

EFFECTIVE
JUNE 3

Federal Emergency Management

NOTES TO USERS

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Reference System Division
l Geodetic Survey, NOAA
pring Metro Center
ast-West Highway
pring, Maryland 20910
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in current elevation, description, and/or location information for **bench** hown on this map, please contact the Information Services Branch of the l Geodetic Survey at **(301) 713-3242**, or visit its website at ww.ngs.noaa.gov/.

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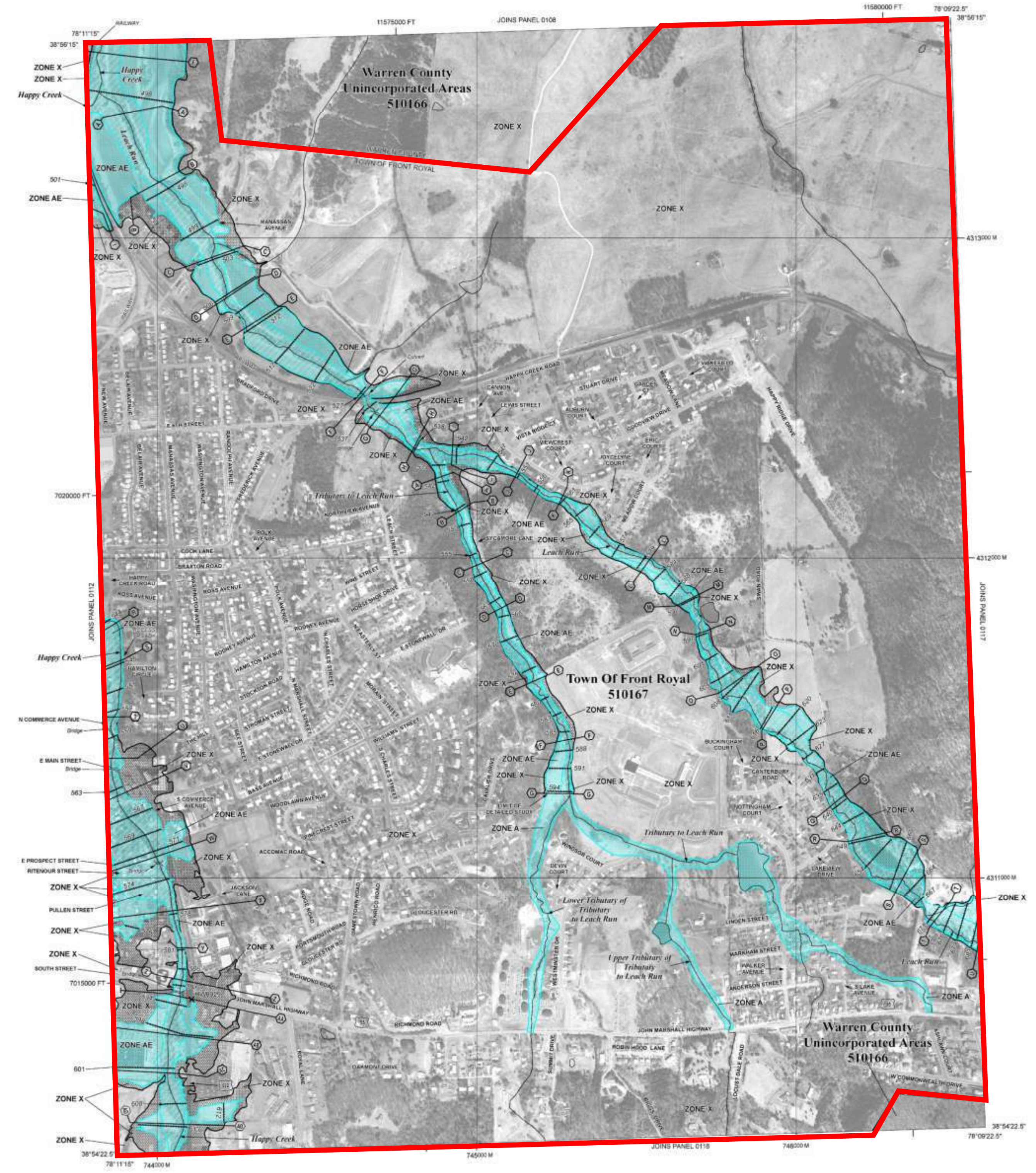

LEGEND

▨	SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT T INUNDATION BY THE 1% ANNUAL CHANCE FLOO

The 1% annual chance flood (100-year flood), also known as the base flood, is the has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard area subject to flooding by the 1% annual chance flood. Areas of special Flood Haz Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the wa elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Ba Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain) depths determined. For areas of alluvial fan flooding, veloc determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annu flood by a flood control system that was subsequently decertified. indicates that the former flood control system is being restored t protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Fed protection system under construction; no Base Flood El determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Ba Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Ba Elevations determined.
▨	FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be of encroachment so that the 1% annual chance flood can be carried without substantia in flood heights.

▩	OTHER FLOOD AREAS
ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance average depths of less than 1 foot or with drainage areas le square mile; and areas protected by levees from 1% annual chanc
☐	OTHER AREAS
ZONE X	Areas determined to be outside the 0.2% annual chance floodpla
ZONE D	Areas in which flood hazards are undetermined, but possible.
▧	COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
▧	OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard A

——	1% annual chance floodplain boundary
——	0.2% annual chance floodplain boundary
– – –	Floodway boundary
— — —	Zone D boundary
••••••••	CBRS and OPA boundary
◀	Boundary dividing Special Flood Hazard Areas of diffe Flood Elevations, flood depths or flood velocities.
～～ 513 ～～	Base Flood Elevation line and value; elevation in feet*
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(23)- - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North Americ of 1983 (NAD 83)
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• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0116C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY,
VIRGINIA
AND INCORPORATED AR

PANEL 116 OF 250

(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0116
WARREN COUNTY	510166	0116

Notice to User: The **Map Number** shown below used when placing map orders; the **Communi** shown above should be used on insurance appl the subject community.

MAP NU
51187C

EFFECTIVE
JUNE 3

Federal Emergency Management

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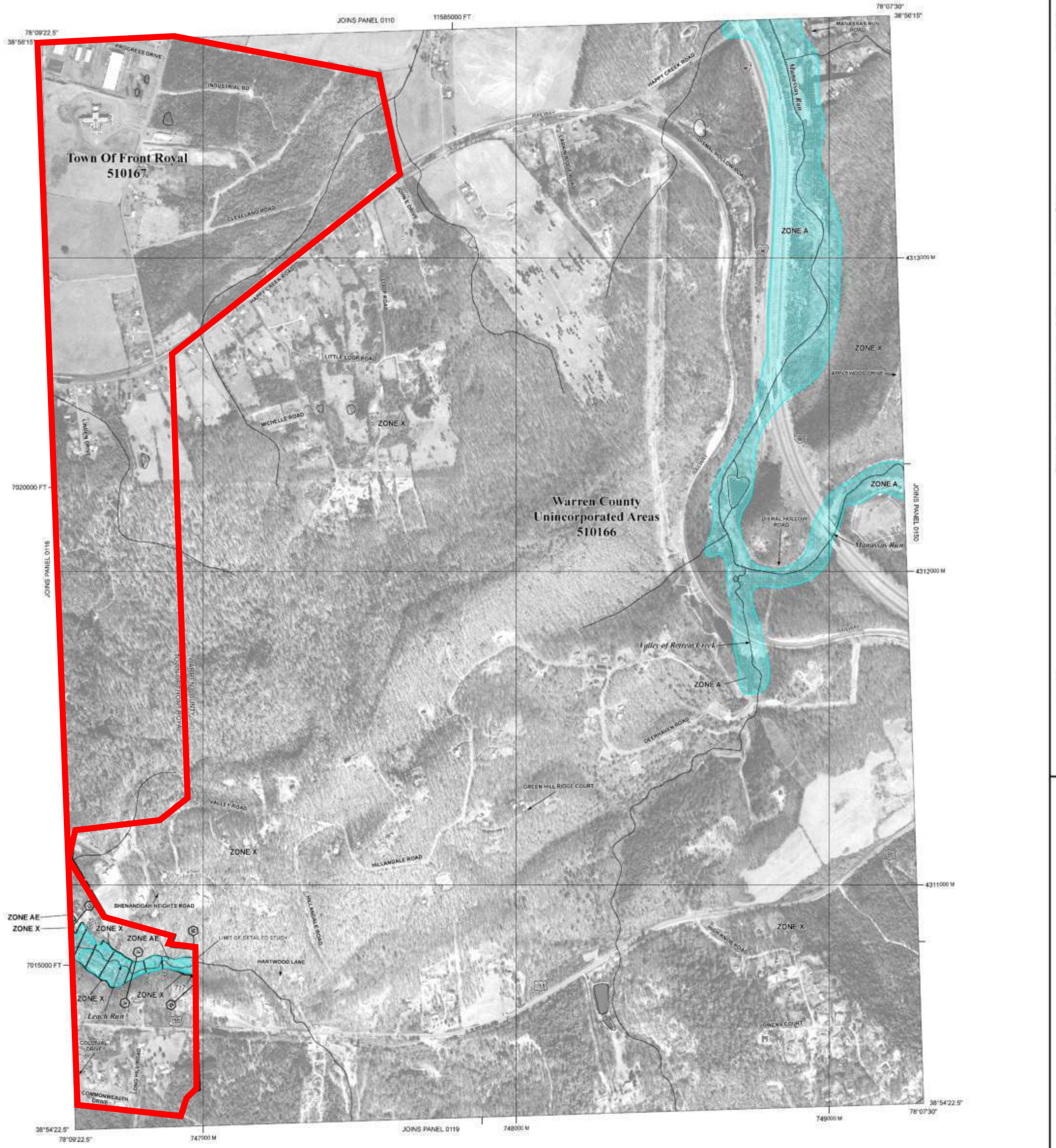

LEGEND

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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annu flood by a flood control system that was subsequently decertified. indicates that the former flood control system is being restored protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Fed protection system under construction; no Base Flood El determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no B Elevations determined.
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▧ OTHERWISE PROTECTED AREAS (OPAS)

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——	1% annual chance floodplain boundary
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DX5510 ×	Bench mark (see explanation in Notes to Users secti FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0117C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY, VIRGINIA
AND INCORPORATED ARE

PANEL 117 OF 250
(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0117
WARREN COUNTY	510166	0117

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NOTES TO USERS

ip is for use in administering the National Flood Insurance Program. It t necessarily identify all areas subject to flooding, particularly from local sources of small size. The **community map repository** should be d for possible updated or additional flood hazard information.

in more detailed information in areas where **Base Flood Elevations** and/or **floodways** have been determined, users are encouraged to the Flood Profiles and Floodway Data and/or Summary of Stillwater ns tables contained within the Flood Insurance Study (FIS) report that anies this FIRM. Users should be aware that BFEs shown on the FIRM nt rounded whole-foot elevations. These BFEs are intended for flood e rating purposes only and should not be used as the sole source of vation information. Accordingly, flood elevation data presented in the FIS hould be utilized in conjunction with the FIRM for purposes of construction oodplain management.

ies of the **floodways** were computed at cross sections and interpolated cross sections. The floodways were based on hydraulic considerations ard to requirements of the National Flood Insurance Program. Floodway and other pertinent floodway data are provided in the Flood Insurance port for this jurisdiction.

areas not in Special Flood Hazard Areas may be protected by **flood structures**. Refer to Section 2.4 "Flood Protection Measures" of the surance Study report for information on flood control structures for this on.

jection used in the preparation of this map was Universal Transverse r (UTM) Zone 17. **Horizontal datum** was NAD 83, GRS80 spheroid. ces in datum, spheroid, projection or UTM zones used in the production s for adjacent jurisdictions may result in slight positional differences in tures across jurisdiction boundaries. These differences do not affect the y of this FIRM.

levations on this map are referenced to the North American Vertical of 1988. These flood elevations must be compared to structure and elevations referenced to the same **vertical datum**. For information g conversion between the National Geodetic Vertical Datum of 1929 and h American Vertical Datum of 1988, visit the National Geodetic Survey at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at wing address:

Reference System Division
Geodetic Survey, NOAA
oring Metro Center
st-West Highway
oring, Maryland 20910
3-3191

in current elevation, description, and/or location information for **bench** hown on this map, please contact the Information Services Branch of the Geodetic Survey at **(301) 713-3242**, or visit its website at w.ngs.noaa.gov/.

ap information was derived from multiple sources. Streamline files were ded from the National Hydrography Dataset. Political boundary files for Co. Unincorporated Areas were provided by Warren Co. Department of and Zoning, VA. Political boundary and road files for Town of Front ere provided by Town of Front Royal Engineering Department, Warren . Road centerline files for Warren Co. Unincorporated Areas were ded from the 2000 TIGER/Line files. Park boundary files were provided lational Park Service and 2002 digital orthophotographs were provided by ginia Geographic Network Division of its Department of Technology (VGIN). Adjustments were made to specific base map features to align 1":200' and 1":400' scale VGIN orthophotos.

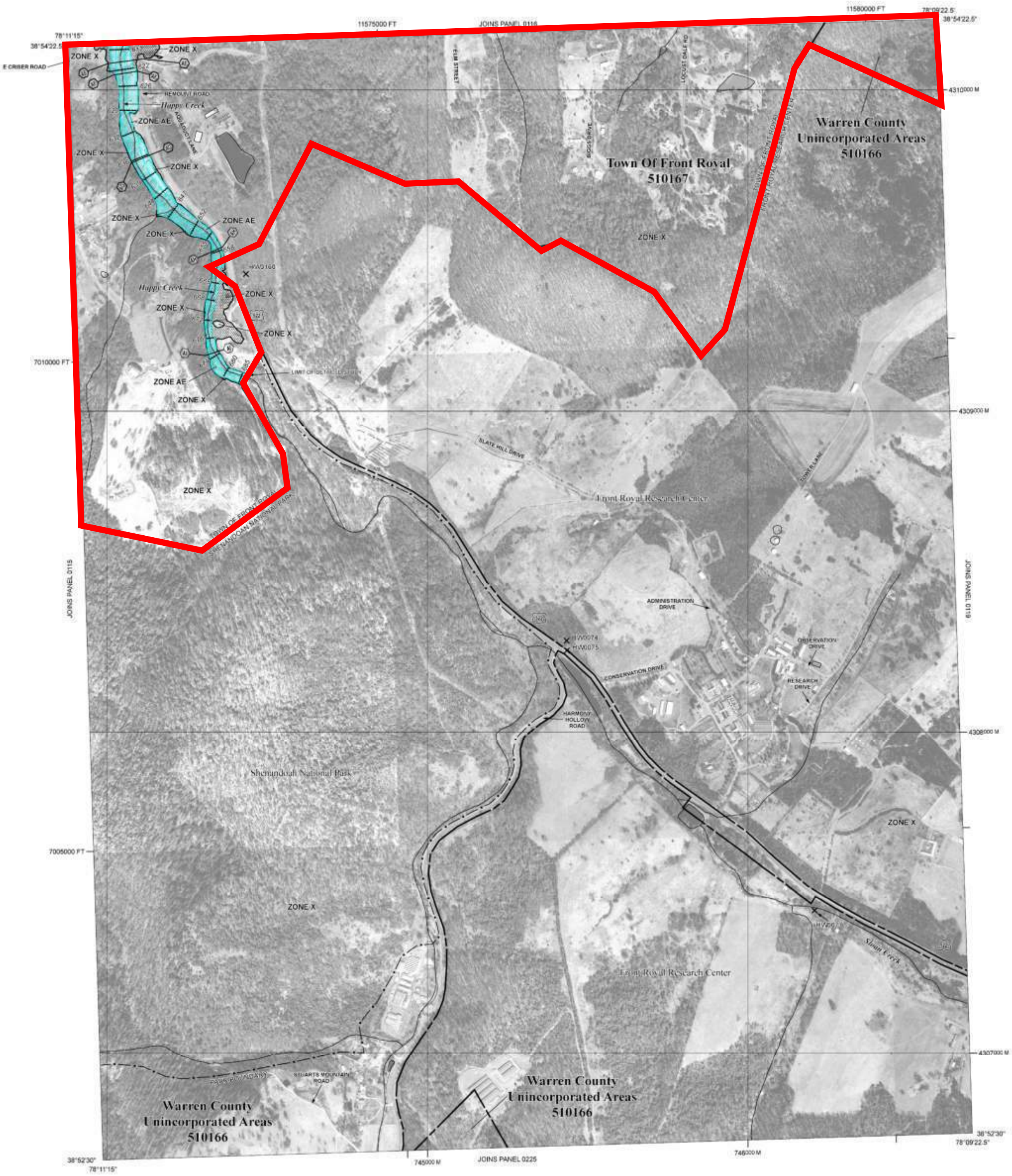
n the above mentioned digital orthophotographs, this map reflects more and up-to-date **stream channel configurations** than those shown on ous FIRM for this jurisdiction. As a result, the Flood Profiles may reflect channel distances that differ from what is shown on the map. Also, the floodplain relationships for unrevised streams may differ from what is n previous maps.

ate limits shown on this map are based on the best data available at the publication. Because changes due to annexations or de-annexations may ccurred after this map was published, map users should contact ate community officials to verify current corporate limit locations.

refer to the separately printed **Map Index** for an overview map of the howing the layout of map panels; community map repository addresses; sting of Communities table containing National Flood Insurance Program r each community as well as a listing of the panels on which each ity is located.

the **FEMA Map Service Center** at 1-800-358-9616 for information on products associated with this FIRM. Available products may include ly issued Letters of Map Change, a Flood Insurance Study report, and /or ersions of this map. The FEMA Map Service Center may also be reached t 1-800-358-9620 and its website at http://www.msc.fema.gov/.

ave **questions about this map** or questions concerning the National surance Program in general, please call **1-877-FEMA MAP** (1-877-336- visit the FEMA website at http://www.fema.gov/.



LEGEND

▨ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT T INUNDATION BY THE 1% ANNUAL CHANCE FLOO

The 1% annual chance flood (100-year flood), also known as the base flood, is the has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard area subject to flooding by the 1% annual chance flood. Areas of special Flood Haz Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the wa elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Ba Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain depths determined. For areas of alluvial fan flooding, veloc determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annu flood by a flood control system that was subsequently decertified. indicates that the former flood control system is being restored protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Fede protection system under construction; no Base Flood El determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Ba Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Ba Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be of encroachment so that the 1% annual chance flood can be carried without substantia in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance average depths of less than 1 foot or with drainage areas le square mile; and areas protected by levees from 1% annual chanc

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodpla
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard A

———	1% annual chance floodplain boundary
———	0.2% annual chance floodplain boundary
— — —	Floodway boundary
—— —— –	Zone D boundary
●●●●●●●●	CBRS and OPA boundary
▬ ◀	Boundary dividing Special Flood Hazard Areas of diffe Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone, in feet*

* Referenced to the North American Vertical Datum of 1988

Ⓐ——Ⓐ	Cross section line
㉓——㉓	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North Americ of 1983 (NAD 83)
4276000 M	1000-meter Universal Transverse Mercator grid values, z
600000 FT	5000-foot grid ticks: Virginia State Plane coordin system (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users secti FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

JUNE 3, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Comm History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance ag the National Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0118C

FIRM
FLOOD INSURANCE RATE M

WARREN COUNTY,
VIRGINIA
AND INCORPORATED AR

PANEL 118 OF 250

(SEE MAP INDEX FOR FIRM PANEL L

CONTAINS:

COMMUNITY	NUMBER	PANEL
FRONT ROYAL, TOWN OF	510167	0118
WARREN COUNTY	510166	0118

Notice to User: The **Map Number** shown belo used when placing map orders; the **Communi** shown above should be used on insurance appl the subject community.

MAP NU
51187C

EFFECTIVE
JUNE 3

Federal Emergency Management

3. Historic flood damage data and/or images

August 21, 2021 Flooding of Happy Creek at 8th Street

April 17, 2011 Flood

Criser Road Bridge over Happy Creek

Criser Road Bridge over Happy Creek

Happy Creek at Bing Crosby Stadium (Public Park)

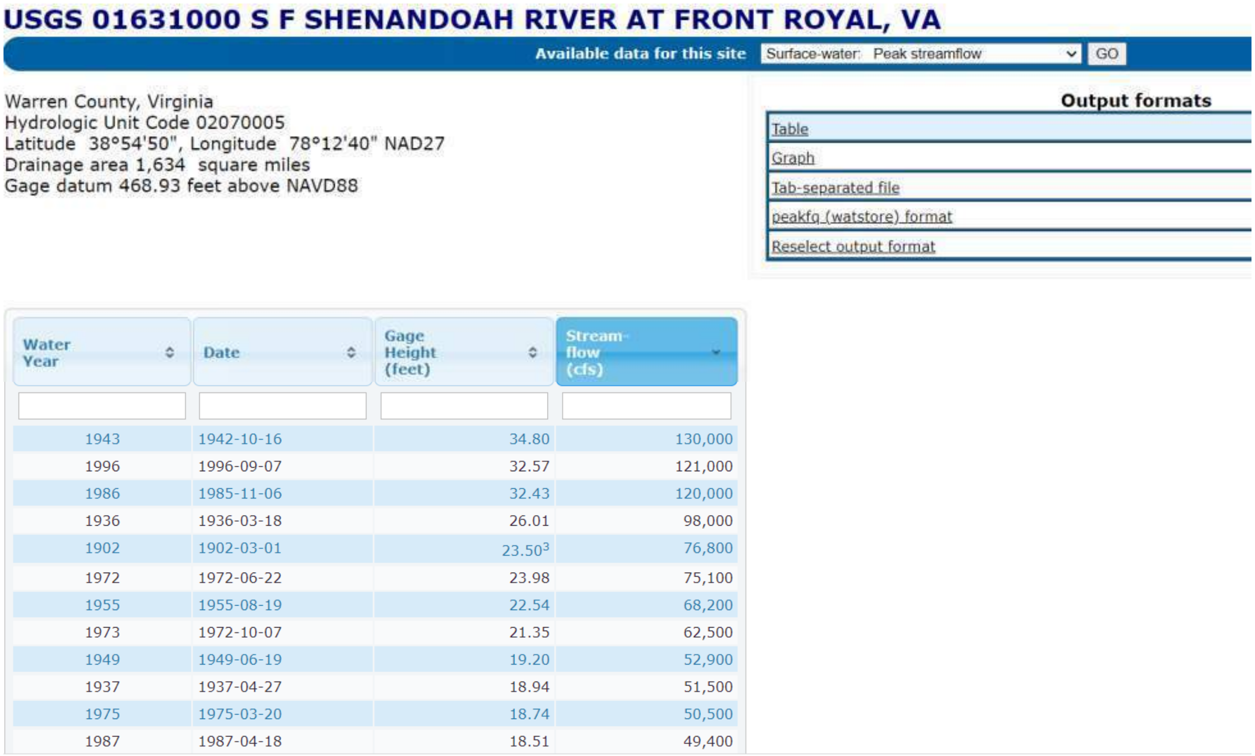
April 17, 2011 Flood Cont'd

Main Street/Downtown – Flooding from Happy Creek

Fantasyland Park – Happy Creek

Flood of 1936

SF Shenandoah River- Front Royal



USGS 01631000 S F SHENANDOAH RIVER AT FRONT ROYAL, VA

Available data for this site: Surface-water: Peak streamflow

Warren County, Virginia
Hydrologic Unit Code 02070005
Latitude 38°54'50", Longitude 78°12'40" NAD27
Drainage area 1,634 square miles
Gage datum 468.93 feet above NAVD88

Output formats

- Table
- Graph
- Tab-separated file
- peakfq (watstore) format
- Reselect output format

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1943	1942-10-16	34.80	130,000
1996	1996-09-07	32.57	121,000
1986	1985-11-06	32.43	120,000
1936	1936-03-18	26.01	98,000
1902	1902-03-01	23.50[3]	76,800
1972	1972-06-22	23.98	75,100
1955	1955-08-19	22.54	68,200
1973	1972-10-07	21.35	62,500
1949	1949-06-19	19.20	52,900
1937	1937-04-27	18.94	51,500
1975	1975-03-20	18.74	50,500
1987	1987-04-18	18.51	49,400

Peak Stream Flow since 1900 of SF Shenandoah River

Town of Front Royal

The principal flood problem on the South and North Fork Shenandoah Rivers in the town is that the floodplains are subject to periodic, disastrous flooding, and yet are the most amenable areas for development. Flow records for the period 1900 to the present are available for USGS gaging station (No. 01631000) located on the South Fork Shenandoah River at Front Royal. Historic floods, recorded at this gage, occurred in September 1996, November 1985, October 1942 and March 1936.

The September 1996 and the November 1985 flood had a peak discharge of 121,000 cubic feet per second (cfs). The recurrence interval for these storms is not available. The October 1942 flood had an estimated recurrence interval of 53 years with a peak discharge of 130,000 (cfs). The March 1936 flood had a recurrence interval of 25 years with a peak discharge of 98,000 cfs.

Another USGS gaging station (No. 01634000) is located on the North Fork Shenandoah River at Strasburg, approximately 10 miles upstream from Front Royal. Flow records are available at this site for the period 1926 to the present. Historic floods and their estimated recurrence intervals as recorded by this gage occurred in September 1996 (114,000 cfs, recurrence interval not availible) and October 1942 (100,000 cfs, greater than 100 years) and March 1936 (89,000 cfs, greater than 100 years).

Another major flood occurred on the Shenandoah River in October 1870. The stage of this flood was estimated to be the same as the flood of 1936 (Reference 1). Damage figures for the June 1972 flood of Tropical Storm Agnes are available for the drainage basins of the South and North Fork Shenandoah Rivers (Reference 2). Most serious conditions developed along mountain streams that received heavy runoff resulting in flash flooding. Total damage in both basins was estimated at $9,411,000. Most damage was to residential property ($3,564,000) and business ($2,227,000) in the South Fork Shenandoah River basin. Damage to transportation ($311,000) and agriculture ($298,000) accounted for most of the total in the North Fork Shenandoah River basin. The peak discharge at the gage on the South Fork Shenandoah River at Front Royal was 71,200 cfs with an estimated recurrence interval of 13 years; while the peak at the North Fork Shenandoah River gage at Strasburg was 25,100 cfs with an estimated recurrence interval of less than 10 years.

Most damage in the town from the flood of November 1985 occurred on the banks of the South and North Fork Shenandoah Rivers. Most permanent residences in the floodplain received water damage. Floodwaters were several feet above the first flood level in some instances. A number of vacation homes and mobile homes were completely submerged. Some structures came loose from their foundations and were carried downstream. A peak discharge of 120,000 cfs was recorded at the South Fork Shenandoah River gage at Front Royal, and its estimated recurrence interval is 47 years. The North Fork Shenandoah River gage at Strasburg recorded a peak discharge of 62,300 cfs with an estimated recurrence interval of 33 years.

Flood problems on Happy Creek are the result of the inadequate capacity of the Happy Creek channel, a number of restricted bridge openings, abrupt changes in the course of the stream at two places, and encroachments on the floodplain. Major floods occurred in March 1936 and October 1942. Much of the downtown area and the surrounding residences were inundated by these floods. A detailed account of the 1942 flood and estimates of the resulting damages are available (Reference 3). Total damages, adjusted to 1950 dollars, were estimated to be $145,600. Business and residential damages were $73,000 and $26,500, respectively. A USGS gaging station was located on Happy Creek near the southern corporate limits. Flow records are available for the period 1948 to 1977. Peak discharge estimates for the 1942 and 1936 floods are 7,100 cfs and 5,600 cfs, respectively. By comparing these estimates to the 29 years of flow record at the Happy Creek gage, the estimated recurrence intervals for the 1942 and 1936 floods are greater than 100 years and 60 years, respectively.

No historic flood information was available for Leach Run and its tributaries.

4. Copy of current floodplain ordinance

Current Floodplain Ordinance

FLOODPLAIN ZONING

(Amended Entirely 7-11-88, 10-14-08)

175-74 GENERAL PROVISIONS (Floodplain)

A. Statutory Authority: This ordinance is adopted pursuant to the authority granted to localities by Virginia Code § 15.2-2280.

(Amended 3-28-16-Effective Upon Passage)

B. Purpose: The purpose of these provisions is to prevent: the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

1. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;

Chapter 175 TOWN OF FRONT ROYAL MUNICIPAL CODE Chapter 175

175-132

2. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;

3. Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or flood-proofed against flooding and flood damage; and,

4. Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

C. Applicability: These provisions shall apply to all lands within the jurisdiction of the Town of Front Royal and identified as a being in the 1% annual chance of a flood (Special Flood Hazard Area), by the Federal Insurance Administration.

D. Compliance and Liability:

1. No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this ordinance and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this ordinance.

2. The degree of flood protection sought by the provisions of this ordinance is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that districts outside the Floodplain District or that land uses permitted within such district will be free from flooding or flood damages.

3. Records of actions associated with administering this ordinance shall be kept on file and maintained by the Zoning Administrator.

4. This ordinance shall not create liability on the part of the Town of Front Royal or any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made there under.

E. Abrogation and Greater Restrictions: This ordinance supersedes any ordinance currently in effect in flood-prone districts. However, any underlying ordinance shall remain in full force and effect to the extent that its provisions are more restrictive than this ordinance.

F. Severability: If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance shall be declared invalid for any reason whatever, such decision shall not affect the remaining portions of this ordinance. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of this ordinance are hereby declared to be severable.

G. Administration:

1. Designation of the Floodplain Administrator. The Floodplain Administrator is hereby appointed to administer and implement these regulations and is referred to herein as the Floodplain Administrator. The Zoning Administrator is hereby designated as the Floodplain Administrator for the Town of Front Royal. The Floodplain Administrator may:

a. Do the work themselves. In the absence of a designated Floodplain Administrator, the duties are conducted by the Town of Front Royal chief executive officer.

b. Delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees.

c. Enter into a written agreement or written contract with another community or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the community of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations at 44 C.F.R. Section 59.22.

2. Duties and Responsibilities of the Floodplain Administrator: The duties and responsibilities of the Floodplain Administrator shall include but are not limited to:

a. Review applications for permits to determine whether proposed activities will be located in the Special Flood Hazard Area (SFHA).

b. Interpret floodplain boundaries and provide available base flood elevation and flood hazard information.

c. Review applications to determine whether proposed activities will be reasonably safe from flooding and require new construction and substantial improvements to meet the requirements of these regulations.

d. Review applications to determine whether all necessary permits have been obtained from the Federal, State or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the 100-year frequency floodplain of free-flowing non-tidal waters of the State.

e. Verify that applicants proposing an alteration of a watercourse have notified adjacent communities, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management), and other appropriate agencies (VADEQ, USACE) and have submitted copies of such notifications to FEMA.

f. Advise applicants for new construction or substantial improvement of structures that are located within an area of the Coastal Barrier Resources System established by the Coastal Barrier Resources Act that Federal flood insurance is not available on such structures;

areas subject to this limitation are shown on Flood Insurance Rate Maps as Coastal Barrier Resource System Areas (CBRS) or Otherwise Protected Areas (OPA).

g. Approve applications and issue permits to develop in flood hazard areas if the provisions of these regulations have been met, or disapprove applications if the provisions of these regulations have not been met.

h. Inspect or cause to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with these regulations or to determine if non-compliance has occurred or violations have been committed.

i. Review Elevation Certificates and require incomplete or deficient certificates to be corrected.

j. Submit to FEMA, or require applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the Town of Front Royal within six months after such data and information becomes available if the analyses indicate changes in base flood elevations.

k. Maintain and permanently keep records that are necessary for the administration of these regulations, including:

[1] Flood Insurance Studies, Flood Insurance Rate Maps (including historic studies and maps and current effective studies and maps) and Letters of Map Change; and

[2] Documentation supporting issuance and denial of permits, Elevation Certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been floodproofed, inspection records, other required design certifications, variances, and records of enforcement actions taken to correct violations of these regulations.

l. Enforce the provisions of these regulations, investigate violations, issue notices of violations or stop work orders, and require permit holders to take corrective action.

m.Advise the Board of Zoning Appeals regarding the intent of these regulations and, for each application for a variance, prepare a staff report and recommendation.

n. Administer the requirements related to proposed work on existing buildings:

[1] Make determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged.

[2] Make reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct. Prohibit the non compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.

o. Undertake, as determined appropriate by the Floodplain Administrator due to the circumstances, other actions which may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other Federal, State, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in special flood hazard areas; and assisting property owners with documentation necessary to file claims for Increased Cost of Compliance coverage under NFIP flood insurance policies.

p. Notify the Federal Emergency Management Agency when the corporate boundaries of the Town of Front Royal have been modified and:

[1] Provide a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to these regulations has either been assumed or relinquished through annexation; and

[2] If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the governing body for adoption; such

adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and FEMA.

q. Upon the request of FEMA, complete and submit a report concerning participation in the NFIP which may request information regarding the number of buildings in the SFHA, number of permits issued for development in the SFHA, and number of variances issued for development in the SFHA.

r. It is the duty of the Community Floodplain Administrator to take into account flood, mudslide and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the Community, whether or not those hazards have been specifically delineated geographically (e.g. via mapping or surveying).

3. Use and Interpretation of FIRMs. The Floodplain Administrator shall make interpretations, where needed, as to the exact location of special flood hazard areas, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of FIRMs and data:

a. Where field surveyed topography indicates that adjacent ground elevations:

[1] Are below the base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as special flood hazard area and subject to the requirements of these regulations;

[2] Are above the base flood elevation, the area shall be regulated as special flood hazard area unless the applicant obtains a Letter of Map Change that removes the area from the SFHA.

b. In FEMA-identified special flood hazard areas where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified SFHAs, any other flood hazard data available from a Federal, State, or other source shall be reviewed and reasonably used.

c. Base flood elevations and designated floodway boundaries on FIRMs and in FISs shall take precedence over base flood elevations and floodway boundaries by any other sources if such sources show reduced floodway widths and/or lower base flood elevations.

d. Other sources of data shall be reasonably used if such sources show increased base flood elevations and/or larger floodway areas than are shown on FIRMs and in FISs.

e. If a Preliminary Flood Insurance Rate Map and/or a Preliminary Flood Insurance Study has been provided by FEMA:

[1] Upon the issuance of a Letter of Final Determination by FEMA, the preliminary flood hazard data shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering these regulations.

[2] Prior to the issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to Section 3.1.A.3. and used where no base flood elevations and/or floodway areas are provided on the effective FIRM.

[3] Prior to issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary base flood elevations or floodway areas exceed the base flood elevations and/or designated floodway widths in existing flood hazard data provided by FEMA. Such preliminary data may be subject to change and/or appeal to FEMA.

4. Jurisdictional Boundary Changes. In accordance with the Code of Federal Regulations, Title 44 Subpart (B) Section 59.22 (a) (9) (v), the Town will notify the Federal Insurance Administration and optionally the State Coordinating Office in writing whenever the boundaries of the Town have been modified by annexation or the Town has otherwise assumed or no longer has authority to adopt and enforce floodplain management regulations for a particular area. A copy of a map of the Town, suitable for reproduction, and clearly delineating the new corporate limits or new area for which the Town has assumed or relinquished floodplain management regulatory authority must be included with

the notification.

5. District Boundary Changes. The delineation of any of the Floodplain Districts may be revised by the Town where natural or man-made changes have occurred and/or where more detailed studies have been conducted or undertaken by the U. S. Army Corps of Engineers or other qualified agency, or an individual documents the need for such change. However, prior to any such change, approval must be obtained from the Federal Emergency Management Agency. A completed Letter of Map Revision (LOMR) is a record of this approval.

6. Interpretation of District Boundaries. Initial interpretations of the boundaries of the Floodplain Districts shall be made by the Zoning Officer. Should a dispute arise concerning the boundaries of any of the Districts, the Board of Zoning Appeals shall make the necessary determination. The person questioning or contesting the location of the District boundary shall be given a reasonable opportunity to present his case to the Board and to submit his own technical evidence if he so desires.

7. Submitting Model Backed Technical Data. A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, a community shall notify the Federal Emergency Management Agency of the changes by submitting technical or scientific data. The community may submit data via a LOMR. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

8. Letters of Map Revision. When development in the floodplain will cause or causes a change in the base flood elevation, the Town shall require the applicant of the development to notify FEMA by applying for a Conditional Letter of Map Revision and then a Letter of Map Revision.

9. Penalty for Violations. Any person who fails to comply with any of the requirements or provisions of this article or directions of the director of planning or any authorized employee of the Town shall be guilty of the appropriate violation and subject to the penalties thereof.

Violations and associated penalties related to the floodplain provisions are found under Section 175-145 of this Chapter. In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of Sections 175-74 through 175-81.3. The imposition of a fine or penalty for any violation of, or noncompliance with, the provisions of Sections 175-74 through 175-81.3, shall not excuse the violation or noncompliance or permit it to continue; and all such persons shall be required to correct or remedy such violations within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in noncompliance with this article may be declared by the Town to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this article.

(Added Entire “G – Administration” 3-28-16-Effective Upon Passage)

175-75 DEFINITIONS (Floodplain)

The following definitions apply to the floodplain regulations found within this chapter, specifically Sections 175-74 through 175-81.3:

(Added 3-28-16-Effective Upon Passage)

A. ACCESSORY STRUCTURE or APPURTENANT STRUCTURE – For purposes of the floodplain regulations of this chapter, shall mean an accessory building not in excess of 200 square feet. (Added 3-28-16-Effective Upon Passage)

B. BASE FLOOD - The flood having a one percent chance of being equaled or exceeded in any given year.

C. BASE FLOOD ELEVATION – The water surface elevations of the base flood, that is, the flood level that has a one percent or greater chance of occurrence in any given year. The water surface elevation of the base flood in relation to the datum specified on the community’s Flood Insurance Rate map. For the purposes of this ordinance, the base flood is the 1% annual chance flood.

(Amended 3-28-16-Effective Upon Passage)

D. BASEMENT - Any area of the building having its floor sub-grade (below ground level) on all sides.

E. BOARD OF ZONING APPEALS - The Board appointed to review appeals made by individuals with regard to decisions of the Zoning Administrator in the interpretation of this ordinance.

F. BREAKAWAY WALL - A wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.

G. DEVELOPMENT - Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

H. ELEVATED BUILDING - A non-basement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, or columns (posts and piers).

I. ENCROACHMENT - The advance or infringement of uses, plant growth, fills, excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

J. EXISTING CONSTRUCTION – Structures for which the “start of construction” commenced before the effective date of the FIRM or before January 1, 1975 for FIRMs effective before that date “existing construction” may also be referred to as “existing structures”.

(Added 3-28-16-Effective Upon Passage)

K. FLOOD OR FLOODING -

1. A general or temporary condition of partial or complete inundation of normally dry land areas from:

a. The overflow of inland or tidal waters; or,

b. The unusual and rapid accumulation or run-off of surface waters from any source.

c. Mudflows which are proximately caused by flooding as defined in paragraph (1)(b) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by current of water and deposited along the path of the current.

(Added “c” 3-28-16-Effective Upon Passage)

2. The collapse or subsistence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph (1) (a) of this definition.

L. FLOOD INSURANCE RATE MAP (FIRM) – An official map of a community, on which the Federal Emergency Management Agency has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

(Added 3-28-16-Effective Upon Passage)

M. FLOOD INSURANCE STUDY (FIS) – A report by FEMA that examines, evaluates and determines flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards.

(Added 3-28-16-Effective Upon Passage)

N. FLOODPLAIN OR FLOOD-PRONE AREA - Any land area susceptible to being inundated by water from any source.

O. FLOODWAY - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

P. FREEBOARD - A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. “Freeboard” tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization in the watershed.

Q. FLOOD-PROOFING - Any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

R. HIGHEST ADJACENT GRADE – The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

(Added 3-28-16-Effective Upon Passage)

S. HISTORIC STRUCTURE – Any structure that is:

1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
2. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a register historic district;
3. Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or,
4. Individually listed on a local inventory of history places in communities with historic preservation programs that have been certified either

a. by an approved state program as determined by the Secretary of the Interior; or,

b. directly by the Secretary of the Interior in states without approved programs.

(Added “S” 3-28-16-Effective Upon Passage)

T. HYDRAULIC AND HYDRAULIC ENGINEERING ANALYSIS – Analyses performed by a licensed profession engineer, in accordance with standard engineering practices that are accepted by the Virginia Department of Conservation and Recreation and FEMA, used to determine the base flood, other frequency floods, flood elevations, floodway information and boundaries, and flood profiles.

(Added 3-28-16-Effective Upon Passage)

U. LETTERS OF MAP CHANGES (LOMC) – A letter of Map Change is an official FEMA determination, by letter, that amends or revises an effective Flood Insurance Rate Map or Flood Insurance Study. Letters of Map Change include:

1. LETTER OF MAP AMENDMENT (LOMA) – An amendment based on technical data showing that a property was incorrectly included in a designated special flood hazard area. A LOMA amends the current effective Flood Insurance Rate Map and establishes that a land as defined by meets and bounds or structure is not located in a special flood hazard area.

2. LETTER OF MAP REVISION (LOMR) – A revision based on technical data that may show changes to flood zones, flood elevations, floodplain and floodway delineations, and planimetric features. A Letter of Map Revision based on Fill (LOMR-F), is a determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer exposed to flooding associated with the base flood. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community's floodplain management regulations.

(Added "U" 3-28-16-Effective Upon Passage)

V. LOWEST ADJACENT GRADE – The lowest natural elevation of the ground surface next to the walls of structure.

(Added 3-28-16-Effective Upon Passage)

W. LOWEST FLOOR – The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor provided, that such enclosure is not built so as to render the structure in violation of the applicable non elevation design requirements of Federal Code 44CFR §60.3.

X. MANUFACTURED HOME – A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured homes" also include park trailers, travel trailers and other similar vehicles placed on a site for greater than 180 consecutive days.

(Added 3-28-16-Effective Upon Passage)

Y. MANUFACTURED HOME PARK OR SUBDIVISION – A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

(Added 3-28-16-Effective Upon Passage)

Z. MEAN SEA LEVEL – Is an elevation point that represents the average height of the ocean's surface (such as the halfway point between the mean high tide and the mean low tide) which is used as a standard in reckoning land elevation.

(Added 3-28-16-Effective Upon Passage)

aa. NEW CONSTRUCTION - For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after the effective date of an initial Flood Insurance Rate Map July 15, 1988, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, new construction means structures for which start of construction commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

bb. POST-FIRM STRUCTURES – A structure for which construction or substantial improvement occurred after July 15, 1988. (Added 3-28-16-Effective Upon Passage)

cc. PRE-FIRM STRUCTURES – A structure for which construction or substantial improvement occurred on or before July 15, 1988.

(Added 3-28-16-Effective Upon Passage)

dd. RECREATIONAL VEHICLE - A vehicle which is:

1. Built on a single chassis;
2. 400 square feet or less when measured at the largest horizontal projection;
3. Designed to be self-propelled or permanently towable by a light-duty truck; and,

4. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

ee. REPETITIVE LOSS STRUCTURE – A building covered by a contract for flood insurance that has incurred flood-related damages on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and at the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

(Added 3-28-16-Effective Upon Passage)

ff. SEVERE REPETITIVE LOSS STRUCTURE – A structure that: (a) is covered under a contract for flood insurance made available under the NFIP; and (b) has incurred flood related damage – (i) for which 4 or more separate claims payments have been made under flood insurance coverage whit the amount of each such claim exceeding $5,000, and with the cumulative amount of such claims payments exceeding $20,000; or (ii) for which at least 2 separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

(Added 3-28-16-Effective Upon Passage)

gg. SPECIAL FLOOD HAZARD AREA - The land in the floodplain subject to a one (1%) percent or greater chance of being flooded in any given year, commonly known as the one-hundred (100) year floodplain.

hh. START OF CONSTRUCTION - The date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

ii. STRUCTURE – For floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

(Added 3-28-16-Effective Upon Passage)

jj. SUBSTANTIAL DAMAGE - Damage of any origin sustained by a structure whereby the cost of restoring the structure to it's before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

kk. SUBSTANTIAL IMPROVEMENT - Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. This term includes structures which have incurred substantial damage regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or

2. Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure, or

3. Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined above, must comply with all ordinance requirements that do not preclude the structure's continued designation as a historic structure. Documentation that a specific ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic Places must be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.

(Added "kk" 3-28-16-Effective Upon Passage) ll VIOLATION – The failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in Sections 175-74 through 175-81.3 of this Chapter is presumed to be in violation until such time as that documentation is provided.

(Added 3-28-16-Effective Upon Passage)

mm. WATERCOURSE - A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

175-76 ESTABLISHMENT OF FLOODPLAIN DISTRICTS

A. Basis of Districts - The various floodplain districts shall include special flood hazard areas. The basis for the delineation of these districts shall be the Flood Insurance Study (FIS) for the Town of Front Royal prepared by the Federal Emergency Management Agency, Federal Insurance Administration, dated June 3, 2008, as amended.

(Amended "A" 5-12-08-Effective Upon Passage)

B. The Floodway District, also referred to as the AE zone, is delineated, for purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the Special Flood Hazard Area without increasing the water surface elevation of that flood more than one (1) foot at any point. The areas included in this District are specifically defined in Table 4 of the above-referenced Flood Insurance Study and shown on the accompanying Flood Boundary and Floodway Map or Flood Insurance Rate Map. The following provisions shall apply within the Floodway District of an AE zone:

1. Within any floodway area, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in flood levels within the community during the occurrence of the base flood discharge. Hydrologic

and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Floodplain Administrator. Development activities which increase the water surface elevation of the base flood may be allowed, provided that the applicant first applies – with the Town's endorsement – for a Conditional Letter of Map Revision (CLOMR), and receives the approval of the Federal Emergency Management Agency. If the requirements of this section are satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction standards.

2. The placement of manufactured homes (mobile homes) is prohibited, except when replacing an existing manufactured home in an existing manufactured home park or subdivision. A replacement manufactured home may be placed on a lot in an existing manufactured home park or subdivision provided the anchoring, elevation and encroachment standards are met.

(Amended "B" 6-23-08-Effective Upon Passage)

(Amended "B" and Added (1-2) 3-28-16-Effective Upon Passage)

C. The Flood-Fringe District shall be that area of the Special Flood Hazard Area not included in the Floodway District. The basis for the outermost boundary of the District shall be the Special Flood Hazard Area elevations contained in the flood profiles of the above-referenced Flood Insurance Study and as shown on the accompanying Flood Boundary and Floodway Map or Flood Insurance Rate Map.

D. The Approximated Floodplain District, also referred to as the A Zone, as illustrated on the FIRM accompanying the Flood Insurance Study (FIS) shall be those areas for which no detailed flood profiles or elevations are provided, but the one percent annual chance floodplain boundary has been approximated. For these areas, the following provisions shall apply:

1. The Approximated Floodplain District shall be that floodplain area for which no detailed

flood profiles or elevations are provided, but where a one percent annual chance floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the FIS. For these areas, the base flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one percent annual chance flood elevation cannot be determined for this area using other sources of data, such as the U. S. Army Corps of Engineers Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this base flood elevation. For development proposed in the approximate floodplain the applicant must use technical methods that correctly reflect currently accepted practices, such as point on boundary, high water marks, or detailed methodologies hydrologic and hydraulic analyses. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Floodplain Administrator.

2. The Floodplain Administrator reserves the right to require a hydrologic and hydraulic analysis for any development. When such base flood elevation data is utilized, the lowest floorshall be elevated to or above the base flood plus twelve (12) inches. Additional elevation above 12 inches over the base flood is recommended if possible because it may reduce the cost of flood insurance.

3. During the permitting process, the Floodplain Administrator shall obtain:

a. The elevation of the lowest floor (in relation to mean sea level),including the basement, of all new and substantially improved structures; and,

b. If the structure has been flood-proofed in accordance with the requirements of this article, the elevation (in relation to mean sea level) to which the structure has been flood-proofed.

4. Base flood elevation data shall be obtained from other sources or developed using detailed methodologies comparable to those contained in a FIS for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions)

that exceed fifty lots or five acres, whichever is the lesser.

(Amended “D” and Added (1-4) 3-28-16-Effective Upon Passage)

175-77 OVERLAY CONCEPT (Floodplain)

A. The Floodplain Districts described above shall be overlays to the existing underlying districts as shown on the Official Zoning Ordinance Map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

B. If there is any conflict between the provisions or requirements of the Floodplain Districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.

C. In the event any provision concerning a Floodplain District is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

175-78 FLOODPLAIN DISTRICT BOUNDARIES

A. The boundaries of the Special Flood Hazard Area and Floodplain Districts are established as shown on the Flood Boundary and Floodway Map and/or Flood Insurance Rate Map which is declared to be a part of this Ordinance and which shall be kept on file at the Town of Front Royal Planning Offices.

(Amended “A” 6-23-08-Effective Upon Passage)

B. District Boundary Changes: The delineation of any of the Floodplain Districts may be revised by the Town of Front Royal where natural or man-made changes have occurred and/or where more detailed studies have been conducted or undertaken by the U. S. Army Corps of Engineers or other qualified agency, or an individual documents the need for such change. However, prior to any such change, approval must be obtained from the Federal Insurance Administration.

C. Interpretation of District Boundaries: Interpretations of the boundaries of the Floodplain Districts shall be made by the Zoning Administrator. Should a dispute arise concerning the boundaries of any of the Districts, the Board of Zoning Appeals shall make the necessary determination. The person questioning or contesting the location of the District boundary shall be given a reasonable opportunity to present his case to the Board and to submit his own technical evidence if he so desires.

175-79 DISTRICT PROVISIONS (Floodplain)

A. Permit Requirement: All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a Zoning Permit. Such development shall be undertaken only in strict compliance with the provisions of the Ordinance and with all other applicable codes and ordinances, as amended, and the Town of Front Royal Subdivision Regulations. Prior to the issuance of any such permit, the Zoning Administrator shall require all applications to include compliance with all applicable state and federal laws.

(Amended “A” 11-23-98-Effective Upon Passage)

(Amended “A” 6-23-08-Effective Upon Passage)

B. Site Plans and Permit Applications: All applications for development within any floodplain district and all building permits issued for the floodplain shall incorporate the following information:

1. For structures to be elevated, the elevation of the lowest floor (including basement).
2. For structures to be flood-proofed (non-residential only), the elevation to which the structure will be flood-proofed.
3. The elevation of the Base Flood at the site.
4. Topographic information showing existing and proposed ground elevations.

(Amended former “F’ 4-19-99-Effective Upon Passage)

(Amended “B” 5-12-08-Effective Upon Passage)

(Added “B” (3 & 4) 3-28-16-Effective Upon Passage)

175-80 GENERAL STANDARDS (Floodplain)

In all special flood hazard areas the property owner is ultimately responsible for insuring the following provisions have been considered:

A. New construction and substantial improvements shall be anchored to prevent floatation, collapse or lateral movement of the structure.

B. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

C. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

D. Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

E. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

F. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

G. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

H. Any alteration, repair, reconstruction or improvements to a building that is in compliance with the provisions of this ordinance shall meet the requirements of “new construction” as contained in this ordinance.

I. Any alteration, repair, reconstruction or improvements to a building that is not in compliance with the provisions of this ordinance, shall be undertaken only if said non-conformity is not furthered, extended, or replaced.

J. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U. S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and the Federal Insurance Administration.

K. The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

L. Manufactured homes shall be anchored to prevent flotation, collapse or lateral movement.

Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state anchoring requirements for resisting wind forces.

(Added “L” 3-28-16-Effective Upon Passage)

(Added Entire Section 10-14-08-Effective Upon Passage)

175-81 SPECIFIC STANDARDS (Floodplain)

In all special flood hazard areas where base flood elevations have been provided in the Flood Insurance Study or generated according to Section 175-81.1(A), the following provisions shall apply:

A. Residential Construction: New construction or substantial improvement of any residential structure shall have the lowest floor, including basement, elevated no lower than one (1) foot above the base flood elevation.

B. Non-Residential Construction: New construction or substantial improvement of any commercial, industrial, or non-residential building shall have the lowest floor, including basement, elevated to no lower than one (1) foot above the base flood elevation. Buildings located in all AE and AH zones may be flood-proofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the Base Flood Elevation (BFE) plus one foot are water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification, including the specific elevation (in relation to mean sea level) to which such structures are floodproofed, shall be maintained by the Floodplain Administrator.

(Amended “B” 3-28-16-Effective Upon Passage)

C. The Space Below the Lowest Floor: Enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

(Amended Title of “C” from Elevated Floor 3-28-16-Effective Upon Passage

1. Not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator). The interior portion of such enclosed area shall not be partitioned or finished into separate rooms, except to enclose storage areas;

2. Be constructed entirely of flood resistant materials below the regulatory flood protection elevation;

3. Include, in Zones A and AE measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:

a. Provide a minimum of two openings on different sides of each enclosed area subject to flooding.

b. The total net area of all openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding.

c. If a building has more than one enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.

d. The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade.

e. Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.

f. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

D. Standards for Recreational Vehicle: All recreational vehicles placed on sites must be either:

1. In all designated Special Flood Hazard Areas, all manufactured homes placed, or substantially improved, on individual lots or parcels, must meet all the requirements for the zone in which they are located for new construction, including the elevation and anchoring requirements in this ordinance; or,

2. All recreational vehicles placed on sites must either

a. Be on the site for fewer than 180 consecutive days, be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions); or

b. Where allowed under the general zoning regulations of this Chapter, may be kept on the site for 180 days or more when all applicable floodplain standards for manufactured homes are complied with.

(Amended “D” and Added (1-2) 3-28-16-Effective Upon Passage)

(Added Entire Section 10-14-08-Effective Upon Passage)

175-81.1 STANDARDS FOR APPROXIMATED FLOODPLAIN

A. When base flood elevation data or floodway data have not been provided, the Zoning Administrator shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal, state, or any other source, in order to administer the provisions of Section. When such base flood elevation data is utilized, the Zoning Administrator shall obtain:

1. The elevation (in relation to the mean sea level) of the lowest floor (including the basement) of all new and substantially improved structures; and,

2. If the structure has been flood-proofed in accordance with the requirements of Section 175-81(B) of this ordinance, the elevation in relation to the mean sea level to which the structure has been flood-proofed.

B. When the data is not available from any source as in Section 175-81.1(A), the lowest floor of the structure shall be elevated to no lower than one (1) foot above the highest adjacent grade.

C. Base flood elevation data shall be provided for subdivision proposals and other proposed development proposals that exceed fifty lots or five acres, whichever is the lesser.

D. Standards for Subdivision Proposals.

1. All subdivision proposals shall be consistent with the need to minimize flood damage;

2. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

3. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards, and

4. Base flood elevation data shall be obtained from other sources or developed using detailed methodologies, hydraulic and hydrologic analysis, comparable to those contained in a Flood Insurance Study for all major subdivision proposals and major site development plans, as defined under Chapter 148 of the Town Code.

(Added “D” 3-28-16-Effective Upon Passage)

E. Existing Structures in the Floodplain Areas. Any structure or use of a structure or premises must be brought into conformity with these provisions when it is changed, repaired, or improved, unless one of the following exceptions is established before the change is made:

1. The floodplain manager has determined that

a. change is not a substantial repair or substantial improvement; and,

b. no new square footage is being built in the floodplain that is not complaint; and,

c. no new square footage is being built in the floodway; and,

d. the change complies with this ordinance and the VA USBC; and,

e. the change, when added to all the changes made during a rolling 5 year period does not constitute 50% of the structure’s value.

2. The changes are required to comply with a citation for a health or safety violation.

3. The structure is a historic structure and the change required would impair the historic nature of the structure.

(Added “E” 3-28-16-Effective Upon Passage)

(Added Entire Section 10-14-08-Effective Upon Passage)

175-81.2 STANDARDS FOR THE FLOODWAY DISTRICT

The following provisions shall apply within the Floodway District:

Encroachments, including fill, new construction, substantial improvements and other developments are prohibited unless certification (with supporting technical data) by a registered professional engineer is provided demonstrating that encroachments shall not result in any increase in flood levels during occurrence of the base flood discharge. The preceding uses, activities and development occurring within any floodway district shall be undertaken only upon the issuance of a Special Use Permit. Development activities in which an increase in the water surface elevation of the base flood may be allowed, provided that the applicant first applies – with the Town of Front Royal endorsement – for a conditional Flood Insurance Rate Map and floodway revision, and receives the approval of the Federal Emergency Management Agency. However, other activities such as demolition in which there is not an increase in the water surface elevation, will require a zoning permit in lieu of a special use permit.

175-81.3 FLOODPLAIN VARIANCES: FACTORS TO BE CONSIDERED

A. Variances shall be issued only upon (i) a showing of good and sufficient cause, (ii) after the Board of Zoning Appeals has determined that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) after the Board of Zoning Appeals has determined that the granting of such variance will not result in (a) unacceptable or prohibited increases in flood heights, (b) additional threats to public safety, (c) extraordinary public expense; and will not (d) create nuisances, (e) cause fraud or victimization of the public, or (f) conflict with local laws or ordinances.

B. While the granting of variances generally is limited to a lot size less than one-half acre, deviations from that limitation may occur. However, as the lot size increases beyond one- half acre, the technical justification required for issuing a variance increases. Variances may be issued by the Board of Zoning Appeals for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, in conformance with the provisions of this section.

C. Variances may be issued for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that the criteria of this section are met, and the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

D. In passing upon applications for variances, the Board of Zoning Appeals shall satisfy all relevant factors and procedures specified in other sections of the zoning ordinance and consider the following additional factors:

(Added (A-D) 3-28-16-Effective Upon Passage)

1. The showing of good and sufficient cause.
2. The danger to life and property due to increased flood heights or velocities caused by encroachments. No variance shall be granted for any proposed use, development, or activity within any Floodway District that will cause any increase in the Special Flood Hazard Area elevation.
3. The danger that materials may be swept on to other lands or downstream to the injury of others.

4. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.
5. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.
6. The importance of the services provided by the proposed facility to the community.
7. The requirements of the facility for a waterfront location.
8. The availability of alternative locations not subject to flooding for the proposed use.
9. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
10. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
11. The safety of access by ordinary and emergency vehicles to the property in time of flood.

12. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site.

13. The historic nature of a structure. Variances for repair or rehabilitation of historic structures may be granted upon a determination that the proposed repair or rehabilitation will not preclude the structure’s continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

(Added (13) 3-28-16-Effective Upon Passage)

14. Such other factors which are relevant to the purposes of this ordinance.

E. The Board of Zoning Appeals may refer any application and accompanying documentation pertaining to any request for a variance to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for flood protection and other related matters.

(Amended 3-28-16-Effective Upon Passage)

F. Variances shall be issued only after the Board of Zoning Appeals has determined that the variance will be the minimum required to provide relief from exceptional hardship to the applicant.

G. The Board of Zoning Appeals shall notify the applicant for a variance, in writing, that the issuance of a variance to construct a structure below the Special Flood Hazard Area elevation (a) increases the risks to life and property and (b) will result in increased premium rates for flood insurance.

H. A record shall be maintained of the above notification as well as all variance actions, including justification for the issuance of the variances. Any variances that are issued shall be noted in the annual or biennial report submitted to the Federal Insurance Administrator.

(Added Entire Section 10-14-08-Effective Upon Passage

5. Link to current hazard mitigation plan

http://www.nsvregion.org/assets/NSV_Hazard_Mitigation_Plan_2018.pdf

6. Link to current comprehensive plan

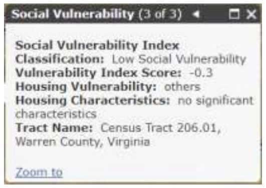
https://www.frontroyalva.com/618/Comprehensive-Plan

7. Social vulnerability index scores for project area

Virginia Vulnerability Index- Front Royal, VA

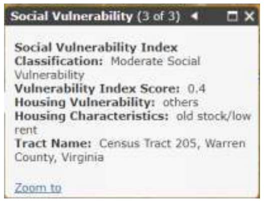
Source: http://cmap2.vims.edu/SocialVulnerability/SocioVul_SS.html

NOTES: Town of Front Royal Corporate Limits are comprised of Census Tracts 206.01, 205, 204, & 203. Vulnerability Index Scores shown below:

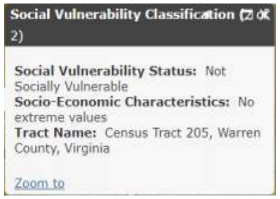


Social Vulnerability Index Classification: Low Social Vulnerability
Vulnerability Index Score: -0.3
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 206.01, Warren County, Virginia

Social Vulnerability Status: Not Socially Vulnerable
Socio-Economic Characteristics: No extreme values
Tract Name: Census Tract 206.01, Warren County, Virginia

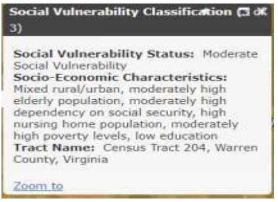


Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.4
Housing Vulnerability: others
Housing Characteristics: old stock/low rent
Tract Name: Census Tract 205, Warren County, Virginia

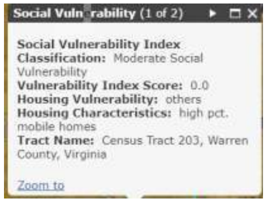


Social Vulnerability Status: Not Socially Vulnerable
Socio-Economic Characteristics: No extreme values
Tract Name: Census Tract 205, Warren County, Virginia

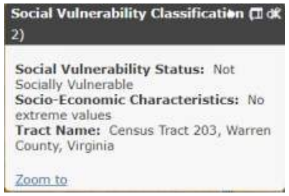
Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.7
Housing Vulnerability: others
Housing Characteristics: old stock/low rent
Tract Name: Census Tract 204, Warren County, Virginia



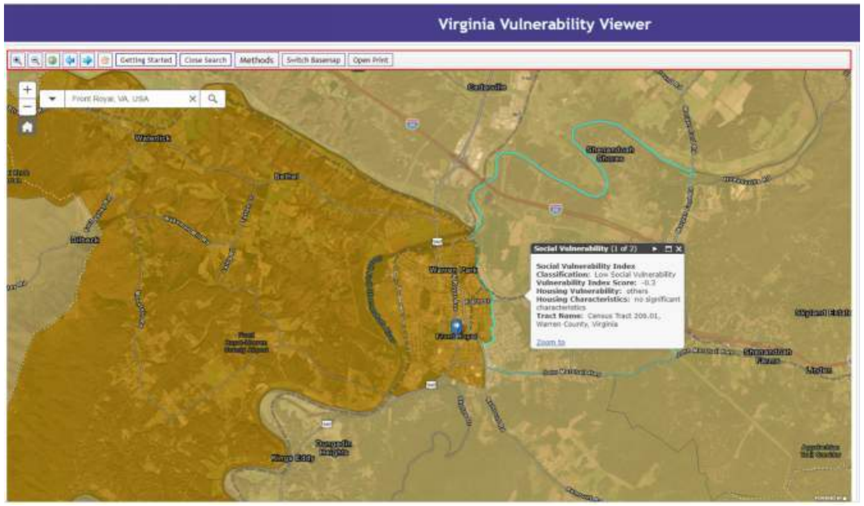
Social Vulnerability Status: Moderate Social Vulnerability
Socio-Economic Characteristics: Mixed rural/urban, moderately high elderly population, moderately high dependency on social security, high nursing home population, moderately high poverty levels, low education
Tract Name: Census Tract 204, Warren County, Virginia



Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.0
Housing Vulnerability: others
Housing Characteristics: high pct. mobile homes
Tract Name: Census Tract 203, Warren County, Virginia



Social Vulnerability Status: Not Socially Vulnerable
Socio-Economic Characteristics: No extreme values
Tract Name: Census Tract 203, Warren County, Virginia



Social Vulnerability Index Classification: Low Social Vulnerability
Vulnerability Index Score: -0.3
Housing Vulnerability: others
Housing Characteristics: no significant characteristics
Tract Name: Census Tract 206.01, Warren County, Virginia

Census Tract Number	Social Vulnerability Index Score
206.01	**-0.3**
205	**0.4**
204	**0.7**
203	**0.0**
Average Score in Project Area	0.2

8. Authorization to request funding from the Fund from governing body of the local government

TOWN OF FRONT ROYAL
TOWN MANAGERS OFFICE
102 E. MAIN STREET
PO BOX 1560
FRONT ROYAL, VIRGINIA 22630-1560
(540) 635-8007

STEVEN W. HICKS
Town Manager
shicks@frontroyalva.com

April 6, 2022

RE: Floodplain Study

The Town of Front Royal is requesting ninety thousand dollars ($90,000) for a one hundred thousand dollar ($100,000) Community Flood Preparedness Fund Grant. The Town of Front Royal will contribute ten thousand dollars ($10,000) from the general fund and agree to pay the cash contribution during the agreement period. The grant will pay for the Flood Plain Study for the Town of Front Royal.

Sincerely,

Steven W. Hicks

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CFPF Grant Application- Round 3- Front Royal (CID# 510167)

1 message

Brian Finerfrock <bfinerfrock@rkk.com> Fri, Apr 8, 2022 at 10:01 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Lauren Kopishke <lkopishke@frontroyalva.com>, Kathleen Leidich <kleidich@frontroyalva.com>

On behalf of the Town of Front Royal, we are pleased to be submit CFPF Grant Application for a Flood Study. If you have any trouble with the attachment, please contact me.

Brian Finerfrock, PE

Manager

RK&K

12600 Fair Lakes Circle, Suite 300

Fairfax, VA 22033

703.259.3719 D | 540.660.2542 C
www.rkk.com

Responsive People | Creative Solutions

"RK&K" and "RK&K Engineers" are registered trade names of Rummel, Klepper & Kahl, LLP, a Maryland limited liability partnership. This message contains confidential information intended only for the person or persons named above. If you have received this message in error, please immediately notify the sender by return email and delete the message. Thank you.

RK&K is an equal opportunity employer that values diversity at all levels. RK&K does not discriminate in employment on the basis of race, color, religion, sex (including pregnancy), national origin, political affiliation, sexual orientation, marital status, disability, genetic information, age, parental status, military and veteran status, and any other characteristic protected by applicable law. Consistent with the requirements of Title VI of the Civil Rights Act of 1964, as amended and other nondiscrimination laws and authorities, we also note that RK&K does not discriminate in its selection or retention of subcontractors on the grounds of race, color, or national origin. We also note that RK&K will ensure that Minorities will be afforded full opportunity to submit proposals and not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

CID510167_FrontRoyal_CFPF.pdf
8279K

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
City of Salem

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

____ **Project**

____ **Study**

NFIP/DCR Community Identification Number (CID) 510141

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Charles E. VanAllman, Jr.

Signature of Authorized Official:

Mailing Address (1): 21 S. Bruffey St.

Mailing Address (2): ____________

City: Salem **State:** Va **Zip:** 24153

Telephone Number: (540) ____________ **Cell Phone Number:** (___) ____________

Email Address: cvanallman@salemva.gov

Contact Person (If different from authorized official): Sam Driscoll

Mailing Address (1): 21 S. Bruffey St.

Mailing Address (2): ____________________

City: Salem **State:** Va **Zip:** 24153

Telephone Number: (540) ____________ **Cell Phone Number:** (____) ____________

Email Address: sdriscoll@salemva.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No ____

*The proposed Resilience Plan is for the entire City of Salem which includes some low-income geographic areas

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

- ☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.
- ☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.
- ☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.
- ☐ Studies and Data Collection of Statewide and Regional Significance.
- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- ☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

- ☐ Floodplain Staff Capacity.
- ✔ Resilience Plan Development
  - ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  - ✔ Resource assessments, planning, strategies and development.
    - ☑ Policy management and/or development.
    - ☑ Stakeholder engagement and strategies.

Location of Project (Include Maps): City of Salem

NFIP Community Identification Number (CID#):(See appendix F 510141

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): Floodway, AE-100yr., 500yr.

Flood Insurance Rate Map Number(s) (If Applicable): See Attachment C

Total Cost of Project: 78,962

Total Amount Requested 59,221

SALEM VA

Charles E. VanAllman, Jr., PE, LS
Director

William L. Simpson, Jr., PE
City Engineer

City of Salem Community Development Department
Engineering, Inspections, GIS, Stormwater, Planning & Zoning

Scope of Work Narrative - Capacity Building and Planning

Introduction

The City of Salem is pleased to apply for funding through the 2022 Virginia Community Flood Preparedness Fund Grant (CFPF). The City of Salem's application is for the capacity building/planning category, and with the assistance of Wetland Studies and Solutions, Inc. the city plans to develop a resilience plan.

Capacity Needs and Assets

Resource Needs

-The City of Salem is applying for funding to assist in establishing a Resiliency Plan. The city is to contract a consultant to establish a plan that will help identify future flood control projects as well as studies, assessments, and program adjustments needed to meet resiliency goals. The city will coordinate with multiple departments but is reliant on the assistance of a consulting agency to aid in developing this plan as it is not something the city has the capacity to do on its own.

Scope of Work: see attachment "A"

Plan Development

-The City of Salem plans to contract with a consultant to assist with developing a Resilience Plan. This will include but is not limited to collecting and analyzing data, reviewing flood plains, stormwater controls, public outreach, and social vulnerability. A Resilience Plan will help the city identify future projects and prioritize areas of need.

See WSSI proposal – attachment "B"

SALEM VA

Charles E. VanAllman, Jr., PE, LS
Director

William L. Simpson, Jr., PE
City Engineer

City of Salem Community Development Department
Engineering, Inspections, GIS, Stormwater, Planning & Zoning

Goals and Objectives

-The goal of the Resilience Plan for the City of Salem is to apply nature-based solutions to the maximum extent possible to address increased flooding within the entire city. The goal of this planning level document will be to assist in reducing impacts to properties and community assets.

Stakeholders

-The Community Development Department with the City of Salem will be the primary stakeholder; but as projects and other items are identified through the Resilience Plan, this will assist in recognizing other stakeholders such as citizens, businesses, places of worship, government entities, and educational institutions.

Implementation

-The City of Salem would like to apply for funding in the earliest funding cycle possible. If awarded funding, the city will sign the proposal from our consultant and provide an estimated timeline for the completion of the plan; and once complete, the city would submit the Resilience Plan.

Responsible Parties

-The Community Development Department with the City of Salem would be the primary party responsible. Community Development is reliant on their consultant to acquire and analyze data to develop the Resilience Plan.

Performance Outputs and Measures

-The final product will be a comprehensive Resilience Plan that assists in identifying future projects, flood preparedness, and strategies to help protect properties city-wide. Another goal is to aid in additional measures to help the city meet its MS-4 permit requirements.

Maintaining Capacity

-The City of Salem plans to maintain and update the Resilience Plan as needed. Either through city staff or by a consultant, the Resilience plan can be updated as new information becomes available as well as other variables that necessitate changes.

Supporting Documentation

- City of Salem Comprehensive Plan
- Regional Hazard Mitigation Plan
- City of Salem Floodplain Overlay District code
- City of Salem Floodplain Map (Attachment C)
- City of Salem Social Vulnerability Map (Attachment C)
- Scoring Sheet (appendix D)

Budget

-Fees for services to develop the Resilience Plan are as follows:

Project Management	$ 11,210
City of Salem GIS Desktop Analysis	$ 16,036
Literature Review	$ 16,200
Community Outreach	$ 11,616
Resilience Plan Development	$ 23,400
Direct Expense Budget	$ 500
Total Fixed Cost	**$ 78,962**

Funds Requested

The City of Salem is requesting funds of $59,221 (75% CFPF) to aid in the development of a Resilience Plan. The city will be responsible for providing $19,741 (25% match) and these funds will be drawn from the City of Salem General Fund. This will provide the necessary funds to hire Wetland Studies and Solutions, Inc. to develop a plan.

SALEM VA

Charles E. VanAllman, Jr., PE, LS
Director

William L. Simpson, Jr., PE
City Engineer

City of Salem Community Development Department
Engineering, Inspections, GIS, Stormwater, Planning & Zoning

Funds Available

The City of Salem will appropriate $19,741 from the Community Development Fund as its 25% match and has been authorized by City council with the approval of the 2023 budget.

SALEM VA

Charles E. VanAllman, Jr., PE, LS
Director

William L. Simpson, Jr., PE
City Engineer

City of Salem Community Development Department
Engineering, Inspections, GIS, Stormwater, Planning & Zoning

Attachment "A"

Scope of Work Narrative

The following narrative is in support of the City of Salem's grant application for the Virginia Department of Conservation and Recreation's 2022 Community Flood Preparedness Fund Grant Program (CFPF). The City of Salem is requesting funds to assist in developing a Resilience Plan that will aid in the discovery and implementation of future flood mitigation and stormwater projects.

The city acknowledges that CFPF funds are to be used under the following principles:

1.) Acknowledge climate change and its consequences, and base decision making on the best available science.

2.) Identify and address socioeconomic inequities and work to enhance equity through adaptation and protection efforts.

3.) Utilize community and regional scale planning to the maximum extent possible, seeking region-specific approaches tailored to the needs of individual communities.

4.) Understand fiscal realities and focus on the most cost-effective solutions for the protection and adaptation of our communities, businesses, and critical infrastructure. The solutions will, to the extent possible, prioritize effective natural solutions.

5.) Recognize the importance of protecting and enhancing nature-based solutions in all regions, natural coastal barriers, and fish and wildlife habitat by prioritizing nature-based solutions.

The City of Salem is to work closely with a consultant (WSSI) to develop a framework document that will assist in establishing future projects, aid in flood preparedness and resilience, and provide data for better stormwater management as well as flood mitigation. For more details on the Resiliency Plan, please see the proposal from WSSI (attachment B)

Per the definition in the 2022 CFPF grant manual. The final Resiliency Plan will include:

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
5. Is based on the best available science, and incorporates climate change, sea level rise, and storm surge (where appropriate), and current flood maps.

Attatchment B - WSSI Proposal

SHORT FORM CONTRACT
PROFESSIONAL SERVICES AGREEMENT

CLIENT:	City of Salem	**DATE:**	January 31, 2022 rev February 4, 2022
ADDRESS:	Community Development	**VIA EMAIL:**	wsimpson@salemva.gov
	21 S Bruffey St, Salem, VA 24153	**PROJECT NAME:**	Salem Resilience Plan
ATTN:	Will Simpson	**WSSI PROPOSAL #:**	P19163A

Wetland Studies and Solutions Inc. (WSSI) is pleased to provide this proposal pursuant to our Term Contract Agreement for Miscellaneous Professional Services. It is WSSI's understanding the City wants to develop a Resilience Plan (Plan) to prepare for the increase in urban flooding due to higher frequency storm events caused by climate and environmental changes. The Plan is intended to serve as a planning level document aimed at reducing impacts to properties and community assets. The Plan will include the five Commonwealth Planning Principles established by the Virginia Coastal Resiliency Master Planning framework and the following elements required by Appendix G of the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund:

1) The Plan will be project-based with projects focused on flood control and resilience.

2) The Plan will incorporate nature-based infrastructure to the maximum extent possible.

3) The Plan will include considerations of all parts of the City regardless of socioeconomics or race.

4) The Plan will include coordination with other local inter-jurisdictional projects, plans and activities and will clearly articulate a timeline and phasing for plan implementation.

5) The Plan will be based on the best available science and will incorporate climate change and current flood maps.

6) The Plan may also identify additional studies, assessments, regulatory or programmatic adjustments that may be needed for the City to reach its identified resiliency goals.

SCOPE AND FEE

The focus of this project is to work closely with the City to develop a Resilience Plan to act as a framework document for future efforts related to repetitive flooding, flood preparedness and resilience with a focus on the City's floodplains, current and planned gray and green infrastructure, and stormwater management. This planning effort will be guided by social equity data and principles. The total fixed fee for the services below is **$78,962.**

<u>Task A – Project Management</u> **Fixed Fee of $11,210.00**

Project Management will include the following:

1) Project meeting set up will be conducted by WSSI in coordination with City staff.

2) It is anticipated that one (1) hour virtual monthly steering committee meetings will be held during the duration of the project which is anticipated to be approximately six (6) months. WSSI will take meeting minutes and provide progress updates at the steering committee meetings.

3) Strategic partners identified in steering committee meetings will be engaged as necessary throughout the plan development process.

4) General project support will be provided throughout the plan development process.

Task B – City of Salem GIS Desktop Analysis — Fixed Fee of $16,036.00

WSSI will use the available City of Salem GIS shapefile data and aerial imagery to develop City-wide base mapping that will be used to help the City identify high priority areas. The GIS Desktop Analysis may include, but are not limited to the following:

- Social/Economical Vulnerable Areas
- High Risk Flooding Areas and FEMA Flood Insurance Rate Maps
- Critical Infrastructure Location
- Existing Historical Resources
- Environmentally Critical Areas
- Other Environmental Data: Soils, Hydrology, Slope, Watershed Delineation, Imperviousness and Existing Land Cover
- Existing and Approved Resilience Efforts
- Utility Easements and Right-of-Ways
- Property Ownership

Task C – Literature Review/Gap Analysis — Fixed Fee of $16,200.00

The literature review and gap analysis will proceed as follows:

1) Review existing City documents regarding stormwater, floodplains, resilience, and comprehensive planning; and identify elements that can be incorporated into the City's Resilience Plan. Documents that shall be collected and analyzed may include, but are not limited to the following:
   - Historical Flood Data
   - Historical Watershed Studies
   - Masterplans
   - Floodplain Ordinances
   - Historical and Proposed Drainage Projects
   - Site Specific Drainage Studies
   - TMDL Action Plans

2) Review the literature regarding the best climate change science available and social equity literature with a focus on flooding policies, strategies, and solutions.

3) Analyze flood resilience plans from other similar municipalities and identify concepts and elements that can be considered for the City's Resilience Plan.

4) Conduct a gap analysis to determine areas to focus the development of the City's Resilience Plan and identify potential studies and projects that would increase the City's resilience.

Task D – Community Education and Engagement — Fixed Fee of $11,616.00

WSSI will work with the City to garner community feedback through a two-phase effort. Phase I will consist of posting resilience information online to educate the public and solicit feedback to be incorporated into the draft resilience plan. WSSI will document feedback from the community and incorporate pertinent feedback into the Plan. The second phase will focus on placing the draft Plan on the City's website to solicit additional community feedback. The feedback will be used to drive resilience priorities in the Plan aimed at reducing flood impacts.

Task E – Resilience Plan Development — Fixed Fee of $23,400.00

The Resilience Plan will include the following:

1) WSSI will work with the steering committee and results of the first phase of community engagement to determine workable options for flood resilience and understand community needs.

2) WSSI will identify climate change impacts/resilience issues facing the City based on concerns identified from the public and available data. The Plan will identify needs for additional data and future studies.

3) WSSI will assess current City programs as they relate to identified resilience issues (e.g., development regulations, floodplain management program). WSSI will recommend programmatic changes to position the City to achieve resilience goals.

4) WSSI will work with the City to assess types of projects and studies to pursue to enhance flood control and resilience. Both green/grey infrastructure and nature-based projects will be considered and presented in the Plan.

5) A draft Plan and overall summary map will be prepared for City review. This draft will be placed on the City's website during the second phase of community engagement to garner feedback from the community.

6) A final Plan will be prepared and delivered to the City based on community feedback.

Task F – Reimbursable Expenses **Fixed Fee of $500.00**

ASSUMPTIONS

- The City will provide input throughout the Plan development process to include information during the literature review, community engagement support, Plan development support and participation on the steering committee.
- Specialty engineering support services such as field work, site survey, geotechnical, and modeling (e.g., floodplain) will not be included in the Plan.
- The City will provide any necessary advertising related to Task 4.
- The City will coordinate the placement of the draft Plan on the City's website. In addition, the City will provide the means to announce the availability of the Plan to the public and devise the means for the public to provide comments.

SCHEDULE & DELIVERABLES

This phase of work will begin upon a written notice to proceed and extend for a duration of approximately six (6) months. An initial kick-off meeting with the City will begin within two (2) weeks of notice to proceed. Community engagement preparation will begin within one (1) month. The draft Plan will be available within five (5) months of notice to proceed and placed on the City's website within two (2) weeks of the draft submission to the City. The final Plan will be developed within six (6) months of the notice to proceed.

The following items are project deliverables for this scope of work:

- Resilience information to post on the website to educate the community and garner feedback.
- Draft and Final City of Salem Resilience Plan.
- All background data, analyses, calculations, and project files.

The price is only fixed for thirty (30) days from the date of this proposal. Our fee for services will be invoiced as outlined above Plus Reimbursables (with 20 percent Administrative Fee).

If this short form contract outlines your understanding of the scope of services, please sign below and return a copy to our office.

Thank you for the opportunity to present this proposal.

Sincerely,
Wetland Studies and Solutions, Inc.

Christopher M. Schrinel

Chris Schrinel
Manager – Engineering

Anna Salzberg, PhD, ENV SP
Associate Environmental Scientist

CLIENT'S PREFERRED METHOD OF INVOICE SUBMISSION

How would you like to receive invoices for this project?

☐ Mail: Invoice(s) will be mailed to the address listed on this proposal.

☒ E-mail: Invoice(s) will be emailed to

sdriscoll@salemva.gov ☐ Other: Please provide instructions

below: ____________________

____

____

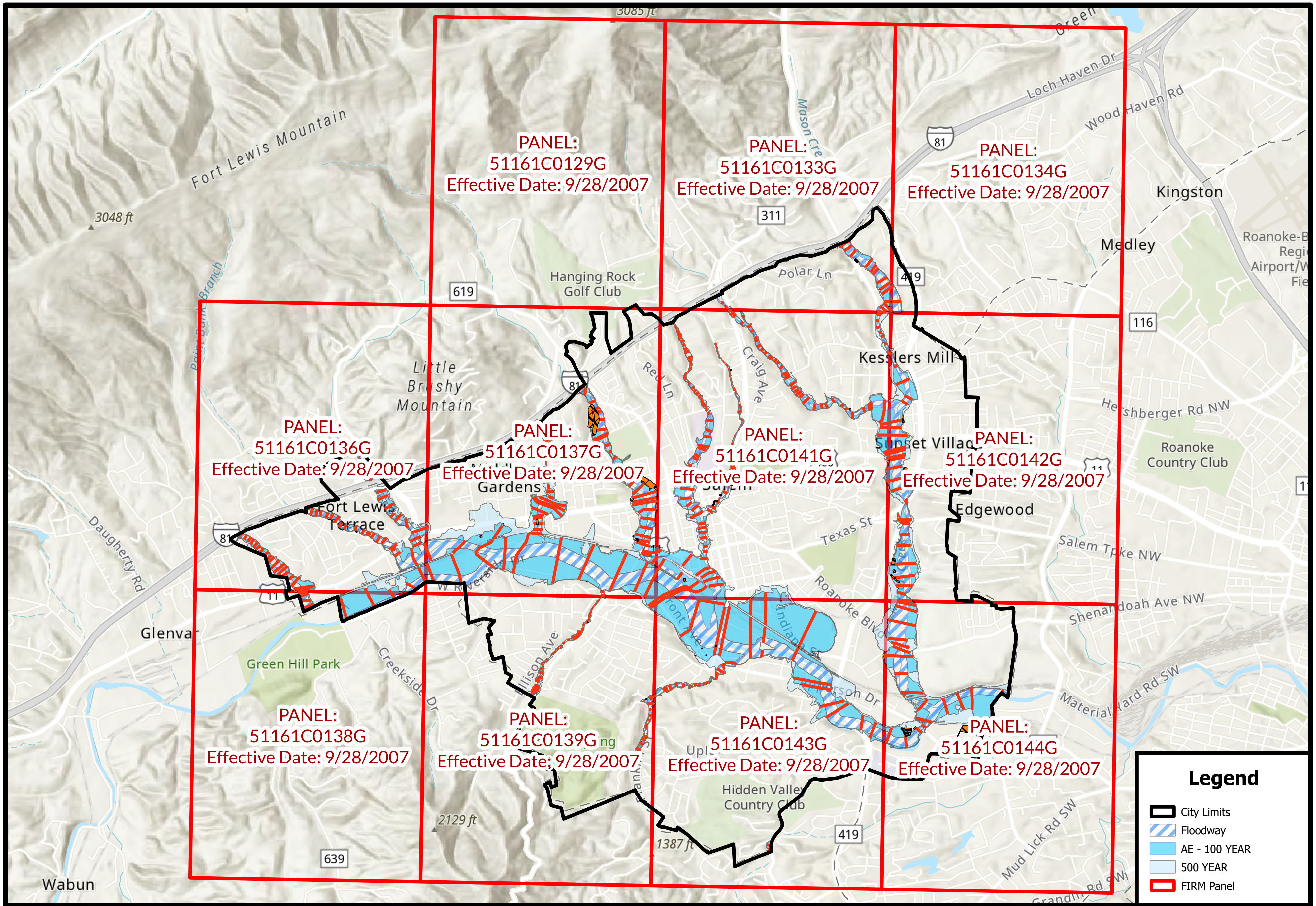
\\ad.davey-tree.com\WSSI\Projects\Proposals\2022\Richmond\City of Salem_Reslience Plan\Salem Proposal\FINAL PROPOSAL\020422P19163A.docx

Attachment C - FIRM Panels and Floodplain Map
&
City of Salem Social Vulnerability Map

List of FEMA FIRM Panels for City of Salem, Virginia

FIRM_PANEL
51161C0143G
51161C0142G
51161C0141G
51161C0138G
51161C0139G
51161C0136G
51161C0137G
51161C0144G
51161C0129G
51161C0133G
51161C0134G

Effective Date for all Panels: September 28, 2007



N

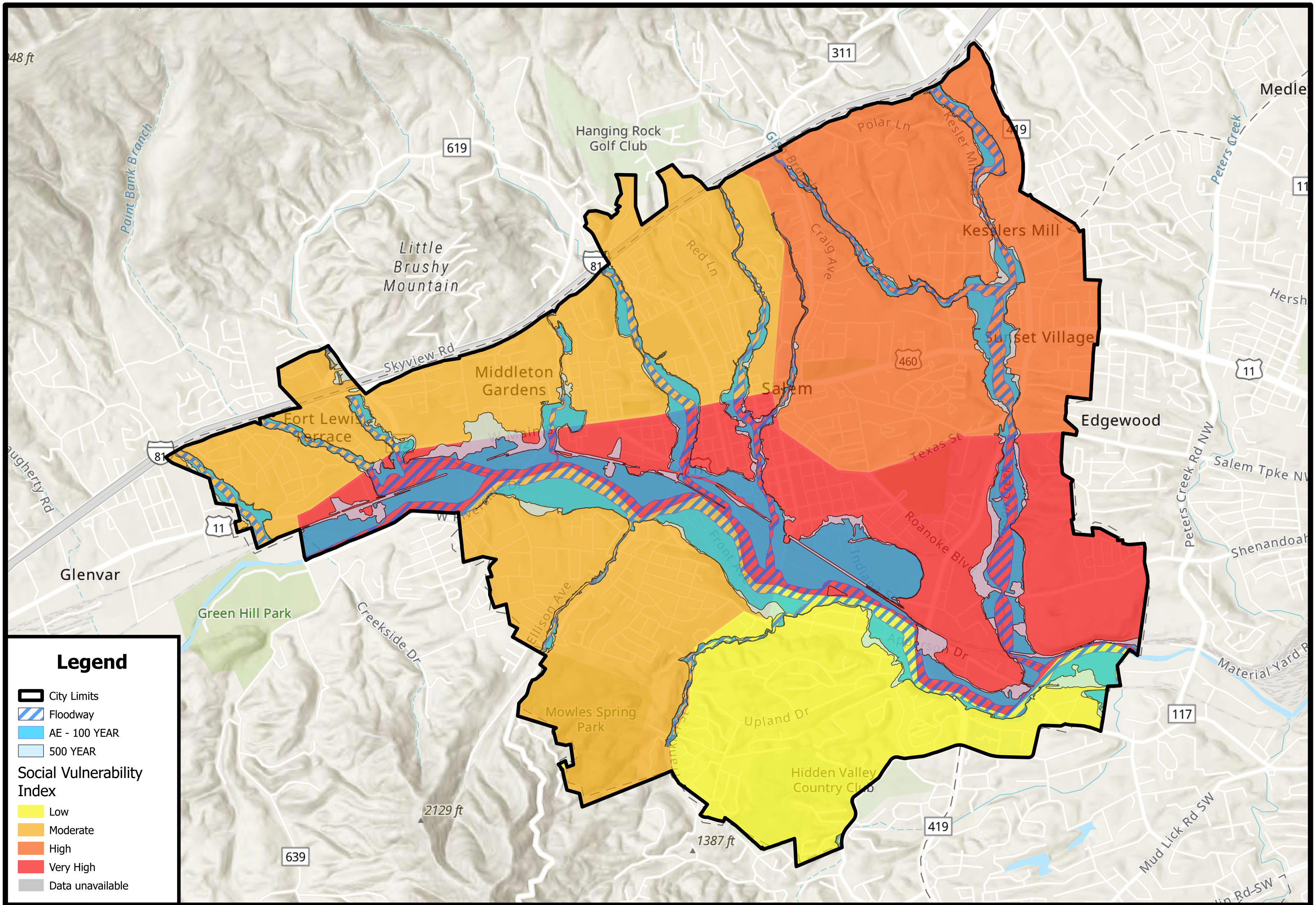
1 inch = 5,000 feet
0 2,500 5,000
Feet

FEMA FIRM Panels

MARCH 2022

The City of Salem assumes no liability for damages arising from errors or omissions. The information is deemed accurate, but not warranted. Please notify the City of Salem Engineering Department of any inconsistency.

CITY OF SALEM
Community Development Dept.
Geographic Information Systems Division
21 S. Bruffey Street
P.O. Box 869
Salem, Virginia 24153-0869
Phone: (540) 375-3032



Social Vulnerability Index

MARCH 2022

The City of Salem assumes no liability for damages arising from errors or omissions. The information is deemed accurate, but not warranted. Please notify the City of Salem Engineering Department of any inconsistency.

CITY OF SALEM
Community Development Dept.
Geographic Information Systems Division
21 S. Bruffey Street
P.O. Box 869
Salem, Virginia 24153-0869
Phone: (540) 375-3032

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Salem

Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration		☒ **Yes** ☐ **No**
Applicant Name:	City of Salem	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	
Development of a new resilience plan.	**55**	55
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development.	**40**	40
Stakeholder engagement and strategies.	**25**	25
Goal planning, implementation and evaluation.	**25**	25
Long term maintenance strategy.	**25**	25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on **ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	15
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	0
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		280

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510141_City of Salem_CFPF Application

1 message

Sam R Driscoll <sdriscoll@salemva.gov> Fri, Apr 8, 2022 at 9:22 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Will L Simpson <wsimpson@salemva.gov>

Please see attached the City of Salem CFPF Grant Application.

Thank you,

Sam Driscoll

Stormwater Manager

Community Development Dept.

(540) 375-3032

CID510141_City of Salem_CFPF.pdf
3963K

Mount Vernon Dual Corrugated Metal Pipe Culvert Replacement and Optimization

Grant Application

CITY OF ALEXANDRIA, VIRGINIA

Community Flood Preparedness Fund Round 3

April 8, 2022

Image: Mount Vernon Avenue, August 15, 2021

Mount Vernon Dual Corrugated Metal Pipe Culvert Replacement and Optimization

The City of Alexandria (City) is applying for grant assistance under the Virginia Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF) Round 3 'Project' category to help mitigate flooding in the Arlandria neighborhood in northeast Alexandria, Virginia. The project, *Mount Vernon and Edison Dual Corrugated Metal Pipe (CMP) Culvert Replacement and Optimization*, will help to contain bigger storm events within the pipes, eliminating the surcharging occurring on Mount Vernon Avenue and greatly improve the health and safety of the community in this equity area. The project will replace existing, deteriorating, undersized dual corrugated metal pipe (CMP) leading from a Mount Vernon Avenue, under the Potomac West Apartments, and leading to the outfall east of Edison Street with a larger dual CMP to convey large flows of water. This work will include the relocation of the existing sanitary sewer line and replacement and upsizing four inlets on Edison Street.

Virginia DCR approved the City of Alexandria's Resilience Plan September 10, 2021. The City has integrated flood mitigation and resilience goals across areas of the local government, with flood resilience a priority addressed holistically through master planning, environmental planning, small area planning, waterfront planning, and capital project planning and implementation, and this project will advance the priorities identified in these various plans. The City has established requirements for development controls in the floodplain through zoning and the local floodplain ordinance. The City's Transportation and Environmental Services Department (T&ES) is implementing resilient stormwater system upgrades informed by the City of Alexandria Storm Sewer Capacity Analysis (CASSCA), neighborhood investigations, and making spot improvements to high priority flood risk areas, along with accelerated frequent operations and maintenance under the Flood Action Alexandria program. Additionally, the City understands the importance of engaging with communities in high-risk areas impacted by frequent urban flooding events. The City performed neighborhood investigations and meeting with residents following a series of intense storm events driven by climate change that caused urban flooding in 2019, 2020, and 2021. The City launched a flood mitigation grant program in August 2021 for property owners to make improvements to, and protect, their private property through flood barrier implementation and structural adaptations. In 2019, the City released an update to the Environmental Action Plan with a roadmap for climate mitigation and resilience activities, accompanied by the Energy and Climate Change Task Force. These initiatives are grounded by the City's new Equity ordinance, which commits to addressing racial, social, and economic disparities in all areas of local government. The project proposed in this application fulfil the requirements and support the goals of each of these resilience planning efforts and accelerate the City's efforts to deliver flood mitigation measures for the Arlandria area of Alexandria.

1. Project Information

In addition to the three severe storms that occurred within a 14-month period (July 2019 to September 2020), the City experienced more severe flash flooding events in 2021 on August 15 (see Figure 1) and September 16. Based on the City's rain gauge network, during the August 15th event, between three to five inches of rain fell in an hour, with very heavy rainfall rates for 30 minutes. The storm caused widespread flooding, as well as power outages, sanitary backups, road closures, displaced manhole covers, traffic light outages, sink holes, and other impacts on City infrastructure. In the neighborhood of Arlandria, one property was particularly hard hit with water entering into at least three basement dwelling units from water breaking through windows, water also rushed into the property from the first floor as it broke through the glass entry way door. This event occurred around midnight, and residents were able to evacuate safely, with reported injuries. The highest rain gauge reading in the City recorded 3.19 inches in

30-minutes, 4.43 inches in one hour, and 5.19 inches in two hours. The August 15 event corresponded to a 200 – 500-year storm event.

Figure 1. August 15, 2021, Edison Street

Arlandria is located within the City's portion of the Four Mile Run watershed. The watershed includes a nine-mile-long stream (Four Mile Run) located in a highly urbanized area in Northern Virginia. It's 19.6 square mile watershed covers portions of Arlington and Fairfax Counties and the Cities of Alexandria and Falls Church. The lower portion of Four Mile Run, from I-395 at the upstream end to National Airport at the mouth, is contained in a hardened flood control channel and marks a rough boundary between Arlington County and the City of Alexandria. Due to the highly urbanized nature of the Four Mile Run watershed, the neighborhoods and businesses adjacent to this portion of the run were subjected to repeated flooding, beginning in the 1940s.

The *Mount Vernon and Edison Dual CMP Culvert Replacement and Optimization* project will achieve the following activities as shown in the Project Vicinity Map, Figure 2:

- Relocate the Edison Street storm drain inlets (four) further north to the low point in the road.
- Relocate the Mount Vernon storm drain pipes so they are more central between the two existing buildings to allow for safer installation and future maintenance access.

- Upsize the Mount Vernon CMP storm drain pipes from 38-inch x 60-inch horizontal ellipses to 48-inch x 76-inch horizontal ellipses.
- Upsize the Mount Vernon storm drain outfall pipes from 51-inch x 66-inch corrugated metal arches to 48-inch x 76-inch horizontal reinforced concrete ellipses.
- Adjust the Mount Vernon storm drain pipes to a uniform two percent (2%) slope.
- Relocation the sanitary sewer line, between Mount Vernon Avenue and Edison Street, to allow for improved hydraulic alignment of the twin culverts.

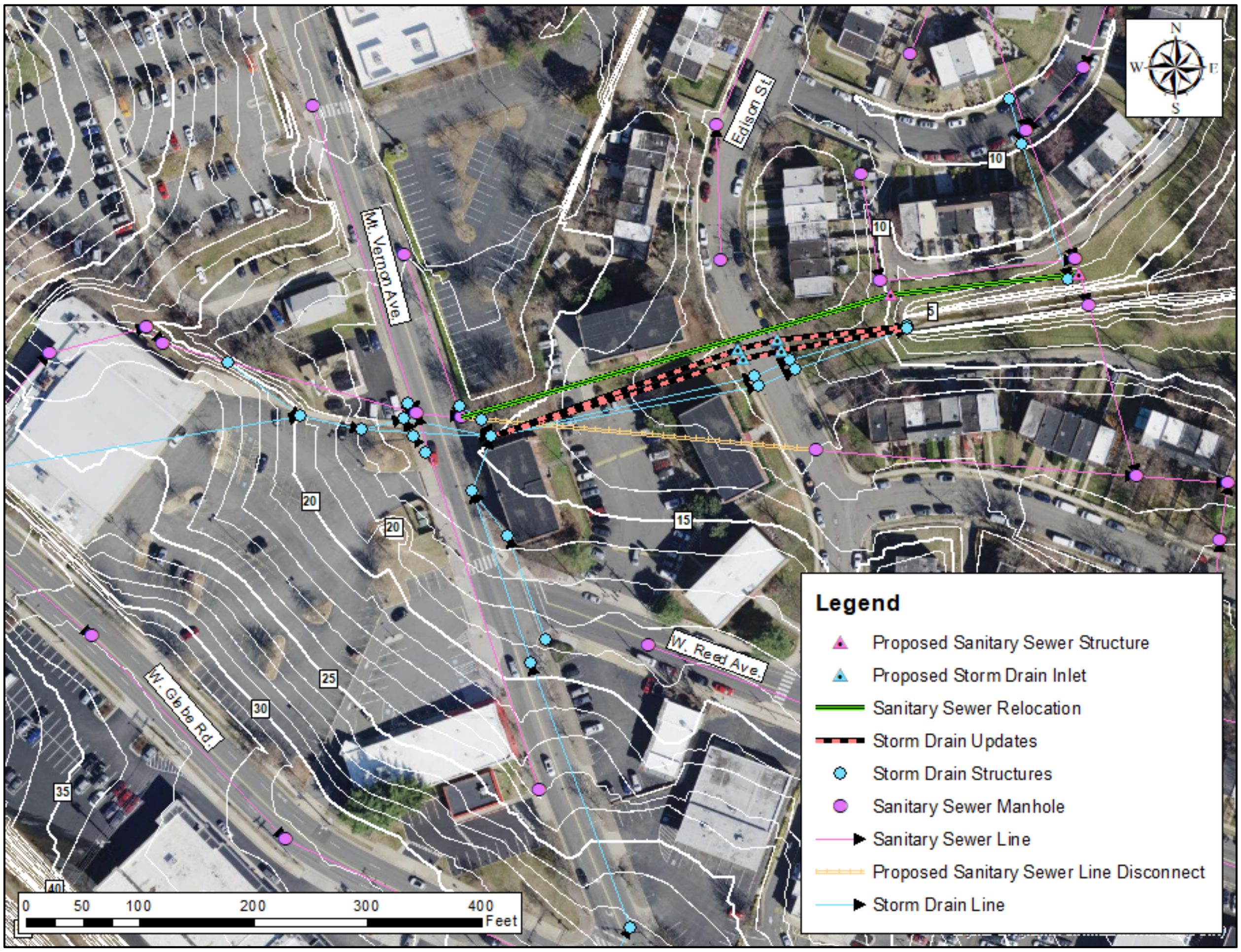


Figure 2. Project Vicinity Map

Arlandria is located within the northern portion of the Four Mile Run watershed model. The proposed optimization of the storm drain line was modeled in the XP-SWMM model by incorporating the *Mount Vernon and Edison Dual CMP Culvert Replacement and Optimization* project conceptual work. The 3-inch, 3-hour synthetic storm and 10-year, 24-hour storm event was used for the analysis. The 3-inch, 3-hour synthetic storm was created to account for the more frequent and high intensity storm events that the City is experiencing. The synthetic storm event was created by the City using Autodesk Storm & Sanitary Analysis (SSA). The program includes a Rainfall Designer, which utilizes site-specific storm information from a database with over 3,500 up-to-date rainfall recording stationing across North America. A comparison between the optimized and existing conditions, shows a decrease in the hydraulic grade line (HGL). The proposed solution would contain the design storm event within the pipes, eliminating the surcharging occurring on Mount Vernon Avenue for the design and greatly improve the health and safety of the community. Furthermore, the *Mount Vernon and Edison Dual CMP Culvert Replacement and*

Optimization project will have a positive impact on the immediate area of Mount Vernon Avenue and Edison Street, the neighborhood of Arlandria, and improve the overall conveyance upstream in Four Mile Run watershed and help create a more resilient City.

a) Population and Equity

Alexandria has a population of 159,467 (U.S. Census Bureau, 2020) and is the densest city in Virginia with a population density of about 9,460 people per square mile. The median household income in Alexandria in 2019 was $100,939. Arlandria is in Census Tract 2012.03 that has a median household income of $60,756, which is less than 80% of the median income of the City, meaning this area meets the grant definition of a “Low-Income Geographic Area”. This Census Tract, 2012.03, also has a High Social Vulnerability Index score of 1.1. This 0.4 square mile census tract has a population of approximately 7,800 and is one of four Opportunity Zones in the city. Figure 4 provides an overview of Arlandria’ s cultural themes as presented in A Cultural History of Arlandria, September 2021. This Cultural History was collected in coordination with the community’s Arlandria-Chirilagua Small Area Plan Process.

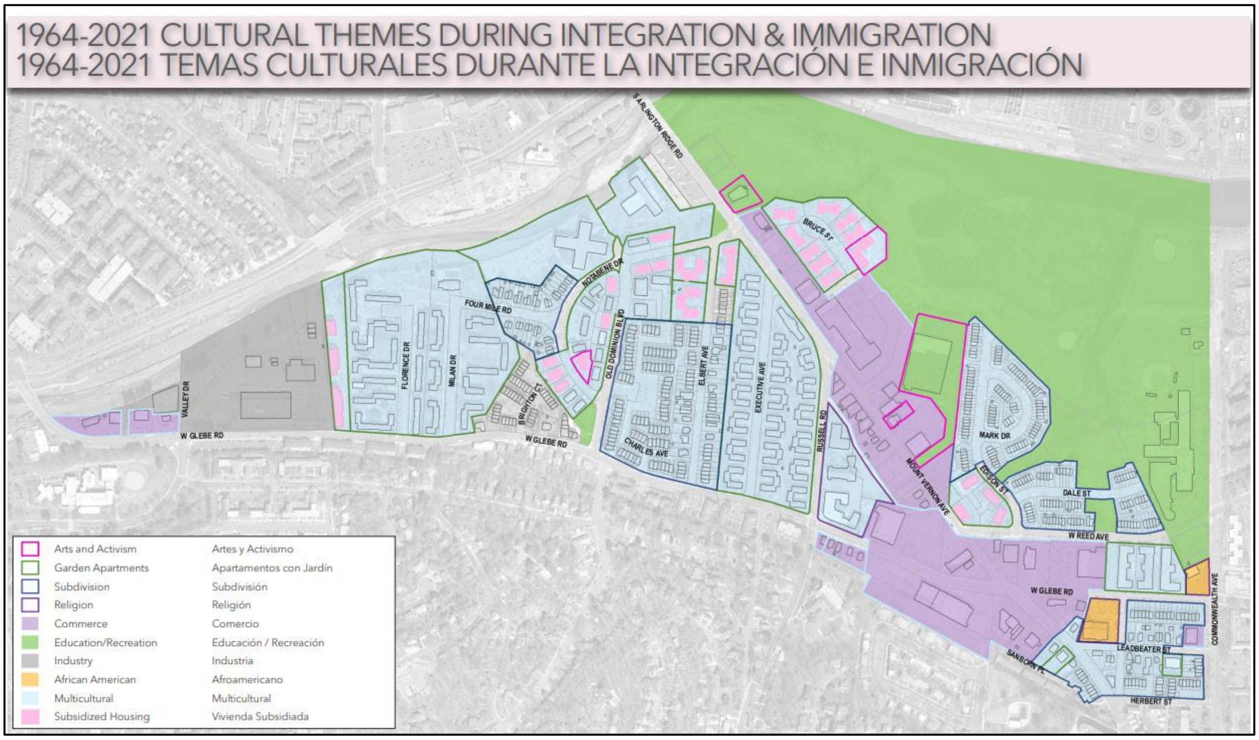


Figure 3. Arlandria Cultural Themes

b) Historic Flooding Data and Hydrologic Studies Projecting Flood Frequency

The City is experiencing more frequent and severe flash flooding from extreme precipitation events which have occurred more frequently in the last few years. These flash flood events damage residential and commercial properties, impact critical assets, and cause day-to-day disruptions and economic losses. The City has experienced several major flooding events since 2019, including July 8, 2019, July 23, 2020, September 10, 2020, and most recently August 15, 2021 and September 16, 2021. These events are characterized between 50 to 500-year level rainstorm events. The City's Intensity-Duration-Frequency (IDF) curves developed in the 1980's were compared to other localities in the region and available climate predictions during the CASSCA study, completed in 2016, and were found to be more conservative than many surrounding localities' design storms, more conservative than the National Atmospheric and Oceanic Administration (NOAA) Atlas-14, and were found to compare favorable to climate predictions available in 2016. The City is currently planning to further analyze these local IDF curves in comparison to regional efforts and more recent climate predictions.

The August and September 2021 storms were recorded by recently installed rain gauges that expand the City's gauge network to gather more localized storm information. Actual accumulation of over 5-inches in two hours, to be between 100 and 500-year level rain when compared to the statistical expectations derived for the City's curves developed in the 1980's for the City, which are more conservative than NOAA's predictions for the region. Meaning, what NOAA would call a 12-hour 25-year rainfall, Alexandria would call it closer to a 15-year rainfall.

c) Ability of Alexandria to Provide its Share of the Project Cost

In response to these recurring flooding events, in May 2021 the City Council unanimously adopted an ordinance to double our Stormwater Utility Fee with a 50% increase in the rate for the May 2021 billing and an additional 50% increase in the rate for the October billing to significantly increase local resources available for investments in our storm sewer infrastructure. The development of the FY 2022 – FY 2031 Stormwater Management Utility Ten Year Plan for funding of operating and capital improvement program (CIP) costs, included the identification and funding schedule for 11 top priority flooding mitigation capacity projects that include a mix of storage, conveyance, and green infrastructure. The 10-Year Plan also includes annually increasing funding for spot improvement projects and increased maintenance activities citywide. The Stormwater Utility Fee, paid by all property owners in the City (including non-taxable properties), will enable an acceleration of major capacity projects and spot improvement projects, an increase in channel maintenance, new state-of-good repair investments, property owner grants, and new staffing in support of these projects. The City confirms that it can cover the Cost Share required for this project with funding identified in the FY 2022 – FY 2031 Stormwater Management CIP under the Storm Sewer Spot Improvement program.

d) Alexandria is an Active Participant in the National Flood Insurance Program

The City began participating in the regular phase of Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) on May 8, 1970, and is recognized for exceeding the goals of the NFIP Community Rating System (CRS) program. Alexandria is one of two Virginia localities to achieve a Class 6 rating. As a result, residents and businesses purchasing flood insurance for properties in Alexandria are eligible to receive up to a 20% discount on flood insurance premiums. The City also has established a Floodplain Ordinance to regulate development and redevelopment in the floodplain. The FEMA Flood Insurance Rate Map (FIRM) for Arlandria and the *Mount Vernon Dual CMP Culvert Replacement and Optimization* project area is included as Figure 4.

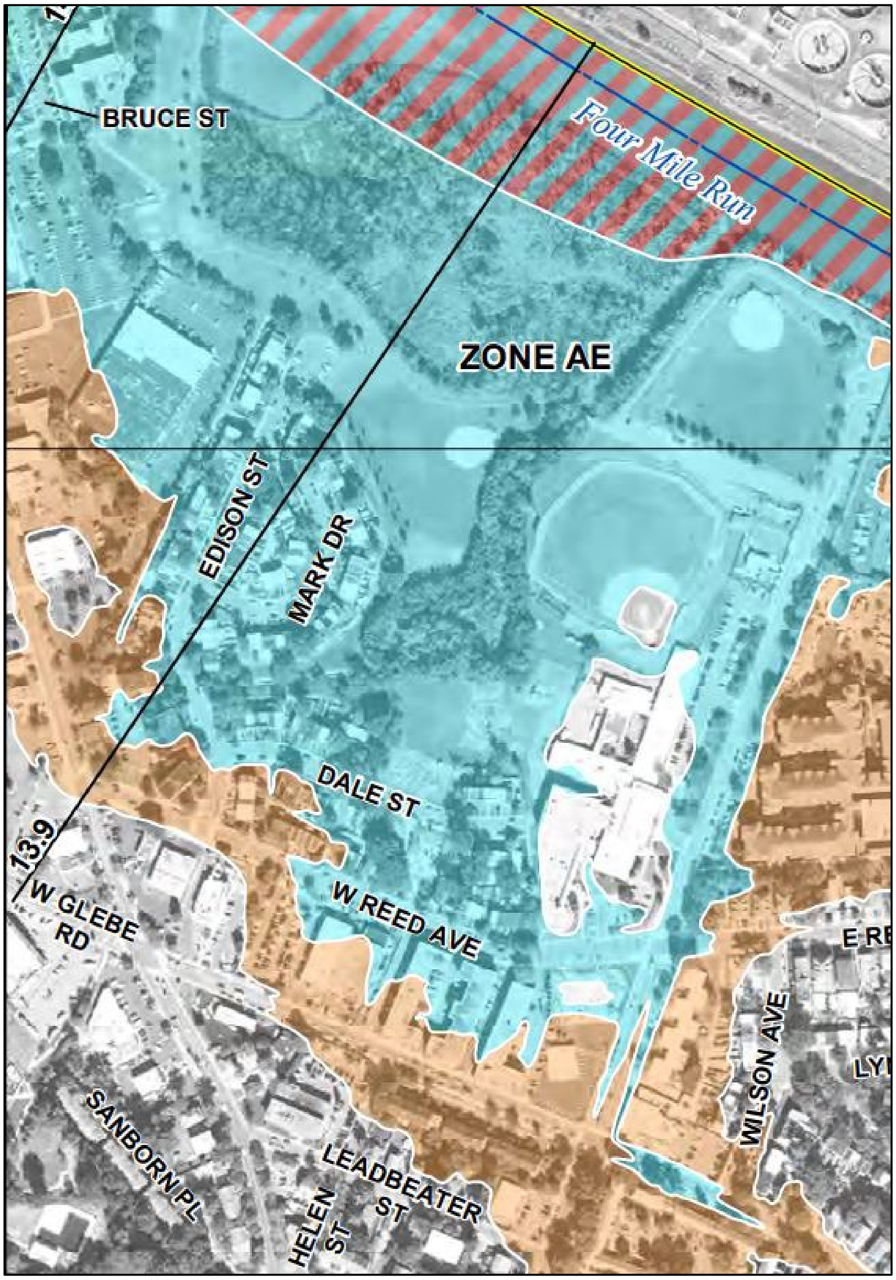


Figure 4. FIRM Map 5155190033F

Repetitive loss is defined by any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. A severe repetitive loss is defined by a family residence that has had four or more claims of more than $5,000 or at least two claims that cumulatively exceed the building value as defined by the Flood Insurance Reform Act of 2004. There were 12 repetitive loss sites in Alexandria as of 2015, of which six are residential and six are non-residential. These 12 repetitive loss sites have experienced a collective 30 losses, with a total payment of $1,871,287 as described in the 2017 Northern Virginia Hazard Mitigation Plan. A more updated list of repetitive losses across the City is forthcoming but preliminary assessment indicates more than 35 properties, more than triple that of 2015.

e) Other Necessary Information to Establish Project Priority

The Northern Virginia Hazard Mitigation Plan identified flooding as one of Alexandria's predominant hazards due to riverine, precipitation, tidal, and storm surge flooding. The Hazard Mitigation Plan ranked natural hazards for Alexandria using historical weather-related events based on the Storm Event Database by the NOAA National Centers for Environmental Information, formerly the National Climatic Data Center (NCDC). Hazards were ranked using a semi-quantitative scoring system that involved grouping the data values (normalized to account for inflation) based on statistical methods (see Figure 5). This method prioritizes hazard risk based on a blend of quantitative factors extracted from NCDC and other available data sources. The parameters considered include:

- Historical occurrences;
- Vulnerability of population in the hazard area; and
- Historical impact, in terms of human lives and property and crop damage.

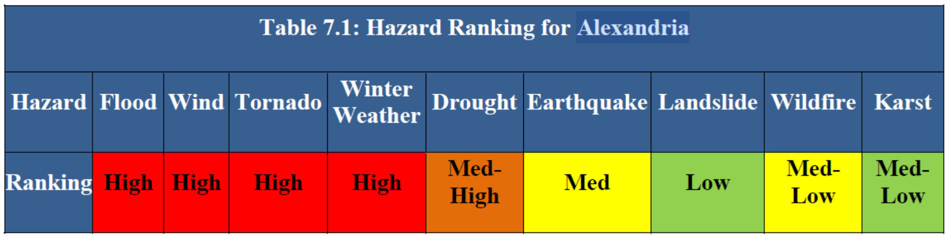


Table 7.1: Hazard Ranking for Alexandria

Hazard	Flood	Wind	Tornado	Winter Weather	Drought	Earthquake	Landslide	Wildfire	Karst
Ranking	High	High	High	High	Med-High	Med	Low	Med-Low	Med-Low

Figure 5. Hazard Ranking, Northern Virginia Hazard Mitigation Plan, 2017

Alexandria's watersheds have a significant percentage of impervious surfaces. Forty-three percent of the City's surface area is comprised of roads, buildings, parking lots, and sidewalks. Impervious surface contributes to the accumulation of stormwater because water is not able to convey and recharge. This type of flooding threatens the continuous operation of roads, emergency access, and property during precipitation events.

No critical facilities are located within the immediate vicinity of the project area.

2. Need for Assistance

The City has the staff and resources (SWM/SWU CIP), BSEGS 5 rating, CRS Class 6, to implement this project as soon as funding becomes available. DCR's financial support will help create a more resilient Alexandria while enhancing and improving the City's built infrastructure in the Arlandria neighborhood located within Four Mile Run.

a) Goals and Objectives

The purpose of this project is to help mitigate flooding in the Arlandria neighborhood by providing enhanced conveyance along a major storm sewer to its downstream outfall. This project will not only address local area flooding, but also facilitate upstream improvements in the drainage area by ensuring adequate conveyance to support future upgrades. The City cost-share for the project will be funded through the FY 2022 – FY 2031 Stormwater Management CIP under the Storm Sewer Spot Improvement program.

b) Approach, Milestones, and Deliverables

The *Mount Vernon Dual CMP Culvert Replacement and Optimization* project is a multi-faceted project that includes relocation of an existing sanitary sewer and replacement of two deteriorated storm sewer pipes. As such, the project team will include experts from the City of Alexandria's Transportation and Environmental Services Stormwater and Sanitary division. The City's Department of Project Implementation will be responsible for managing and delivering the project. Additional details on the project delivery approach and project teaming will be detailed in a project management plan developed by the City.

The City's project management plan is a living document specific to the project that is continually updated through the design and construction process. Input from the design contractor and construction manager will be included in the document as the project progresses. At a minimum, the project management plan will clearly identify the projects scope, team member roles and responsibilities, critical stakeholders, project risks and the project procurement plan.

The City's Engineer of Record Contract or an equivalent existing procured agreement will be utilized to develop contract documents including design plans, construction specifications costs estimates, a basis of design report and public rendering of impacts and improvements. Staff expect that construction of the project may require an open-bid procurement process.

Project deliverables will undergo a multiphase review at 30% Design, 60% Design and 90% Design before being accepted by the City as the Final Contract Documents.

c) Project Milestones and Deliverables

Table 1 summarizes project milestones for the *Mount Vernon Dual CMP Culvert Replacement and Optimization* project. The deliverables associated with each Milestone are included in Table 2.

Table 1. Project Milestones

Milestone	Fiscal Year (FY)
Project Planning	2023
Design Services Procurement	2023
Design Phase	2023 / 2024
Construction Procurement	2024
Construction	2025
Post-Construction	2025

Table 2. Deliverables by Milestone

Milestone	Deliverable
Project Planning	• Project Charter • Project Management Plan • Project Work Breakdown Structure • Project Schedule
Design Services Procurement	• Task Order Request based on existing contract • Task Order approval • Purchase Order and Notice To Proceed
Design Phase	• Design Plans at 30% and Final Design • Construction Specifications at Final Design • Basis of Design including Hydraulic Calculations at 30% and Final Design • Cost Estimate at 30% and Final Design
Construction Procurement	• Invitation to Bid at contract award • Contractor Proposal at contract award • Purchase Order at contract award
Construction/Post Construction	• Sign & Sealed As-builts following project close out • Site photographs following project close out

3. Relationship to Other Projects

The City has experienced repeated and increasingly frequent flooding from storm events, with several large severe storm event occurring in 2019 and 2020. These events lead to the development of the Flood Action Alexandria initiative. Information gathered via the City's 311 response center regarding flooding complaints and inquiries in addition to the 2016 City of Alexandria Storm Sewer Capacity Analysis (CASSCA) study, provided a roadmap for City staff to undertake neighborhood investigations. Located in the Four Mile Run watershed, with a large footprint within the 100-year and 500-year floodplain, the neighborhood of Arlandria, specifically the Edison Street, Dale Street, and West Reed Avenue, located off of Mount Vernon Avenue, a main throughfare, experienced significant flooding from the storms during 2019 and 2020. The City undertook neighborhood investigations and further engineering assessment and analysis of the storm sewer network in this area beginning in early 2021. However, it was the large storm event that occurred on August 15, 2021, after the launch of the Flood Action Alexandria, that brought the most significant flooding to this area, as described in Section 1, Project Information. Figure 6 provides a snapshot of the 311 requests for services that focused on reporting flooding issues across the City on August 15th.

The *Mount Vernon Dual CMP Culvert Replacement and Optimization* project falls within the City's Flood Action Alexandria initiative which includes a 10-year, $170 million capital improvement plan focused on 11 large capacity projects in addition to numerous spot improvement projects that are currently underway at the neighborhood scale across the City. The proposed project for funding will increase the resiliency of the Arlandria neighborhood, Four Mile Run watershed, and the City of Alexandria. This is a critical need given the City's sensitivity to climate change-induced severe storm events caused by rising global temperatures and increasing humidity.

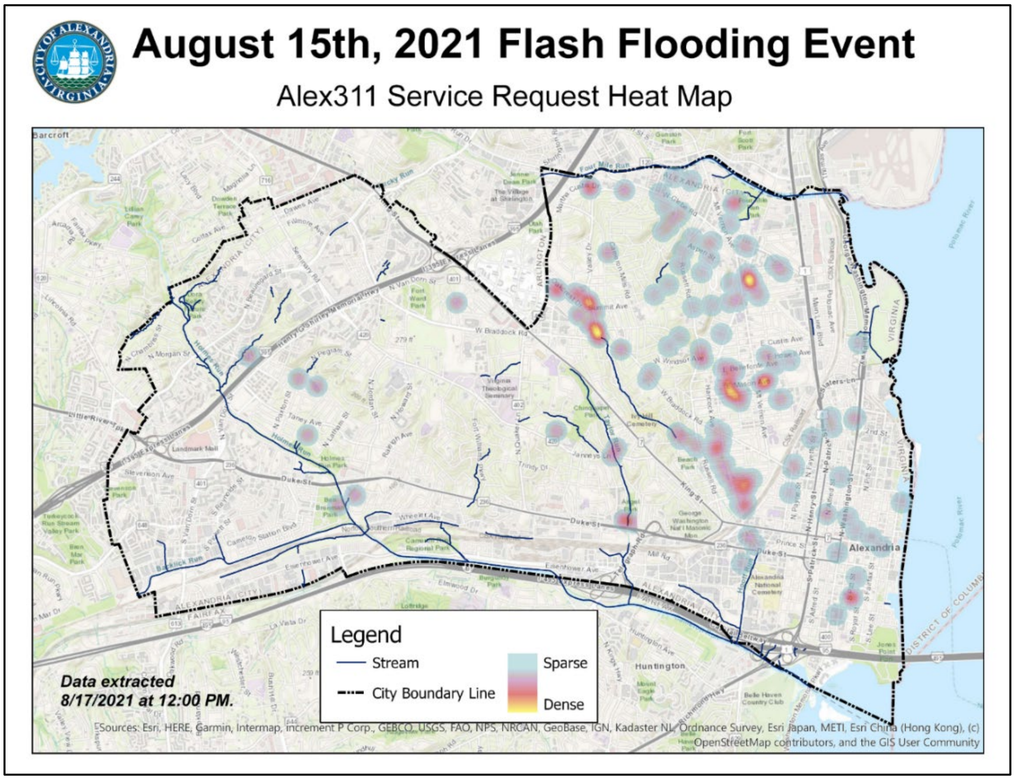


Figure 6. Alex311 Heat Map, August 15, 2021

4. Maintenance Plan

City sewer infrastructure 'state of good repair' program maintenance objectives includes inspection and maintenance on a rotating 3-5 year service schedule. The City also performs inspection and maintenance in response to Alex311 service requests an in advance of forecasted storm events. The initial installation will be inspected early on to ensure proper functioning prior to the routine, rotating schedule being implemented. More information is available on the City's Sewer Maintenance webpage.

5. Criteria

This project scoring criteria is found in Appendix B.

Budget Narrative

The *Mount Vernon Dual CMP Culvert Replacement and Optimization* is budgeted for design and construction for a total cost of $2,500,000. The City respectfully requests 50% of the total project cost to be covered by this grant: $1,250,000. All costs are categorized as Contractual. It is anticipated that 25% of the total Contractual costs will be spent on Project Design ($625,000) and 75% of the total Contractual costs will be spent on Project Construction ($1,875,000)

These projects will help to mitigate flooding and help increase the resiliency of the Arlandria neighborhood, the Four Mile Run watershed, and the City at-large. Project matching funds will come from the CIP section of the City's Stormwater Management Utility 10-Year Plan..

Cost Category	City of Alexandria Match	DCR CFPF Request	Total
Personnel	$0	$0	$0
Fringe Benefits	$0	$0	$0
Travel	$0	$0	$0
Equipment	$0	$0	$0
Supplies	$0	$0	$0
Contractual	$1,250,000	$1,250,000	$2,500,000
Construction	$0	$0	$0
Other	$0	$0	$0
Total Direct Charges	$0	$0	$0
Indirect Charges	$0	$0	$0
Totals	**$1,250,000**	**$1,250,000**	**$2,500,000**

Appendix A – Application Form

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Alexandria, VA

Category of Grant Being Applied for (check one):

____Capacity Building/Planning

_X____Project

_____Study

NFIP/DCR Community Identification Number (CID): CID515519

If a state or federally recognized Indian tribe, Name of tribe: No

Name of Authorized Official: Jesse Maines, PMP

Signature of Authorized Official: ________________

Mailing Address (1): 2900 Business Center Drive

Mailing Address (2): ____

City: Alexandria **State:** VA **Zip:** 22314

Telephone Number: 703.746.4643 **Cell Phone Number:** 571.414.8237

Email Address: jesse.maines@alexandriava.gov

Contact Person (If different from authorized official): Jessica Lassetter

Mailing Address (1): 2900 Business Center Drive

Mailing Address (2): ____

City: Alexandria State: VA Zip: 22314

Telephone Number: 703.746.4127 Cell Phone Number: 703.915.5695

Email Address: jessica.lassetter@alexandriava.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.

X Storm water system upgrades.

- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Mt. Vernon Avenue, Edison Street, Arlandria Neighborhood, Alexandria, VA

NFIP Community Identification Number (CID#):(See appendix F CID515519

Is Project Located in an NFIP Participating Community? **X Yes** □ No

Is Project Located in a Special Flood Hazard Area? **X Yes** □ No

Flood Zone(s) (If Applicable): **AE**

Flood Insurance Rate Map Number(s) (If Applicable): **5155190033F**

Total Cost of Project: **$2,500,000**

Total Amount Requested **$1,250,000**

Appendix B – Scoring Criteria

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**City of Alexandria, VA**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

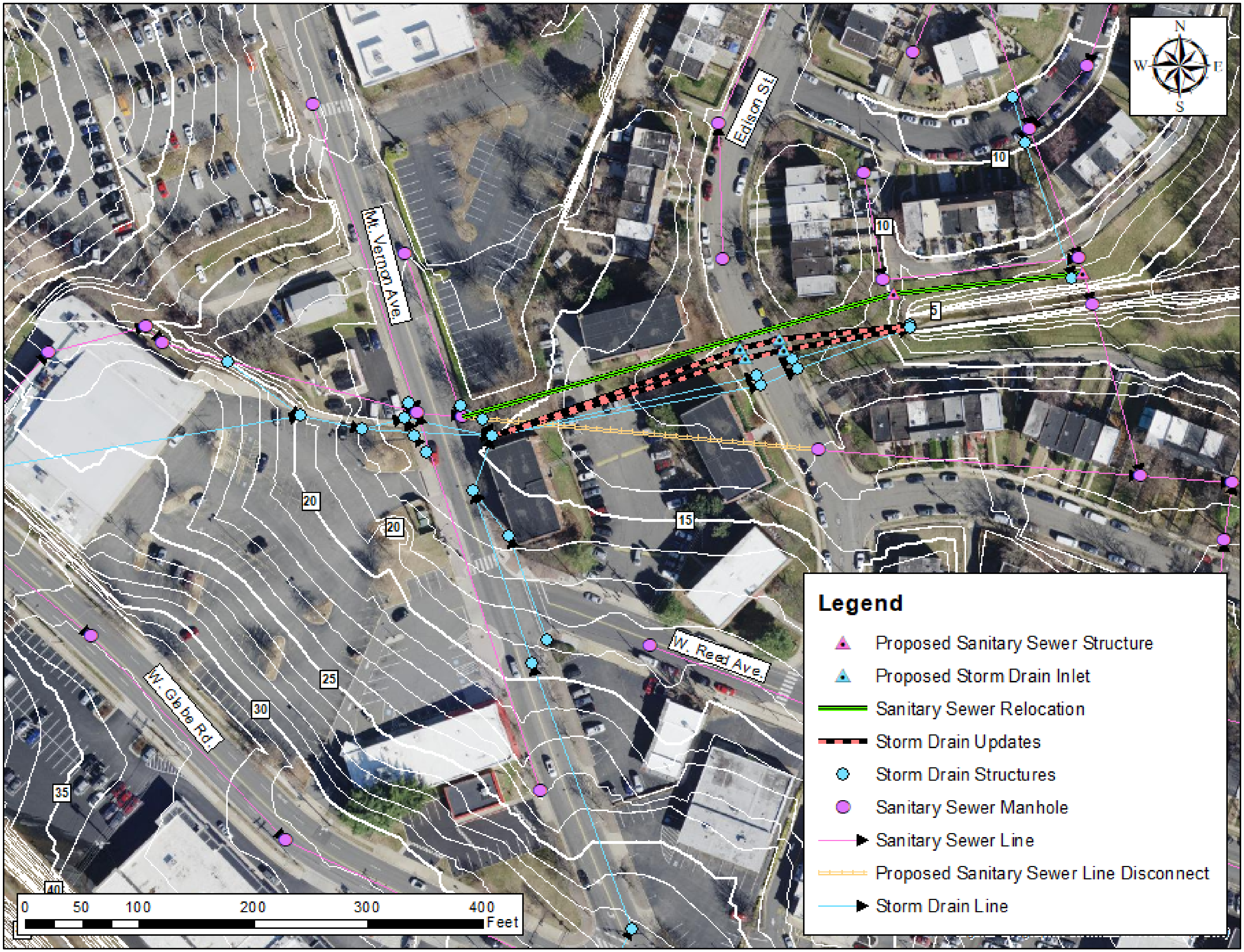
Project Eligible for Consideration		**X Yes** **☐ No**
Applicant Name:	**City of Alexandria, VA**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	**25**
7. Is the project area socially vulnerable? (Based on ADAPT VA’s Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	

8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		67

Appendix C – Project Vicinity Map

CID515519_CityofAlexandria_CFPF-1
Mount Vernon Dual Corrugated Metal Pipe Culvert Replacement and Optimization

PROJECT VICINITY MAP



CID515519_CityofAlexandria_CFPF-1

1 message

Jessica Lassetter <jessica.lassetter@alexandriava.gov> Fri, Apr 8, 2022 at 8:52 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Jesse Maines <Jesse.Maines@alexandriava.gov>

Good morning –

Attached, please find the City of Alexandria CFPF Round 3 grant application. We plan to submit a second application today for review under a separate email.

Thank you so much for allowing the City the opportunity to apply to this highly valuable program to help enhance our community resilience and mitigate the impacts of flooding.

Sincerely,

Jessica

Jessica E. B. Lassetter, MNR

Senior Environmental Specialist/CE III

City of Alexandria, Virginia

Transportation & Environmental Services

Office Phone Number (703.746.4127)

Cell Phone Number (703.915.5695)

alexandriava.gov

CID515519_CityofAlexandria_CFPF-1.pdf
3651K

City of Fairfax

Mosby Woods Floodplain Improvements Study Grant Request

2022 Virginia Community Flood Preparedness Fund (Round 3) Application Package

Introduction

The City of Fairfax (City) has prepared this 2022 Virginia Community Flood Preparedness Fund (CFPF) Application Package to request matching funds for the preparation of the Mosby Woods Floodplain Improvements Study. The City intends to apply for matching funds in the Study category. The City of Fairfax is a 6.27 square mile independent city located within Fairfax County in northern Virginia. The City is highly developed and is mainly compromised of residential and commercial lots. The City and study location have a low social vulnerability index score based on the ADAPT VA Social Vulnerability Index.

Background

The City of Fairfax is bisected by a multitude of stream reaches and acts as the headwater of Accotink Creek. As the City has evolved, it has naturally experienced large-scale development with the majority of its land draining to the north fork or the mainstem of Accotink Creek. This situation has led to locations of increased localized urban flooding. The City is now looking to conduct a study to evaluate the effects of the north fork of the Accotink Creek floodplain on the Mosby Woods condominiums, as well as develop strategies to prevent and mitigate damages from the riverine flooding. It is currently anticipated that the culvert system below Stafford Drive does not provide sufficient capacity and causes large storm events to back up, spilling onto neighboring properties. The drainage area and location of the Stafford Drive culvert system can be seen in Attachment 1.1.

The study will look to analyze the existing condition of 6,000 linear feet of Accotink Creek and the effects of the stream on floodplain on the adjoining infrastructure. The hydrology to the point of interest will be derived from a compilation of the most readily available aerial landcover data, survey data, GIS shapefile data, and soils data. The study will utilize the full build out condition from the City's 2035 Comprehensive Plan to increase resilience of future events. Additionally, the study will model the historic flows related to the rainfall and runoff from Tropical Storm Lee, a known flooding event at the Mosby Woods condominiums.

The study will then perform a floodplain sensitivity modeling analysis for infrastructure changes at the major culvert systems, stream, and the use of floodplain grading techniques within the study area. Evaluation of the overall stream corridor will be prioritized as to model the effect of the changes wholistically on the floodplain system, as to not potentially transfer any flooding downstream. Utilizing the study results, the City will have a comprehensive evaluation of the localized flooding within the study area and the impacts that different potential solutions could have on the floodplain.

Scope of Work Narrative

Capacity Needs

The City, in conjunction with an engineering consulting firm, will develop the Mosby Woods Floodplain Improvements Study. The City currently lacks the capacity or in house expertise to undertake this effort singularly and thus outside resources are required for the completion of this task.

Goals and Objectives

The goal of the Mosby Woods Floodplain Improvements Study is to provide a corridor-wide approach to better understand the flooding within the Accotink Creek. This planning level document will provide the City with the ability to better assess and develop an action-oriented approach to flooding and resiliency within the Mosby Woods community.

Stakeholders

Initially, the stakeholders associated with the Mosby Woods Floodplain Improvements Study will primarily be the City Department of Public Works. As items and projects identified in the study come to fruition, an expansion of the stakeholders will include citizens, businesses, and residents within the Mosby Woods community.

Implementation Plan and Timeline

The implementation of this plan will start once the grant has been awarded to the City and when the new fiscal year begins in July 2022. The City would like to note this is an anticipated timeline and could be subject to change.

Outputs and Measures

The output of this task is a comprehensive evaluation of the localized flooding within the study area and the impacts that different potential solutions could have on the floodplain. No other outputs are expected from this task.

Maintaining Capacity

At this time, the City does not anticipate the need for continuing support for development of the Mosby Woods Floodplain Improvements Study.

Budget Narrative

Estimated Total Project Cost

The estimated total project cost for the development of the Mosby Woods Floodplain Improvements Study is $48,570.66. The City has coordinated with a consultant to provide an estimated summary of proposed services and associated cost. This document has been included in Attachment 1.2 and includes an hourly breakdown based on anticipated tasks to be conducted by a consultant in the development of the Mosby Woods Floodplain Improvements Study.

Amount of Funds Requested

Per the 2022 CFPF Manual, the Mosby Woods Floodplain Improvements Study development is categorized as a Study activity. According to the latest U.S census data, the City of Fairfax has a median household income of $116,979. This is 58% higher than the Virginia median household income of $74,222 thus not qualifying as a low-income geographic area. The U.S census data can be seen in Attachment 3.7 of this application package.

Per the 2022 CFPF Manual, the City is requesting a 50% City match and a 50% CFPF match of the total project cost. Based on the Estimated Total Project cost highlighted above, the City is requesting $24,285.33 with this grant application package. This match will be utilized to assist with the overall cost of developing the Mosby Woods Floodplain Improvements Study. As mentioned above, an estimated summary of proposed services and associated cost has been included in Attachment 1.2. This includes an hourly breakdown based on anticipated tasks to be conducted by a consultant in the development of the Mosby Woods Floodplain Improvements Study.

Amount of Cash Funds Available

The City intends to allocate a portion of the City of Fairfax Stormwater Utility Fund for this study. The study has been included within the approved 2023 proposed budget as “Flood Mitigation Planning & Resilience”, which has an available budget of $225,000. The City has reserved $24,285.33 of available matching funds from the City of Fairfax Stormwater Utility Fund as part of this application package. The Flood Mitigation Planning & Resilience project sheet from the 2023 proposed Stormwater Utility Fund can be seen in Appendix 1.3. The Stormwater Utility Fund is available to the City’s Public Works division to complete engineering functions and manage capital improvement projects for stormwater related needs within the City.

Authorization To Request Funding

A signed authorization to request for funding has been included below:

> “I certify that I am requesting matching grant funds from the Virginia Community Flood Preparedness Fund on behave of the City of Fairfax in the Study category for the development of the Mosby Woods Floodplain Improvement Study.”

Signature

3-31-22
Date

2022 Virginia CFPF Grant Application

Appendix Table of Contents / Attachments

Attachment 1 – CFPF Grant Narratives Supporting Documents

Attachment 2 – CFPF Grant Manual Appendix A

Attachment 3 – CFPF Grant Manual Appendix C/D

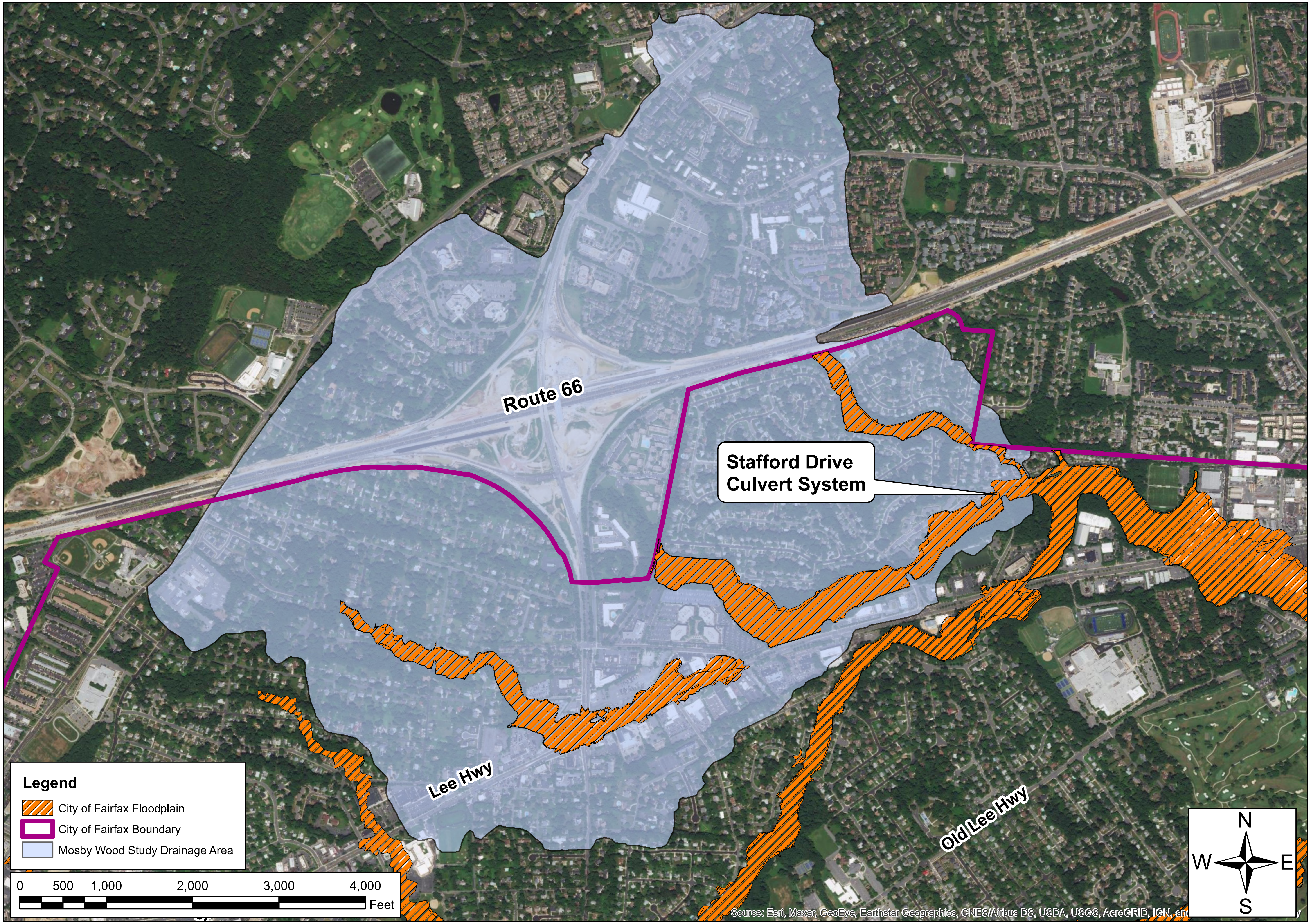
Attachment 1 – CFPF Grant Narratives Supporting Documents

Attachment 1 – Outline

1. Mosby Woods Floodplain Improvements Study Drainage Area Exhibit
2. Kimley-Horn - Summary of Proposed Services
3. City of Fairfax – 2023 Stormwater Utility Fund Project Information Sheet
4. City of Fairfax – 2023 Complete Stormwater Utility Fund

Attachment 1.1

Mosby Woods Floodplain Improvements Study Drainage Area Exhibit



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and

KIMLEY-HORN - NORTHERN VIRGINIA OFFICE
11400 COMMERCE PARK DRIVE, SUITE 400
RESTON, VIRGINIA 20191

Kimley»Horn
Expect More. Experience Better.

DATE:	03/28/2021
DRAWN BY:	J.A.C
CHECKED BY:	J.A.C

CITY OF FAIRFAX
MOSBY WOODS STUDY DRAINAGE AREA EXHIBIT

MOSBY WOODS STUDY DRAINAGE AREA EXHIBIT
CITY OF FAIRFAX, VIRGINIA

SCALE:	1" = 1,000'
PROJECT NUMBER:	EXHIBIT
SHEET NUMBER:	EXHIBIT

Attachment 1.2

Kimley-Horn – Summary of Proposed Services

Kimley»Horn

April 4, 2022

Satoshi Eto
Public Works Program Manager
City of Fairfax, Department of Public Works
10455 Armstrong Street, Room 200
Fairfax, Virginia 22030

Re: Mosby Woods Floodplain Improvement Study

Dear Mr. Eto:

Kimley-Horn and Associates, Inc. (Kimley-Horn) is pleased to submit this task order proposal to the City of Fairfax (City) to provide professional consulting services related to the development of a Mosby Woods Floodplain Improvement Study. The language outlined below identifies our project understanding, scope of requested services, and accompanying fees related to the overall project.

PROJECT UNDERSTANDING

This proposal summarizes the phases and tasks necessary to prepare a Study to evaluate the effects of the North Fork of the Accotink Creek floodplain on the Mosby Woods Condominiums, as well as develop strategies to prevent and mitigate damages from the riverine flooding. This Scope of Services will focus on 6,600 linear feet of stream channel (Study Area) depicted in Attachment 1 of this Scope of Services.

SCOPE OF SERVICES

This proposal has been divided into six (6) tasks. Each task is outlined below with a brief summary defining the Scope of Services for each task. A time and materials not-to-exceed cost to perform this work is provided (Attachment 2) and includes Kimley-Horn project management and coordination time.

1. Site Base Mapping, Project Due Diligence, and Site Visit
2. Full Buildout Hydrologic Analysis of the Study Area
3. Stream Corridor Hydraulics Study
4. Development of a Mosby Woods Floods Improvement Concept Plan
5. Mosby Woods Floodplain Improvements Study Report
6. Meetings & Coordination

Task 100 - Site Base Mapping, Project Due Diligence, and Site Visit

Kimley-Horn will develop a Geographic Information Systems (GIS) base-map illustrating the existing site conditions from Plantation Parkway through Stafford Drive to the culvert system at Fairfax Boulevard (Route 50) / Lee Highway (Route 29). The base mapping will depict the 6,600 linear feet of stream along the Study Area and will illustrate existing City of Fairfax and FEMA GIS floodplain features, as well as depict the impacts of the existing floodplain on pertinent infrastructure. The base mapping will be derived using the most readily available City and FEMA GIS shapefile data, aerial imagery, and previously developed Study Limit data provided by the City. The base mapping will be used by Kimley-Horn to assist in site reconnaissance efforts and to supplement all meetings, efforts, and study deliverables outlined in this Scope of Services.

Kimley-Horn will a perform project due diligence for the Study Area by compiling pertinent information from the following reports and data sets:

- City of Fairfax - Flood Insurance Study (FIS)
- FEMA relevant Flood Insurance Rate Maps (FIRMs)
- Previous studies performed within the project study area (to be provided by the City)
- Available City of Fairfax existing HEC-HMS (Hydrologic Models) and HEC-RAS (Hydraulic / Floodplain Models)
- Available VDOT / City of Fairfax Bridge and Culvert Plans for the project Study Area
- Best available FEMA, State, and City GIS Shapefile Data and Aerial Imagery

Kimley-Horn will compile all relevant Study Area floodplain and site data in a Technical Support Data Memo (TSDM) and submit to the City.

Kimley-Horn will utilize the site base mapping and background data obtained through this task to perform a site visit to photo-document the current conditions along the Study Area. Kimley-Horn will compile the base mapping and site photos to create a composite GIS base-map depicting the photo locations captured in the field that identify potential Study Area opportunities and constraints.

Task 200 – Full Buildout Hydrologic Analysis of the Study Area

Kimley-Horn will perform a full buildout hydrologic evaluation of the Study Area watershed utilizing aerial imagery, as well as the City's 2035 Comprehensive Plan. As part of this analysis, Kimley-Horn will evaluate the major drainage area sub-basins within the following watersheds.

- Plantation Parkway Culvert System
- Stafford Drive Culvert System
- Ranger Road Culvert System
- Fairfax Boulevard (Rt.50) / Lee Highway (Rt.29) Culvert System

Kimley-Horn will use the United States Department of Agriculture's (USDA) Technical Release-55 (TR-55) Urban Hydrology for Small Watersheds SCS Methodology to determine the existing basin hydrologic parameters such as Runoff Curve Numbers (RCNs) and Times of Concentrations (Tc) / Lag Times (Tlag). The hydrology will be derived from a compilation of the most readily available aerial landcover data, survey data, GIS Shapefile data, and soils data. The derived drainage basin hydrologic conditions will be utilized as model input parameters in subsequent tasks to determine the Study Area's basin and stream corridor runoff inflows for the 1-yr, 2-yr, 10-yr, and 100-yr storm events. As part of this task, Kimley-Horn will also model the historical flows related to the rainfall and runoff from Tropical Storm Lee, a known flooding event at the Mosby Woods Condominiums.

The hydrologic data generated will be utilized in conjunction with the Army Corp of Engineer's HEC-HMS (Hydrologic Modeling System) software to simulate the hydrologic stream processes at junctions and specific locations within the 6,600 linear foot stream corridor that traverses the Study Area. The model input parameters for the Mosby Woods Study Area HEC-HMS model will be developed based on the following information:

- City of Fairfax and (potentially) Fairfax County supplemental GIS topography.
- NOAA Atlas 14 Precipitation Data and City Specific Precipitation data
- SCS curve numbers based on ArcGIS orthogonal imagery and NRCS Soil information within the Study Area watershed.
- Time of Concentration / Lag time values developed based on ArcGIS orthogonal imagery and City of Fairfax / Fairfax County topography.

A comprehensive basin routing comparison will be performed to determine the effects of different runoff producing events on the existing Study Area. In developing this model, Kimley-Horn will be able to determine the volumetric discharge (flow rate) for multiple storm events which will be utilized as inputs in the HEC-RAS stream corridor hydraulics study (Task 300).

As part of this task, Kimley-Horn will compare our modeled hydrologic results with the published flows outlined in the City of Fairfax – Flood Insurance Study (FIS) for the North Fork of Accotink Creek, as well as the published flows at the Confluence of the North Fork of Accotink Creek with the Main Stem of Accotink Creek. Both sets of stream flows (KH derived / FIS) will be utilized in the hydraulic models developed in Task 300 (Stream Corridor Hydraulics Study).

All information derived and modeled in this task will be documented within the Mosby Woods Floodplain Improvements Study Final Report (Task 500).

Task 300 – Stream Corridor Hydraulics Study

Existing Conditions Modeling

Kimley-Horn will build an existing conditions floodplain hydraulics model of the 6,600 linear foot stream system within the Study Area utilizing previously derived topographic survey information for portions of the stream reach, and readily available City GIS shapefile data as supplemental information (contour, road, structure, etc.). Kimley-Horn will generate representative cross-sections for the 6,600 linear foot stream reach from available survey information and supplemental GIS contours, to input into the Army Corp of Engineer's HEC-RAS (River Analysis System) modeling software. The existing conditions floodplain hydraulics model will be developed to reflect channel and cross-sectional geometry indicative of the stream reach as well as any pertinent site characteristics (obstructions, structures, residences etc.), present throughout the stream reach / floodplain area.

Kimley-Horn will route the flows derived in the Full Buildout hydrologic analyses (Task 200) through the existing conditions floodplain hydraulic model to determine the existing stream/floodplain cross-sectional hydraulic characteristics along the Study Area. The hydraulic data generated in this task will be used to determine water surface elevations along the existing stream reach, specifically around the Mosby Woods Community and downstream from the Stafford Drive culvert system. This analysis will also quantify the effect of the Plantation Parkway, Stafford Drive, Ranger Road, and the Route 50/Route 29 Culvert System on the stream corridor and floodplain. Existing flood inundation depths, stream and floodplain velocities, cross-sectional top widths, and energy and hydraulic grade line calculations will be derived as part of this analysis.

Once the existing conditions model is developed, Kimley-Horn will create a separate HEC-RAS geometry file that will nest the Kimley-Horn derived exiting conditions model into the preliminary revised HEC-

RAS model developed for the revised Flood Insurance Study for the City of Fairfax (Stantec – September 2020). It is assumed that this model will be provided by the City to Kimley-Horn for this task.

Kimley-Horn will document the results for both the existing conditions floodplain hydraulics model, as well as the nested existing conditions hydraulics model in the overall preliminary 2020 FEMA floodplain model. These values will provide a baseline comparison for all future modeling analysis.

Floodplain Improvements Sensitivity Modeling

Kimley-Horn will modify the Existing Conditions Hydraulics Model(s) to evaluate proposed changes that may help abate the flooding at the Mosby Woods Condominium complex. Floodplain sensitivity modeling will focus on infrastructure changes at the major culvert systems, stream, and floodplain grading techniques, and pairing of the two within the Study Area. Evaluation of the overall stream corridor will be prioritized as to model the effect of the changes wholistically on the floodplain system, as to not potentially transfer any flooding downstream.

Kimley-Horn will route the flow data derived in Task 200 to analyze the viability and success of potential changes along the Study Area stream corridor. Revised Water Surface Elevations for all modeled storm events will be compared to existing conditions as to quantify the effect of the proposed improvements on the inundation depths and horizontal spread of the floodplain limits.

All relevant model cross sections and stream profiles will be updated to reflect any conceptual proposed infrastructure changes, grading, structure placement or channel realignment techniques, if applicable, within the Study Area limits. This information will be included in the Mosby Woods Floodplain Improvements Study Report (Task 500)

Task 400 - Development of a Mosby Woods Flood Improvement Concept Plan

Based on the results determined in the Floodplain Improvements Sensitivity modeling, Kimley-Horn will derive a 24x36 AutoCAD developed conceptual plan that will graphically depict locations of potential improvements among the 6,600 linear foot stream reach. Proposed conceptual improvements will include, but are not limited to the following:

- Infrastructure based improvements
- Natural based solutions
- Preservation and creation of open space and focus on permanent conservation of lands having flood resilience value

Due to the conceptual nature of this plan all proposed structural improvements, grading and riparian enhancements, and proposed future project implementation locations will have limited engineering design and will focus on project layout and location.

Task 500 - Mosby Woods Floodplain Improvements Study Report

Kimley-Horn will develop a Mosby Woods Floodplain Improvement Study report outlining the information derived in tasks 100 - 400. Study graphics, tabular summaries, numerical analysis, and conceptual level designs created in all previous tasks will be included in the final report. Recommendations on future drainage basin stormwater management improvements, future storm sewer designs, as well as comprehensive drainage and floodplain improvement implementation scenarios for the Study Area will be included with the report.

Task 600 – Meetings & Coordination

Kimley-Horn staff will be available for up to two (2) project coordination meetings, in person (if requested), to discuss the project. In addition, Kimley-Horn staff will participate in calls to discuss the project with City staff. If additional meetings and coordination activities are requested, Kimley-Horn will prepare a separate Scope of Services and cost estimate for client approval prior to proceeding with the additional work.

DELIVERABLES

The following items are anticipated as project deliverables for this Scope of Services.

- Site specific floodplain data compilation outlined in a Technical Support Data Memo (TSDM)
- HEC-HMS Hydrologic / HEC-RAS Stream Hydraulic Models(s)
- Mosby Woods Floodplain Improvements Study – 24 x 36 AutoCAD Derived Conceptual Plan
- Mosby Woods Floodplain Improvements Study – Final Report
- All maps, models, analyses, spreadsheets, and base data utilized for the design (if requested).

OVERALL PROJECT ASSUMPTIONS

For the purposes of developing this proposed Scope of Services and the accompanying cost estimate, we have made the following assumptions:

- All previous project information developed by others will be provided by the City to Kimley-Horn in a timely manner to accommodate anticipated project schedule.
- The flood studies and analyses proposed in this Scope of Services are intended as a planning level and will not constitute a formal FEMA floodplain study. As such this information and data will not be stamped and sealed by a Virginia Professional Engineer (PE).
- All analyses and studies developed in this Scope of Services will be based on limited survey information, and as such, the information derived will be considered “for information purposes only”
- The Conceptual Design Plan referenced in this Scope of Services will be limited in terms of engineering design and analysis. As such, they will be not stamped by a licensed Virginia Professional Engineer and labeled as “Not for Construction Purposes”.
- The City will provide site access permission to Kimley-Horn, for conducting all necessary fieldwork related tasks in a timely manner to facilitate the project schedule.
- Accuracy and precision of data and previous studies provided by others is solely on the consulting firm that derived the studies. Kimley-Horn will review all data provided by the City with regards to the Study Area but assumes no responsibility for information outlined in the studies developed by others.
- Readily available City GIS shapefile and geodatabase information will be used to supplement this study, as needed.

- The City will provide all coordination with inter-city departments with regards to this project.
- This proposal and the accompanying cost estimate are valid for a period of 60 days and will expire if not accepted within that timeframe.

OVERALL PROJECT EXCLUSIONS

Services that are not currently anticipated as part of this project and are therefore outside the scope of this task order proposal include the following:

- Phase I, II, III Archaeological Investigations
- Environmental Site Assessments
- Perennial Stream Assessments and/or Flow Determinations
- Wetland Permit Compliance
- Project Renderings
- VSMP Compliance
- Floodplain Studies and Submittals
- FEMA CLOMR or LOMR Applications
- Dam Safety Compliance
- Dam Break Inundation Zone (DBIZ) Modeling / Mapping
- Engineering Design Plan Submittals
- Utility Design
- VDOT Design or Permitting
- Right of Way Permitting or Dedication associated with planned or future development
- Development/Delivery of Presentations, Board of Supervisors, Committees, or the Public
- Notifications to impacted Property Owners
- All other services not explicitly stated in this Scope of Services

SCHEDULE

The tasks referenced in this scope will be coordinated with City Staff. Meetings, action items, and deliverables will be tracked on a monthly basis and reported to the City with a monthly progress report for documentation of services provided. Assuming Kimley-Horn receives a notice to proceed by July 1, 2022, Kimley-Horn anticipates completion of the Scope of Services outlined above by October 31, 2022. A detailed schedule will be developed for the City outlining project workflow and deliverables after contract execution.

FEE AND BILLING

Kimley-Horn will provide the following scope of services under our term contract #17007-2017-KHA. The following tasks will be provided on a time and materials basis not to exceed a total project cost of **$48,570.66.** A detailed breakdown (by task) of Kimley-Horn Horn's fee estimate is provided in Attachment 1 and utilizes the rate schedule as provided for in the City of Fairfax Task Order Contract #17007-2017-KHA, Year 5. Please note that hourly fees will be invoiced monthly based upon hours expended for services performed and payment will be due within 25 days of receipt of invoices related to this project.

CLOSURE

The work described with this proposal will be completed in accordance with the terms and conditions of Contract #17007-2017-KHA between the City of Fairfax and Kimley-Horn. We appreciate the opportunity to provide these services to you. Please contact either of us if you have any questions.

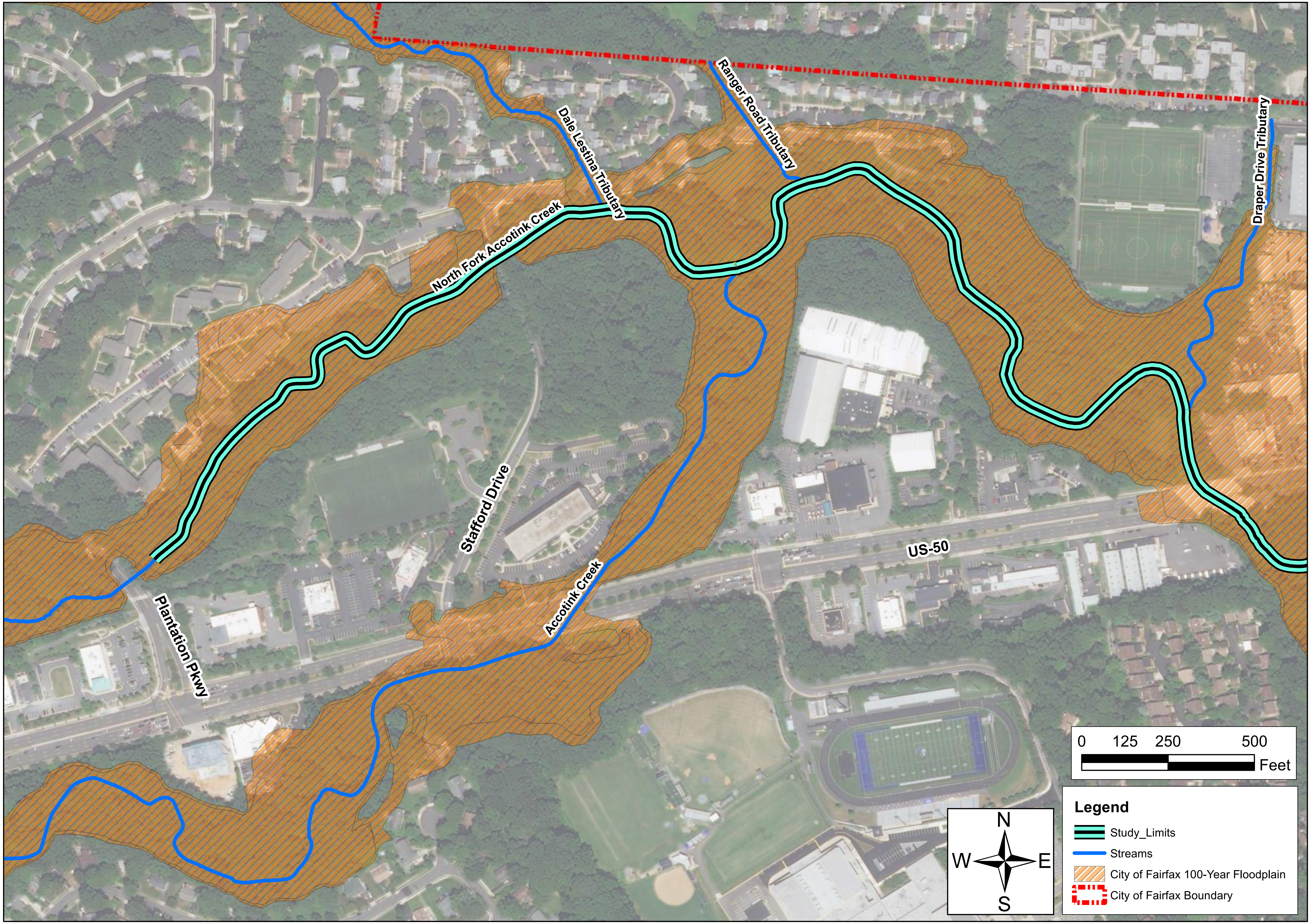
Very truly yours,
KIMLEY-HORN AND ASSOCIATES, INC.

Erica V.T. Carter

Jon D'Alessandro, P.E.
Senior Project Manager

Erica Carter, P.E.
Principal

Attachment 1 – Mosby Woods Floodplain Improvements Study Area



KIMLEY-HORN - NORTHERN VIRGINIA OFFICE
11400 COMMERCE PARK DRIVE, SUITE 400
RESTON, VIRGINIA 20191

Kimley»Horn
Expect More. Experience Better.

DATE: 03/30/2022

DRAWN BY: M.J.M

CHECKED BY: J.A.C

CITY OF FAIRFAX
MOSBY WOODS STUDY LIMITS EXHIBIT

PREPARED FOR
THE CITY OF FAIRFAX DEPARTMENT OF PUBLIC WORKS

SCALE: 1" = 250'

PROJECT NUMBER: EXHIBIT

SHEET NUMBER: EXHIBIT

Attachment 2 – Kimley Horn Fee Breakdown

City of Fairfax, Virginia
Mosby Woods Floodplain Improvements Study
April 4, 2022
T&M not-to-exceed Cost Estimate

Loaded Hourly Rate[1]		$326.73	$274.77	$220.46	$184.28	$146.89	$124.39					10%	
Task	**Description**	Senior Technical Specialist	Senior Professional II	Senior Professional I	Professional II	Professional I	Analyst	**Budget Total Hours**	**Budget Labor Cost**	**Reimbursable Expenses**	**Subconsultant Services**	**Subconsultant Mark-up**	**Budget Total Cost**
100	**Site Base Mapping, Project Due Diligence, and Site Visit**		**4**		**12**		**12**	**28**	**$4,803.12**	**$50.00**	**$0.00**	**$0.00**	**$4,853.12**
200	**Full Buildout Hydrologic Analysis of the Study Limits**		**8**		**16**		**12**	**36**	**$6,639.32**	**$0.00**	**$0.00**	**$0.00**	**$6,639.32**
300	**Stream Corridor Hydraulics Study**		**16**		**48**		**24**	**88**	**$16,227.12**	**$0.00**	**$0.00**	**$0.00**	**$16,227.12**
400	**Development of a Mosby Woods Flood Improvement Concept Plan**		**16**		**12**		**24**	**52**	**$9,593.04**	**$100.00**	**$0.00**	**$0.00**	**$9,693.04**
500	**Mosby Woods Floodplain Improvements Study Report**		**8**		**20**		**16**	**44**	**$7,874.00**	**$50.00**	**$0.00**	**$0.00**	**$7,924.00**
600	**Meetings & Coordination**		**8**		**4**		**2**	**14**	**$3,184.06**	**$50.00**	**$0.00**	**$0.00**	**$3,234.06**
TOTAL		**0**	**60**	**0**	**112**	**0**	**90**	**262**	**$48,320.66**	**$250.00**	**$0.00**	**$0.00**	**$48,570.66**

[1] **Rates (Year 5) per City of Fairfax Task Order Contract #17007-2017-KHA**

Attachment 1.3

City of Fairfax – 2023 Stormwater Utility Fund Project Information Sheet

PROJECT INFORMATION

Name:	**Flood Mitigation Planning & Resiliency**	**Project #**	**--**
2035 Comprehensive Plan Reference:	**NE2.1 pg 108**	**2035 Comprehensive Plan Timeframe:**	**Long-Term**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project supports the development of two flood mitigation initiatives. The first is a Flood Resilience Plan for the city. This plan provides project-based improvements for flood control and resilience, leverages nature-based infrastructure, considers all parts of a locality, includes coordination with other local and inter-jurisdictional activities, and is based on best available science. The plan will be developed to also provide credits towards FEMA's Community Rating System.

During the design of the Stafford Drive Stream Restoration Project, the effects to the floodplain were reviewed through hydraulic modeling. It was found that the culvert under Stafford Drive is a contributing factor in the floodplain impacts to the Mosby Woods condominium community. A flood study is proposed to evaluate the current condition of the Stafford Drive culvert and investigate options to improve the flood conditions in this area.
.
The city intends to apply for Community Flood Preparedness Fund grants for two projects which can, if approved, provide up to 75% funding for the flood preparedness plan, and 50% for the flood mitigation study. Development of a Flood Resilience Plan is a prerequisite to applying for any future grant funding for construction of a mitigation project, which can fund 50-70% of the project costs.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	225,000	-	-	-	-	225,000
Total Costs	**$ -**	**$ 225,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 225,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
State - Other	-	148,250	-	-	-	-	148,250
Stormwater Utility Fund	-	76,750	-	-	-	-	76,750
Total Funding	**$ -**	**$ 225,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 225,000**

Estimated Project Timeline	
Project Origination Date	02/01/22
Project Design Start Date	07/01/22
Construction Start Date	
Project Completion Date	06/30/23

New Project ✓

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):

Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

Attachment 1.4

City of Fairfax – 2023 Complete Stormwater Utility Fund

STORMWATER UTILITY FUND

City of Fairfax, Virginia
FY 2023 Stormwater Utility Fund
Budget Summary

	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed	Variance to Budget $	Variance to Budget %
Expenditures						
Salaries	$ -	$ -	$ -	$ 966,189	$ 966,189	0.00%
Fringe Benefits	-	-	-	433,138	433,138	0.00%
Purchased Services	-	-	-	414,246	414,246	0.00%
Internal Services	-	-	-	489,866	489,866	0.00%
Other Charges	-	-	-	210,850	210,850	0.00%
Supplies & Materials	-	-	-	225,900	225,900	0.00%
Capital Outlay	-	-	-	2,819,257	2,819,257	0.00%
Total Expenditures	**$ -**	**$ -**	**$ -**	**$ 5,559,445**	**$ 5,559,445**	**0.00%**
Revenues						
Revenue Bond Funds	$ -	$ -	$ -	$ 1,775,000	$ 1,775,000	0.00%
Annual Billing Units Revenue	-	-	-	2,718,634	2,718,634	0.00%
Grants	-	-	-	1,065,811	1,065,811	0.00%
Total Revenues	**$ -**	**$ -**	**$ -**	**$ 5,559,445**	**$ 5,559,445**	**0.00%**
Net Cost to the City	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**0.00%**
Total FTE	**-**	**-**	**-**	**14.60**		

FUNCTION:	**Stormwater Utility Fund**
DEPARTMENT:	**Public Works**
DIVISION OR ACTIVITY:	**Storm Drainage Operations & Maintenance**

BUDGET COMMENTS:

The FY2023 budget creates the Stormwater Utility Fund. The Storm Drainage function will be transferred from the General Fund to the Stormwater Utility Fund.

Cost Center 438120: Stormwater Utility Operations & Maintenance

Title	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed	Variance to Budget $	Variance to Budget %
Salaries	$ -	$ -	$ -	$ 623,546	$ 623,546	0.00%
Fringe Benefits	-	-	-	265,168	265,168	0.00%
Purchased Services	-	-	-	262,746	262,746	0.00%
Internal Services	-	-	-	154,216	154,216	0.00%
Other Charges	-	-	-	67,000	67,000	0.00%
Supplies & Materials	-	-	-	205,374	205,374	0.00%
Capital Outlay	-	-	-	5,000	5,000	0.00%
Total	**$ -**	**$ -**	**$ -**	**$ 1,583,050**	**$ 1,583,050**	**0.00%**

Personnel Classification	Grade	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed
Crew Supervisor	119	-	-	-	1.00
Asst Crew Supervisor	114	-	-	-	1.00
Equip Operator I	111	-	-	-	2.00
Utility Worker II	109	-	-	-	2.00
Truck Driver I	107	-	-	-	4.00
Total FTE		**-**	**-**	**-**	**10.00**

FUNCTION:	**Stormwater Utility Fund**
DEPARTMENT:	**Public Works**
DIVISION OR ACTIVITY:	**Storm Drainage Operations & Maintenance**

PROGRAM:

The Storm Drainage division maintains the city's stormwater collection systems, which consist of 300,000 linear feet of storm pipe, 1,840 catch basins, 145 outfalls, 28 box culverts, 324 driveway culverts, 7 bridges, and 37 bridge culverts. Crews replace deteriorated storm lines, perform preventative maintenance tasks biannually, clear blocked streams, repair box culverts, and repair damaged driveway pipe and ditch lines.

OBJECTIVES:

- Clean ditch lines, storm pipes, and catch basins
- Repair and replace storm pipes and catch basins.
- Clean and clear stream beds of brush/obstacles to improve flow without affecting downstream properties.
- Repair box culverts.

SERVICES AND PRODUCTS:

- Catch basin repair
- Creek and stream maintenance
- Drainage ditch maintenance
- Storm sewer pipe maintenance, repair, and replacement
- Culvert repairs
- Bridge repairs
- Install lining to storm pipe and culverts
- Concrete lid/top replacement and repair
- Perform emergency drainage repairs and projects
- Provide sandbags and emergency response to flooding

FUNCTION:	**Stormwater Utility Fund**
DEPARTMENT:	**Public Works**
DIVISION OR ACTIVITY:	**Stormwater Utility Administration & Engineering**

Budget Comments:

The FY2023 budget creates the Stormwater Utility Fund. The stormwater related costs from Public Works Administration and Engineering will be transferred from the General Fund to the Stormwater Utility Fund.

Cost Center 438130: Stormwater Utility Administration & Engineering

Title	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed	Variance to Budget $	Variance to Budget %
Salaries	$ -	$ -	$ -	$ 342,643	$ 342,643	0.00%
Fringe Benefits	-	-	-	167,969	167,969	0.00%
Purchased Services	-	-	-	151,500	151,500	0.00%
Internal Services	-	-	-	335,650	335,650	0.00%
Other Charges	-	-	-	143,850	143,850	0.00%
Supplies & Materials	-	-	-	20,526	20,526	0.00%
Capital Outlay	-	-	-	2,814,257	2,814,257	0.00%
Total	**$ -**	**$ -**	**$ -**	**$ 3,976,395**	**$ 3,976,395**	**0.00%**

Personnel Classification	Grade	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed
Director of Public Works	**	-	-	-	0.15
Program Manager	S02	-	-	-	0.30
Sustainability Coordinator	121	-	-	-	0.15
Utilities Analyst	121	-	-	-	0.50
Utilities Coordinator	121	-	-	-	0.50
Stormwater Program Specialist	119	-	-	-	0.70
Stormwater Plan Reviewer	118	-	-	-	0.25
Urban Forester	117	-	-	-	1.00
Facilities Inspectors	117	-	-	-	0.60
Contract Manager	114	-	-	-	0.15
Admin Assistant IV	113	-	-	-	0.30
Total FTE		**-**	**-**	**-**	**4.60**

FUNCTION:	**Stormwater Utility Fund**
DEPARTMENT:	**Public Works**
DIVISION OR ACTIVITY:	**Stormwater Utility Administration & Engineering**

PROGRAM:

The office of the director manages seven public works divisions, including Stormwater Management, and provides professional engineering services for constructing and maintaining stormwater infrastructure, environmental projects, and drainage improvements.

OBJECTIVES:

- Maintain compliance with the city's Municipal Separate Storm Sewer System (MS4) permit.
- Meet the city's Total Maximum Daily Load (TMDL) goals for the Chesapeake Bay and local waterways.
- Administrate erosion and sediment control and stormwater pollution prevention programs for public and private development projects.
- Maintain records of the layout and condition of the city's storm sewer infrastructure.
- Deliver adopted capital drainage improvement projects that provide direct benefit to affected property owners.
- Provide public outreach and education on stormwater management and pollution prevention topics.
- Encourage the public to engage in stormwater-positive actions and activities.
- Administrate Stormwater Utility capital programming.
- Assist city residents and businesses with finding solutions to drainage problems.

SERVICES and PRODUCTS:

- Administrative services for the Stormwater Utility.
- Drainage improvement projects.
- Environmental projects; stream restoration, stormwater facility upgrades and retrofits.
- Evaluation of drainage concerns, both public and private.
- Printed and electronic outreach and education materials on stormwater topics.
- Administration of Virginia Erosion & Sediment Control and Virginia Stormwater Management Program laws through inspections and enforcement.

Stormwater Utility Fund Expense Detail

Account	Account Title	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed	Variance to Budget $	Variance to Budget %
SWU Operations & Maintenance (438120)							
511105	Salaries - Full Time	-	-	-	540,921	540,921	0.00%
511115	Salaries - Overtime	-	-	-	68,125	68,125	0.00%
511125	Temporary Help	-	-	-	6,000	6,000	0.00%
511130	On Call Pay	-	-	-	8,500	8,500	0.00%
512110	Fringe Benefits	-	-	-	265,168	265,168	0.00%
530113	Contract Services	-	-	-	262,746	262,746	0.00%
540102	Motor Pool Charges	-	-	-	154,216	154,216	0.00%
550430	Equipment Rental	-	-	-	1,000	1,000	0.00%
550501	Travel & Training	-	-	-	6,000	6,000	0.00%
550806	Other Services	-	-	-	60,000	60,000	0.00%
560110	Office Supplies	-	-	-	6,000	6,000	0.00%
560120	Small Equipment	-	-	-	10,500	10,500	0.00%
560416	Uniforms	-	-	-	4,389	4,389	0.00%
560420	Operating Supplies	-	-	-	38,900	38,900	0.00%
560421	Pipe & Accessories	-	-	-	10,000	10,000	0.00%
560422	Construction Materials	-	-	-	20,000	20,000	0.00%
560424	Concrete	-	-	-	7,000	7,000	0.00%
560430	Operating Materials	-	-	-	101,585	101,585	0.00%
560435	Soil & Mulch	-	-	-	7,000	7,000	0.00%
580214	Capital Outlay	-	-	-	5,000	5,000	0.00%
	Subtotal	**-**	**-**	**-**	**1,583,050**	**1,583,050**	**0.00%**
SWU Admin & Engineering (438130)							
511105	Salaries - Full Time	-	-	-	342,643	342,643	0.00%
512110	Fringe Benefits	-	-	-	167,969	167,969	0.00%
530113	Contract Services	-	-	-	151,500	151,500	0.00%
540060	Management Fee	-	-	-	335,650	335,650	0.00%
560110	Office Supplies	-	-	-	20,526	20,526	0.00%
580501	Ashby Pond Dredging	-	-	-	984,927	984,927	0.00%
580523	Flood Mitigation Planning & Resiliency	-	-	-	76,750	76,750	0.00%
580503	Mosby Road Drainage Improvements	-	-	-	45,000	45,000	0.00%
580504	Municipal Separate Storm Sewer Systen	-	-	-	155,000	155,000	0.00%
580506	Northfax Linear Park	-	-	-	80,000	80,000	0.00%
580507	Private BMP/SWM Inspection	-	-	-	130,000	130,000	0.00%
580508	Public BMP/SWM Inspection & Mainter	-	-	-	130,000	130,000	0.00%
580509	Reline Bridge Culvert Storm Structures	-	-	-	85,000	85,000	0.00%
580510	Replacement of Failing Galvanized Stor	-	-	-	120,000	120,000	0.00%
580514	Storm Drainage Repair for Paving Schec	-	-	-	110,000	110,000	0.00%
580516	Storm Pipe Lining Rehabilitation	-	-	-	120,000	120,000	0.00%
580517	Storm Sewer Evaluation & Update Progr	-	-	-	100,000	100,000	0.00%
580519	Stream Evaluation and Restoration	-	-	-	200,000	200,000	0.00%
580520	TMDL Action Plans	-	-	-	477,580	477,580	0.00%
590102	Reserve	-	-	-	143,850	143,850	0.00%
	Subtotal	**-**	**-**	**-**	**3,976,395**	**3,976,395**	**0.00%**
Total Stormwater Utility Fund		**$ -**	**$ -**	**$ -**	**$ 5,559,445**	**$ 5,559,445**	**0.00%**

PROJECT INFORMATION

Name:	**Replacement of Failing Galvanized Storm Drainage Systems**	**Project #**	**340-644411-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project provides for the replacement of the City's galvanized storm drain systems located within the city's right-of-ways and citizen properties. Failed storm sewer mains create sinkholes and hazards. The failing systems would be replaced with HDPE pipe and new structures.

FY 2022 - Old Lee Highway

FY 2023 - Old Lee Highway

FY 2024 - Orchard Street & Burrows Avenue

FY 2025 - Maple Street

FY 2026 - Towlston, appx. 70' X12"

FY 2027 - TBD

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	120,000	120,000	120,000	120,000	120,000	120,000	600,000
Total Costs	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 600,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	120,000	120,000	120,000	120,000	120,000	120,000	600,000
Total Funding	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 600,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	✓
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Storm Drainage Repair for Paving Schedule**	**Project #**	**340-644408-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project is to address all storm drainage infrastructure issues prior to road overlay paving construction. Work would include storm pipe replacement and structure reconstruction.

- Storm pipe replacement - 68' LF
- Storm pipe lining - 590' LF
- 13 Throat reconstructions
- 9 Storm top reconstructions
- 5 Manhole rehabilitations

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	110,000	110,000	110,000	110,000	110,000	110,000	550,000
Total Costs	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 550,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	110,000	110,000	110,000	110,000	110,000	110,000	550,000
Total Funding	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 550,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	✓
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Storm Pipe Lining Rehabilitation**	**Project #**	**340-644410-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project is necessary to extend the life of the storm pipe lines. As concrete storm pipe linings age and deteriorate, sections can collapse and lose capacity. A plastic liner is installed on the inside wall of the pipe to maintain pipe integrity and stormwater flow.

Project includes mobilization, pre TV inspection, heavy cleaning, post TV inspection, and linear installation.

FY 2022: Hill Street - 400' at 24" LF

FY 2023: Country Club Hills Area - 288' at 15" LF

FY 2024: Westmore Area - 230' at 12" LF

FY 2025: Green Acres Area - 370' at 12" LF

FY 2026: Layton Hall Area - 126' at 12" LF and 150' at 18" LF

FY 2027: Rust Hill Neighborhood; to Truro Church

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	120,000	120,000	120,000	120,000	120,000	120,000	600,000
Total Costs	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 600,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	120,000	120,000	120,000	120,000	120,000	120,000	600,000
Total Funding	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 600,000**

Estimated Project Timeline	
Project Origination Date	
Project Design Start Date	
Construction Start Date	
Project Completion Date	Ongoing

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	✓
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Mosby Road Drainage Improvements**	**Project #**	**340-344429-580330**
2035 Comprehensive Plan Reference:	**IU1.3.2 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project is needed to reduce flooding on Mosby Road. During heavy rain storms stormwater from Burke Station Road and floods the road. This project will fund the design and construct curb and gutter, curb inlets and stormwater pipes to collect and direct the stormwater from Burke Station Road to an existing stormwater sewer main on Mosby Road. Design will be completed in FY23 with construction scheduled for FY24.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	45,000	-	-	-	-	45,000
Construction	-	-	250,000	-	-	-	250,000
Total Costs	**$ -**	**$ 45,000**	**$ 250,000**	**$ -**	**$ -**	**$ -**	**$ 295,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	-	45,000	250,000	-	-	-	295,000
Total Funding	**$ -**	**$ 45,000**	**$ 250,000**	**$ -**	**$ -**	**$ -**	**$ 295,000**

Estimated Project Timeline		New Project	Responsible Department(s):			
Project Origination Date	07/01/20		Cable TV		Police	
Project Design Start Date			CD&P		PW Admin	✓
Construction Start Date	07/01/23		City Manager		PW Fleet	
Project Completion Date	06/30/24		Finance		PW Operations	
			Fire		PW Signs/Signal	
Financial Impacts			Historic		PW Stormwater	
Annual Revenue Generated:	$ -		Human Svc		PW Streets	
Annual Cost Savings:	$ -		IT		PW Transport	
Annual Increase in Operating Costs:	$ -		Parks & Rec		PW Wastewater	
Projected Future Savings:	$ -		Personnel		Schools	

PROJECT INFORMATION

Name:	**Neighborhood Drainage Projects**	**Project #**	**340-644414-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**	✓	**Other City Plan/Policy**

Statement of Need:

These projects provide for stormwater improvements in residential neighborhoods to alleviate existing drainage problems. The projects have been requested by residents and represent the projects recommended for design and construction by staff.

FY23 - Orchard Dr. & Evergreen Dr., Design
Park Rd. & Fern St., Final Design & Construction

FY24 - Virginia St. & Dwight Ave., Design
Orchard Dr. & Evergreen Dr., Construction

FY25 - Orchard St. & Howerton Ave., Design
Virginia St. & Dwight Ave., Construction

FY26 - Norman Ave & Cobb Dr, Design
Orchard St. & Howerton Ave., Construction
.
FY27 - Parklane Rd, Design
Norman Ave & Cobb Dr, Construction

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	100,000	100,000	100,000	50,000	100,000	450,000
Construction	-	420,000	400,000	600,000	600,000	200,000	2,220,000
Total Costs	**$ -**	**$ 520,000**	**$ 500,000**	**$ 700,000**	**$ 650,000**	**$ 300,000**	**$ 2,670,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	-	520,000	300,000	-	-	-	820,000
Stormwater Utility Fund	-	-	200,000	700,000	650,000	300,000	1,850,000
Total Funding	**$ -**	**$ 520,000**	**$ 500,000**	**$ 700,000**	**$ 650,000**	**$ 300,000**	**$ 2,670,000**

Estimated Project Timeline	
Project Origination Date	
Project Design Start Date	
Construction Start Date	
Project Completion Date	Ongoing

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	✓
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Reline Bridge Culvert Storm Structures**	**Project #**	**320-631318-580330**

2035 Comprehensive Plan Reference:	**IU1.3.1**	**p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project is necessary to extend the life of the storm structures that bridge vehicular traffic over the creek systems. The existing galvanized pipe has deteriorated and will not support the road bed if a new system is not installed. There are approximately 37 bridge culverts throughout the city with diameters exceeding 24”.

FY 2022 - Stratford Avenue and Fairchester Drive

FY 2023 - Woodhaven Drive & Jancie Road

FY 2024 - Scott Drive

FY 2025 - Shiloh Street

FY 2026 - Raider Lane

FY 2027 - Ashby Road/Ashby pond

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	85,000	85,000	85,000	85,000	85,000	85,000	425,000
Total Costs	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 425,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	85,000	85,000	85,000	85,000	85,000	85,000	425,000
Total Funding	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 425,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	✓
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Ashby Pond Dredging & Retrofit**	**Project #**	**340-644430-580330**
2035 Comprehensive Plan Reference:	**IU1.3.2 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Short-Term**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

When the Ashby Pond project was completed in 2011, the project did not include the complete removal of silt. Instead, only a portion was removed. Since then the City has taken steps to help the water quality through the installation of aeration bubblers and native plantings along the pond banks. 30% design plans for restoration of the channel that feeds the east side of the pond, and restoration of the inflow channel on the south side of the pond, as well as the pond dredging and retrofit were completed in FY21 & FY22. Stormwater Local Assistance Fund grants were applied for in FY22. This project will contribute to the TMDL pollutant load reduction for the City. All available grant funding opportunities will be pursued.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	175,000	-	-	-	-	-	-
Construction	-	1,575,000	-	-	-	-	1,575,000
Total Costs	**$ 175,000**	**$ 1,575,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,575,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	-	590,073	-	-	-	-	590,073
Grant	87,500	588,231	-	-	-	-	588,231
Stormwater Utility Fund	87,500	396,696	-	-	-	-	396,696
Total Funding	**$ 175,000**	**$ 1,575,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,575,000**

Estimated Project Timeline		New Project
Project Origination Date	07/01/18	
Project Design Start Date	06/30/19	
Construction Start Date	07/01/21	
Project Completion Date	06/30/23	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Plantation Parkway Culvert Repairs**	**Project #**	**320-644427-580330**
2035 Comprehensive Plan Reference:	**IU1.3.2 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Short-Term**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project will replace the erosion/scour slab, riprap and repair the wing walls on the upstream and downstream ends of this double 10' diameter corrugated metal pipe culvert across two phases. FY23 funding will provide for repair of the eastern/outlet side headwall and wingwall, and outlet apron/plunge pool area. The wingwalls and headwalls will also be sealed with graffiti resistant paint.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Construction	500,000	500,000	-	-	-	-	500,000
Total Costs	**$ 500,000**	**$ 500,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 500,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	500,000	500,000	-	-	-	-	500,000
Total Funding	**$ 500,000**	**$ 500,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 500,000**

Estimated Project Timeline	
Project Origination Date	07/01/19
Project Design Start Date	07/01/19
Construction Start Date	07/01/21
Project Completion Date	06/30/22

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P	✓	PW Admin	✓
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Flood Mitigation Planning & Resiliency**	**Project #**	**--**
2035 Comprehensive Plan Reference:	**NE2.1 pg 108**	**2035 Comprehensive Plan Timeframe:**	**Long-Term**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project supports the development of two flood mitigation initiatives. The first is a Flood Resilience Plan for the city. This plan provides project-based improvements for flood control and resilience, leverages nature-based infrastructure, considers all parts of a locality, includes coordination with other local and inter-jurisdictional activities, and is based on best available science. The plan will be developed to also provide credits towards FEMA's Community Rating System.

During the design of the Stafford Drive Stream Restoration Project, the effects to the floodplain were reviewed through hydraulic modeling. It was found that the culvert under Stafford Drive is a contributing factor in the floodplain impacts to the Mosby Woods condominium community. A flood study is proposed to evaluate the current condition of the Stafford Drive culvert and investigate options to improve the flood conditions in this area.
.
The city intends to apply for Community Flood Preparedness Fund grants for two projects which can, if approved, provide up to 75% funding for the flood preparedness plan, and 50% for the flood mitigation study. Development of a Flood Resilience Plan is a prerequisite to applying for any future grant funding for construction of a mitigation project, which can fund 50-70% of the project costs.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	225,000	-	-	-	-	225,000
Total Costs	$ -	**$ 225,000**	$ -	$ -	$ -	$ -	**$ 225,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
State - Other	-	148,250	-	-	-	-	148,250
Stormwater Utility Fund	-	76,750	-	-	-	-	76,750
Total Funding	$ -	**$ 225,000**	$ -	$ -	$ -	$ -	**$ 225,000**

Estimated Project Timeline		New Project	Responsible Department(s):			
Project Origination Date	02/01/22		Cable TV		Police	
Project Design Start Date	07/01/22		CD&P		PW Admin	
Construction Start Date		✓	City Manager		PW Fleet	
Project Completion Date	06/30/23		Finance		PW Operations	
			Fire		PW Signs/Signal	
Financial Impacts			Historic		PW Stormwater	✓
Annual Revenue Generated:	$ -		Human Svc		PW Streets	
Annual Cost Savings:	$ -		IT		PW Transport	
Annual Increase in Operating Costs:	$ -		Parks & Rec		PW Wastewater	
Projected Future Savings:	$ -		Personnel		Schools	

PROJECT INFORMATION

Name:	**Northfax Linear Park Design**	**Project #**	**--**

2035 Comprehensive Plan Reference:	**CCAC 2.3.5**	**p.52**		**2035 Comprehensive Plan Timeframe:**	**Immediate**

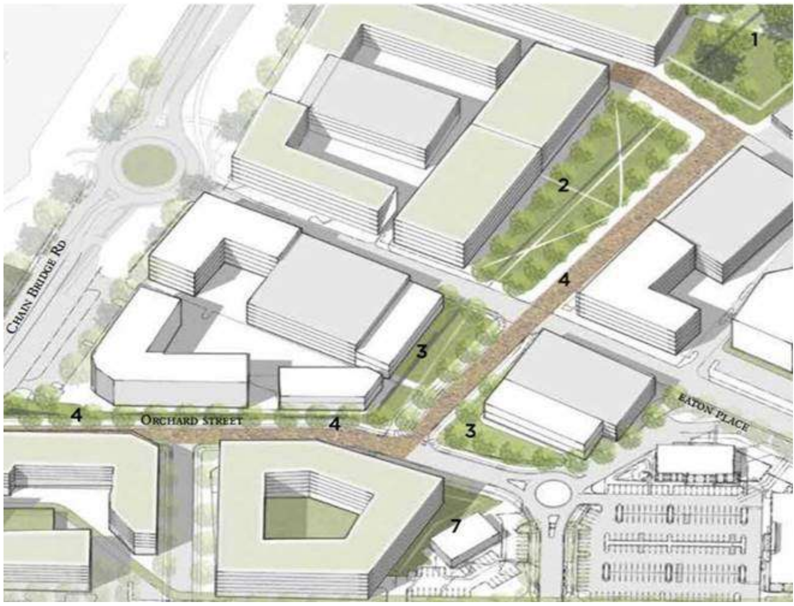
Comprehensive Plan Element

✓	**Land Use**		✓	**Environment and Sustainability**
✓	**Multimodal Transportation**		✓	**Economic Vitality**
	Community Services			**Other City Plan/Policy**

Statement of Need:

Funding is requested for consultant services to develop a unified stormwater strategy, landscape design and standards for the Northfax Linear Park as recommended in the Northfax Small Area Plan adopted in June 2020. This project will establish a phasable conceptual plan to be implemented across multiple properties and timelines. Final design and construction will occur incrementally as development proceeds on impacted parcels. A unified stormwater strategy and landscape plan are specifically recommended as implementation items to precede development of impacted parcels in the plan.

Picture:



Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	80,000	-	-	-	-	80,000
Total Costs	**$ -**	**$ 80,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 80,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	-	80,000	-	-	-	-	80,000
Total Funding	**$ -**	**$ 80,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 80,000**

Estimated Project Timeline		New Project
Project Origination Date	06/23/20	
Project Design Start Date	07/01/22	
Construction Start Date		
Project Completion Date		

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P	✓	PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	✓
Parks & Rec	✓	PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Stormwater & Wastewater Plan Review**	**Project #**	**340-644439-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p.144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

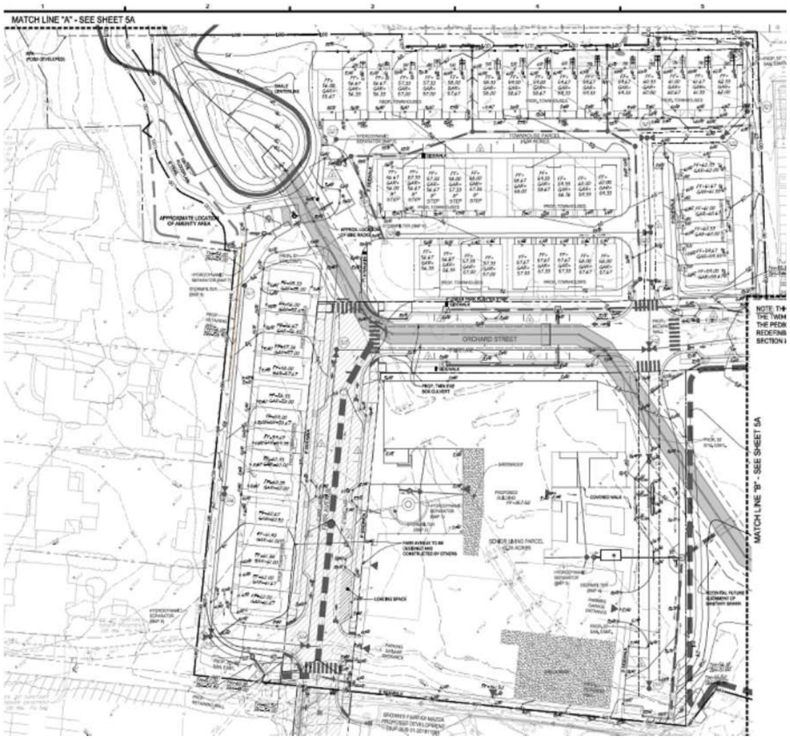
Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

Stormwater quality and quantity designs for larger development projects are becoming more complex due to the increasingly urban nature of the City. Wastewater contributions to the City's system also increase through development projects. This project will allow for an additional layer of plan review assistance by specialized storm/waste water engineering firms to ensure that regulatory requirements are met, no adverse stormwater impacts to the proposed development or surrounding properties will occur, and wastewater capacities are adequate.

Picture:



Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	75,000	40,000	80,000	80,000	80,000	80,000	360,000
Total Costs	**$ 75,000**	**$ 40,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 360,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	50,000	-	55,000	55,000	55,000	55,000	220,000
Wastewater Fund	25,000	40,000	25,000	25,000	25,000	25,000	140,000
Total Funding	**$ 75,000**	**$ 40,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 360,000**

Estimated Project Timeline		New Project	Responsible Department(s):			
Project Origination Date			Cable TV		Police	
Project Design Start Date			CD&P		PW Admin	
Construction Start Date			City Manager		PW Fleet	
Project Completion Date	Ongoing		Finance		PW Operations	
			Fire		PW Signs/Signal	
Financial Impacts			Historic		PW Stormwater	✓
Annual Revenue Generated:	$ -		Human Svc		PW Streets	
Annual Cost Savings:	$ -		IT		PW Transport	
Annual Increase in Operating Costs:	$ -		Parks & Rec		PW Wastewater	✓
Projected Future Savings:	$ -		Personnel		Schools	

PROJECT INFORMATION

Name:	**Municipal Separate Storm Sewer System (MS4)**	**Project #**	**340-644424-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project is required to comply with the 2018-2023 Municipal Separate Storm Sewer System (MS4) permit requirements. The new permit has new significant milestones that the City must meet each year of the 5 year permit term. The permit requirements include updating GIS files for DEQ, updating the City's website, revising the 5 year program plan, updating and implementing nutrient management plans, conducting outfall screening, conducting public outreach & education, and compiling our MS4 annual report. Funding will also provide for inspections, materials/equipment/signage, and staff training necessary to maintain Stormwater Pollution Prevention Plan compliance at the City's Property Yard facility. This permit will be active from 2018-2023, with this fiscal year being permit year 5.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	155,000	155,000	165,000	165,000	165,000	165,000	815,000
Total Costs	**$ 155,000**	**$ 155,000**	**$ 165,000**	**$ 165,000**	**$ 165,000**	**$ 165,000**	**$ 815,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	120,000	-	-	-	-	-	-
Stormwater Utility Fund	35,000	155,000	165,000	165,000	165,000	165,000	815,000
Total Funding	**$ 155,000**	**$ 155,000**	**$ 165,000**	**$ 165,000**	**$ 165,000**	**$ 165,000**	**$ 815,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		H-17	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Private BMP/SWM Inspection**	**Project #**	**340-644432-580330**

2035 Comprehensive Plan Reference:	**IU1.3.1**	**p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project provides for the annual inspection of all the private Best Management Practice/Storm Water Management (BMP/SWM) systems throughout the City. Currently there are 440 privately owned facilities in inventory. Annual inspection of these facilities is required under the Virginia Pollution Discharge Elimination System (VPDES) and Phase II-Municipal Separate Storm Sewer System (MS4) permit. While BMP facilities are engineered to meet state requirements for pollutant load reduction and water quantity, their continued performance is dependent upon inspections and maintenance. The number of facilities in inventory will continue to increase with future development / redevelopment of properties.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	120,000	130,000	130,000	135,000	135,000	140,000	670,000
Total Costs	**$ 120,000**	**$ 130,000**	**$ 130,000**	**$ 135,000**	**$ 135,000**	**$ 140,000**	**$ 670,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	120,000	-	-	-	-	-	-
Stormwater Utility Fund	-	130,000	130,000	135,000	135,000	140,000	670,000
Total Funding	**$ 120,000**	**$ 130,000**	**$ 130,000**	**$ 135,000**	**$ 135,000**	**$ 140,000**	**$ 670,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Public BMP/SWM Inspection and Maintenance**	**Project #** **340-644415-580330**

2035 Comprehensive Plan Reference:	**IU1.3.1**	**p. 144**		**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project provides for the annual inspection and maintenance of all the public Best Management Practice/Storm Water Management (BMP/SWM) systems throughout the City, including prior stream restoration project areas. There are currently 38 City owned and maintained facilities, plus two stream restoration areas that are inspected annually. Annual inspection of these facilities is required under the Virginia Pollution Discharge Elimination System (VPDES), Phase II-Municipal Separate Storm Sewer System (MS4) permit, and grant funding agreements with Virginia Department of Environmental Quality. Maintenance of BMP facilities is necessary to ensure that they continue to function as designed to provide water quality and quantity control. Implementation of Best Management Practices is required to offset the impacts of development activity, and the number of facilities in inventory will increase with future development/redevelopment of City properties, and roadway / transportation projects.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	130,000	130,000	135,000	135,000	140,000	140,000	680,000
Total Costs	**$ 130,000**	**$ 130,000**	**$ 135,000**	**$ 135,000**	**$ 140,000**	**$ 140,000**	**$ 680,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	110,000	-	-	-	-	-	-
Stormwater Utility Fund	20,000	130,000	135,000	135,000	140,000	140,000	680,000
Total Funding	**$ 130,000**	**$ 130,000**	**$ 135,000**	**$ 135,000**	**$ 140,000**	**$ 140,000**	**$ 680,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Stream Evaluation and Restoration**	**Project #**	**340-644422-580330**

2035 Comprehensive Plan Reference:	**IU1.3.1**	**p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**	✓	**Other City Plan/Policy**

Statement of Need:

The Accotink Creek Stream Stability Assessment and Prioritization Plan was developed in October 2007 and has been used as a guide to select future stream restoration project areas. This report is now 15-years old and an update is needed. A comprehensive stream condition assessment is proposed for FY23 which will document improvements made through completed environmental projects and help prioritize stream segments for future restoration projects. All grant opportunities will be explored for this project.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	150,000	200,000	200,000	-	200,000	200,000	800,000
Construction	2,200,000	-	-	2,500,000	1,300,000	-	3,800,000
Total Costs	**$ 2,350,000**	**$ 200,000**	**$ 200,000**	**$ 2,500,000**	**$ 1,500,000**	**$ 200,000**	**$ 4,600,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	-	-	-	250,000	-	-	250,000
Grant	1,175,000	-	-	1,250,000	750,000	-	2,000,000
Stormwater Utility Fund	1,175,000	200,000	200,000	1,000,000	750,000	200,000	2,350,000
Total Funding	**$ 2,350,000**	**$ 200,000**	**$ 200,000**	**$ 2,500,000**	**$ 1,500,000**	**$ 200,000**	**$ 4,600,000**

Estimated Project Timeline		New Project	Responsible Department(s):			
Project Origination Date			Cable TV		Police	
Project Design Start Date			CD&P		PW Admin	
Construction Start Date			City Manager		PW Fleet	
Project Completion Date	Ongoing		Finance		PW Operations	
			Fire		PW Signs/Signal	
Financial Impacts			Historic		PW Stormwater	✓
Annual Revenue Generated:	$ -		Human Svc		PW Streets	
Annual Cost Savings:	$ -		IT		PW Transport	
Annual Increase in Operating Costs:	$ -		Parks & Rec		PW Wastewater	
Projected Future Savings:	$ -		Personnel		Schools	

PROJECT INFORMATION

Name: **TMDL Action Plans**	**Project #** **340-644426-580330**

2035 Comprehensive Plan Reference:	**IU1.3.1**	**p. 144**	**2035 Comprehensive Plan Timeframe:** **Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project is needed to comply with the annual milestone requirements of the Municipal Separate Storm Sewer System (MS4) permit and state mandated TMDL allocations for waterways located within the regional watershed. A Chesapeake Bay Total Maximum Daily Load (TMDL) action plan was completed in 2015 and updated in 2019, as well as nine additional local TMDLs allocated to the City. Each action plan outlines what the pollutant of concern (POC) loads and required reductions are for the City to meet the permit requirements, and how the City will achieve them. The City met the Chesapeake Bay TMDL 5% reduction requirements for 2018. The Chesapeake Bay TMDL requires that the City achieve a 40% pollutant reduction goal by 2023, and 100% pollutant reduction goal by 2028. This project will provide for design and construction of stormwater outfall channel retrofits, and BMP retrofits. Both types of projects will provide for TMDL credit towards the City's pollutant reduction goals. Alternative compliance methods will be explored, including nutrient credit purchases. This project will also provide for development of a required chloride TMDL Action Plan. All grant opportunities will be explored.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	100,000	100,000	100,000	100,000	100,000	100,000	500,000
Construction	200,000	400,000	400,000	400,000	400,000	400,000	2,000,000
Total Costs	**$ 300,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 2,500,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	300,000	-	-	-	-	-	-
Grant	-	477,580	-	-	-	-	477,580
Stormwater Utility Fund	-	22,420	500,000	500,000	500,000	500,000	2,022,420
Total Funding	**$ 300,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 2,500,000**

Estimated Project Timeline	
Project Origination Date	
Project Design Start Date	
Construction Start Date	
Project Completion Date	Ongoing

New Project

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

PROJECT INFORMATION

Name:	**Storm Sewer Evaluation & Update Program**	**Project #**	**340-644407-580330**
2035 Comprehensive Plan Reference:	**IU1.3.2 p.144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

A multi-phase evaluation program to prioritize areas for CCTV camera inspection of pipes and manholes was developed in FY22. This project will continue inspections to provide asset condition data and guide future maintenance and upgrade priorities. This project will also allow for collection of updated storm sewer inventory data that will be accessible through GIS. Data to be collected will include coordinate location, pipe size, material, depth, inlet/manhole type, and pipe connectivity layout.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	250,000	250,000	250,000	250,000	250,000	1,250,000
Total Costs	**$ -**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 1,250,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	-	150,000	150,000	150,000	-	-	450,000
Stormwater Utility Fund	-	100,000	100,000	100,000	250,000	250,000	800,000
Total Funding	**$ -**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 1,250,000**

Estimated Project Timeline	New Project
Project Origination Date	
Project Design Start Date	
Construction Start Date	
Project Completion Date	Ongoing

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

Attachment 2 – CFPF Grant Manual Appendix A

Attachment 2 – Outline

1. Appendix A: Application Form for Grant Request for All Categories

Attachment 2.1

Appendix A: Application Form for Grant Request for All Categories

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
City of Fairfax

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

X **Study**

NFIP/DCR Community Identification Number (CID) 515524

If a state or federally recognized Indian tribe, Name of tribe

Name of Authorized Official: Robert A. Stalzer, City Manager

Signature of Authorized Official:

Mailing Address (1): 10455 Armstrong St

Mailing Address (2):

City: Fairfax **State:** VA **Zip:** 22030

Telephone Number: (703) 385-7850 **Cell Phone Number:** ( )

Email Address: rob.stalzer@fairfaxva.gov

Contact Person (If different from authorized official): Satoshi Eto, Public Works Program Mgr.

Mailing Address (1): 10455 Armstrong St

Mailing Address (2): ______

City: Fairfax **State:** VA **Zip:** 22030

Telephone Number: (703) 273-6073 **Cell Phone Number:** (571) 641-0839

Email Address: satoshi.eto@fairfaxva.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☒ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): City of Fairfax: Mosby Woods

NFIP Community Identification Number (CID#):(See appendix F 515524

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Zone AE, Zone X

Flood Insurance Rate Map Number(s) (If Applicable): 5155240002D

Total Cost of Project: $48,570.66

Total Amount Requested $24,285.33

Attachment 3 – CFPF Grant Manual Appendix C/D

Attachment 3 – Outline

1. Appendix C: Scoring Criteria for Studies
2. Appendix D: Checklist All Categories
3. Mosby Woods Floodplain Improvements Study Area FIRM Map
4. City of Fairfax – Current Floodplain Ordinance (4.15 Floodplain Regulations)
5. City of Fairfax – 2035 Comprehensive Plan
6. Study Area – ADAPT VA Vulnerability Map
7. United States Census Median Household Income Virginia & City of Fairfax

Attachment 3.1

Appendix C: Scoring Criteria for Studies

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name: City of Fairfax

Eligibility Information

Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration		☒ **Yes** ☐ **No**
Applicant Name:		
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	X
☐ Regional hydrologic and hydraulic studies of floodplains.	**45**	
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	X
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	X
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	X
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	X
Total Points		50

Attachment 3.2

Appendix D: Checklist All Categories

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Attachment 3.3

Mosby Woods Floodplain Improvements Study Area FIRM Map

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at www.ngs.noaa.gov.

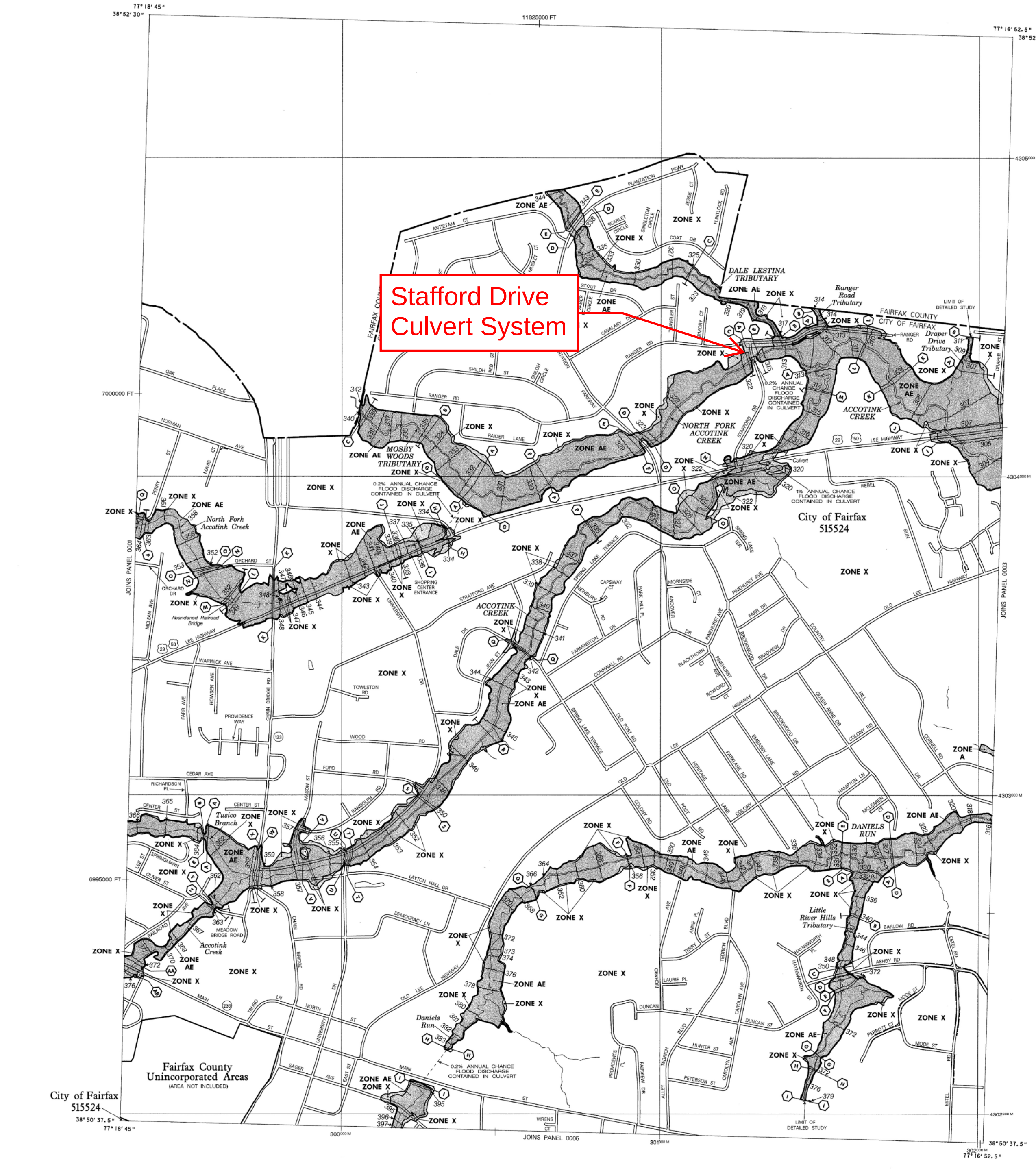
Base map information shown on this FIRM was provided in digital format by the City of Fairfax, Virginia. This information was photogrammetrically compiled at a scale of 1:1,200 from aerial photography dated March 1997.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

▨ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———————	1% annual chance floodplain boundary
———————	0.2% annual chance floodplain boundary
—— —— ——	Floodway boundary
- ——— ——— -	Zone D boundary
••••••••••••••••••••	CBRS and OPA boundary
▨ ←	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities
~~513~~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

(A)———(A)	Cross section line
(23)- - - - - -(23)	Transect line
97°07' 30", 32°22' 30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000 M	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system, north zone (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Fairfax City Hall, 10455 Armstrong Street, Room 204, Fairfax, Virginia 22030 (Maps available for reference only, not for distribution.)

INITIAL IDENTIFICATION
May 5, 1970
FLOOD HAZARD BOUNDARY MAP REVISIONS
None
FLOOD INSURANCE RATE MAP EFFECTIVE
December 23, 1971
FLOOD INSURANCE RATE MAP REVISIONS

October 31, 1975 – to reflect curvilinear flood boundary and to add Special Flood Hazard Areas.

March 2, 1993 – to update map format

February 19, 2003 – to update corporate limits, and roads and road names, to change Base Flood Elevations, Special Flood Hazard Areas and zone designations, to add Special Flood Hazard Areas and Base Flood Elevations.

June 2, 2006 – to correct the referenced vertical datum.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0002D

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
FAIRFAX,
VIRGINIA
(INDEPENDENT CITY)

PANEL 2 OF 6

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFAX, CITY OF	515524	0002	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
5155240002D

MAP REVISED
JUNE 2, 2006

Federal Emergency Management Agency

Attachment 3.4

City of Fairfax – Current Floodplain Ordinance (4.15 Floodplain Regulations)

§4.14.6. Radioactivity

There shall be no radioactive emission that would be dangerous to health.

§4.14.7. Electrical interference

There shall be no electrical disturbance adversely affecting the operation of any equipment other than that of the creator of such disturbance.

§4.14.8. Liquid or solid wastes

There shall be no discharge of any liquid or solid wastes into any stream, except as authorized by a public agency.

§4.14.9. Glare and heat

There shall be no direct or reflected glare, whether from floodlights or from high-temperature processes (for example, combustion or welding) so as to be visible from within any residential district. There shall be no discharge of heat or heated air from any source so as to be detectable beyond the lot line.

§4.15. FLOODPLAIN REGULATIONS

§4.15.1. Authority

These regulations are adopted pursuant to the authority granted to localities by Code of Virginia, §15.2 - 2280.

§4.15.2. Purpose

The purpose of these provisions is to prevent: the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

A. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;

B. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;

C. Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or floodproofed against flooding and flood damage; and

D. Protecting individuals from buying land and structures that are unsuited for intended purposes because of flood hazards.

§4.15.3. General Provisions

A. Applicability

These regulations shall apply to all privately and publicly owned lands within the city and identified as areas of special flood hazard according to the flood insurance rate map (FIRM) that is provided to the city by the Federal Emergency Management Agency (FEMA)

B. Compliance and liability

1. No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance

with the terms and provisions of these regulations and any other applicable ordinances and regulations, which apply to uses within the city.

2. The degree of flood protection sought by the provisions of these regulations is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study, but does not imply total flood protection. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. These regulations do not imply that districts outside the floodplain district or land uses permitted within such district will be free from flooding or flood damages.

3. These regulations shall not create liability on the part of the city or any officer or employee thereof for any flood damages that result from reliance on these regulations or any administrative decision lawfully made thereunder.

C. Records

Records of actions associated with administering these regulations shall be kept on file and maintained by the floodplain administrator.

D. Abrogation and greater restrictions

These regulations supersede any regulations currently in effect in flood-prone districts. Any existing regulation, however, shall remain in full force and effect to the extent that its provisions are more restrictive than the provisions of these regulations.

§4.15.4. Administration

A. Designation of the floodplain administrator

The zoning administrator shall serve as the floodplain administrator and is hereby appointed to administer and implement the regulations of this section and is referred to herein as the floodplain administrator. The floodplain administrator may:

1. Administer and implement floodplain regulations himself or delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees.

2. Enter into a written agreement or written contract with another community or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the city of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program (NFIP) as set forth in the Code of Federal Regulations at 44 CFR 59.22.

B. Duties and responsibilities of the floodplain administrator

The duties and responsibilities of the floodplain administrator shall include but are not limited to:

1. Review applications for floodplain permits to determine whether proposed activities will be located in the special flood hazard area.

2. Interpret floodplain boundaries and provide available base flood elevation and flood hazard information.

3. Review applications to determine whether proposed activities will be reasonably safe from flooding and require new construction and substantial improvements to meet the requirements of these regulations.
4. Review applications to determine whether all necessary permits have been obtained from the federal, state or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the 100-year frequency floodplain of free-flowing nontidal waters of the state.
5. Verify that applicants proposing an alteration of a watercourse have notified adjacent communities, the Department of Conservation and Recreation (DCR) Division of Dam Safety and Floodplain Management, and other appropriate agencies (Virginia Department of Environmental Quality [VADEQ], United States Army Corps of Engineers [USACE]) and have submitted copies of such notifications to FEMA.
6. Approve applications and issue floodplain permits to develop in flood hazard areas if the provisions of these regulations have been met, or disapprove applications if the provisions of these regulations have not been met.
7. Inspect or cause to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with these regulations or to determine if non-compliance has occurred or violations have been committed.
8. Review elevation certificates and require incomplete or deficient certificates to be corrected.
9. Submit to FEMA, or require applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the city, within six months after such data and information becomes available if the analyses indicate changes in base flood elevations.
10. Maintain and permanently keep records that are necessary for the administration of these regulations, including:
    - **(a)** Flood insurance studies, FIRMs (including historic studies and maps and current effective studies and maps) and letters of map change; and
    - **(b)** Documentation supporting issuance and denial of permits, elevation certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been floodproofed, other required design certifications, special exceptions and special use permits, and records of enforcement actions taken to correct violations of these regulation
11. Enforce the provisions of these regulations, investigate violations, issue notices of violations or stop work orders, and require permit holders to take corrective action.
12. Advise the board of zoning appeals, or the city council, as appropriate, regarding the intent of these regulations and, for each application for special exceptions and special use permits, prepare a staff report and recommendation.

13. Administer the requirements related to proposed work on existing buildings:
    - **(a)** Make determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged.
    - **(b)** Make reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.
14. Undertake other actions which may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other Federal, State, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in special flood hazard areas; and assisting property owners with documentation necessary to file claims for Increased Cost of Compliance coverage under NFIP flood insurance policies.
15. Notify FEMA when the corporate boundaries of the city have been modified and:
    - **(a)** Provide a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to these regulations has either been assumed or relinquished through annexation; and
    - **(b)** If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the city council for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to DCR Division of Dam Safety and Floodplain Management and FEMA.
16. Upon the request of FEMA, complete and submit a report concerning participation in the NFIP which may request information regarding the number of buildings in the special flood hazard area, number of permits issued for development in the special flood hazard area, and number of special exceptions and special use permits issued for development in the special flood hazard area.
17. Take into account flood, mudslide and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the city, whether or not those hazards have been specifically delineated geographically (e.g. via mapping or surveying).

C. Use and interpretation of FIRMs

The floodplain administrator shall make interpretations, where needed, as to the exact location of special flood hazard areas, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of FIRMs and data:

1. Where field surveyed topography indicates that adjacent ground elevations:

(a) Are below the base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as special flood hazard area and subject to the requirements of these regulations;

(b) Are above the base flood elevation, the area shall be regulated as special flood hazard area unless the applicant obtains a letter of map change that removes the area from the special flood hazard area.

2. In FEMA-identified special flood hazard areas where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified special flood hazard areas, any other flood hazard data available from a federal, state, or other source shall be reviewed and reasonably used.

3. Base flood elevations and designated floodway boundaries on FIRMs and in flood insurance studies shall take precedence over base flood elevations and floodway boundaries by any other sources if such sources show reduced floodway widths and/or lower base flood elevations.

4. Other sources of data shall be reasonably used if such sources show increased base flood elevations and/or larger floodways than are shown on FIRMs and in flood insurance studies.

5. If a Preliminary FIRM and/or a Preliminary Flood Insurance Study has been provided by FEMA:

(a) Upon the issuance of a letter of final determination by FEMA, the preliminary flood hazard data shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering these regulations.

(b) Prior to the issuance of a letter of final determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to §4.15.6.C regarding A Zones, and used where no base flood elevations and/or floodways are provided on the effective FIRM.

(c) Prior to issuance of a letter of final determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary base flood elevations or floodways exceed the base flood elevations and/or designated floodway widths in existing flood hazard data provided by FEMA. Such preliminary data may be subject to change and/or appeal to FEMA.

D. Jurisdictional boundary changes

1. The city floodplain regulations then in effect on the date of annexation or agreed upon boundary line adjustment shall remain in effect and shall be enforced by the city for all annexed areas until the city adopts and enforces an ordinance which meets the requirements for participation in the NFIP. It is a requirement that municipalities with existing floodplain ordinances shall pass a resolution acknowledging and accepting responsibility for enforcing floodplain ordinance standards prior to annexation of any area containing identified flood hazards. If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, the city shall prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the city council for adoption; such adoption shall take place at the

same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to the DCR Division of Dam Safety and Floodplain Management and FEMA.

2. In accordance with the Code of Federal Regulations, Title 44 Subpart (B) Section 59.22 (a) (9) (v) all NFIP participating communities must notify the Federal Emergency Management Agency and optionally the State Coordinating Office (Virginia Department of Conservation and Recreation – Division of Dam Safety and Floodplain Management) in writing whenever the boundaries of the community have been modified by annexation or the community has otherwise assumed or no longer has authority to adopt and enforce floodplain management regulations for a particular area.
3. In order that all FIRMs accurately represent the city's boundaries, a copy of a map of the city suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority must be included with the notification.

E. District boundary changes

The city council may modify the boundaries of the floodplain in accordance with the procedures established for zoning map amendments contained in §6.4. Any such modification shall be based upon hydrologic and hydraulic analyses performed by an engineer who shall certify that the technical methods used correctly reflect accepted engineering design methods. Prior to any such modification, approval shall be obtained from FEMA.

F. Interpretation of district boundaries

The zoning administrator shall be responsible for the interpretation of floodplain boundaries and may approve minor refinements after consulting with the city engineer to more accurately determine the true location of such boundaries. Such approval shall be based on hydrologic and hydraulic analyses performed by an engineer, who shall certify that the technical methods used correctly reflect accepted engineering design methods. The determination of the floodplain boundary by the zoning administrator may be appealed by an aggrieved party to the board of zoning appeals pursuant to §6.21.

G. Submitting technical data

The city's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the city shall notify FEMA of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

H. Letters of map revision

When development in the floodplain causes a change in the base flood elevation, the applicant, including state agencies, must notify FEMA by applying for a conditional letter of map revision prior to construction, and a letter of map revision after construction. For example:

1. Any development that causes a rise in the base flood elevations within the floodway.

2. Any development occurring in Zones A1-30 and AE without a designated floodway, which will cause a rise of more than one foot in the base flood elevation.

§4.15.5. Alteration or relocation of a stream

Alteration or relocation of a stream, including but not limited to installing culverts and bridges. [44 CFR 65.3 and 65.6(a)(12)]

§4.15.6. Establishment of special flood hazard districts

A. Description of special flood hazard districts

The various special flood hazard districts shall include the special flood hazard areas. The basis for the delineation of these districts shall be the flood insurance study and the FIRM for the city prepared by FEMA, dated June 2, 2006, and any subsequent revisions or amendments thereto. The city may identify and regulate local flood hazard or ponding areas that are not delineated on the FIRM. These areas may be delineated on a local flood hazard map using best available topographic data and locally derived information such as flood of record, historic high water marks or approximate study methodologies. The boundaries of the special flood hazard areas are established as shown on the FIRM which is declared to be a part of these regulations and which shall be kept on file at the city.

1. The floodway district is in an AE Zone and is delineated, for purposes of These regulations, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one percent annual chance flood without increasing the water surface elevation of that flood more than one foot at any point. The following provisions shall apply within the floodway district of an AE Zone [44 CFR 60.3(d)]:

   (a) Within any floodway, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in flood levels within the community during the occurrence of the base flood discharge. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the floodplain administrator.

   (b) Development activities which increase the water surface elevation of the base flood may be allowed, provided that the applicant first applies – with the city's endorsement – for a conditional letter of map revision (CLOMR), and receives the approval of FEMA.

   (c) If §4.15.6.A.1(a) is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of §4.15.7, §4.15.8, §4.15.9, §4.15.10, and §4.15.11.

B. The AE, or AH Zones on the FIRM accompanying the Flood Insurance Study shall be those areas for which one-percent annual chance flood elevations have been provided and the floodway has not been delineated. The following provisions shall apply within an AE or AH Zone [44 CFR 60.3(c)]:

1. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as Zones A1-30 and AE or AH on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the city.

2. Development activities in Zones Al-30 and AE or AH, on the city FIRM which increase the water surface elevation of the base flood by more than one foot may be allowed, provided that the applicant first applies – with the city's endorsement – for a conditional letter of map revision, and receives the approval of FEMA

C. The A Zone on the FIRM accompanying the Flood Insurance Study shall be those areas for which no detailed flood profiles or elevations are provided, but the one percent annual chance floodplain boundary has been approximated. For these areas, the following provisions shall apply [44 CFR 60.3(b)]:

1. The approximated floodplain district shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the Flood Insurance Study. For these areas, the base flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one percent annual chance flood elevation cannot be determined for this area using other sources of data, such as the USACE Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this base flood elevation. For development proposed in the approximate floodplain the applicant must use technical methods that correctly reflect currently accepted non-detailed technical concepts, such as point on boundary, high water marks, or detailed methodologies hydrologic and hydraulic analyses. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the floodplain administrator.

2. The floodplain administrator reserves the right to require a hydrologic and hydraulic analysis for any development. When such base flood elevation data is utilized, the lowest floor shall be elevated at least 18 inches above the base flood level.

3. During the permitting process, the floodplain administrator shall obtain:

   (a) The elevation of the lowest floor (including the basement) of all new and substantially improved structures; and,

   (b) If the structure has been floodproofed in accordance with the requirements of this article, the elevation (in relation to mean sea level) to which the structure has been floodproofed.

4. The AO Zone on the FIRM accompanying the Flood Insurance Study shall be those areas of shallow flooding identified as AO on the FIRM. For these areas, the following provisions shall apply [44 CFR 60.3(c).

   (a) All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM plus 18 inches. If no flood depth number is specified, the lowest floor, including basement, shall be elevated no less than three and one-half feet above the highest adjacent grade.

(b) All new construction and substantial improvements of nonresidential structures shall:

(1) Have the lowest floor, including basement, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM plus 18 inches. If no flood depth number is specified, the lowest floor, including basement, shall be elevated at least three and one-half feet above the highest adjacent grade; or,

(2) Together with attendant utility and sanitary facilities be completely floodproofed to the specified flood level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

(c) Adequate drainage paths around structures on slopes shall be provided to guide floodwaters around and away from proposed structures.

D. Overlay Concept

The floodplain districts described above shall be overlays to the existing underlying districts as shown on the city’s zoning map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

1. If there is any conflict between the provisions or requirements of the floodplain districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.

2. In the event any provision concerning a floodplain district is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

§4.15.7. Permit and application requirements

A. Permit requirement

All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a zoning permit. Such development shall be undertaken only in strict compliance with the provisions of these regulations and with all other applicable codes and ordinances, as amended, such as the Virginia Uniform Statewide Building Code (USBC) and the city’s subdivision ordinance and regulations appertaining thereto. Prior to the issuance of any such permit, the floodplain administrator shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system. A floodplain permit shall be issued by the zoning administrator after an application has been submitted along with any documentation required by the zoning administrator and a fee in accordance with §6.2.4.

B. Site plans and permit applications

All applications for development within any floodplain district and all building permits issued for the floodplain shall incorporate the following information:

1. The elevation of the base flood at the site.
2. The elevation of the lowest floor (including basement).
3. For structures to be floodproofed (nonresidential only), the elevation to which the structure will be floodproofed.
4. Topographic information showing existing and proposed ground elevations.

C. Allowed uses

The following uses shall be permitted within the floodplain by right or with a special use permit, as specified; provided, that such uses are permitted in the zoning district within which they are located, the review criteria contained in §4.15.7 are met, and a floodplain permit is obtained as specified in §4.15.4.C.

1. Permitted uses

(a) Utilities and public facilities and improvements such as streets, channel improvements, bridges, utility pipes, utility transmission lines and stormwater management facilities shall be permitted.

(b) The following uses and improvements shall be permitted, provided that the development or use is otherwise permitted in this chapter and that the area of impervious surface shall not exceed 2,500 square feet and such uses or improvements shall not contain areas of fill in excess of 12 inches in depth:

(1) Agricultural uses such as farming, gardening, grazing and similar uses.

(2) Outdoor recreational uses such as parks, trails, picnic grounds, athletic fields, play grounds, golf courses, tennis courts and archery ranges.

2. Special uses

The following uses and improvements shall be permitted with a special use permit issued by the city council in accordance with the provisions of §6.7, provided that such use is permitted in the zoning district in which the proposed use or improvement is located:

(a) Area specified

The uses permitted and specified in §4.15.7.C.1 where the area of impervious surface will exceed 2,500 square feet or such uses or improvements will contain areas of fill in excess of 12 inches in depth.

(b) Redevelopment of property

(1) For the purposes of §4.15, redevelopment shall be any reconstruction, conversion, structural alteration, relocation or enlargement of any structure or any extension of the use of the land. No redevelopment shall be permitted in any floodplain until the developer submits to the zoning administrator a study performed by an engineer, which addresses the review criteria contained in §4.15.8.

(2) Redevelopment shall only be permitted if construction techniques are employed which floodproof each structure located within the floodplain in accordance with the NFIP, USBC floodproofing standards and all other applicable requirements. Within Zone AO the underside of the lowest floor (including basement) of any structure shall be a minimum of three and one-half feet above the highest adjacent grade. In addition, the underside of the lowest floor (including basement) of any structure shall be a minimum of 18 inches above the floodplain elevation.

§4.15.8. Approval criteria

A. Permitted uses, activities or developments (including redevelopments) within the floodplain shall be permitted only when all available alternative locations not within the floodplain have been properly considered and it is not possible to accommodate reasonable development outside the floodplain boundaries. Each application for a floodplain permit, together with required supporting documentation, shall clearly demonstrate that the proposed use, activity or development:

1. Shall minimize grading to the maximum possible extent.
2. Shall minimize the amount of impervious surface to the maximum possible extent through site design, the use of porous construction materials, grid or modular pavement, and other reasonable methods.
3. Shall minimize the loss of natural vegetation and natural stormwater characteristics.
4. Shall minimize the susceptibility of structures and their contents to flood damage.
5. Shall not negatively affect water quality.
6. Shall not increase the intensity or extent of flooding of lands above or below the property or jeopardize property or human life.
7. Shall not adversely affect the capacity of the floodplain channel or increase erosion within or adjacent to the floodplain. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within the city all applicable permits shall be obtained from the USACE, the VADEQ, and the Virginia Marine Resources Commission. Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the DCR, and the Federal Insurance Administration.
8. Shall minimize negative impacts upon wildlife habitat.
9. Shall have its design incorporate base (100-year) flood elevation data for any proposed new activity or development greater than 50 lots or five acres, whichever is the lesser, if located within Zone A. In addition, the best available floodway information from federal, state, or other sources acceptable to the zoning administrator shall be used.
10. Shall not result in more than a one-foot increase in the base (100-year) flood elevation. This shall include the cumulative effect of the proposed use, activity, or development when combined with all other existing and anticipated uses, activities, or development.
11. Shall not negatively affect drainage.

§4.15.9. General standards

A. New construction and substantial improvements shall be according to the Virginia USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.

B. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

C. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

D. Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

E. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

F. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters.

G. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

§4.15.10. Elevation and construction standards

In all identified flood hazard areas where base flood elevations have been provided in the Flood Insurance Study or generated by a certified professional in accordance with §4.15.6.C, the following provisions shall apply:

A. Residential Construction

New construction or substantial improvement of any residential structure in Zones A1-30, AE, AH and A with detailed base flood elevations shall have the lowest floor, including basement, elevated at least 18 inches above the base flood level.

B. Non-Residential Construction

New construction or substantial improvement of any commercial, industrial, or nonresidential building shall have the lowest floor, including basement, elevated at least 18 inches above the base flood level. Buildings located in all A1-30, AE, and AH Zones may be floodproofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the base flood elevation plus one foot are water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this §4.15.10 are satisfied. Such certification, including the specific elevation (in relation to mean sea level) to which such structures are floodproofed, shall be maintained by the zoning administrator).

C. Space Below the Lowest Floor

In Zones A, AE, AH, AO, and A1-A30, fully enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

1. Not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

2. Be constructed entirely of flood resistant materials below the regulatory flood protection elevation;

3. Include measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:

  (a) Provide a minimum of two openings on different sides of each enclosed area subject to flooding.

  (b) The total net area of all openings must be at least one square inch for each square foot of enclosed area subject to flooding.

  (c) If a building has more than one enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.

  (d) The bottom of all required openings shall be no higher than one foot above the adjacent grade.

  (e) Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.

  (f) Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

D. Manufactured homes

All manufactured homes shall be prohibited within the city. No special exceptions or variances will be granted.

E. Recreational vehicles

All recreational vehicles shall be prohibited within any special flood hazard area. No special exceptions or variances will be granted.

§4.15.11. Subdivision standards

A. All subdivisions shall minimize flood damage;

B. All subdivisions proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

C. All subdivisions shall have adequate drainage provided to reduce exposure to flood hazards, and

D. Base flood elevation data shall be obtained from other sources or developed using detailed methodologies, hydraulic and hydrologic analysis, comparable to those contained in a Flood

Insurance Study for subdivision proposals and other proposed development proposals (including subdivisions) that exceed 50 lots or five acres, whichever is the lesser.

§4.15.12. Existing structures in floodplain areas

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

A. Existing structures in the floodway shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion would not result in any increase in the base flood elevation.

B. Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain areas to an extent or amount of less than 50 percent of its market value shall conform to the Virginia USBC and the appropriate provisions of these regulations.

C. The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its location in a floodplain area to an extent or amount of 50 percent or more of its market value shall be undertaken only in full compliance with these regulations and shall require the entire structure to conform to the Virginia USBC.

§4.15.13. Special exceptions

A. The board of zoning appeals may, by special exception, permit within the floodplain additional uses where such uses are not permitted uses specified in §4.15.6, provided that:

1. Such additional use is permitted in the underlying zoning district;
2. Special exceptions shall be granted only in accordance with the procedures and limitations established for special use permits in §6.7; and
3. The special exception granted represents the minimum variation necessary to afford relief.

B. In reviewing a special exception request, the board of zoning appeals shall consider the following additional factors:

1. The danger to life and property due to increased flood heights or velocities caused by encroachments. No special exception shall be granted for any proposed use, development, or activity within any floodway that would cause any increase in the 100-year flood elevation.
2. The compatibility of the proposed use with existing development and nearby development anticipated in the foreseeable future.
3. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
4. For historic structures, a determination that the exception is the minimum necessary to preserve the historic character and design of the structure and would not preclude the structures continued designation as a historic structure.
5. The danger that materials may be swept on to other lands or downstream to the injury of others.

6. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.
7. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.
8. The importance of the services provided by the proposed facility to the community.
9. The requirements of the facility for a waterfront location.
10. The availability of alternative locations not subject to flooding for the proposed use.
11. The safety of access by ordinary and emergency vehicles to the property in time of flood.
12. The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters expected at the site.

C. A special exception shall be granted only after the board of zoning appeals has determined that the granting of such would not (i) result in unacceptable or prohibited increases in flood heights, (ii) pose additional threats to public safety, (iii) require extraordinary public expense, (iv) create any nuisances, (v) cause fraud or victimization of the public, and (vi) conflict with local laws or ordinances. Special exceptions shall be granted only after the board of zoning appeals has determined that a special exception would be the minimum required to provide relief from any hardship to the applicant.

D. The board of zoning appeals shall notify, in writing, the applicant for a special exception request that the issuance of a special exception to construct a structure below the 100-year flood elevation (i) increases the risks to life and property and (ii) may result in increased premium rates for flood insurance.

E. A record shall be maintained of the above notification as well as all special exception actions, including justification for the issuance of the special exceptions. The annual or biennial report submitted to the FEMA shall note any special exceptions, which are issued during the period covered by the report.

F. A special exception shall meet the elevation and construction standards established in §4.15.10.

§4.15.14. Variances

A. Applications for a variance, pursuant to the requirements of §6.18, will be subject to the same considerations as a special exception, as set forth in §4.15.13.

B. The board of zoning appeals shall notify, in writing, the applicant for a variance request that the issuance of a variance to construct a structure below the 100-year flood elevation (i) increases the risks to life and property and (ii) may result in increased premium rates for flood insurance.

§4.15.15. Definitions

For the purposes of 4.15, the following words and phrases shall have the meanings respectively ascribed to them by 4.15 unless the context clearly indicates otherwise:

100-YEAR FLOODPLAIN: The Federal Emergency Management Agency designated one percent annual chance water surface elevation. For the purposes of this ordinance, the 100-year flood is the base flood.

§4.15.15 Definitions

A, A1-30, AND AE ZONES: Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base flood elevations are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

AH ZONE: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between one and three feet. Base flood elevations derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.

AO ZONE: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply. Some AO Zones have been designated in areas with high flood velocities such as alluvial fans and washes. Communities are encouraged to adopt more restrictive requirements for these areas.

APPROXIMATED FLOODPLAIN DISTRICT: The floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated.

BASE FLOOD: The flood having a one percent chance of being equaled or exceeded in any given year.

BASE FLOOD ELEVATION (BFE): The FEMA designated one percent annual chance water surface elevation and the elevation determined per §4.15.10. The water surface elevation of the base flood in relation to the datum specified on the city’s FIRM. For the purposes of these regulations, the base flood is the 100-year flood or 1 percent annual chance flood.

BASEMENT: Any area of the building having its floor sub-grade (below ground level) on all sides.

CONDITIONAL LETTER OF MAP REVISION (CLOMR): A formal review and comment as to whether a proposed flood protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not revise the effective Flood Insurance Rate Map or Flood Insurance Study.

DCR: Virginia Department of Conservation and Recreation.

DEVELOPMENT: Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

ELEVATION CERTIFICATE: An administrative tool of the National Flood Insurance Program which is to be used to provide elevation information necessary to ensure compliance with to community floodplain management ordinances, to determine the proper insurance premium rate, or support a request for a Letter of Map Amendment.

ENCROACHMENT: The advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA): The federal agency under which the NFIP is administered. In March 2003, FEMA became part of the newly created U.S. Department of Homeland Security.

FLOOD OR FLOODING: A general or temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters; the unusual and rapid accumulation or runoff of surface waters from any source. Mudflows which are proximately caused by such accumulation or runoff of surface waters and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in the overflow of inland or tidal waters. .

FLOOD INSURANCE RATE MAP (FIRM): an official map of a community, on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

FLOOD INSURANCE STUDY (FIS): A report by FEMA that examines, evaluates and determines flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards.

FLOODPLAIN AREA: Any land area susceptible to being inundated by water from any source.

FLOODPLAIN DISTRICT: District designated as a special flood hazard area.

FLOODPLAIN ADMINISTRATOR: the individual appointed to administer and implement these regulations. The zoning administrator has been appointed as the floodplain administrator.

FLOODPROOFING: any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

FLOODWAY: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

FLOODWAY DISTRICT: The area within an AE Zone that is delineated, for purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one percent annual chance flood without increasing the water surface elevation of that flood more than one foot at any point. See §4.15.6.A.

HIGHEST ADJACENT GRADE: the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

HISTORIC STRUCTURE: Any structure that is: (a) listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or, (c) individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either; (d) by an approved state program as determined by the Secretary of the Interior; or (e) directly by the Secretary of the Interior in states without approved programs.

LETTER OF FINAL DETERMINATION (LFD): A letter FEMA sends to the chief executive officer of a community stating that a new or updated FIRM or DFIRM will become effective in six months.

LETTER OF MAP CHANGE (LOMC): A letter of map change is an official FEMA determination, by letter, that amends or revises an effective Flood Insurance Rate Map or Flood Insurance Study. Letters of map change include:

LETTER OF MAP AMENDMENT (LOMA): An amendment based on technical data showing that a property was incorrectly included in a designated special flood hazard area. A LOMA amends the current effective Flood Insurance Rate Map and establishes that land as defined by meets and bounds or structure is not located in a special flood hazard area.

LETTER OF MAP REVISION (LOMR): A revision based on technical data that may show changes to flood zones, flood elevations, floodplain and floodway delineations, and planimetric features. A letter of map revision based on fill (LOMR-F), is a determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer exposed to flooding associated with the base flood. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community’s floodplain management regulations.

LOCAL FLOOD HAZARD MAP – A map created by the city of Fairfax to identify and regulate local flood hazard or ponding areas that are not delineated on the Flood Insurance Rate Map.

LOWEST ADJACENT GRADE: the lowest natural elevation of the ground surface next to the walls of it structure.

LOWEST FLOOR: The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building’s lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of 44 CFR 60.3.

MANUFACTURED HOME: A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term “manufactured home” also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than 180 consecutive days, but does not include a recreational vehicle.

NEW CONSTRUCTION: For the purposes of determining insurance rates, structures for which the “start of construction” commenced on or after December 23, 1971, or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, new construction means structures for which the start of construction commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

POST-FIRM STRUCTURES: A structure for which construction or substantial improvement occurred after December 31, 1974 or on or after December 23, 1971, whichever is later.

PRE-FIRM STRUCTURES: A structure for which construction or substantial improvement occurred on or before December 31, 1974 or before December 23, 1971.

RECREATIONAL VEHICLE: A vehicle which is: (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projection; (c) designed to be self-propelled or permanently towable by a light duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

REGULATORY FLOOD PROTECTION ELEVATION: See “base flood elevation”.

SHALLOW FLOODING AREA: A special flood hazard area with base flood depths from one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

SPECIAL FLOOD HAZARD AREA: The land in the floodplain subject to a one percent or greater chance of being flooded in any given year as determined in §4.15.6.

START OF CONSTRUCTION: The date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

STRUCTURE: A walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home.

SUBSTANTIAL DAMAGE: Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. This term includes structures that have incurred substantial damage regardless of the actual repair work performed. The term does not, however, include either: (a) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or (b) any alteration of a historic structure, provided that the alteration will not preclude the structure’s continued designation as a historic structure. Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined above, must comply with all ordinance requirements that do not preclude the structure’s continued designation as a historic structure. Documentation that a specific ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic places must be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.

USACE: United States Army Corps of Engineers.

USBC: Virginia Uniform Statewide Building Code.

VADEQ: Virginia Department of Environmental Quality.

VIOLATION: the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in these regulations is presumed to be in violation until such time as that documentation is provided.

WATERCOURSE: A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

§4.16. STORM DRAINAGE FACILITIES

§4.16.1. Purpose

A. The purpose of §4.16 to define those storm drainage facilities which must be provided by landowners to control rainfall runoff from and across their property in a manner not detrimental to other inhabitants of the city and to preserve, where possible, presently existing natural creek channels. It is the further purpose of §4.16 to minimize the adverse effects of stormwater runoff on downstream drainageways within the city.

B. Article 2.3 (§62.1-44.15:27) of Chapter 3.1 of Title 62.1 of the Code of Virginia establishes the requirement for localities to establish a stormwater management program. §4.16 is adopted pursuant to Chapter 3.1 of Title 62.1 of the Code of Virginia (§62.1-44.15:25 and §62.1-44.15:28 et seq.).

§4.16.2. Performance standards for facilities

Stormwater BMPs, on-site detention facilities, and on-site drainage facilities shall be designed and maintained in such a manner as to minimize economic and environmental costs to the city and its inhabitants in accordance with §4.16.7.

§4.16.3. Performance requirements

Performance requirements for stormwater BMPs, on-site detention facilities, and on-site drainage facilities shall be as specified in §4.16.8.

§4.16.4. Design, construction, inspection and maintenance requirements

Design, construction, inspection and maintenance requirements shall be as defined in the city storm drainage facility specifications as they may be hereafter promulgated by the city engineer and approved by the city council from time to time.

§4.16.5. Usage, improvement and preservation of creeks and channels

A. Natural creeks and drainage channels may be used where available to route stormwater runoff from the city.

B. Natural drainage systems will be improved where necessary in accordance with 9VAC25-870-66 of the Regulations. To the maximum degree possible, these improvements shall be made in such a manner as to preserve, enhance or restore the vegetation, including trees, along the creek line so that the aesthetic, environmental and ecological values of the vegetation are not lost to the community.

C. Land disturbances within resource protection areas or resource management areas may require a water quality impact assessment in accordance with §4.18.8.

Attachment 3.5

City of Fairfax – 2035 Comprehensive Plan

1805

City of Fairfax
2035 Comprehensive Plan

Adopted February 12, 2019
Last Amended June 23, 2020

City of Fairfax, Virginia
10455 Armstrong Street · Fairfax, VA 22030-3630
www.fairfaxva.gov

This is an exciting time for the City's Comprehensive Plan to be significantly revised — not only because it has been 15 years since such an extensive effort has been taken, but also because of the many opportunities happening right now that will impact our future.

Our region is undergoing a major economic shift. Federal spending as a portion of the overall regional economy continues to diminish. This greatly impacts the demand for federal workforce and contractors. Meanwhile, technology-based businesses are flourishing and have made numerous high-profile investments in the region.

The City and George Mason University, at our southern border, have the opportunity to work together to take advantage of this shift and be critical players in the new regional economy. In addition, there are many other opportunities in this plan to leverage the regional economy to benefit the community.

Commercial Redevelopment: Many of the City's commercial properties date to the 1950s and are no longer competitive to attract top-tier tenants. The land use plan provides new flexibility and clarity to encourage property owners to revitalize their properties to meet modern demands and remain competitive in the commercial market.

Housing and Neighborhoods: The City's older housing stock is increasingly being renovated and expanded to keep up with current trends in design and amenities to attract employees in the new economy. The Comprehensive Plan encourages new housing types to attract a wider array of residents and to create and maintain a supply of units that is more affordable.

Historic Resources: The long history of the City provides a unique identity that separates the City from the bulk of Northern Virginia, making it an ideal place to invest. This history will continue to be communicated through preservation of the numerous historic structures and landscapes and celebrated through events and festivals.

Multimodal Transportation: This Comprehensive Plan is supported by the City's recently completed Multimodal Transportation Plan. It envisions a more accessible City for cars, bikes, pedestrians and public transit alike, and accommodates anticipated innovative technologies in transportation. A number of new funding sources also make implementing these initiatives much more feasible than in the past.

Environment: The City will embrace new technologies and promote policies and regulations for a more sustainable future, both locally and globally. New measures will improve the quality of our streams through better stormwater management. The City will vigorously pursue best practices to reduce the volume of waste generated from commercial and residential properties.

Community Services: The City has always prided itself on providing the highest quality public services. Maintaining this stature requires continued investment and monitoring public service facilities for needed improvements, particularly as new technologies and innovations emerge.

The City Council, the Planning Commission, and all of the stakeholders who participated in the development of this plan look forward to seizing the opportunities that will influence the City during the next 15 to 20 years — from an advancing regional economy to new technologies and innovations to support services and environmental sustainability. Together, these opportunities will support a strong, sustainable economy for our vibrant 21st-century community.

Sincerely,

Mayor David L. Meyer

Councilmember Michael Demarco

Councilmember Jennifer Passey

Councilmember So Lim

Councilmember Jonathan Stehle

Councilmember Janice Miller

Councilmember Sang Yi

Contents

The City of Fairfax is committed to the letter and spirit of the Americans with Disabilities Act. If you are in need of assistance in interpreting the Fairfax 2035 Comprehensive Plan or to request a reasonable accommodation for any type of disability, please call 703-385-7930, (TTY 711).

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Chapter 6: Community Services

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Special thanks to City residents, business owners, and stakeholders who have reviewed and provided comments to City Staff on the 2035 Comprehensive Plan drafts.

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1 Introduction

The City of Fairfax ("the City") is unique in boasting the benefits of a closely knit community that is hard to find in the Metropolitan Washington region and the access and proximity to large-city amenities and activities. Residents enjoy neighborhoods with distinct character, an active arts scene, high-quality educational institutions for all ages, easy access to natural amenities, and exceptional City services and facilities. Employees and business owners appreciate its central location within Northern Virginia; ease of access and adjacency to major thoroughfares, and its proximity to major regional employers in the health, education, government, and legal sectors.

Nonetheless, the City is not immune to the internal and external elements that place considerable pressure on its identity and future. Its commercial and retail properties are aging and growing less competitive with nearby jurisdictions, raising questions about future development and tax burdens on City residents. Nearby localities feature newer, more in-demand housing stock to attract and retain residents. Region-wide issues of affordable housing, aging and stressed utility infrastructure, traffic congestion, and environmental concerns similarly impact the City and those who live and work here.

As the City's official policy guide for future development-related decisions, the 2035 Comprehensive Plan ("the Comprehensive Plan") provides direction to enhance the City's function, appearance, and livability based on its current conditions. It also seeks to provide the opportunity to examine the various forces affecting the City – such as redevelopment opportunities, economic competitiveness, and an increasingly strained transportation network – and propose innovative solutions that benefit City residents, workers, and visitors alike. As changes occur in and around the City, the Comprehensive Plan provides a framework for responding to and thriving as a result of these changes. Those who contributed to the Comprehensive Plan hope that readers find it a thoughtfully-crafted document that lends itself to enhancing quality of life and making the City a great place for everyone.

Background

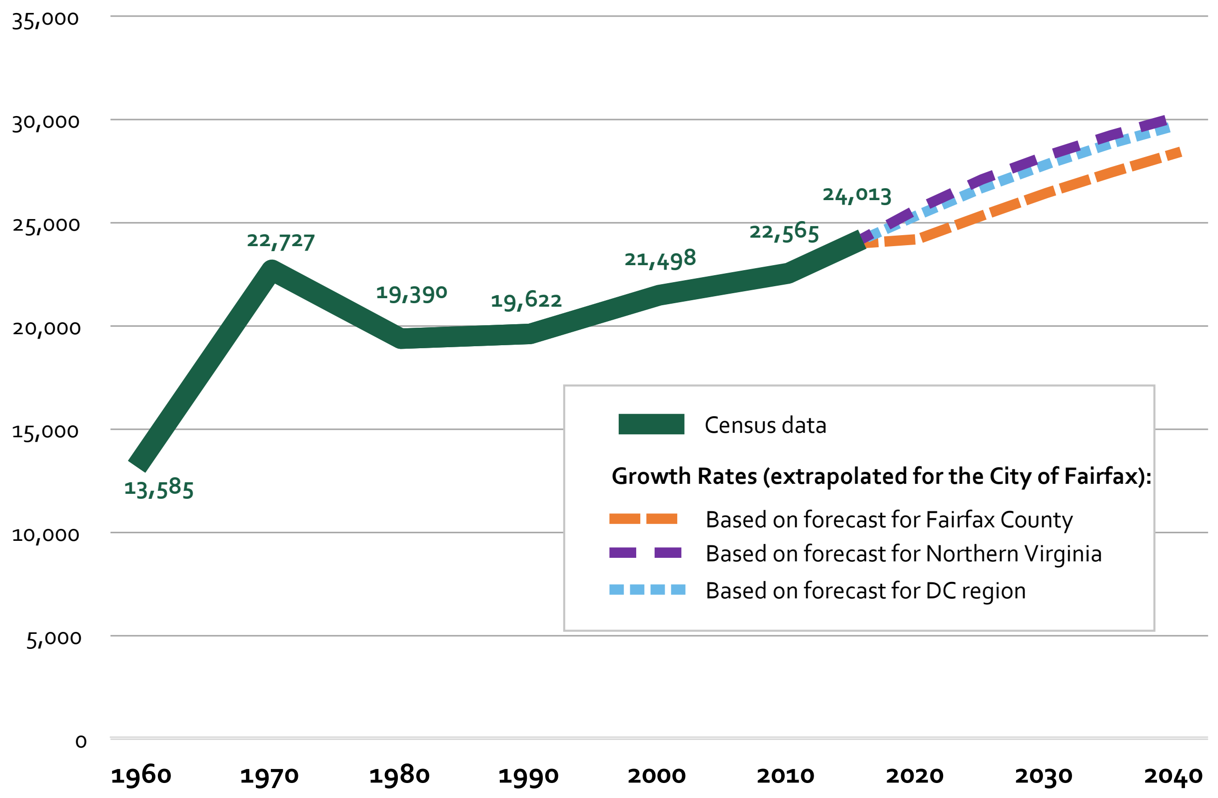
The City was established as the Town of Providence in 1805 following the construction of the Fairfax County Courthouse at the rural crossroads of Little River Turnpike and Ox Road. The Town became a hub of commerce within a predominantly agricultural area removed from the growing City of Washington. In 1874, the Town adopted the name Fairfax.

The Town emerged as a more significant regional crossroads when US 50 and US 29 were created in 1926 as part of the original U.S. Highway System. These roadways supported the City's economic growth as businesses expended around the needs of travelers, and the industries serving the surrounding dairy farms. Federal housing programs following World War II catalyzed suburban development in the City, attracting veterans and their families and spurring rapid population growth. The Town was incorporated as the City of Fairfax in 1961. Further economic growth was fueled by the establishment of George Mason University along the City's southern border in 1964, the opening of Interstate 66 along the northern border in 1982, the extension of the Metrorail Orange Line from Washington to the nearby Vienna/Fairfax-GMU station in 1986, and continued overall growth of the region.

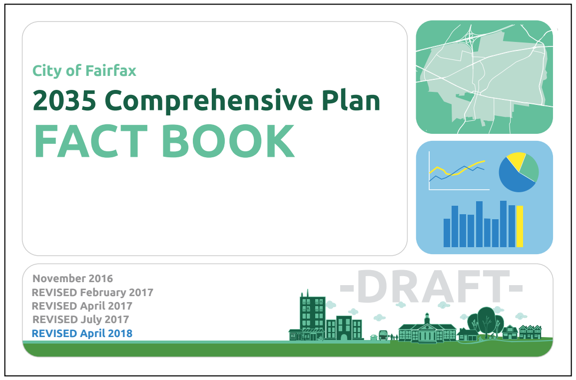
Today, the City is an independent jurisdiction of just over six square miles and a current population of around 24,000, located in the heart of Northern Virginia. The Metropolitan Washington Council of Governments (MWCOG) forecasts an increase of 3,400 households in the City by 2035, as shown in Figure 1. The City strives to strike a balance between maintaining the charm that residents currently enjoy and that makes it unique from surrounding communities while also guiding the growth and development projected for this metropolitan area.

Main Street Fairfax, 1905 *- Winter view of Main Street with the Ratcliffe-Allison House on the right next to Town Hall, built only five years earlier, at the intersection with Mechanic Street (now University Drive).*

FIGURE 1 POPULATION HISTORY AND FORECASTS



Source: US Census and MWCOG Round 8.4 Cooperative Forecasting: Population and Household Forecasts



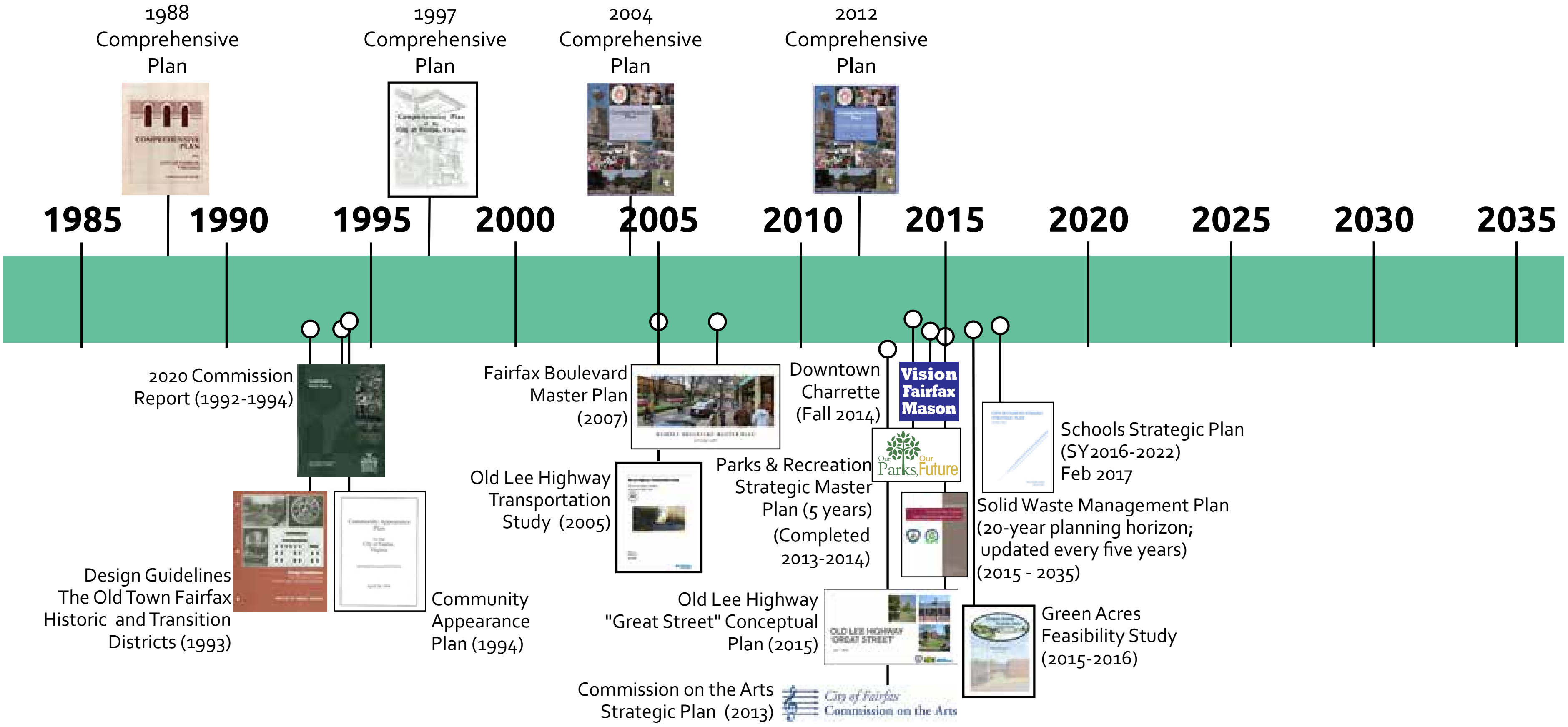
City of Fairfax
2035 Comprehensive Plan
FACT BOOK

November 2016
REVISED February 2017
REVISED April 2017
REVISED July 2017
REVISED April 2018

-DRAFT-

For more information about the City's population, check out the City of Fairfax Fact Book.

The first comprehensive development plan for the City was adopted in June 1968, with amendments in 1971 and 1973. New plans were adopted in 1975, 1982, and 1988, with amendments in 1983, 1991, 1993, and 1997. City Council adopted the Comprehensive Plan's last major rewrite in July 2004. During the Comprehensive Plan's 2008-2011 review, the Planning Commission amended the existing plan, which was adopted in 2012. In addition to the Comprehensive Plan updates, many individual studies and plans have been completed over the years as shown in the diagram below. This Comprehensive Plan incorporates and builds on many of the goals and strategies found in those studies as well as other plans and City policies not identified below.



Structure of the Comprehensive Plan

The Comprehensive Plan is a guide for the future growth of the City, focusing on community needs through 2035. Guidance and policy recommendations are provided through a vision, guiding principles, goals, outcomes, and actions, as described below.

- The **Vision** is the aspirational statement for the City in 2035;
- **Guiding Principles** are content-specific statements;
- **Goals** are general statements of the ideals toward which the City strives;
- **Outcomes** define what success looks like for each Goal; and
- **Actions** are the specific steps necessary to realize each Goal and Outcome.

The 14 Guiding Principles, as provided on pages 6-8, are categorized into five chapters: **Land Use, Multimodal Transportation, Environment and Sustainability, Economic Vitality, and Community Services**. Each topic is presented in a chapter of the Comprehensive Plan. Each chapter includes an introduction that provides background on the topic and a description of existing conditions, as well as opportunities and challenges facing the City that inform some of the policies suggested through the Comprehensive Plan. Additional background information, Goals, Outcomes, and Actions are then provided for each Guiding Principle. Goals, Outcomes, and Actions, can also be found in the stand-alone Implementation Guide, which will be revised on a regular basis to track the City's progress on meeting its Goals.

This Comprehensive Plan is supported by two appendices:

- **Appendix A – Chesapeake Bay Preservation Plan** identifies and characterizes the City's water resources and addresses the effects of land use planning and development on water quality in accordance with the Chesapeake Bay Preservation Act.
- **Appendix B - Transportation Practices and Policy** provides additional information on some of the more innovative practices discussed in the Multimodal Transportation Chapter.

Supporting maps, graphs and figures are provided throughout this document.

What is a Comprehensive Plan?

- Document describing a community's vision for how it wants to physically grow and develop in the near future (10 to 20 years)
- Provides guidance on land use, transportation, housing, economic development, environment, public facilities, parks, arts, and historic preservation
- Policy document for decision-making that informs zoning and budget decisions, i.e., the Capital Improvement Program (the five-year plan for physical improvements in the City – facilities, infrastructure, etc.)

VISION

In 2035, the City of Fairfax
has a strong, sustainable economy
that supports a vibrant 21st century community.

GUIDING PRINCIPLES

In 2035, Fairfax is a city with...

Land Use

...a close-knit community and a population that is diverse in its culture, demographics, and lifestyles, that capitalizes on its location in the center of the growing region and with easy access to the nation's capital.

...inviting neighborhoods, each with its own unique character.

Neighborhoods

Housing

...a choice of housing types that meet the needs of our community.

Economic Vitality

...an economy that cultivates and promotes business success and entrepreneurial opportunities for large, small, and independent businesses and capitalizes on national, regional and intellectual partnerships.

Commercial Corridors and Activity Centers

Photo Credit: Hord Coplan Macht

...flourishing centers of commercial and mixed-use activity that include an assortment of grocery stores, restaurants, cafes, entertainment venues, retail stores, offices, and housing.

Cultural Arts

...a thriving cultural arts program that supports a variety of special events, art spaces and performance venues.

Multimodal Transportation

...options for residents to easily, safely, and efficiently move within and between neighborhoods either by walking, bicycling, taking public transportation or driving.

Community Design and Historic Preservation

...architecture that contributes to a vibrant, creative place and complements our historic character.

Parks and Recreation

...inviting, well-maintained parks, trails, open spaces and multi-generational community centers.

Education

...world-class community schools and a best-in-class education from preschool to post-high school that prepares students to be productive, responsible members of society, capable of competing in the global economy and motivated to pursue life-long learning.

Sustainability Initiatives

...sustainable practices that preserve, conserve, reuse and recycle resources.

Natural Environment

...a healthy ecosystem of naturally flowing streams, native plants, wildlife, contiguous natural habitat areas, and a healthy tree population.

Government and Public Safety

...exceptional governmental, police and fire safety services.

Infrastructure and Utilities

...safe, well-maintained infrastructure and use of advanced technology.

Planning Process

Development of the Comprehensive Plan was based on a three-phase process beginning with information collection, followed by analysis and recommendations. Information collection included references to previous plans and studies that helped inform the Comprehensive Plan and input provided by members of the community, including residents, business owners, City Council, City boards and commissions, other stakeholders (George Mason University, Fairfax County, etc.), and City staff. During the information collection period, staff also developed the Fact Book, a summary of data on the City, from physical conditions to demographics and service analysis.

Based on the previous plans and studies referenced, input collected from the community, and data from the Fact Book, a series of goals and outcomes were developed for each of the content areas. These goals and outcomes were reviewed with the Planning Commission and City boards and commissions. The same process was followed to develop actions and metrics for the content areas. Goals, outcomes, actions and metrics for each content area encompass the recommendations of the Comprehensive Plan and provide the foundation for the overall document.

More specific data analysis was provided for the Land Use Strategies Guiding Principle, including a scenario analysis using Envision Tomorrow software. This provided a way to illustrate – with graphics and numbers – what the future could look like, given different development contexts, culminating in a public survey on potential development scenarios based on the results of the analysis. Along with the Scenario Analysis, survey results helped guide development of the Future Land Use Map.

Final revisions to the Comprehensive Plan were based on review by members of the community through public open houses, online forums, and Planning Commission and City Council meetings. The Comprehensive Plan was adopted by City Council on February 12, 2019 (R-19-03) after recommendation by the Planning Commission (PC-19-02).

The Multimodal Transportation Plan was prepared through a separate planning process parallel to this one, but with the intention of incorporating it into the Comprehensive Plan, with connections to land use, open space, housing, and economic development.

Community Outreach

Community outreach played a vital role in the development of the Comprehensive Plan. Early public involvement guided all aspects of the Comprehensive Plan including issue and opportunity identification, as well as development of the vision, goals, and objectives. Providing the opportunity for public input encourages citizens to be invested in the future of their community and helps ensure that recommendations developed as part of the Comprehensive Plan are implemented and sustained over time.

Staff employed a diverse set of traditional and non-traditional outreach tools and strategies to ensure all stakeholders had an opportunity to contribute throughout the process.

Community Surveys

The Center for Social Science Research (CSSR) at George Mason University worked with City staff to develop and administer a Community Survey to ask members of the community for feedback on issues of interest to formulate a vision, goals, and objectives for the Comprehensive Plan.

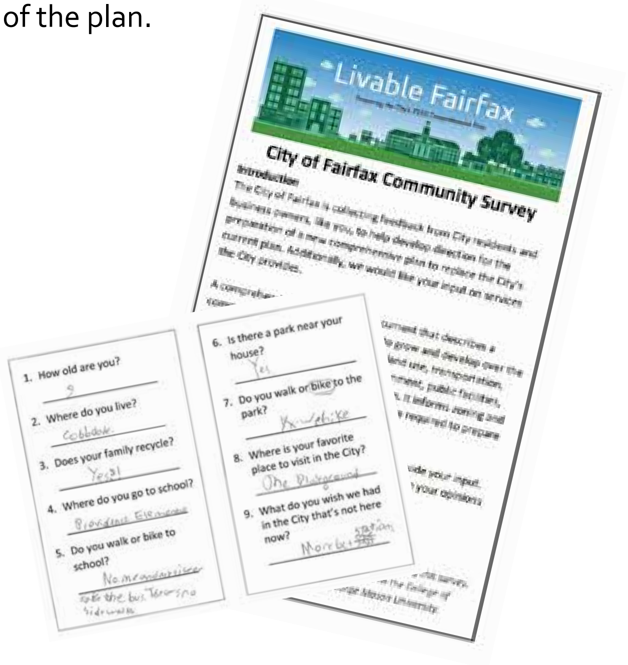
City residents and business owners were notified of the survey via postcards sent out in March 2016, which provided directions on how to take an online survey. Paper copies were also made available to those that requested them.

An overview of the results was presented at a public meeting on June 6 at the Sherwood Community Center, as well as at meetings of the City Council on June 14 and the Planning Commission on June 27, which were televised on Cityscreen-12. The full document detailing the process and analyzing the results was released on June 30, 2016.

CSSR sent out 9,943 postcards to City residences and businesses, and followed up with reminder calls. A total of 863 surveys were completed.

City staff also prepared a ten-question Kids' Survey that was distributed at Parks and Recreation events and to students at Daniels Run Elementary School, Providence Elementary School, Lanier Middle School, and Saint Leo the Great Catholic School. A total of 620 Kids' Surveys were completed. The ages of the students that completed the survey ranged from seven to thirteen.

Online Google surveys were also used to collect feedback on proposed future development scenarios, the future land use map, and drafts of the plan.


Livable Fairfax

City of Fairfax Community Survey

Introduction

The City of Fairfax is collecting feedback from City residents and business owners, like you, to help develop direction for the preparation of a new comprehensive plan to replace the City's current plan. Additionally, we would like your input on services the City provides.

1. How old are you?
9
2. Where do you live?
[illegible]
3. Does your family recycle?
Yes!
4. Where do you go to school?
Providence Elementary
5. Do you walk or bike to school?
[illegible]

6. Is there a park near your house?
Yes
7. Do you walk or bike to the park?
Walk/bike
8. Where is your favorite place to visit in the City?
The Playground
9. What do you wish we had in the City that's not here now?
[illegible]

Website and Social Media

Information about the Comprehensive Plan process, meetings, technical information, and opportunities to provide feedback were made available on the City's website. City staff created a page within the website devoted to the Comprehensive Plan, www.fairfaxva.gov/livablefairfax.

In addition to the website, City staff promoted meetings and information about the Comprehensive Plan through Facebook and Twitter. One of the many benefits of using social media for outreach is that it allowed staff to track how many people viewed what was shared and which posts performed the best.

Several of the presentations were shared live on Facebook and posted on the City's YouTube channel. Staff also created YouTube videos to advertise the community survey, which were shown on the City's government access television station, Cityscreen-12. Staff also created a welcome video for an open house to explain the comprehensive plan process.

Printed Media

To ensure all members of the community were aware of the comprehensive plan process and opportunities to participate, articles were regularly included in the CityScene, the City's newsletter published monthly and mailed to all City businesses and residents. Seventeen articles related to the Comprehensive Plan have been posted in the CityScene since April 2016.

To reach an even broader audience for targeted events, ads were purchased in regional newspapers, The Fairfax Times and Fairfax Connection.

Other printed communications include postcards mailed to all residents and businesses and informational fliers handed out at City events and displayed at City facilities.

CityScene Article

City Seeks Input on Vision for 2035 *Comprehensive Plan*

The City of Fairfax seeks community feedback on the draft vision statement for the 2035 *Comprehensive Plan*, culminating with a public comment period during the September 26 Planning Commission meeting. The *Comprehensive Plan* vision statement will provide guidance on how the city should grow and develop during the next 20 years. Information: 703-385-7930.

The draft vision statement is a series of statements related to each of the proposed content areas in the 2035 *Comprehensive Plan*: Land Use; Neighborhoods; Commercial Centers and Redevelopment Areas; Housing; Community Design and Historic Preservation; Transportation, Mobility and Connectivity; Natural Environment; Sustainability Initiatives; Business Attraction, Retention and Promotion; Education; Parks, Recreation and Cultural Arts; Public Safety; Infrastructure and Utilities; and Implementation Strategy and Performance Metrics.

The vision statement is intended to describe Fairfax's values, aspirations and shared image of what the community as a whole

continued on page [illegible]

Public Meetings

The Planning Commission began discussions on preparing the Comprehensive Plan on Monday, October 26, 2015. Members of the public were encouraged to attend any of the regularly scheduled Planning Commission meetings to share thoughts or concerns about the Comprehensive Plan, even if it was not explicitly being discussed as part of the agenda.

In addition to presentations to the Planning Commission, staff presented briefings and solicited feedback at the regular meetings of other boards and commissions including the City of Fairfax School Board, Board of Architectural Review, Community Appearance Committee, Commission on the Arts, Fairfax Renaissance Housing Corporation, Parks and Recreation Advisory Board, Historic Fairfax City Inc., Economic Development Authority, Commission for Women, and the Environmental Sustainability Committee. The Planning Commission also hosted joint work sessions at The Civil War Interpretive Center at Historic Blenheim with the various boards and commissions to discuss specific topics of interest, and joint work sessions with the City Council.

Community Events

Open Houses

In addition to regularly scheduled public meetings, staff hosted many open houses at locations throughout the City, including the Stacy C. Sherwood Community Center, Old Town Hall, Lanier Middle School, and City Hall.

Panel Discussion: Emerging Trends Shaping our Community

The City gathered a panel of experts and a moderator to talk about trends in housing, economic vitality, and community development as part of the effort to prepare the Comprehensive Plan. The discussion took place on Saturday, September 16, 2017 at the Sherwood Community Center.

The expert panel included Thomas Maskey, Jr., Principal of Potomac Development Group, who has dedicated 35 years to the development of retail shopping centers and is responsible for over 8 million square feet of development in the Washington, D.C. region, including landmark projects at Downtown Silver Spring, Washingtonian Center, Milestone Center, Fair Lakes Center, Fairfax Corner, Virginia Gateway, and National Harbor; Donald W. Knutson, President of the Knutson Companies, whose development projects include Downtown Brambleton and Crescent Place in Leesburg; and Michelle Krocker, Executive Director of the Northern Virginia Affordable Housing Alliance. The discussion was moderated by Lisa Nisenson, an affiliated researcher with George Mason University's Center for Real Estate Entrepreneurship who leads Alta Planning + Design's New Mobility Group.

City Events

City staff attended other events to engage and inform the public about the comprehensive planning process. Those events included:

- Chocolate Lovers Festival
- Scavenger Hunt on July 4
- Fall Festival
- Easter Egg Hunt
- Community Farmers Market
- Rock the Block
- Bike to Work Day

Schools

Staff worked with the City of Fairfax School Board, Superintendent, and School principals to involve the City's students in the comprehensive planning process early and often. In addition to the Kids' Survey that was covered previously, staff made several presentations and had discussions with the students at Daniels Run Elementary School, Providence Elementary School, Lanier Middle School, Fairfax High School, and George Mason University. At the end of the 2017-2018 school year, representatives from the City's schools and from George Mason University presented their thoughts on the draft goals to the Planning Commission at public meetings. All City school students grades K through 12 were also encouraged to share their vision of Fairfax in 2035 through an art contest.

Statutory Requirements

The comprehensive plan serves as a locality's primary decision-making document for land use and development. It establishes the intent and goals of the community to influence development in both the private and public sectors and should be relied upon as an initial source that directs users to appropriate reports or strategic plans where necessary.

State law governing the development of a comprehensive plan (Section 15.2-2223 of the Code of Virginia) requires every county, city, and town to adopt a plan for the physical development of the territory within its jurisdiction. The Code further requires that comprehensive plans be reviewed every five years to ensure that the plan is responsive to current circumstances and that its goals continue to be supported by the citizenry; however, the City should consistently be prepared to make interim changes to the plan because necessary changes can result from the completion of strategic plans or changes to other City policies. The Planning Commission is tasked with preparing the plan and recommending it to the City Council for adoption.

The Code of Virginia includes both required and optional content for comprehensive plans. Required provisions relate to issues that are fundamental to the plan itself, such as long-range recommendations for development and methods of implementation. In order to address what are perceived as critical issues statewide, the Code of Virginia specifically requires that all comprehensive plans address both affordable housing and transportation infrastructure.

Authority

While the Comprehensive Plan communicates a vision for future land use and development in the City, the zoning ordinance provides the regulatory mechanism to ensure that new development and changes in land uses are consistent with this vision. Section 15.2-2232 of the Virginia Code states that a comprehensive plan "shall control the general or approximate location, character and extent of each feature shown on the plan." Consistency with the Comprehensive Plan is one of the approval considerations for zoning text amendments, zoning map amendments, special use permits, and special exceptions to the zoning ordinance.

Where any new development is proposed that requires a land use action not consistent with the Comprehensive Plan, the applicant should request a modification to the Comprehensive Plan as well, in order to keep the two documents consistent. Such modifications must be reviewed by the Planning Commission and approved by City Council. This provides flexibility for the Comprehensive Plan to adjust to market conditions and design trends, but ensures that any such changes are reviewed and considered within the greater context of the City's vision.

In addition to guiding decisions on land use and development, the Comprehensive Plan includes guidance on investment for transportation and infrastructure. Section 15.2-2232 of the Code of Virginia requires that no public facilities – such as streets, parks, utilities, or public buildings – shall be approved or constructed unless deemed to be in accordance with the Comprehensive Plan by the Planning Commission. The Comprehensive Plan should be used as a reference for all land use and budget decisions. Any budget item in the Capital Improvement Plan should support at least one of the goals of the Comprehensive Plan.

Implementation

In addition to providing guidance on land use and budget decisions, the Comprehensive Plan includes numerous actions to be taken by the City or its affiliates in order to achieve the vision of the plan. A separate Implementation Guide has been developed in support of the Comprehensive Plan to track progress on implementation of these actions. This is accomplished through an implementation matrix that provides the lead responsibility, timeframe for initiation and timeframe for completion of each action. Where appropriate, performance metrics are listed for goals to provide a mechanism for determining whether the implemented actions are achieving the desired result.

The Implementation Guide is a separate document from the Comprehensive Plan because it is expected to be updated regularly as progress is made toward achieving each action. The lead responsibilities, timeframes and performance metrics are also subject to change as more information is obtained in support of specific actions.

City of Fairfax

2035 Comprehensive Plan

IMPLEMENTATION GUIDE

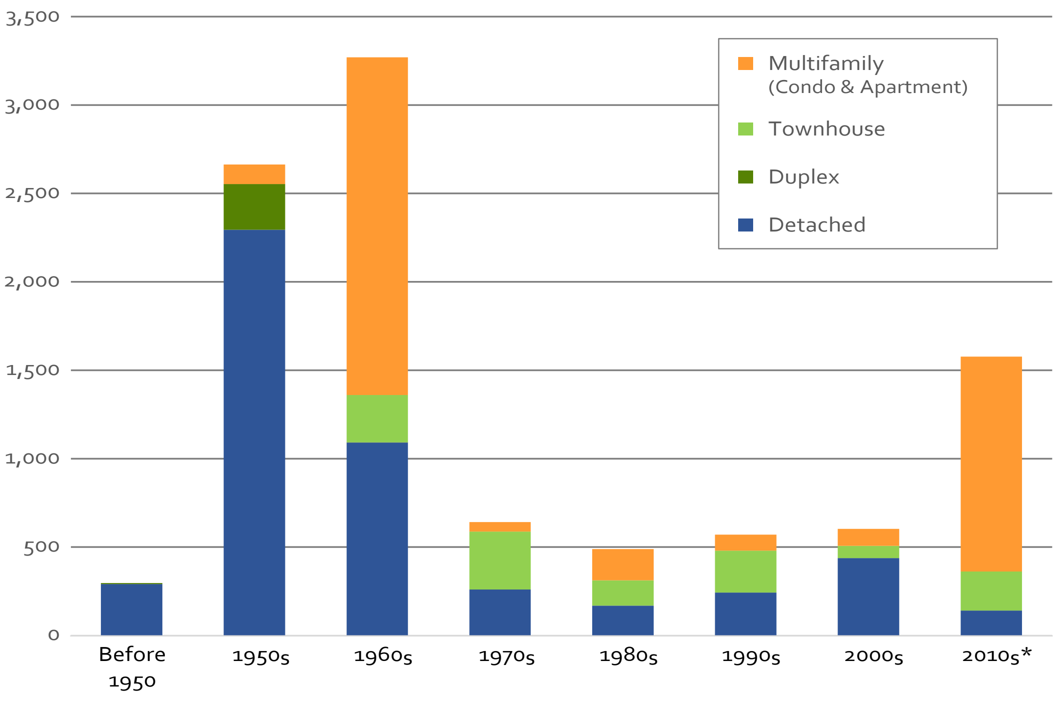
November 2018

2 Land Use

The City's residential neighborhoods are distinct in housing types, age, and character. While much of the land area of the City is encompassed by single-family neighborhoods initially developed in the 1950s and 1960s, there is also a significant amount of multifamily neighborhoods built primarily during the 1960s. Since then, the City has continued to accommodate residential development on smaller sites, including single-family homes, townhomes, and multifamily residences.

As developable land has become scarcer, new residential development has been more dependent on infill and redevelopment sites. Developers are offering higher-end products and seeking greater densities to offset the higher land values and development costs associated with redevelopment sites. In addition, some homes in existing single-family neighborhoods are being significantly renovated, expanded, or redeveloped.

FIGURE 2 HOUSING UNITS BY TYPE AND DECADE BUILT



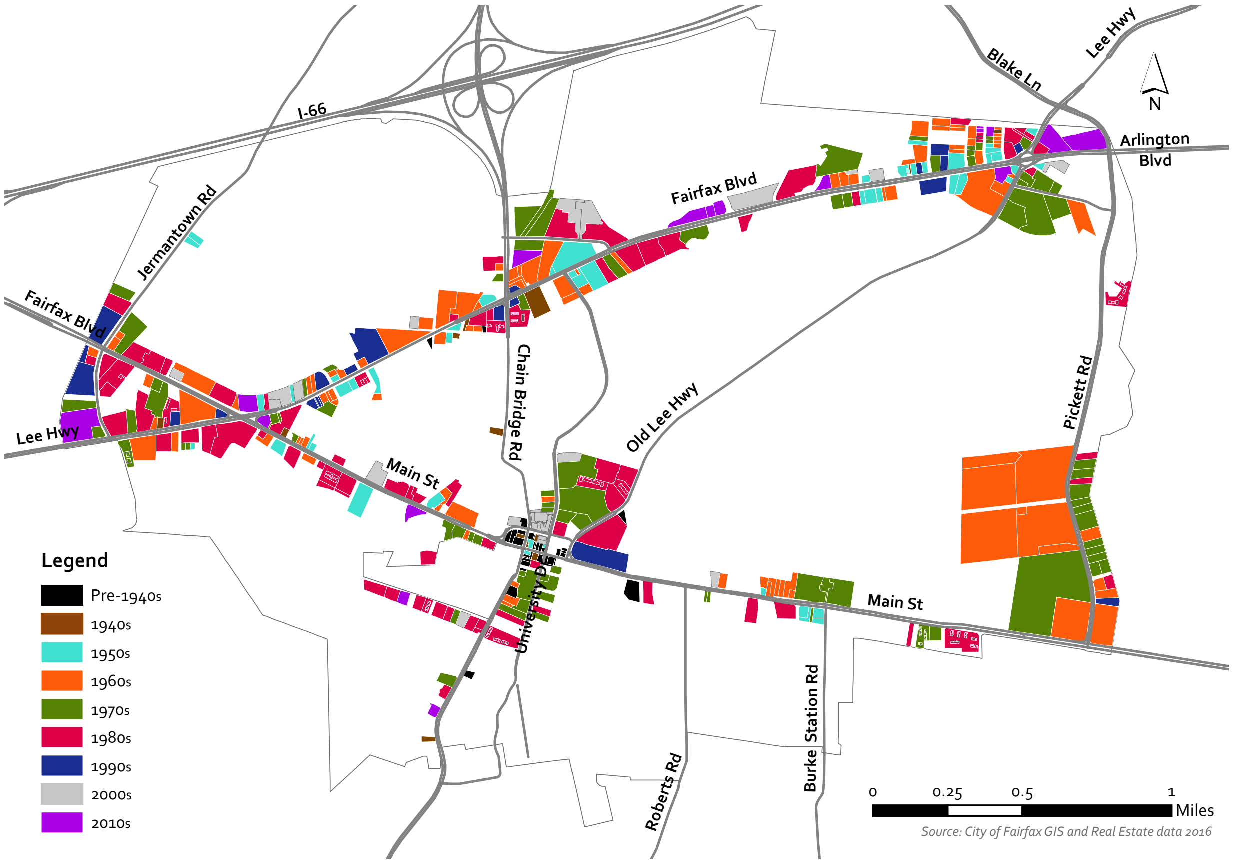
Note: Includes housing units existing and approved as of January, 2018. "2010s" includes housing units under construction, as well as projects that have been approved by City Council, but for which construction has not begun.

Source: Fairfax City Real Estate Assessments

Commercial uses in the City have historically benefited from its location at a crossroads of several regional transportation routes. While most neighborhoods in the City were established in the 1950s and 1960s, heavy commercial growth continued through the 1980s. This was fueled by continuing regional population growth and by general market trends that supported extensive office and retail growth. There has been less commercial growth in recent years as the commercial real estate market has changed and new development in surrounding areas of Fairfax County has added competition to the local market. Despite this, the City has experienced some redevelopment of older commercial properties, and recently approved mixed-use projects indicate that unsubsidized redevelopment remains feasible.

The Land Use Chapter encompasses the following Guiding Principles: Land Use Strategies, Neighborhoods, Commercial Corridors and Activity Centers, Housing, and Community Design and Historic Preservation.

FIGURE 3 COMMERCIAL AND INDUSTRIAL BUILDING AGE BY DECADE BUILT



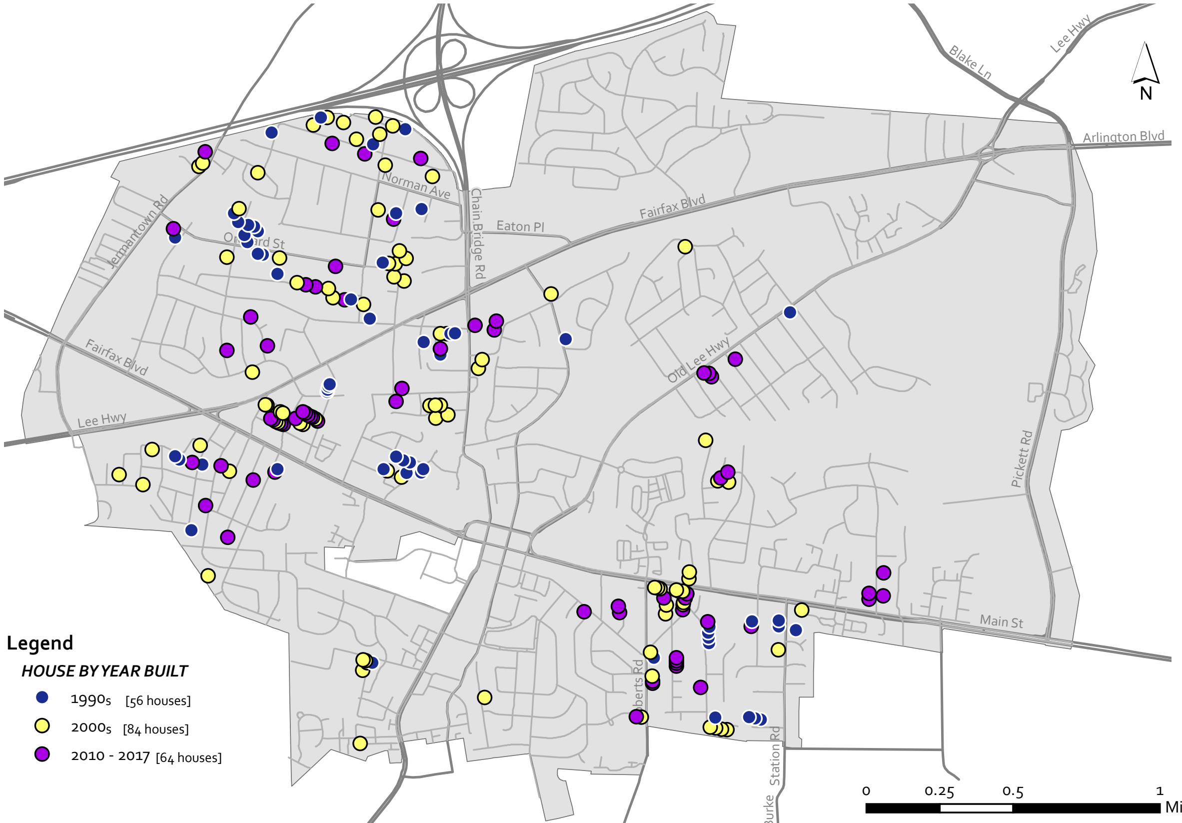
Source: City of Fairfax GIS and Real Estate data 2016

Opportunities and Challenges

Residential improvements

With an aging housing stock, there is consistent pressure for upgrading or replacing existing homes. While this can help keep neighborhoods current with consumer desires and housing preferences, it can also impact the character of existing neighborhoods.

FIGURE 4 INFILL HOUSING BY DECADE BUILT



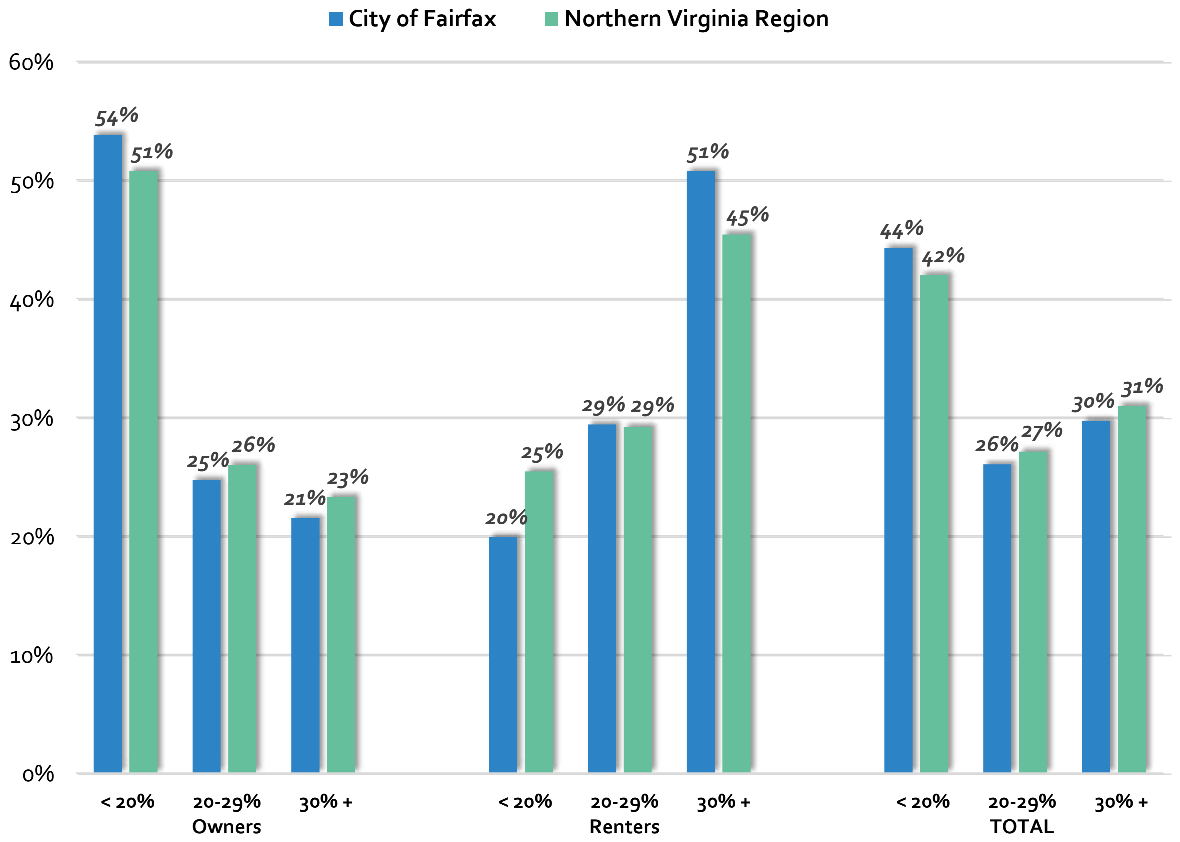
Source: City of Fairfax GIS and Real Estate data 2017

Housing affordability

As the regional economy has grown, increases in housing values have outpaced increases in income. As a result, there are few residential units in the City that are affordable to lower income households. About one-third of City households spend more than 30% of their income on housing costs, as shown in Figure 5 , which also highlights that almost half of renters reside in units that are potentially cost-burdensome.

While many of the apartments that were built in the 1960s are more affordable than newer apartments in the surrounding areas of Fairfax County, their asking rents are not achievable to a full range of incomes. There is also no guarantee that these apartment complexes will remain as "naturally occurring affordable housing." Redevelopments of two complexes have been approved since 2013, and there has been communicated interest in redevelopment of additional complexes.

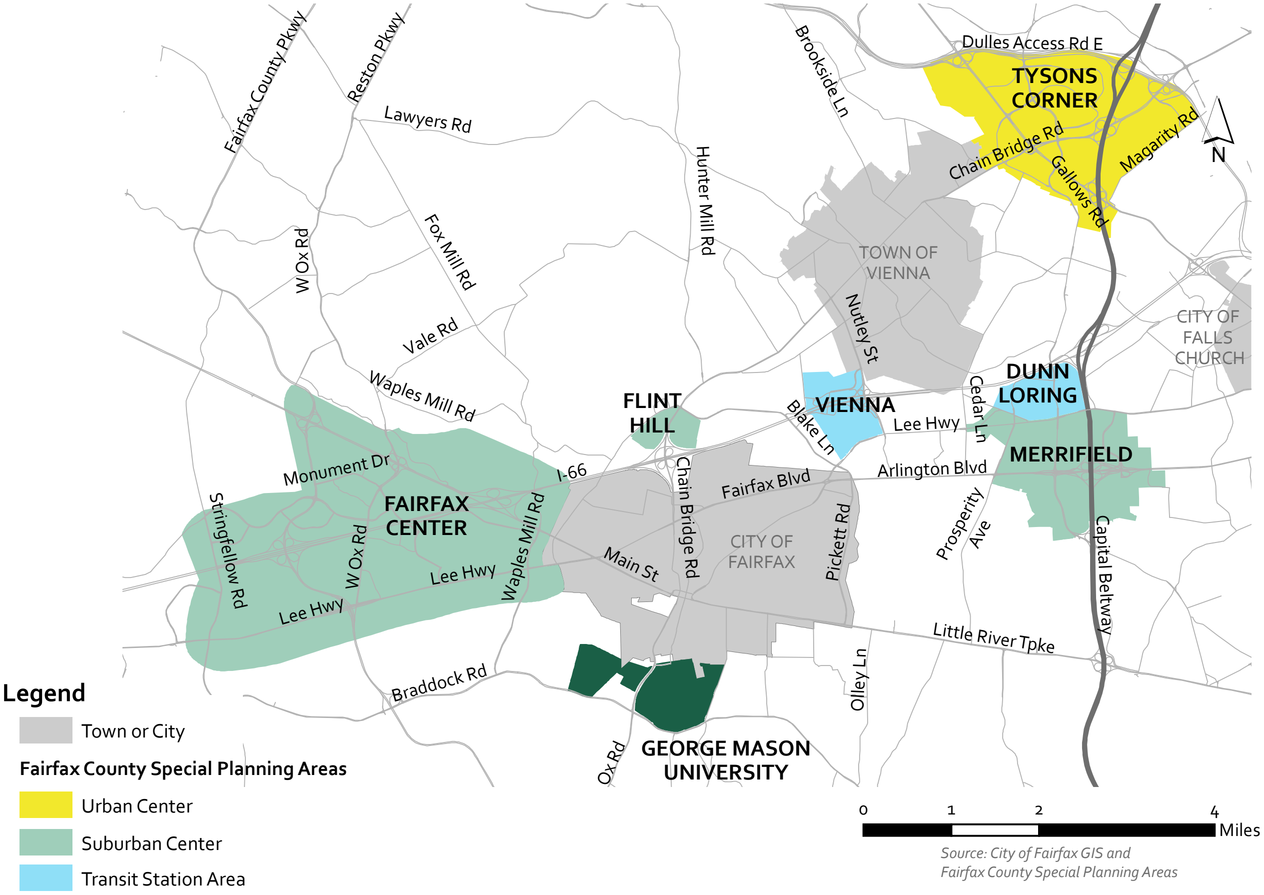
FIGURE 5 HOUSING COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME BY TENURE AND IN TOTAL



Source: US Census ACS, 2012-16

Note: The Department of Housing and Urban Development defines cost-burdened families as those who pay more than 30% of their income for housing and may have difficulty affording necessities such as food, clothing, transportation, and medical care.

FIGURE 6 NEARBY MAJOR MIXED-USE CENTERS

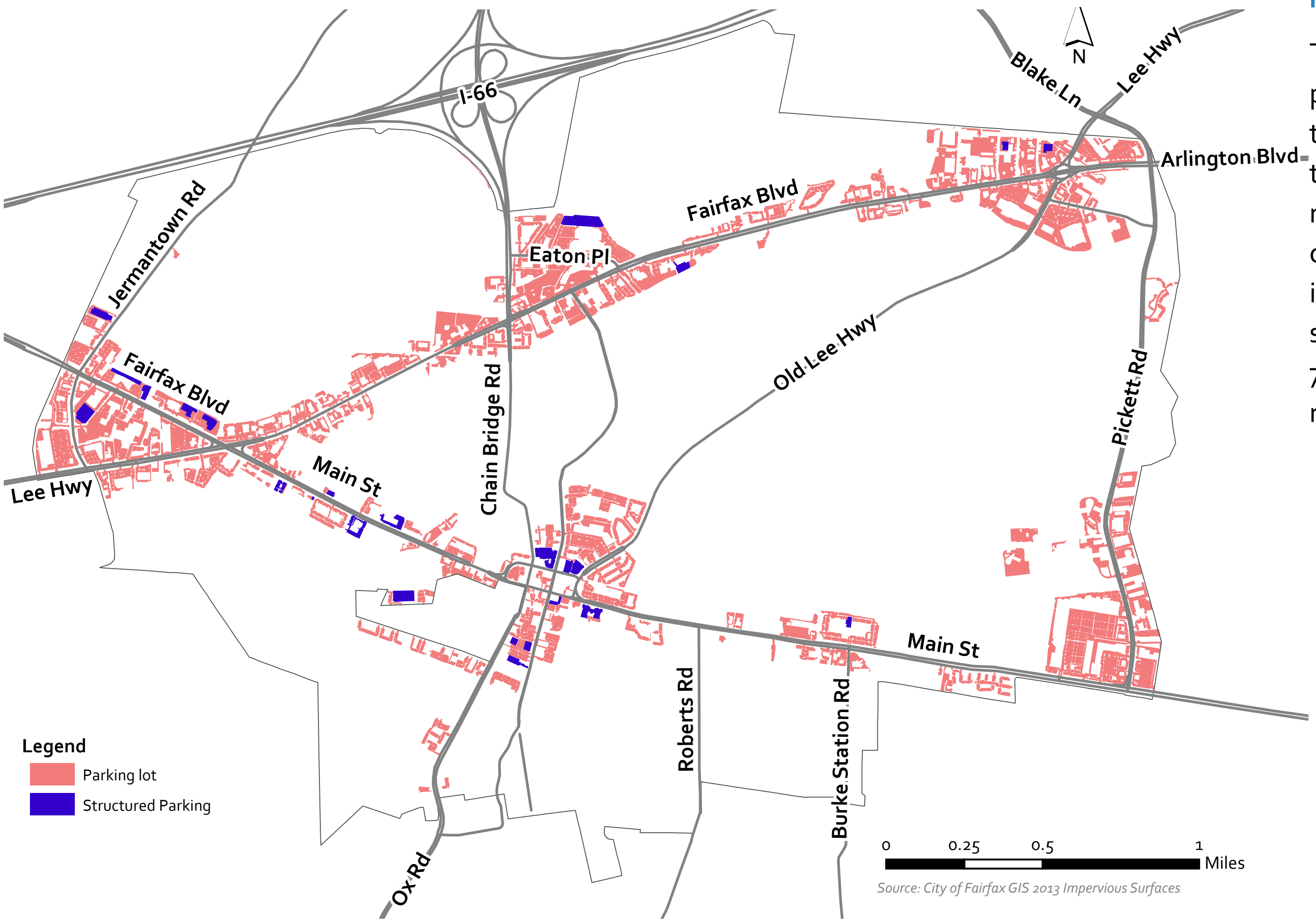


Source: City of Fairfax GIS and Fairfax County Special Planning Areas

Commercial market changes

Long-term shifts in retail and office markets have added uncertainty to the continued marketability of some commercial properties in the City. In addition, new development to the east and west of the City absorbs potential demand for destination commercial offerings, and the City's Commercial Corridors and Activity Centers currently lack many popular types of retail and entertainment establishments. This trend could continue with the Fairfax County Comprehensive Plan encouraging new commercial and mixed-use development in designated Special Planning Areas proximate to the City, as shown in Figure 6.

FIGURE 7 COMMERCIAL AND INDUSTRIAL SURFACE AND STRUCTURED PARKING



Source: City of Fairfax GIS 2013 Impervious Surfaces

Commercial redevelopment potential

There are numerous commercial properties throughout the City with the potential for redevelopment or to reposition themselves for current market demands. Characteristics of potential redevelopment sites include significant amounts of surface parking, as shown in Figure 7, and low building-to-land value ratios.

Land Use Strategies

Guiding Principle:

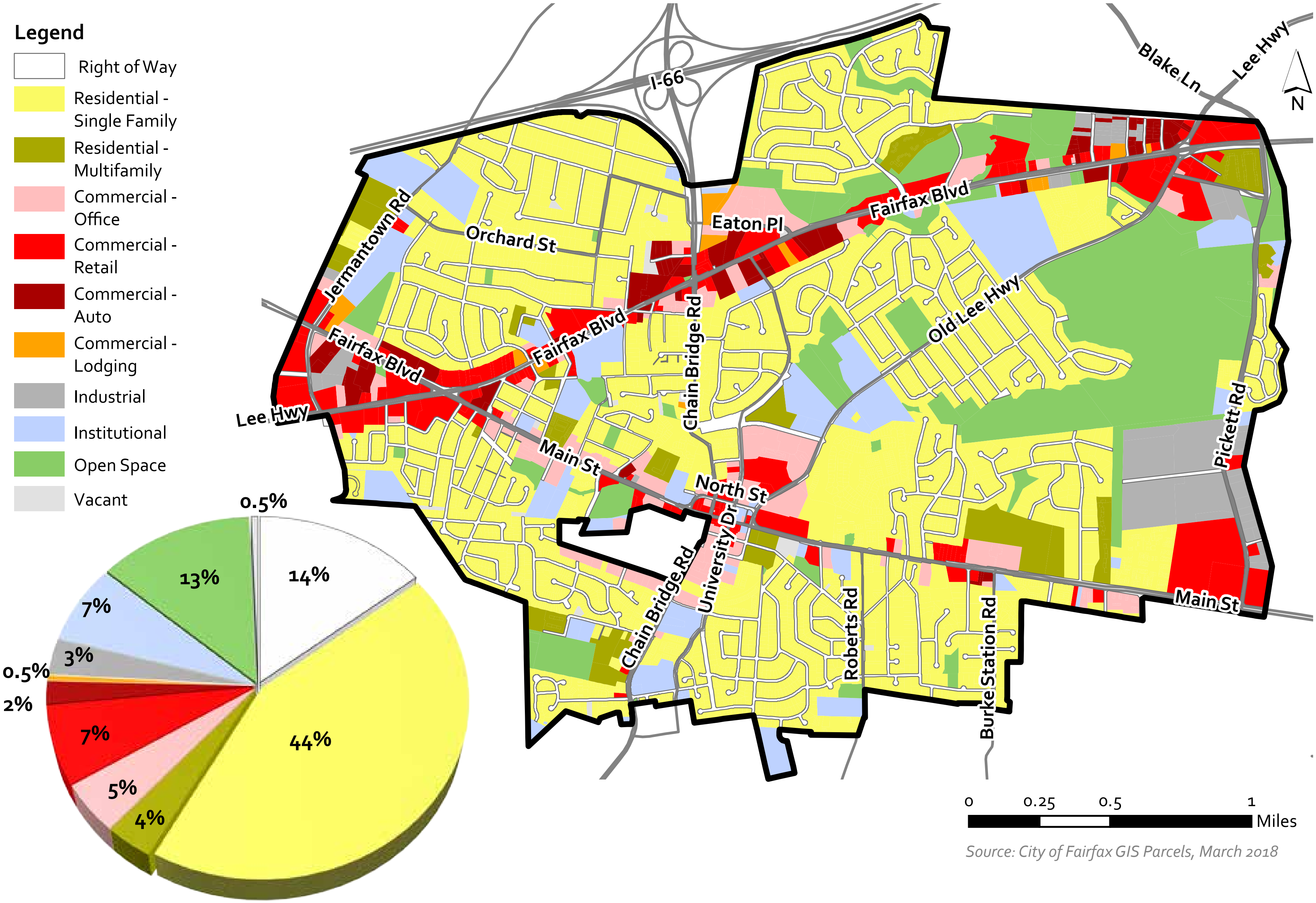
In 2035, Fairfax is a city with...
a close-knit community and a
population that is diverse in its
culture, demographics, and lifestyles,
that capitalizes on its location in the
center of the growing region and with
easy access to the nation's capital.

More than 200 years of growth and development have formed Fairfax into a unique small city with development patterns and building styles that span multiple eras. A variety of land uses are distributed throughout the City to complement and support each other. Existing land uses and a summary of land use coverage areas in the City are shown in Figure 8. The City, however, continues to evolve to accommodate changing needs of residents and businesses. The Land Use Strategies Guiding Principle supports measures to manage growth in such a way to allow the City to evolve while maintaining the unique character that has taken decades to build.

Managing development depends heavily on the Comprehensive Plan Future Land Use Map (shown on p. 27). This map, which is supported by Goal 1 of this Guiding Principle, illustrates the desired land uses in the City organized by Place Types, which are locations within the City that are intended to share similar physical characteristics and have both zoning and "Link + Place" street types (as defined under Multimodal Transportation Goal 2) that are consistent with these characteristics.

Rather than show land uses as they exist today, the Future Land Use Map shows how the Comprehensive Plan foresees appropriate development over the next 15 to 20 years. The Place Types shown on the map communicate the types of uses and character of development envisioned throughout the City.

FIGURE 8   EXISTING LAND USE MAP



Source: City of Fairfax GIS Parcels, March 2018

Land Use Strategies

Goal 1

Ensure development is complementary.

OUTCOME LU1.1:	The Future Land Use Map is used in conjunction with other recommendations from the Comprehensive Plan to guide development throughout the City.
ACTION LU1.1.1	Maintain and update, as necessary, a Future Land Use Map that provides for a balanced mix of development types and addresses current and future needs of the City.
ACTION LU1.1.2	Use the Future Land Use Map (Figure 9), Place Types, and general text from the Comprehensive Plan as a guide when considering new development throughout the City.
ACTION LU1.1.3	Refer to Parcel Specific Recommendation, as detailed on pages 39-44 for potential alternative uses. Amend the Comprehensive Plan to provide additional Parcel Specific Recommendations as appropriate.
OUTCOME LU1.2:	Zoning regulations that accommodate high-quality design and development practices.
ACTION LU1.2.1	Consistently review the Zoning and Subdivision Ordinances and the Zoning Map to ensure they are able to support the Future Land Use Map and other guidance of the Comprehensive Plan.

While the 6.3 square mile City is primarily built out, leaving few opportunities for large new development, there is consistent pressure for the City's variety of land use types to adapt to environmental, economic and cultural demands. This means that some flexibility must be provided with a balanced mix of development types that accommodate adaptations without negatively impacting the existing community. New development and redevelopment should be complementary to surrounding areas and contribute to an attractive, accessible, and economically viable place.

This can be managed by using the Future Land Use Map in conjunction with recommendations of this Comprehensive Plan and the requirements of the Zoning and Subdivision Ordinances to guide development within the City. While the Future Land Use Map communicates the most appropriate types of uses and character of development, the Zoning and Subdivision Ordinances provide the regulatory measures to accommodate such development. The Ordinances may occasionally be amended to furnish necessary changes for various land uses.

Future Land Use Map

The Future Land Use Map is provided in Figure 9, with specific guidance on development for each of the Place Types identified on the map provided on the following pages. Additional guidance is provided for certain specific sites beginning on page 38. When using the Future Land Use Map, consideration should also be given to the other Guiding Principles of this chapter, depending on site location and types of uses.

The following information is provided for each of the Place Types:

1. Definition: A brief description of the types of uses and structures the Place Type applies to.
2. Zoning Districts: A list of Zoning Districts that are most likely to accommodate the uses and structures provided in the definition for the Place Types.
3. Link + Place Street Types: A list of the types of streets (as provided in the Multimodal Transportation Chapter) where the Place Type is most appropriate.
4. Physical Characteristics: A description of general preferences for site design and building placement.
5. Concept diagrams and photos: Provided to show typical development patterns for each Place Type.

Most new development is anticipated to occur in areas designated as an Activity Center Place Type. There are five areas of the City that have this Place Type designation: Old Town Fairfax, Northfax, Kamp Washington, Fairfax Circle, and Pickett & Main. The following additional guidance is provided for the Activity Center Place Type:

6. Use Characteristics: Since multiple uses can be accommodated in the Activity Center Place Type, separate physical characteristics are provided for various uses to ensure that new development provides a consistent character in spite of varying uses.
7. Residential Limitations: As a more detailed analysis of specific development scenarios is not included in this plan, limitations on the number of residential units that can be absorbed in each Activity Center are provided. This is intended to communicate to developers and the general public that unrestrained increases in residential development will not be considered in these areas of the City.

Small Area Plans

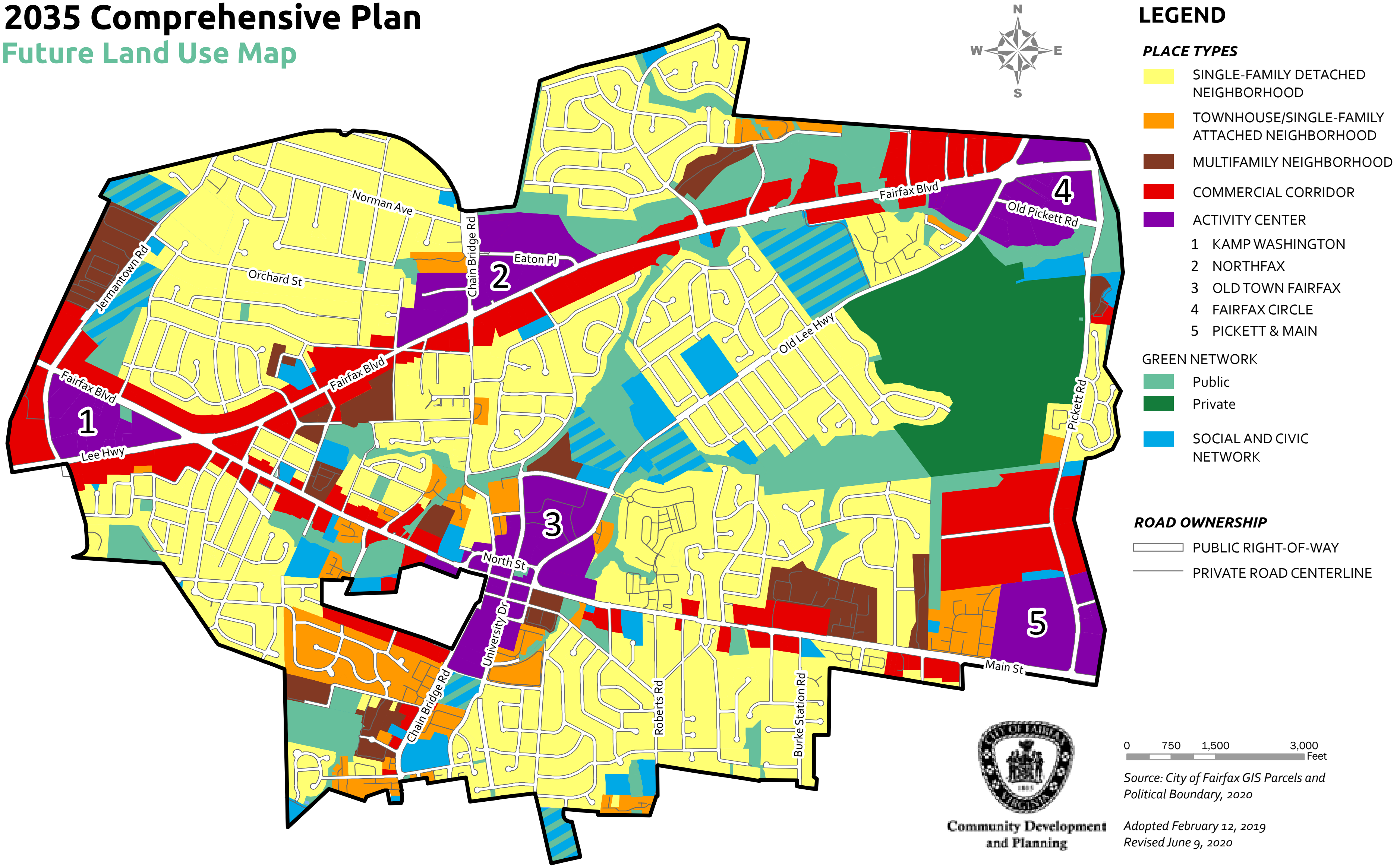
Small Area Plans are an opportunity to conduct detailed analyses of concentrated geographic areas of the City and provide more specific recommendations on issues such as land use and transportation than that provided in the Comprehensive Plan. Once approved, Small Area Plans serve as the primary source for guidance on development in the respective Activity Centers. As supported by Land Use Action CCAC2.3.5, Small Area Plans are proposed for each of the five Activity Centers. As each of the Small Area Plans is completed and adopted, the recommendations from that plan will supersede the Activity Center Place Type recommendations from the Future Land Use Map. This may include the guidance provided for Physical Characteristics, appropriate Street Types, Use Characteristics, and Residential Limitations.

In June 2020, Small Area Plans were adopted for the Old Town Fairfax and Northfax Activity Centers. While a brief description of these two Activity Centers is provided in the Activity Center Place Type description, please refer to the respective Small Area Plans for specific guidance in those two areas. The general guidance in the Activity Center Place Type description applies to Kamp Washington, Fairfax Circle, and Pickett & Main until Small Area Plans are adopted for those Activity Centers.

FIGURE 9   FUTURE LAND USE MAP

2035 Comprehensive Plan

Future Land Use Map



Community Development and Planning

Source: City of Fairfax GIS Parcels and Political Boundary, 2020

Adopted February 12, 2019
Revised June 9, 2020

SINGLE-FAMILY DETACHED NEIGHBORHOOD

Definition

The Single-Family Detached Neighborhood Place Type, identified in yellow on the Future Land Use Map, applies to neighborhoods that are primarily developed with single-family detached homes. Accessory uses associated with these residences are permitted, such as home-based businesses and accessory dwelling units.

Physical Characteristics

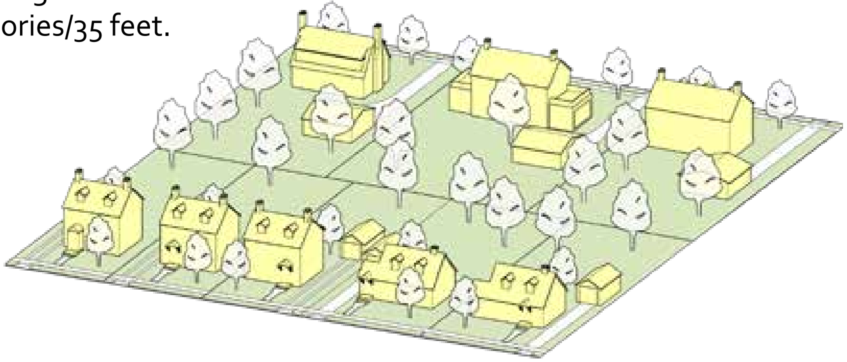
New development of single-family detached homes in an existing residential neighborhood should reflect the character of that neighborhood by providing similar lot widths and building setbacks as surrounding properties. In order to support shared stormwater management facilities and usable open space, narrower lot widths and building setbacks may be considered where a new development provides a similar overall density to the surrounding neighborhood. New development is considered to be within an existing neighborhood where any vehicular access is taken from an existing Limited Connection Residential street or a Neighborhood Circulator. New residential units on all lots that are adjacent to those streets should be oriented with the front of the structure facing that street, even where vehicular access is taken from a new public or private street. Predicated on the underlying zoning district, the Single-Family Detached Neighborhood Place Type supports up to 7 dwelling units per acre and a maximum height of 3 stories/35 feet.

Zoning Districts

- RL, Residential Low
- RM, Residential Medium
- RH, Residential High
- PD-R, Planned Development Residential

Link + Place Street Types

- Limited Connection Residential
- Neighborhood Circulators
- Some existing Single-Family Detached Neighborhoods are present along Avenues and Boulevards, such as portions of Chain Bridge Road, Old Lee Highway, and Main Street.



TOWNHOUSE/SINGLE-FAMILY ATTACHED NEIGHBORHOOD

Definition

The Townhouse/Single-Family Attached Neighborhood Place Type, identified in orange on the Future Land Use Map, applies to neighborhoods that are primarily developed with townhouses and single-family attached or duplex housing. Single-family detached uses may be considered in the Townhouse/Single-Family Attached Neighborhood Place Type when developed in conjunction with Townhouse/Single-Family Attached Neighborhood uses.

Physical Characteristics

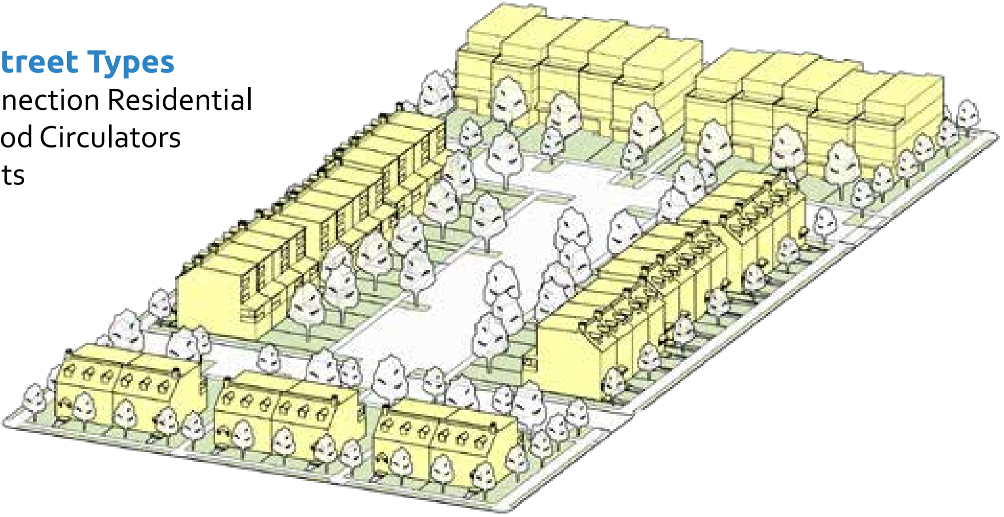
The design and layout of new Townhouse and Single-Family Attached Neighborhood developments should reflect the location of the development within the City. In particular, development that is adjacent to Single-Family Detached Neighborhoods within City limits, or to neighborhoods zoned primarily for single-family detached residences within adjacent jurisdictions, should have a maximum of three floors and provide landscaped setbacks for that portion of the site that is adjacent to any such neighborhood. Otherwise, a building height of up to four stories or 45 feet may be considered. Predicated on the underlying zoning district, the Townhouse/Single-Family Attached Neighborhood Place Type supports up to 12 dwelling units per acre.

Zoning Districts

- RT, Residential Townhouse
- RT-6, Residential Townhouse
- PD-R, Planned Development Residential

Link + Place Street Types

- Limited Connection Residential
- Neighborhood Circulators
- Active Streets
- Avenues
- Boulevards



MULTIFAMILY NEIGHBORHOOD

Definition

The Multifamily Neighborhood Place Type, identified in brown in the Future Land Use Map, applies to neighborhoods that are primarily developed with multifamily apartment or multifamily condominium housing. Townhouse/Single-Family Attached Neighborhood uses and Single-Family Detached Neighborhood uses may be considered in the Multifamily Neighborhood Place Type when developed in conjunction with Multifamily Neighborhood uses.

Physical Characteristics

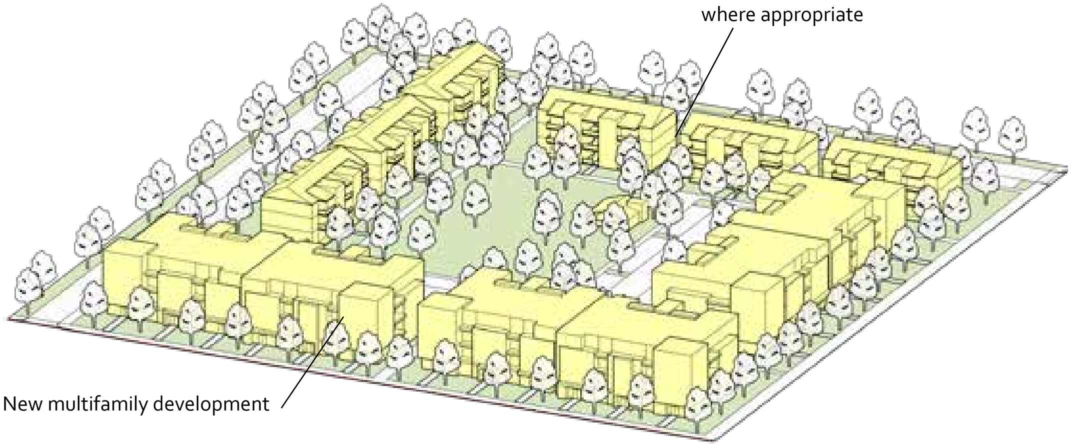
The design and layout of new Multifamily Neighborhood developments should reflect the location of the development within the City. Development that is adjacent to Single-Family Detached or Townhouse/Single-Family Attached neighborhoods within City limits, or to neighborhoods zoned primarily for single-family detached or single-family attached residences within adjacent jurisdictions, should have a maximum of three floors and provide landscaped setbacks for portions of the site that are adjacent to any such uses. Otherwise, a building height of up to four stories or 45 feet may be considered. In order to retain the relative affordability available in many existing multifamily structures, redevelopment of existing multifamily sites within Multifamily Neighborhood land use areas, where additional density is permitted by the Zoning Ordinance, should consider accommodating existing multifamily structures. Predicated on the underlying zoning district, the Multifamily Neighborhood Place Type supports up to 20 dwelling units per acre and a maximum height of 4 stories/45 feet.

Zoning Districts

- RMF, Multifamily
- PD-R, Planned Development Residential

Link + Place Street Types

- Limited Connection Residential
- Neighborhood Circulators
- Active Streets
- Avenues
- Boulevards



COMMERCIAL CORRIDOR

Definition

The Commercial Corridor Place Type, identified in red on the Future Land Use Map, includes a mix of retail, restaurant, service, medical, office, and other commercial uses. Limited manufacturing and other light industrial uses may also be considered. Heavy industrial uses should not be added or expanded beyond areas where they currently exist (such as the tank farm on Pickett Road). Residential uses are not recommended in Commercial Corridors. Commercial areas should accommodate access via a variety of transportation modes and be accessible to adjacent neighborhoods via pedestrian and bicycling facilities.

Physical Characteristics

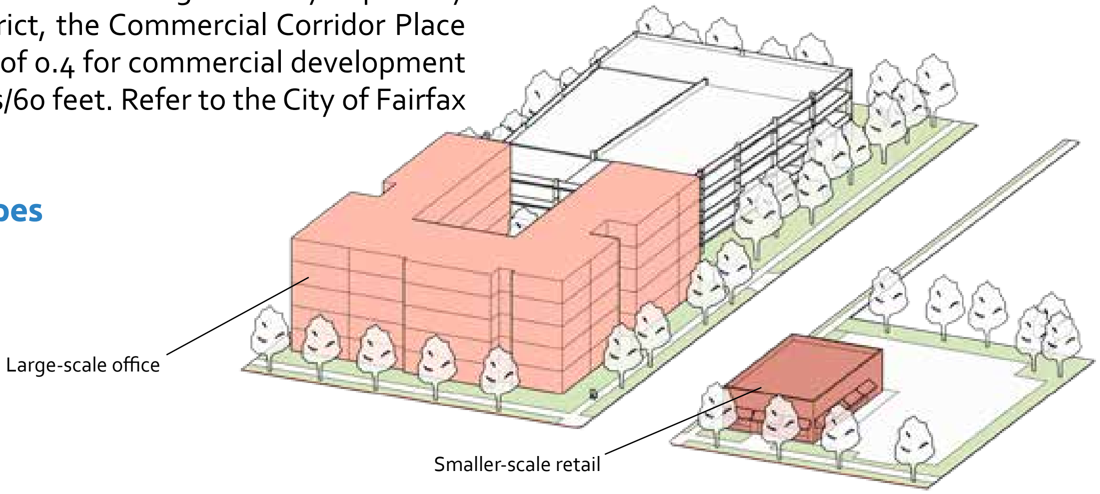
Commercial Corridor Place Types can accommodate a variety of buildings from small footprint retail buildings to multi-story office buildings. The desired orientation and placement of buildings on a Commercial Corridor site is primarily dependent on the adjacent Street Type. For sites located along Commercial Mains, buildings should have similar setbacks and building orientation as recommended for the nearby Activity Centers. Parking is encouraged in above-ground structures or underground, should be provided to the side or rear of buildings, and should be screened from view from the right-of-way by building mass or landscaping. For sites located along Boulevards or other street types, buildings should be located near front property lines with parking provided to the side or rear. Direct pedestrian access should be provided from the sidewalk in the right-of-way to primary building entrances. Predicated on the underlying zoning district, the Commercial Corridor Place Type supports a density of a minimum Floor Area Ratio (FAR) of 0.4 for commercial development and a maximum building height of 3 stories/35 feet to 5 stories/60 feet. Refer to the City of Fairfax Design Guidelines for more specific guidance on site design.

Zoning Districts

- CL, Commercial Limited
- CO, Commercial Office
- CR, Commercial Retail
- CG, Commercial General
- IL, Industrial Light
- IH, Industrial Heavy
- PD-C, Planned Development Commercial
- PD-I, Planned Development Industrial

Link + Place Street Types

- Boulevards
- Commercial Mains



ACTIVITY CENTER

Definition

The Activity Center Place Type, identified in purple on the Future Land Use Map, applies to locations in the City where pedestrian-oriented, mixed-use development is strongly encouraged. (Mixed-use development is pedestrian-oriented development that allows multiple activities to take place by layering compatible land uses, public amenities, and active streets accommodating multimodal transportation, and community-serving commercial.) Uses should be integrated as a mix of commercial uses, multifamily housing, and townhouses, either in the same building (i.e., vertical mixed-use) or as a combination of single-use buildings featuring a range of complementary uses within the Activity Center (i.e., horizontal mixed-use).

Physical Characteristics

Activity Centers can accommodate a variety of building types based on the different uses permitted and varying characteristics among individual Activity Centers. Recommended physical characteristics for specific uses are provided under Use Characteristics (p. 33) and more specific recommendations are provided for the Old Town Fairfax and Northfax Activity Centers on the following pages. The Comprehensive Plan also recommends Small Area Plans be developed for each of the City's five Activity Centers. As each of these plans is completed and adopted, the recommendations will supersede the pre-existing guidance of this Comprehensive Plan.

In general, new development in Activity Centers should support a connected street network as recommended in the Multimodal Transportation Chapter of the Comprehensive Plan; provide an improved streetscape and pedestrian connections to surrounding uses, including links to the existing pedestrian network; and include inviting public and/or private open spaces. Parking should be provided in structured or below-grade facilities where reasonable.

Development in Activity Centers must meet the Code of Virginia definition for an Urban Development Area (Virginia Code § 15.2-2223.1) and follow the recommendations for Private Site Design and Elements in the applicable district of the City of Fairfax Design Guidelines. Predicated on the underlying zoning district, the Activity Center Place Type supports a density of a minimum FAR of 0.4; at least six townhouses or at least 12 multifamily dwelling units per acre; or any proportional combination of residential and commercial densities with building heights predominantly five stories or less, unless otherwise specified in an adopted Small Area Plan.

Photo Credit: Hord Coplan Macht

ACTIVITY CENTER (con't)

Use Characteristics

Office: Office uses are acceptable as components of mixed-use buildings or as stand-alone buildings.

Retail: Retail uses may be provided on the ground floor of mixed-use buildings, as stand-alone buildings, or on upper floors of buildings where larger tenant floor area requirements would detract from an active presence on the first floor. Retail uses are preferred along Commercial Mains, except where indicated otherwise in adopted Small Area Plans, but may be provided at other locations within an Activity Center.

Hotel: Hotels are acceptable as components of mixed-use buildings or as stand-alone buildings. Hotels are particularly encouraged in high visibility locations along Commercial Mains and at key intersections, or as may otherwise be identified in adopted Small Area Plans.

Public, Civic, and Institutional: Public, civic and institutional uses that are allowed by special use permit in commercial districts in the Zoning Ordinance may be provided as components of mixed-use buildings or as stand-alone buildings.

Residential Multifamily: Residential multifamily uses are acceptable as components of mixed-use buildings or as stand-alone buildings. Ground floor residential uses in multifamily or residential mixed-use buildings, including accessory spaces and amenities but not including residential lobby areas, should not be provided along Commercial Mains, unless such uses are identified in adopted Small Area Plans. Where ground-floor residential units are located adjacent to Active Streets or Commercial Mains, direct exterior access should be provided to individual units.

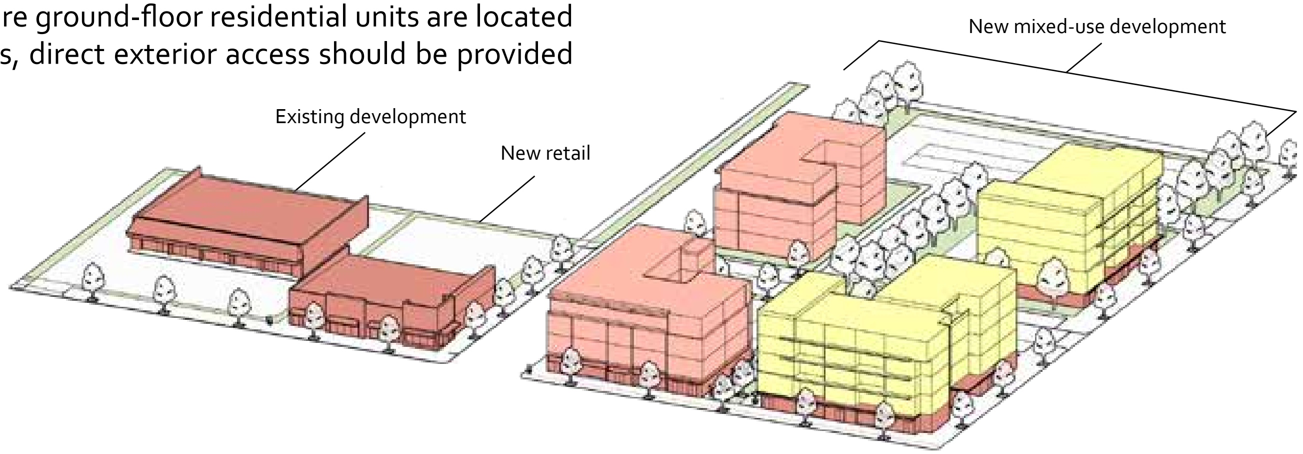
Townhouse: Residential townhouses should only be considered to serve as a transitional use to existing development outside of the Activity Center.

Zoning Districts

- CU, Commercial Urban
- PD-R, Planned Development Residential
- PD-C, Planned Development Commercial
- PD-M, Planned Development Mixed Use

Link + Place Street Types

- Active Streets
- Commercial Mains



ACTIVITY CENTER (con't)

Residential Limitations

The majority of future residential growth is anticipated to occur within the five Activity Centers identified in the Future Land Use Map. Refer to adopted Small Area Plans for specific recommendations on growth in each Activity Center. For Activity Centers for which a Small Area Plan has not yet been adopted, any unified development application within an Activity Center that contains a residential component should have a density of no more than 48 dwelling units per acre. Such developments must offer benefits that support the vision of the Comprehensive Plan for the Activity Center. Such benefits should include the following:

1. A mix of uses within the development site;

2. Contributions toward a connected street grid;

3. Usable open space, and;

4. High quality design.

Should a unified development application fail to offer these benefits, that development may contain no more than 20 dwelling units per acre.

Direct fiscal benefits to the City from residential developments are not typically as strong as those from commercial properties. In order to avoid significant displacement of commercial uses in Activity Centers, new residential development should first focus on lower value commercial or industrial sites unless a significant commercial component is included. Conversion of commercial space in existing buildings into residential space is not generally supported.

ACTIVITY CENTER - OLD TOWN FAIRFAX

The Old Town Fairfax Activity Center ("Old Town Fairfax") encompasses a cultural hub for the City, with a concentration of historic buildings, public services, active open space, and commercial buildings. Old Town Fairfax can also capitalize on its proximity to George Mason University to attract university supported businesses and arts and entertainment venues. The entirety of Old Town Fairfax is within the Old Town Fairfax Historic Overlay District (HOD) or the Old Town Fairfax Transition Overlay District (TOD) and is subject to those provisions of the Zoning Ordinance and the City of Fairfax Design Guidelines.

Refer to the Old Town Fairfax Small Area Plan, dated June 2020, for specific recommendations within Old Town Fairfax, including locations for future streets and open spaces, opportunities for pedestrian connections across Commercial Mains, building form (including appropriate locations for more or less restrictive building heights from the Activity Center standards), and general land use and development limitations. The overall concept plan for Old Town Fairfax, as provided in the Small Area Plan, is shown to the right.

ACTIVITY CENTER - NORTHFAX

The Northfax Activity Center ("Northfax") is considered the most appropriate location in the City to accommodate a regional mixed-use destination. Its location at the intersection of Fairfax Boulevard and Chain Bridge Road, with immediate access to Interstate 66 and a potential future Metro station, is more accessible than other Activity Centers. It is also equidistant from existing regional mixed-use destinations at Merrifield and Fairfax Corner. In order to leverage these characteristics, the City should strive to market Northfax to a wide range of commercial tenants and retail uses in order to take advantage of these benefits. New residential uses and amenities such as open spaces and a pedestrian-friendly multimodal transportation network, should also be leveraged to improve the commercial marketability of the Activity Center.

Refer to the Northfax Small Area Plan, dated June 2020, for specific recommendations within the Northfax Activity Center, including locations for future streets and open spaces, pedestrian connections, building height and form, general land use, and development limitations. The overall concept plan for Northfax, as provided in the Small Area Plan, is shown to the right.

SOCIAL AND CIVIC NETWORK

Definition

The Social and Civic Network Place Type, identified in blue on the Future Land Use Map, includes public and private schools, libraries, places of worship, post offices, and other public facilities There are no specific corresponding Link + Place Street Types for this category because the varying types of Social and Civic Network land uses are appropriate in a variety of conditions. There is no zoning district specifically related to this Place Type. More information on the zoning districts for which uses in this Place Type are permitted, or constitute a special use, is provided in the Principal Use Table in the Zoning Ordinance. In order to support the recommendations of the Housing Guiding Principle in this chapter, residential uses may be considered in conjunction with other uses in the Social and Civic Network Place Type, provided such residential uses are considered affordable.

Physical Characteristics

New development of, or modifications to existing, social and civic uses located in any Residential Neighborhood should complement the character of the surrounding properties and provide transitional screening where necessary. Any new, or modifications to, existing social and civic uses located in an Activity Center should reflect the typical context of the center. New buildings should be oriented towards the street network and provide additional pedestrian connections to surrounding uses as recommended in the Multimodal Transportation Chapter of the Comprehensive Plan.

GREEN NETWORK

Definition

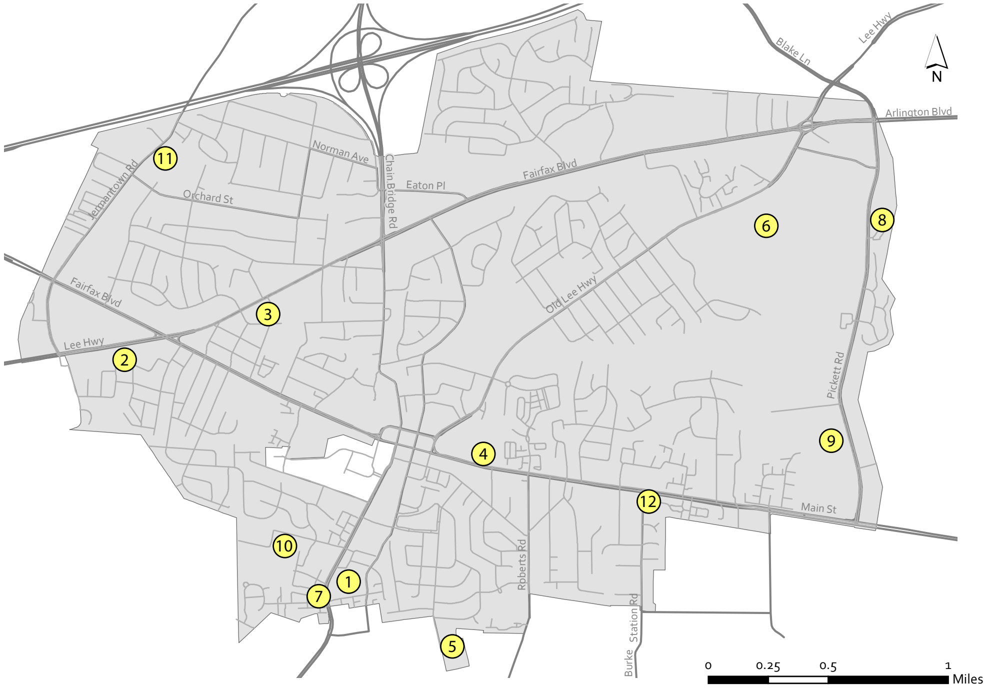
The Green Network Place Type includes public spaces, such as active and passive parks, trails, playing fields, public recreation facilities, cemeteries, open space, and private facilities such as golf courses and private open space. There are currently no zoning districts specifically related to this Place Type. Green Network uses are permitted in the CR, Commercial Retail; CU, Commercial Urban; and CG, Commercial General zoning districts and constitute a special use in all of the residential zoning districts. Outdoor recreational uses, such as tennis courts and golf courses, are permitted as a special use in all of the nonresidential zoning districts except for CL, Commercial Limited.

Physical Characteristics

New recreational facilities shall provide connections to the pedestrian and street network as recommended in the Multimodal Transportation Chapter of the Comprehensive Plan. Proposed connections to other green spaces to complete the network should be prioritized for recreation and transportation purposes as well as ecological benefits. Properties in the network also include natural areas for conservation and protection. Parking facilities for specific recreational uses shall be integrated into the site so as not to prioritize vehicular access over pedestrian connections.

Parcel Specific Considerations

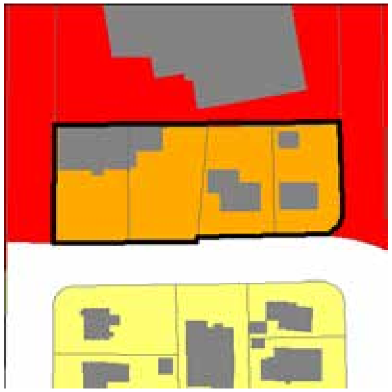
In some cases, the appropriate Place Type for a parcel or group of parcels can vary based on the specifics of design, changes in market demand and variations in surrounding conditions. Several sites in the City have been identified for further consideration of their Place Type designation based on these factors. These sites are identified on the map to the right and described below. While alternatives may be considered, the existing Place Type designation on the Future Land Use Map is the primary recommendation for each site. This list may be expanded in future modifications of this in plan. In particular, potential alternative Place Type designations should be considered for privately-owned sites with a Social and Civic Network designation.



1. Inova and Sunrise Assisted Living

The Inova Emergency Care site, located on Chain Bridge Road, School Street, and George Mason Boulevard, encompasses 9.6 acres and is currently occupied by the Inova Fairfax Emergency Care Center, Sunrise Assisted Living, and the PACE senior medical care center. This site is likely to become available for redevelopment within the next few years. Its unique location makes it suitable for different uses to include commercial, multifamily, and/or townhouse uses. Commercial uses are appropriate along Chain Bridge Road. Any multifamily development should provide substantial buffering to abutting residential uses to the north. Building heights should be no more than three floors along the north, east, and south property lines. Additionally, townhouse uses may be considered as a transition to adjacent, lower-density residential uses.

2. Park Road Properties



Four properties located along Park Road, totaling 0.89 acres, are located within the Westmore Neighborhood but are commercially zoned. Two of the parcels contain a commercial building. The other two parcels contain single-family residential buildings, though one is occupied by a commercial business. Given the location of these lots and their dependence on access from within the neighborhood, alternative uses may be more appropriate than a commercial zoning designation.

Single-family attached residential uses would provide a logical transition between the single-family detached neighborhood to the south and commercial uses to the north. Single-family detached residential uses may also be appropriate. Commercial uses may be appropriate if the properties are consolidated with commercial properties to the north so vehicular access is not dependent on Park Road.

3. Oak Street Properties

Five parcels (059 through 063 on the attached map) located along the west side of Oak Street between Fairfax Boulevard and Cedar Avenue are designated as Single-Family Attached and Single-Family Detached though they are surrounded by higher intensity uses, including the potential Fairfax Garden redevelopment to the west and commercial uses to the north and east. While the Place Type designation supports the current uses, these properties may be appropriate for a Multifamily Neighborhood Place Type designation if they are all included in a parcel consolidation. Alternatively, parcel 063 may be appropriate for a Commercial Corridor designation if it is consolidated with properties with that Place Type designation to the north.

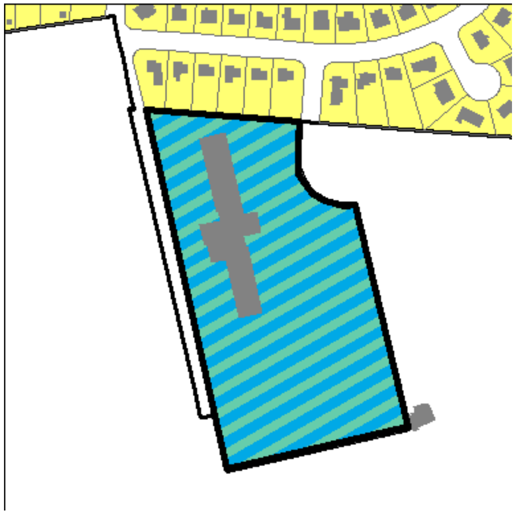
4. Farr Homeplace

This 9.4-acre property located along Main Street between Farrcroft and Main Street Marketplace is privately-owned and the location of the "Farr Homeplace," also known as "Five Chimneys." There is a Resource Protection Area in the rear of the property. Although no historic designation exists, it should be explored for inclusion within a Historic Overlay District. An alternate use may include Single-Family Attached Neighborhood. Any development should retain the existing house, minimize disturbance in the Resource Protection Area, and consider appropriate relationships with the Farrcroft neighborhood to the east.

5. Green Acres

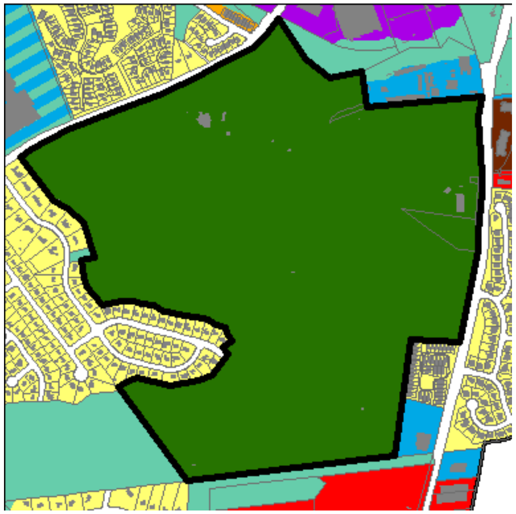
The Green Acres site encompasses 10 acres of land surrounded by George Mason University with one street leading to it through a residential neighborhood. The 2016 Green Acres Feasibility Study found that it is not best suited for the community center use it currently serves and recommended a new community center be constructed elsewhere in the City. The study proposed three alternatives for the future use of the Green Acres site; retaining the entire site for future community uses, selling the entire site, or retaining a portion of the site for community use and selling a portion of the site. The study does not recommend specific uses.

The City of Fairfax School Board reserves the right to retain the site for construction for a future school if necessitated by enrollment demands. This is governed through a covenant on the property. For this reason, the Social and Civic Network Place Type designation should remain. If this covenant is transferred to another property in the City, it would no longer be needed at Green Acres, and the site would become available for other uses.



6. Army Navy Country Club

Covering approximately 234 acres, the Army Navy Country Club is the largest individual property in the City and the largest area of open space. While there are no known plans for the Country Club to vacate or for the property to be developed, and this plan supports continued use of the property for open space, priorities for the future of the site should be considered. Given the wide array of potential implications development of this site could have on the various Guiding Principles for the City, an advisory committee should be formed to conduct a comprehensive analysis and provide recommendations on key priorities if development becomes likely.

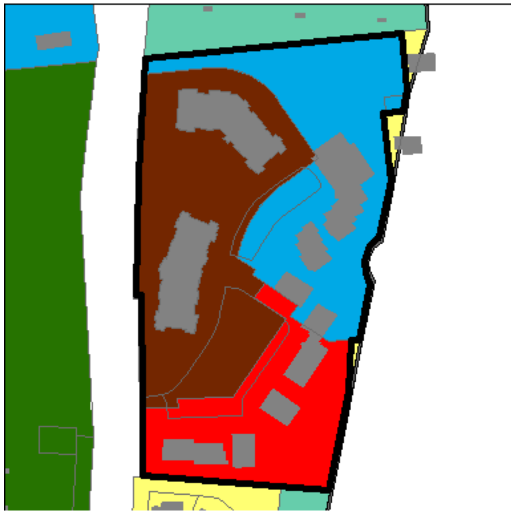


7. 4328 Chain Bridge Road

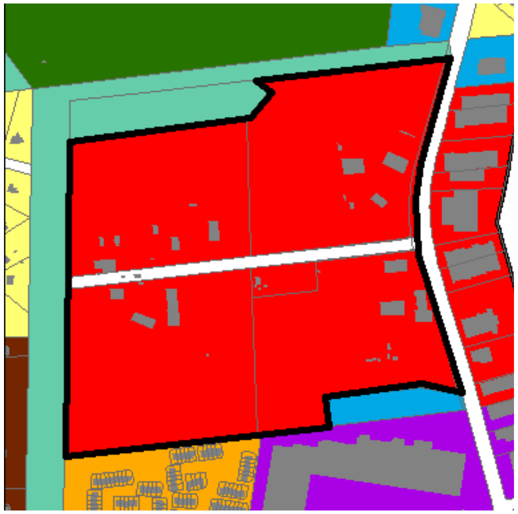
Encompassing just over half an acre, this site is located on the northwest corner of Chain Bridge Road and School Street. Adjacent properties to the north, west and south are occupied by fairly new townhomes and single-family homes that are not expected to be redeveloped within the timeframe of this plan. Redevelopment on this site should be limited to three stories to integrate with surrounding development. An alternative use for the site could include townhomes for which partial fourth stories could be considered for portions of the site that are not directly adjacent to shorter buildings.

8. Mantua Professional Center

The Mantua Professional Center was originally approved as an office development in 1975, though only a portion of the approved development was ever constructed. Since that time, the original approved plan has been amended several times, including separate amendments that converted portions of the site to be used as a private school and multifamily condominiums. As a result, the current complex is now occupied by three distinct uses. Alternative uses could include multifamily residential or townhomes in the portions of the site currently designated as Commercial Corridor and Social/Civic Network. Any expansion of residential uses in the complex should be cognizant of existing neighborhoods to the south and east and should provide adequate transitions in these areas.



9. Tank Farm

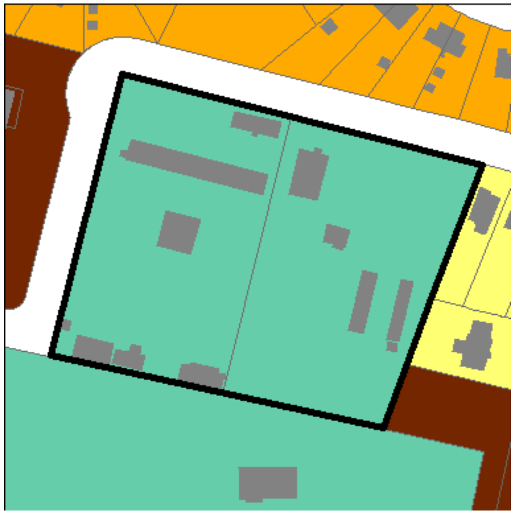


The Pickett Road tank farm comprises above-ground storage for four commercial gasoline and fuel oil facilities and an underground pipeline station on approximately 71 acres. No expansion of the existing heavy industrial uses at this site would be appropriate, and the Commercial Corridor place type is recommended for future development. While there are no known plans for the tank farm to be redeveloped, guidance on development priorities and alternative uses that complement recommendations for the Pickett & Main Activity Center should be established for the site.

Fairfax County Property Yards

Fairfax County currently owns and manages three property yards within the City, located on West Drive, Jermantown Road, and Main Street. Fairfax County may consider some of these locations for closure in order to provide more efficient services from a consolidated, centralized location. Should Fairfax County choose to vacate any of these locations and dispose of the properties, the City should consider pursuing acquisition. These properties have been identified as potential locations for park uses, open space, affordable housing partnerships between the City and non-profit entities, school sites, property yard functions, or other uses.

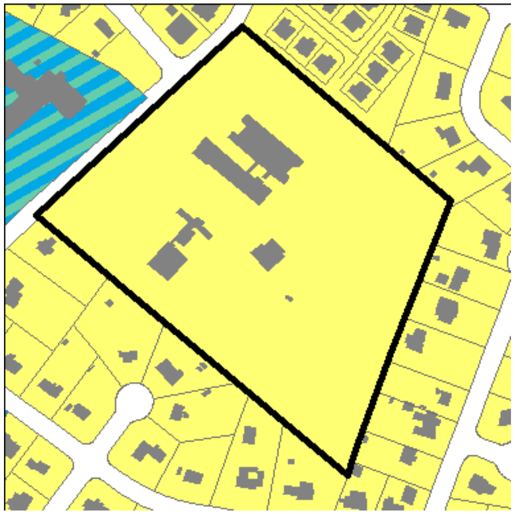
10. West Drive



The two properties that make up the West Drive property yard site encompass 4.2 acres and present a logical extension of the adjacent Providence Park. Their inclusion in the park area would also make Providence Park large enough to host a potential future elementary school in place of the Green Acres site, should that site be desired for other uses. If the City does not acquire this site, it is most suitable for residential development, including single-family detached, single-family attached, or multifamily units. Residential development should provide logical transitions to adjacent uses, particularly along the eastern property line where it abuts existing single-family uses.

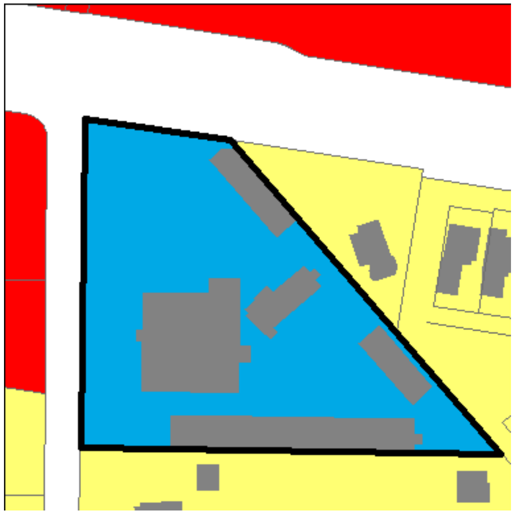
11. Jermantown Road

If this 15-acre property discontinues its function as a property yard and the City does not acquire it, single-family detached residential uses are an appropriate use, consistent with surrounding uses. The cemetery on this parcel should not be impacted by any redevelopment.



12. Main Street

This 2.45-acre parcel is bounded on two sides by roads, Main Street and Burke Station Road. If the City obtains this site, one potential reuse would be a relocation of some of the City's public works services, currently located at the Property Yard on Pickett Road. The existing property yard has flooding issues and diminishing space. The Parks and Recreation Strategic Plan also recommends identification of new potential park sites in the southeast portion of the City. While this site is relatively small, open space uses would provide an amenity in a portion of the City in which open space is not abundant. If the City does not purchase this property, appropriate uses include single-family detached, single-family attached, or commercial uses.



Neighborhoods

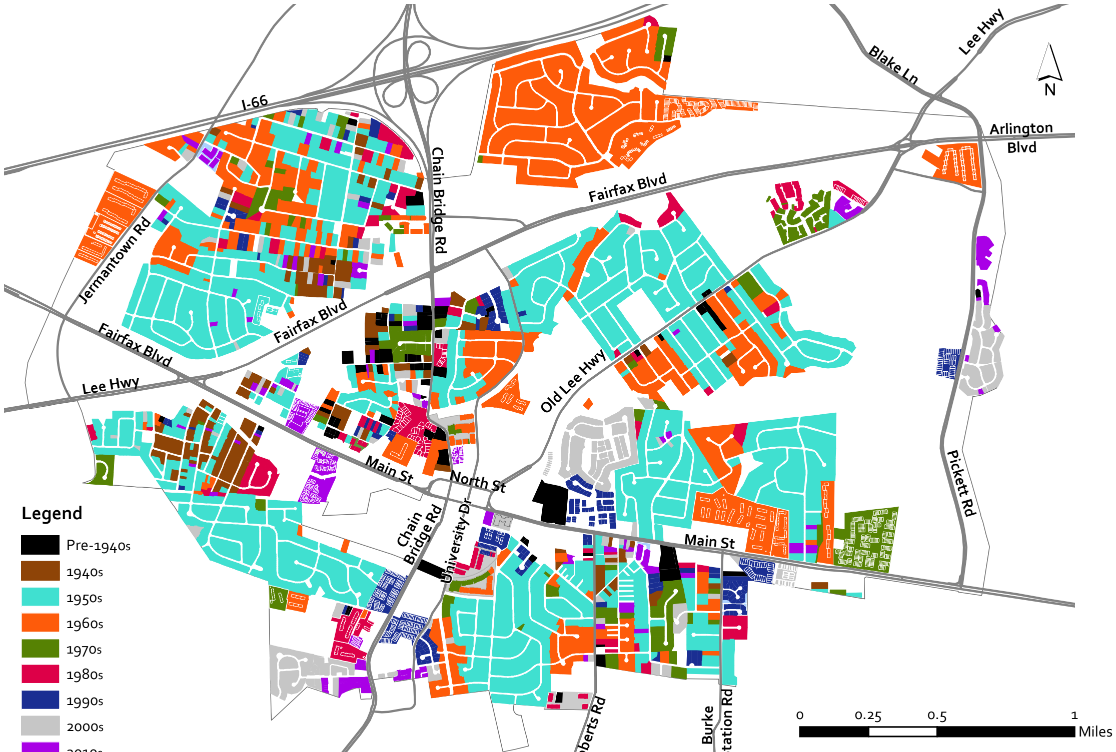
Neighborhoods – the places where we live, learn, play, and increasingly work – constitute the largest geographical use of land in the City, though physical boundaries are not the only defining character trait of a neighborhood. Numerous characteristics define neighborhoods, including the period of building and development (Figure 10), subdivision patterns, architectural style, location of public amenities and services, and presence of social or civic organizations. The City's neighborhoods each have their own unique character and offer a variety of housing and lifestyle opportunities.

Neighborhoods are supported by a separate Guiding Principle in this Plan due to their importance to residents. City growth and development policies must both preserve the quality of neighborhoods and protect neighborhoods from adverse consequences of growth. However, this should not imply that Fairfax's neighborhoods should remain static. Well-designed and properly scaled infill can be an appropriate strategy to foster walkability, better amenities, and housing affordability. This section's goals strive to balance these concerns and take advantage of opportunities through improved policies and regulations, and increased communication with and within the community.

Guiding Principle:

In 2035, Fairfax is a city with...
inviting neighborhoods, each
with its own unique character.

FIGURE 10 HOUSING AGE BY DECADE BUILT



Source: City of Fairfax GIS and Real Estate data 2016

Neighborhoods Goal 1

Enhance neighborhood character.

There is relatively little undeveloped land available in the City for new residential neighborhoods. As the City's housing stock ages, replacements for, or additions to, existing structures will be the prevalent methods of updating housing to meet current market demands. The City should use this as an opportunity to enhance the character and inclusiveness of the City's neighborhoods. Any modification or new construction on residential lots located in established neighborhoods should be compatible with the character of that neighborhood. In order to encourage reinvestment in neighborhoods, the City and civic associations should educate residents about programs available to them (such as Fairfax Renaissance Housing Corporation loans) and the processes involved in updating their homes.

OUTCOME N1.1:	Infill housing that complements the character of surrounding homes in existing neighborhoods.
ACTION N1.1.1	Maintain regulatory standards to ensure infill housing fits in with the surrounding neighborhood context.
OUTCOME N1.2:	Residents have regular communication and positive interactions with other members of their neighborhood as well as the larger City community.
ACTION N1.2.1	Encourage and support community engagement through homeowner, condominium, and civic associations.
ACTION N1.2.2	Establish regular communication with homeowner, condominium, and civic associations and residential property managers as a means to keep individual citizens informed about City business.

Neighborhoods

Goal 2

Provide neighborhood pedestrian connections.

Walkability was frequently cited as a desired attribute of the City during the Comprehensive Plan's public outreach process. Ensuring our neighborhoods are designed to both encourage pedestrian activity and to provide various transportation alternatives will enable people of all abilities to get around the City efficiently and reduce traffic congestion. Improving walkability is not just about adding more sidewalks and trails, but also looking at destinations residents can walk to – such as parks, schools, Commercial Corridors, Activity Centers, and other local destinations – and identifying the condition of the transportation network that can get them there. The strength of a network to get someone from point A to point B is only as good as its weakest link.

OUTCOME N2.1: Residents of all abilities safely and easily move about the community.

ACTION N2.1.1 Identify opportunities for future open space and trails in neighborhoods that are currently deficient in offering these amenities.

ACTION N2.1.2 Expand existing pedestrian network to increase connectivity within neighborhoods and to other destinations.

Commercial Corridors and Activity Centers

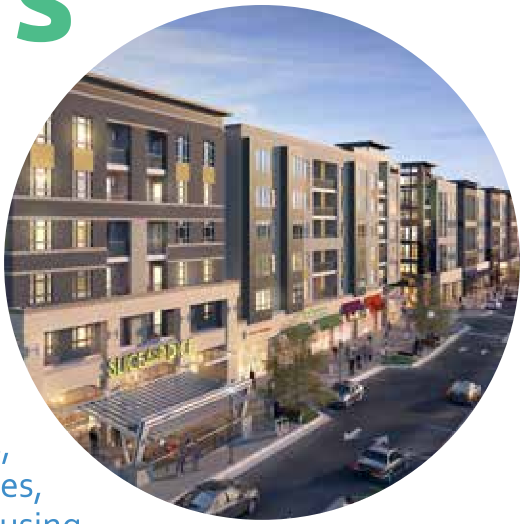


Photo Credit: Hord Coplan Macht

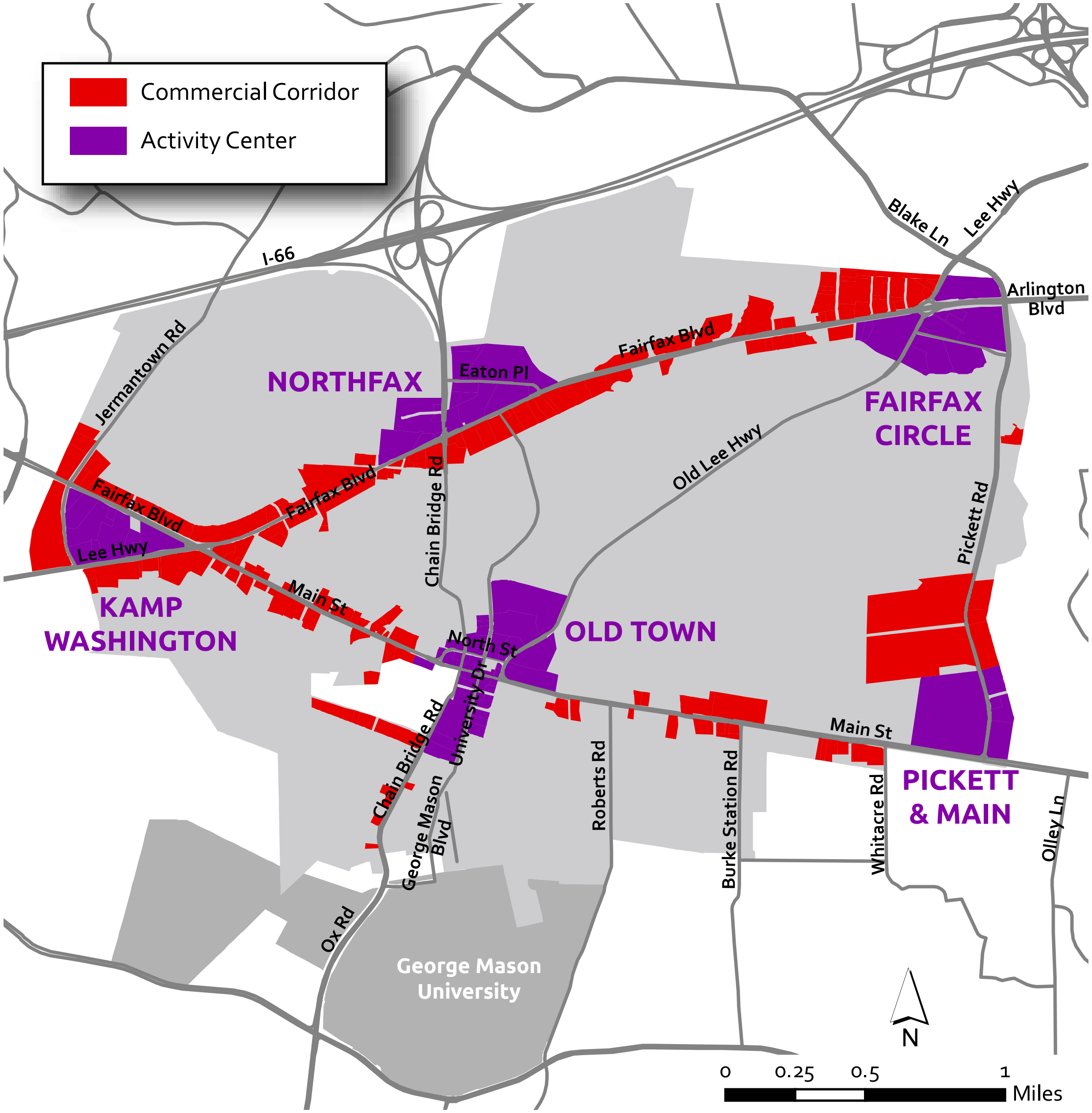
Guiding Principle:

In 2035, Fairfax is a city with...
flourishing centers of commercial and mixed-use activity that include an assortment of grocery stores, restaurants, cafes, entertainment venues, retail stores, offices, and housing.

Fairfax's success in achieving the community's vision for future development hinges upon effective growth strategies for the City's areas of highest redevelopment potential. These areas will accommodate the majority of new commercial activity, higher density residential neighborhoods, and transportation improvements. Success in achieving this vision will be measured not by the magnitude of new investment, but rather by the attributes that can transform a disjointed pattern of development into an attractive and welcoming neighborhood. If the City's Commercial Corridors and Activity Centers can be transformed into areas with attractive physical characteristics and a mix of uses, then the City will realize a major aspect of its goal to be a vibrant 21st century community.

While higher intensity mixed-use redevelopment of older commercial properties can provide economic and social benefits to the community, these benefits would be most realized if concentrated in key areas to allow new developments to complement each other, avoid oversaturating the market, and minimize impacts to existing neighborhoods. These types of uses are primarily envisioned in Activity Centers, as indicated on the Future Land Use Map. While a mix of uses and connected street grids are envisioned in all Activity Centers, such development is always encouraged in the Old Town Fairfax and Northfax Activity Centers. More specific guidance is provided for these two areas in the Activity Center Place Type (pages 35-36) and through the goals of this Guiding Principle.

FIGURE 11 ACTIVITY CENTERS AND COMMERCIAL CORRIDORS



While reinvestment and redevelopment of properties in Commercial Corridors is encouraged, incorporation of residential mixed uses is not recommended. Stronger pedestrian orientation and improved aesthetics are encouraged in Commercial Corridors through the physical attributes of the Place Type and recommendations of the City of Fairfax Design Guidelines.

Commercial Corridors and Activity Centers

Goal 1

Enhance Commercial Corridors.

Many commercial properties in the City are underutilized with an overabundance of surface parking. These properties are often suitable for redevelopment, whether to achieve greater use of the land or to make the properties more market competitive. New development and redevelopment must enhance commercial activities along the City's major corridors with a mix of retail, office, and service offerings in an attractive and welcoming setting. Recently-approved projects indicate that there is demand for additional investment in many of these properties.

OUTCOME CCAC1.1:	Commercial Corridors with attractive physical characteristics that provide shopping, dining, services, and other businesses.
ACTION CCAC1.1.1	Encourage commercial redevelopment that offers amenities and atmosphere to attract top-tier commercial tenants.
ACTION CCAC1.1.2	Identify underutilized properties (i.e., buildings assessed at considerably less than the total property value) and, working with the City's Economic Development Authority, encourage redevelopment.
ACTION CCAC1.1.3	Encourage creativity and architectural excellence in new commercial developments.
ACTION CCAC1.1.4	Develop urban design concept diagrams for small block and multi-block areas along the City's Commercial Corridors outside the Activity Centers.
ACTION CCAC1.1.5	Encourage tree-lined and heavily-landscaped property edges, particularly where surface parking is adjacent to the public rights-of-way.
ACTION CCAC1.1.6	Provide pedestrian and bicycle connections to nearby neighborhoods.
OUTCOME CCAC1.2:	Tenants representing diverse business sectors that meet current and emerging trends in neighborhood-serving retail, service, and other business demands.
ACTION CCAC1.2.1	Strengthen existing retail businesses and expand choices to capture retail spending by residents.
ACTION CCAC1.2.2	Create a marketing plan to generate excitement about the current retail and service offerings.

Commercial Corridors and Activity Centers

Goal 2

Promote redevelopment in the City's Activity Centers.

While actions throughout the City will contribute to fulfill the community's vision for the City's future, those pertaining to land use planning in these specific areas carry an outsized importance. The City will promote redevelopment in Activity Centers to strengthen economic vitality; provide retail, office, and residential opportunities for sustained demand; and reinforce the City's regional appeal. Given the potential scope of redevelopment opportunities, new construction in these areas to accommodate various types of housing units and commercial tenants could accomplish many of the goals set forth elsewhere in this Plan's Land Use Chapter.

OUTCOME CCAC2.1:	Old Town Fairfax, including an expanded downtown area to its north and south, is a lively, economically viable, walkable cultural hub for the City.
ACTION CCAC2.1.1	Capitalize on the authenticity and appeal of Old Town Fairfax as an historic place and a shopping, dining, and tourist destination.
ACTION CCAC2.1.2	Attract and retain businesses along Main Street and market it as a primary retail street for Old Town Fairfax.
ACTION CCAC2.1.3	Maximize the use of publicly-owned properties to contribute to the economic and cultural vibrancy of Old Town Fairfax.
ACTION CCAC2.1.4	Encourage redevelopment of privately-owned, underutilized sites north and south of Old Town Fairfax, such as the Courthouse Plaza shopping center and the area west of University Drive between Sager Avenue and Armstrong Street, as mixed-use developments.
ACTION CCAC2.1.5	Market the connection to Old Town Fairfax from George Mason University and emphasize Old Town Fairfax as a desirable place for students and faculty to shop, dine, and live.
ACTION CCAC2.1.6	Support efforts by Fairfax County to develop a Master Plan for the County Courthouse Complex including encouraging improved connections between the complex and surrounding areas, as well as uses that contribute toward, rather than compete with the vibrancy of the Old Town Activity Center.
OUTCOME CCAC2.2:	A pedestrian-oriented, mixed-use destination at Northfax that capitalizes on its location to successfully compete with other regional centers.
ACTION CCAC2.2.1	Pursue feasibility of a public-private partnership to develop parking structures.
ACTION CCAC2.2.2	Consistently articulate expectations for unified developments and support measures that facilitate property consolidation.
ACTION CCAC2.2.3	Encourage the redevelopment of Northfax as a major commercial center and transit-oriented development that capitalizes on a potential future Metrorail station along I-66.

Commercial Corridors and Activity Centers

Goal 2

OUTCOME CCAC2.3:	Old Town Fairfax, Northfax, and the other Activity Centers are well-designed and desirable places to live, work, shop, and dine.
ACTION CCAC2.3.1	Encourage structured parking and minimize surface parking, particularly adjacent to public rights-of-way.
ACTION CCAC2.3.2	Promote the orientation of buildings facing toward streets with architecture that engages street-level activity.
ACTION CCAC2.3.3	Promote active streetscapes with minimal building setbacks, pedestrian amenities, street furniture, on-street parking, landscaping, and other features.
ACTION CCAC2.3.4	Support land planning that balances connectivity for pedestrians, bicyclists, and motorists.
ACTION CCAC2.3.5	Prepare individual Small Area Plans, as defined in Section 15.2-2303.4 of the Code of Virginia, for each of the Activity Centers that clearly demonstrate the desired mix of uses, residential density, building intensity, design aesthetic, specific street locations and multimodal connections, infrastructure improvements, parking, and open space.
ACTION CCAC2.3.6	Target and coordinate public infrastructure improvements with desired infill, reinvestment, and redevelopment areas to encourage and stimulate private development.

Housing

Guiding Principle:

In 2035, Fairfax is a city with... a choice of housing types that meet the needs of our community.

In order to function equitably and inclusively, the City must prioritize the availability of housing units for people of widely varying income levels, ages, and lifestyle choices. While there is great variety among the approximately 9,000 housing units in the City, several types or characteristics of housing may be underrepresented among the current housing mix, especially as other nearby communities undergo redevelopment and expand their offerings.

Although the City is primarily built out, a variety of new housing types can be accommodated through redevelopment on a relatively limited basis to broaden the current offerings and accommodate changing demands. Accordingly, housing that is affordable, housing that is designed for older adults and people with disabilities to accommodate the City's relatively high proportion of older adults, and housing for growing younger families seeking modern single-family housing without leaving the City should be prioritized.

Existing housing units can also accommodate changing demands through renovations and retrofits. Prioritizing additional housing units in underrepresented market segments, improving the functionality of existing housing units, and accommodating in-demand housing types would help to ensure that the City is as welcoming as possible to current and potential residents, regardless of socioeconomic status, age, or other circumstances.

In addition to expanding housing choices, proactive strategies should be taken to ensure that existing housing units that are affordable are preserved and that new units that are affordable are added to the City's overall housing unit mix.

Housing

Goal 1

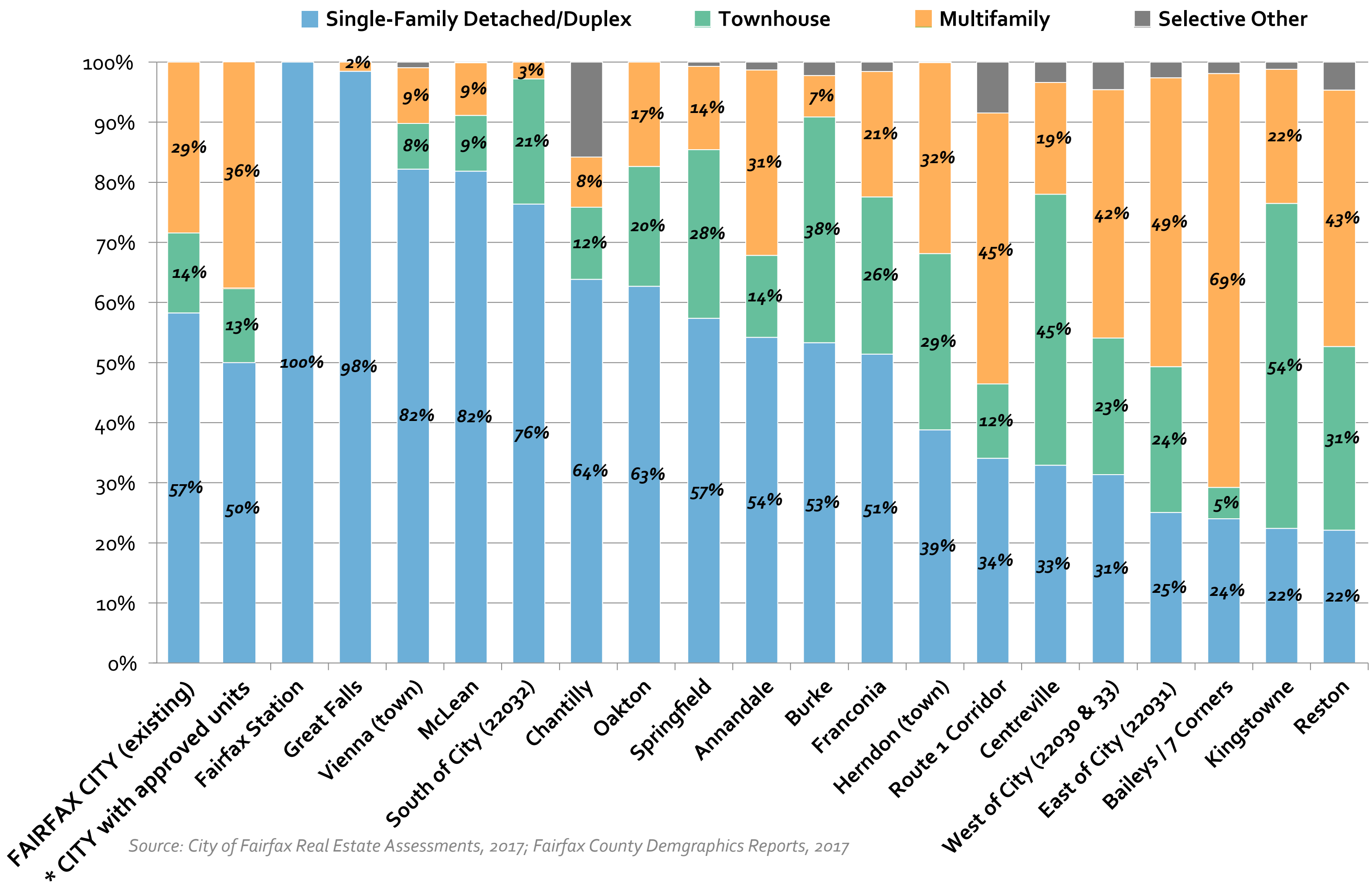
Support a wide range of housing types.

It is vital that a variety of high-quality, attractive housing choices continue to be available in the City to support differing needs and demands of residents. Housing needs and demands are reflective of the existing housing stock and fluctuating market trends, making them subject to change over time. Specific housing types are identified in the Land Use Strategies Section of the Comprehensive Plan. Current shortages could include multifamily rentals and condominiums, of which the majority of the City's stock was built in the 1960s, and townhomes, of which the City currently has a lower ratio than many surrounding communities in Fairfax County. Although significant single-family development is not anticipated as the City is primarily built-out, potential redevelopment and infill housing that keep up with modern expectations and meet demand are encouraged, provided they comply with the Zoning Ordinance.

OUTCOME H1.1:	Continued development of housing types that are underrepresented in the City's existing stock of housing units.
ACTION H1.1.1	Create a housing policy that can best provide for the types of housing units that are most in demand.
1.1.1.1	Conduct a housing assessment to examine the types of housing that are most in demand in the City for a full income range of households, or are most supportive of growing sectors of the local economy.
1.1.1.2	Support development of housing types that are not heavily represented in the City's housing stock, as identified in the housing assessment, where reasonable.
1.1.1.3	Consider efforts to market new and existing housing stock in the City to growing sectors of the regional economy.
ACTION H1.1.2	Research changes to the zoning regulations to expand opportunities for accessory dwelling units, while ensuring they do not negatively impact the surrounding neighborhood.

Figure 12 on the following page provides a comparison of housing type percentages between the City (both current and approved) and other parts of Fairfax County.

FIGURE 12 HOUSING UNITS BY TYPE



Source: City of Fairfax Real Estate Assessments, 2017; Fairfax County Demgraphics Reports, 2017

* City with approved units = Approved and unbuilt units as of the adoption of this Comprehensive Plan.

Housing
Goal 2

Ensure availability of housing that is affordable.

During the Comprehensive Plan outreach process, affordable housing was the primary issue that rose to the forefront of the housing discussion. (Code of Virginia Section 15.2-2201 defines affordable housing as housing that is affordable to households with incomes at or below the area median income, provided that the occupant pays no more than thirty percent of his gross income for gross housing costs, including utilities. However, the actions associated with this goal could target households with incomes below the median.) In addition, Code of Virginia Section 15.2-2223 states that the Comprehensive Plan "shall include the designation of areas and implementation of measures for the construction, rehabilitation and maintenance of affordable housing, which is sufficient to meet the current and future needs of residents of all levels of income in the locality." There are a number of tools available to encourage the establishment of new affordable residential units as well as to preserve existing "naturally occurring affordable housing" that is affordable to families earning below the region's median household income. Affordable housing should be encouraged in higher-density areas of the City, particularly in the Activity Centers.

OUTCOME H2.1:	Affordable housing units have been added to the City's housing stock through redevelopment and strategic investments.
ACTION H2.1.1	Maintain a robust housing affordability program and dedicated housing trust fund that could be used to rehabilitate and preserve existing housing that is affordable or to help leverage other funding streams for new construction.
ACTION H2.1.2	Provide regulatory and financial incentives to increase the supply of affordable housing, including amending the City's Zoning Ordinance to include an Affordable Dwelling Unit ordinance.
ACTION H2.1.3	Pursue a contractual partnership with the Fairfax County Department of Housing and Community Development to administer elements of a housing affordability program for the City.
ACTION H2.1.4	Provide alternative means of accommodating new dedicated affordable housing units, such as leveraging vacant or underutilized public land; supporting or partnering with private, non-profit, or faith-based organizations; and co-locating affordable housing with public construction.
OUTCOME H2.2:	Preservation of and reinvestment in the City's existing supply of affordable multifamily rental housing units.
ACTION H2.2.1	Facilitate partnerships between existing property owners and nonprofit organizations to preserve and ensure long-term affordability of existing multifamily complexes.
ACTION H2.2.2	Promote the use of the Low Income Housing Tax Credits, tax abatements, low-interest loans, the PACE (Property Assessed Clean Energy) Program, and other funding sources available to reinvest in and upgrade existing multifamily complexes.

Housing
Goal 3

Provide housing options for older adults and persons with disabilities.

Housing that is designed for older residents and persons with disabilities was another issue that rose to the forefront of the housing discussion during the Comprehensive Plan's public outreach sessions. Given the relatively high concentration of older adults in the City as compared to surrounding jurisdictions, demand for such units from existing City residents could be strong. Housing should be suitable for a range of choices, such as aging in place, accessory dwelling units, dedicated senior housing, and assisted living/nursing care. In addition, options should be available for people with a variety of disabilities and incorporate features of universal design - the design of buildings, products, or environments to make them accessible to all people, regardless of age, disability, or other factors.

OUTCOME H3.1:	A range of accessible housing types with appropriate levels of support and care is available for older adults and persons with disabilities that incorporate the concept of universal design.
ACTION H3.1.1	Express preferences regarding housing units that are appropriate and/or in demand for seniors and those with disabilities and incorporate features of universal design at a range of price points.
ACTION H3.1.2	Encourage development of congregate living facilities - a group of independent dwelling units that have common kitchen and dining areas - to support older adults and persons with disabilities.
ACTION H3.1.3	Review provisions within the City's Zoning Ordinance to identify and amend provisions that impede the ability to construct or modify housing containing minimal physical barriers for people of all ages and abilities, including but not limited to standards of universal design.

Housing

Goal 4

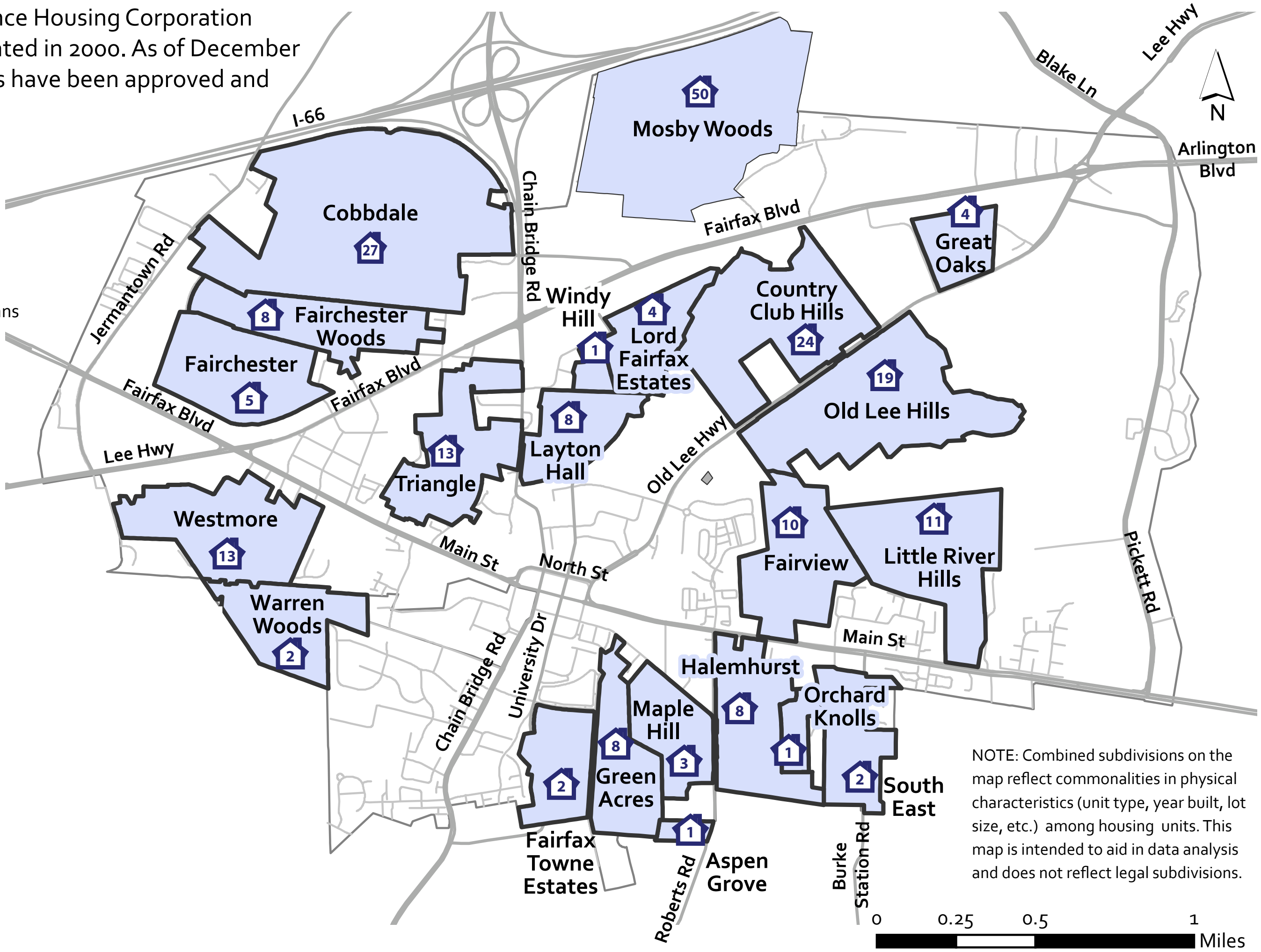
Support residential improvements of existing housing units.

Home renovations and expansions allow existing housing units in the City to keep up with modern expectations, including characteristics such as floor area, layout, style, technological amenities, and sustainable infrastructure. The Fairfax Renaissance Housing Corporation has assisted in such housing improvement projects throughout the City since 2000, as shown in Figure 13. In addition, the City has engaged in other programs, such as Solarize NOVA, to encourage residents to consider sustainable elements in home renovations.

OUTCOME H4.1:	A greater number of renovated housing units.
ACTION H4.1.1	Continue to encourage property owners to undertake residential reinvestment projects that can collectively modernize the City's housing stock.
ACTION H4.1.2	Encourage energy-efficient retrofits that reduce water use and heating and cooling costs.
ACTION H4.1.3	Continue to enforce compliance with building and property maintenance codes to prevent deteriorated, unsafe, and unhealthy housing conditions.
ACTION H4.1.4	Incentivize reinvestment in existing multifamily complexes.
OUTCOME H4.2:	Expanded City-sponsored residential improvement programs.
ACTION H4.2.1	Continue to explore modifications to the FRHC program to encourage greater participation.
ACTION H4.2.2	Encourage further engagement of programs to promote sustainable retrofits and incorporation of sustainable elements in residential renovations.

FIGURE 13 RESIDENTIAL IMPROVEMENT PROJECTS WITH FAIRFAX RENAISSANCE HOUSING CORPORATION (FRHC) LOANS

The Fairfax Renaissance Housing Corporation (FRHC) was incorporated in 2000. As of December 2017, 224 applications have been approved and completed.



NOTE: Combined subdivisions on the map reflect commonalities in physical characteristics (unit type, year built, lot size, etc.) among housing units. This map is intended to aid in data analysis and does not reflect legal subdivisions.

Source: Fairfax City GIS Parcels 2017 & FRHC Data January 2018

Community Design and Historic Preservation

Guiding Principle:

In 2035, Fairfax is a city with...
architecture that contributes
to a vibrant, creative place and
complements our historic character.

An attractive, well-designed City instills civic pride; improves the visual character of the community; creates a strong, positive image; and attracts quality developments. Community Design relates not just to what buildings look like, but to the spaces between buildings, as well as to the street and public realm. While accommodating new growth and change, consideration must be given to preserving significant elements of the community that contribute to the City's unique character.

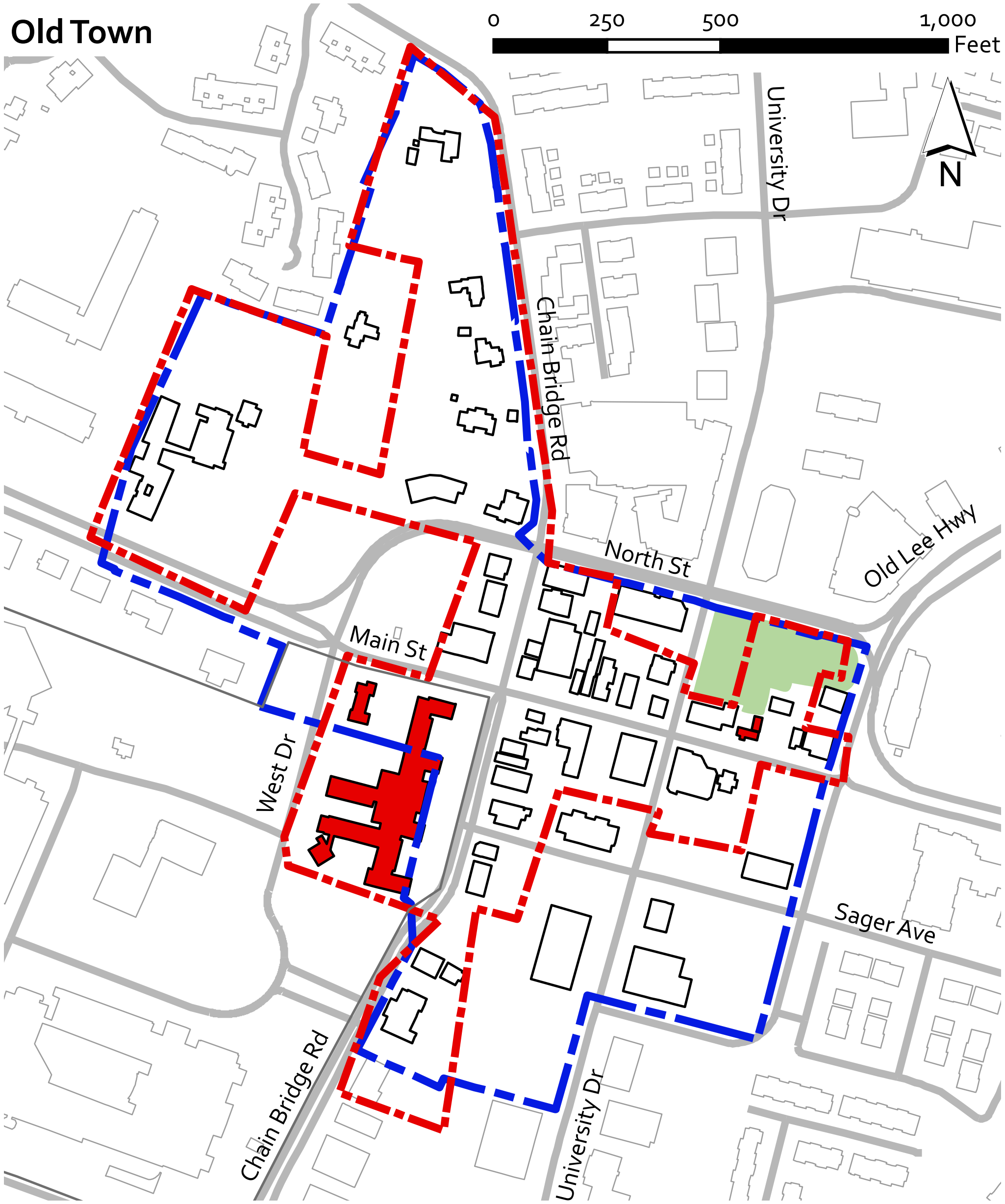
The intent of the Community Design and Historic Preservation Guiding Principle is to capitalize on unique features of the City in a manner reflecting the community's values and its connection to the history and traditions that distinguish it from other communities in the region. This can be accomplished through review and adjustment of planning, regulatory and incentive tools, and by improving coordination among stakeholders who impact the future development of the City, without unreasonably burdening the review process.

The primary resource on design elements for new construction, expansions and renovations is the City of Fairfax Design Guidelines. Separate design characteristics are described in the guidelines for the Old Town Fairfax Historic Overlay District, the Old Town Fairfax Transition Overlay District (both described on the following pages), and the Architectural Control Overlay District (which encompasses all properties within the City except for single-family residential properties and those properties located within one of the other overlay districts). The Board of Architectural Review, along with City staff, reviews development applications to determine if proposals meet the intent of the design guidelines.

Historic Overlay Districts

The majority of the City's historic architectural resources are concentrated in Old Town, the City's traditional core. Old Town is recognized and preserved both nationally as a National Register of Historic Places district as well as through a City preservation district zoning overlay (Figure 14). There are 52 buildings, 10 "other structures," and a monument within the National Register of Historic Places' "City of Fairfax Historic District," many of which are considered "contributing elements." Six of the buildings predate 1850 while others are from the turn of the 20th century to the early 1930s. The City's locally-designated Old Town Fairfax Historic Overlay District is larger in area than the National Register district.

FIGURE 14 HISTORIC DISTRICTS AND BUILDINGS



Source: City of Fairfax GIS 2016 Impervious Surfaces, Zoning Overlays, National Register Districts

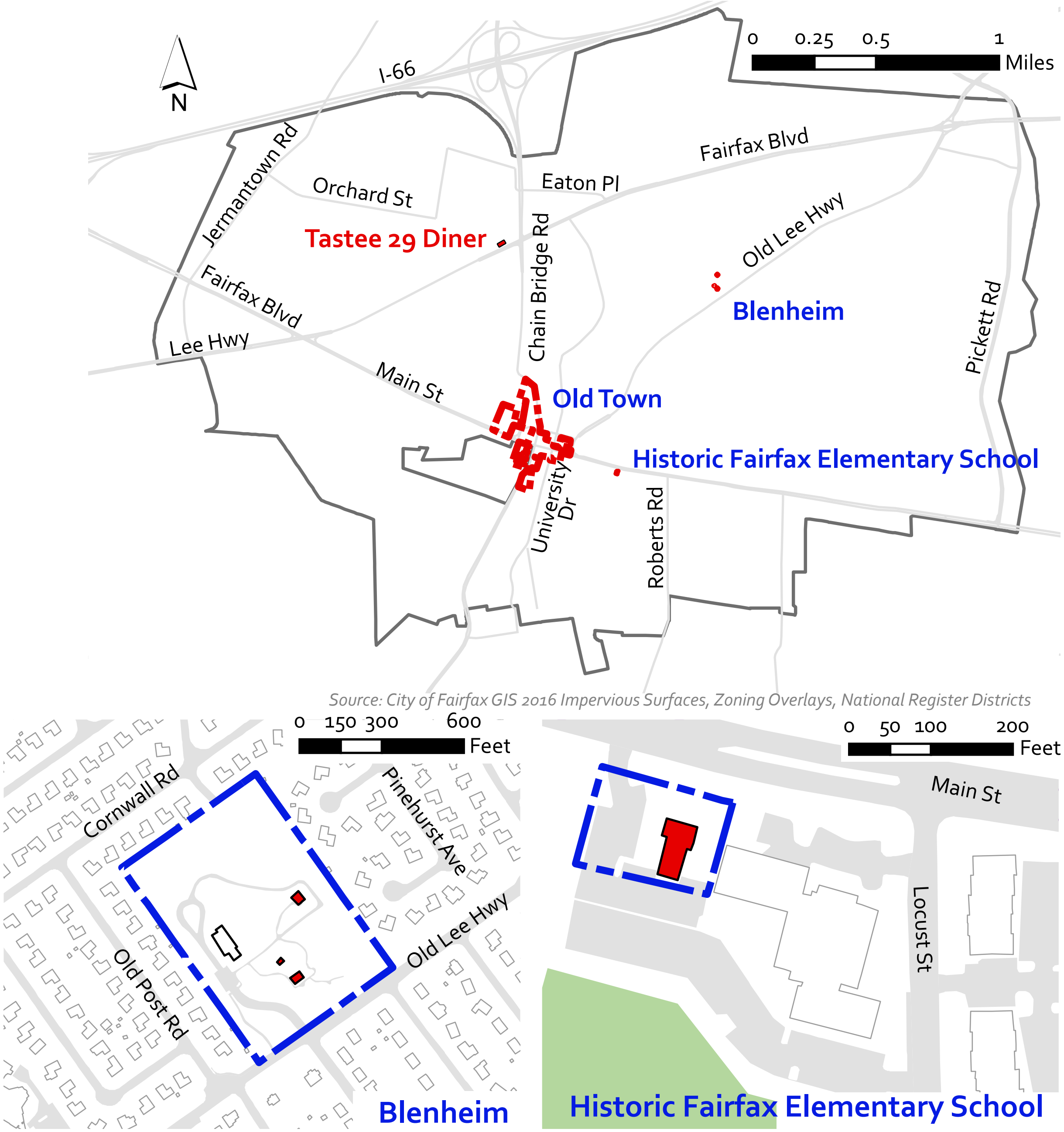
Legend

- ▭ National Register Historic District
- 🟥 National Register Historic Building
- ▭ City Historic District
- □ Building
- — Centerline of Road
- 🟩 Park

In addition to Old Town, the City has historic zoning overlay districts for two other properties, the Fairfax Public School and Blenheim (Figure 15).

Additionally, there are many properties and structures with historic characteristics that have not been designated at the local, state, or national levels. Over 4,800 structures in the City are 50 years of age or older, one of the criteria to determine eligibility of historic designation. The significance of a given property or structure to architectural history, landscape history, events or activities in the past, or to lives of important people are other criteria for preservation. Remaining large estates such as the Farr Homeplace and the Sisson House may also be considered for preservation, as well as landforms such the Manassas Gap Railroad Bed.

FIGURE 15 HISTORIC DISTRICTS AND BUILDINGS



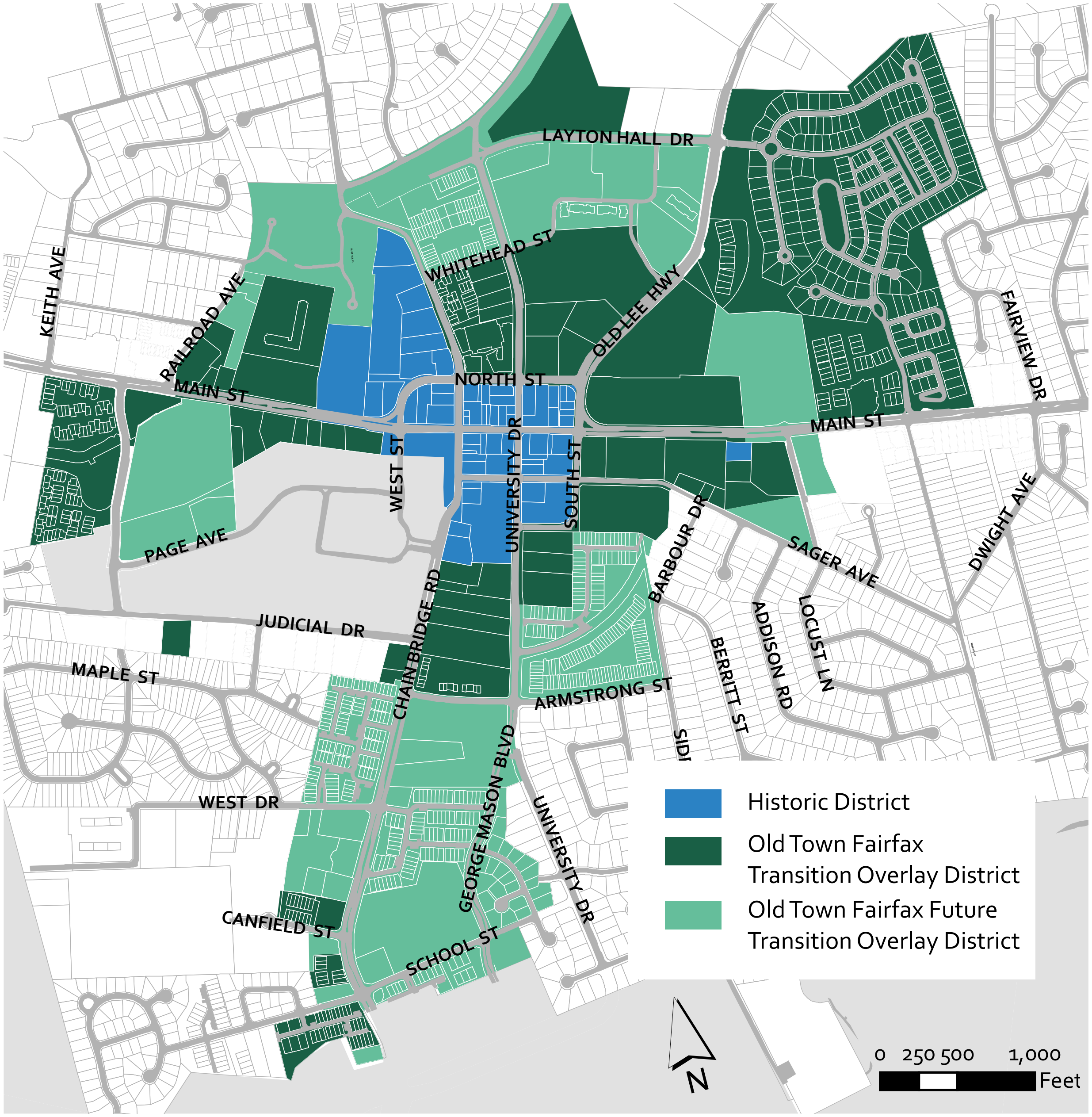
Source: City of Fairfax GIS 2016 Impervious Surfaces, Zoning Overlays, National Register Districts

Old Town Fairfax Transition Overlay District (Transition District)

The Transition District is established in areas surrounding Old Town Fairfax as a means to ensure the character of those areas complements that of the historic districts. This is accomplished through regulations in the Zoning Ordinance limiting the height of new construction, encouraging buildings to be oriented toward the street, and requiring more extensive streetscape improvements than the base standards. The current extent of the Transition District and potential Future Transition Overlay District are provided in Figure 16.

Properties located in the Future Transition Overlay District may be added to the Transition District either upon application from the property owner (typically in conjunction with an individual property rezoning) or as part of a larger City-initiated rezoning. The extent of the potential expansion area for the Transition District stretches farther away from the historic district in order to continue these characteristics along corridors leading into Old Town Fairfax.

FIGURE 16 HISTORIC DISTRICTS AND TRANSITION OVERLAY DISTRICTS



Community Design and Historic Preservation

Goal 1

Require high-quality, sustainable design.

Beyond residential neighborhoods, there is a wide variety of building uses in the City, from office and retail buildings to industrial and institutional buildings. These buildings were constructed over several decades and encompass an array of design styles and architectural influences. The City requires high-quality, sustainable design and construction of new buildings and public spaces along with similarly high-quality modifications and additions to existing buildings and open spaces. The intent of the design review process in areas of the City outside the historic districts is to continue to allow architectural variety while encouraging higher quality materials and design rather than designating specific design styles. The City can further support aesthetic quality through public investment in visible infrastructure, such as streetscapes and signage, and through public-private partnerships to promote desired types of development.

OUTCOME CDHP1.1:	Clear expectations for the required design elements and building materials for the City's historic districts and commercial centers.
ACTION CDHP1.1.1	Determine design aesthetic of Fairfax Boulevard and Main Street with input from City boards and commissions and convey through design documents such as the City of Fairfax Design Guidelines and other documents that may be prepared.
OUTCOME CDHP1.2:	Attractive buildings, inviting public spaces, and welcoming gateways that contribute to our economic vitality and unique character.
ACTION CDHP1.2.1	Identify commercial economic investment areas and provide financial support through the Economic Development Authority.
ACTION CDHP1.2.2	Continue to develop and refine design standards with a menu of options to encourage variety, visual interest, and durability in the design of new development.
ACTION CDHP1.2.3	Explore public-private partnerships to create neighborhood centers inclusive of gathering places.
ACTION CDHP1.2.4	Create attractive gateway features at key City entry points.

Community Design and Historic Preservation

Goal 2

Protect and enhance historic resources.

Inclusion of properties or structures in a local historic district should be based on the criteria described on p. 61. Local protections give the City the ability to designate specific characteristics of a property or district that are intended to be preserved, as well as provide regulatory measures that protect those properties. Local districts can be applied to individual properties or a group of properties, such as a neighborhood. Establishment of any new historic districts should be contingent upon support from owners of the affected properties.

OUTCOME CDHP2.1:	Protection of eligible structures, properties, and neighborhoods through local historic designation and strategic investments.
ACTION CDHP2.1.1	Develop an inventory of historic and archaeological resources readily available on the City's website that is reviewed and updated at least every 10 years.
ACTION CDHP2.1.2	Work with neighborhoods to gain support for new locally-designated historic districts and landmarks, where appropriate.
ACTION CDHP2.1.3	Encourage the preservation of existing buildings of historic or architectural significance whenever feasible.
OUTCOME CDHP2.2:	Redevelopment that respects nearby historic structures and the established architectural pattern.
ACTION CDHP2.2.1	Ensure all new development subject to the requirements of the City of Fairfax Design Guidelines is compliant, and continue to monitor the review process for Certificates of Appropriateness to ensure it is effective.
ACTION CDHP2.2.2	Rezone all properties in the Old Town Fairfax Future Transition Overlay District to the Old Town Fairfax Transition Overlay District, either proactively or as each property seeks land use amendments.
OUTCOME CDHP2.3:	The City's historic resources are utilized to provide educational programs to the community and promote preservation of historic properties.
ACTION CDHP2.3.1	Promote greater awareness of the City's historic resources and the history of the City and surrounding area, identifying educational, economic, and recreational benefits of historic structures, properties, and districts.
ACTION CDHP2.3.2	Evaluate the need to expand the Fairfax Museum and Visitor Center, currently located in the Historic Fairfax Elementary School building.

Preservation and appreciation of historic properties and other historic resources in the City can be supported through events and programs that highlight the history of the City and the importance of the historic properties in historic events. City historic resources, such as the Fairfax Museum and Visitor Center, Blenheim Civil War Interpretive Center, and the Ratcliffe-Allison-Pozer House can be utilized to engage the public through special programs, tours, events, exhibitions, and outreach efforts.

3

Multimodal Transportation

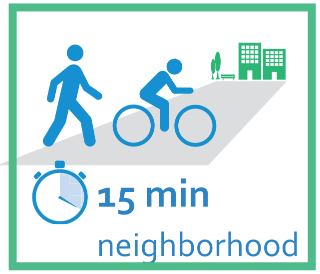
Transportation is about more than mere movement – transportation grants us access to the needs of everyday life. Sustainable, connected, and integrated transportation is fundamental to the success and livability of the City. The intent of the Multimodal Transportation Chapter is to recommend strategies that will improve the operation and safety of the City's transportation system in order to achieve the larger community objectives for a vital, vibrant, and livable City.

This Chapter is based on the Multimodal Transportation Plan, the first comprehensive, multimodal transportation plan completed by the City. ("Multimodal" refers to the multiple ways people use to get around – car, bus, train, bike, walking, etc. – and a multimodal plan incorporates these various transportation modes into an efficient and connected system.) The Multimodal Transportation Plan was developed as a separate effort, but in coordination with the Comprehensive Plan. The four key aspirations shown to the right helped ensure the multimodal aspect of the plan inform many of the recommendations.

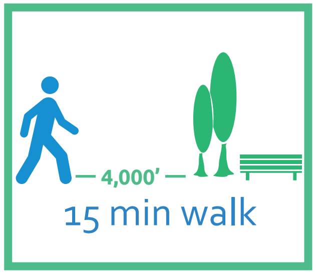
Guiding Principle:

In 2035, Fairfax is a city with...
options for residents to easily, safely, and efficiently move within and between neighborhoods either by walking, bicycling, taking public transportation or driving.

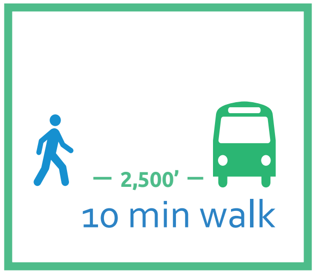
Create a city of **"15-minute neighborhoods"** – ensure that 100% of residents can access a local activity center via a safe 15-minute walk from home (currently 44%).



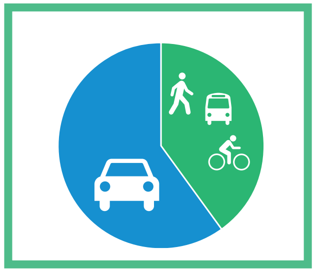
Ensure 100% of residents are connected to green space, trails, or open space via a safe 15-minute walk of home (currently 88%).



Ensure 100% of residents have access to transit by providing a transit stop within a safe 10-minute walk of each residence (currently 79%).



Increase choice, reliability, and efficiency in travel by achieving at least a 40% non-drive alone mode share for commute to work trips (currently 28%).



Fairfax Transportation Facts

The City of Fairfax is centrally located

A **20-minute** drive to Tysons, Falls Church, and Dulles International Airport

Taking transit to these same destinations can take **three times as long**

27% Of households have at least **one child at home**

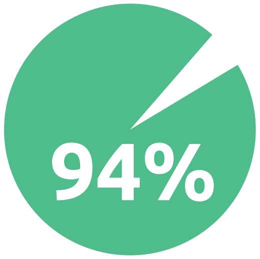
36% Of households include at least **one senior**

68,000 Daily trips are made through the city **without stopping**

In 2015, there were

837

Automobile crashes in the city



Of city residents have access to **one or more** cars

6% Of city residents must get by without an automobile

72% Of City of Fairfax commuters **drive alone to work**

66% Of residents surveyed would prefer to travel by a means **other than driving alone** to work or errands

CONGESTION + Safety

are the two most frequently cited threats to livability in the City of Fairfax

Most transit routes in the city operate from **early morning through evening**

However, most transit routes only operate **once or twice per hour**

1/3 of all household trips are less than one mile in distance

1/2 Of these short distance trips **are driven**

SOURCE: City of Fairfax Multimodal Transportation Survey, 2015; US Census National Household Travel Survey, 2009; MWCOG; City of Fairfax

Opportunities and Challenges

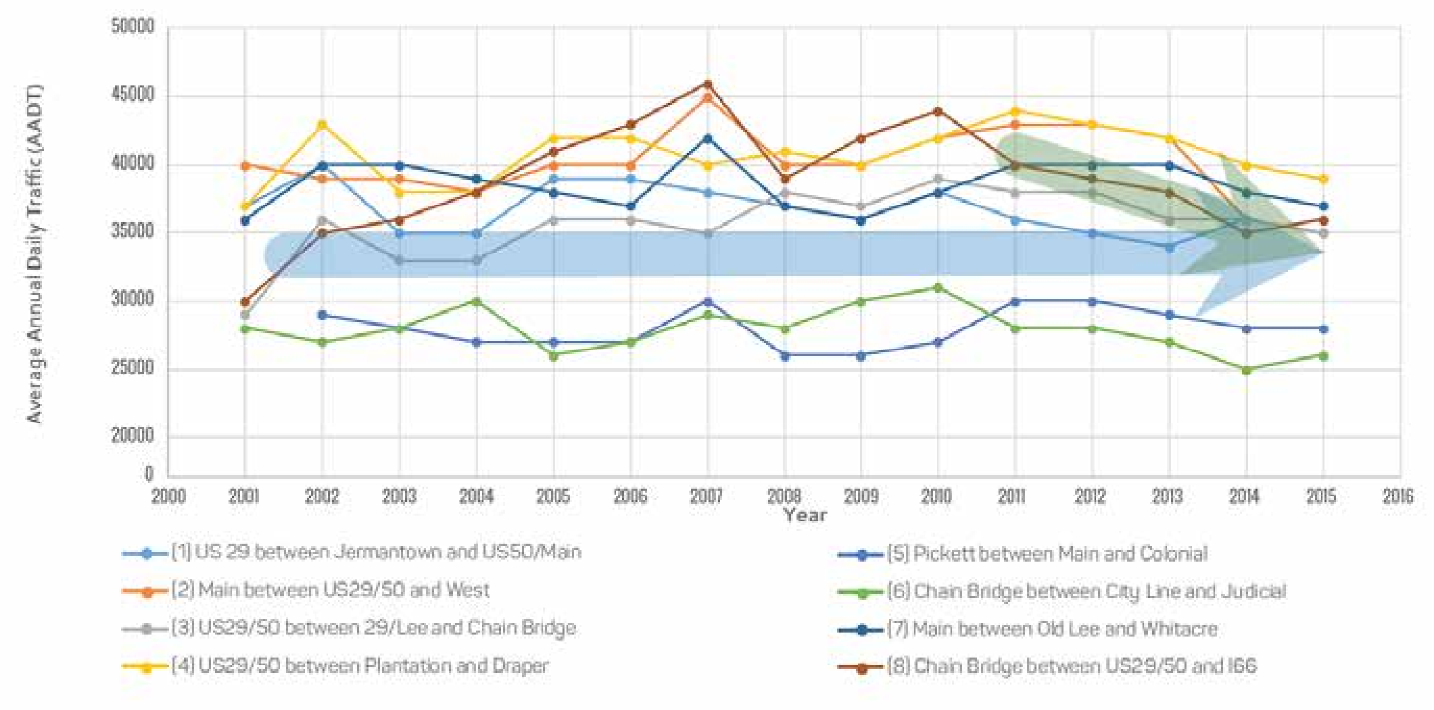
Traffic volumes and peak period congestion

Despite growth in population in the area, daily traffic volumes on the City's 16 miles of arterial roads have remained relatively stable over the past 15 years. However, while traffic volume on several segments has decreased since 2010-2011, vehicular congestion during peak hours continues to present challenges to residents and commuters.

Travel patterns

Currently, the vast majority (72%) of City residents who are employed drive alone to work while 8% carpool, 11% use transit (bus or rail), and 5% work from home. Most households (94%) have at least one automobile. However, 6% of City households make do without owning a personal vehicle. The average City resident who is employed travels 12.6 miles to work — a trip that takes 35 minutes on average. Within the Washington region, approximately one third of all trips are less than a mile, but more than 50% are driven. Many of the short trips in the City could be completed on foot, on transit, or by bike rather than driving.

FIGURE 17 AVERAGE ANNUAL DAILY TRAFFIC



SOURCE: Virginia Department of Transportation, 2001 - 2015

Transportation safety

Traffic congestion is significant along most of the major corridors in the City and concentrated where arterials intersect. These areas also experience high rates of vehicle crashes, with the highest rates concentrated at major intersections.

FIGURE 18 2015 VEHICLE CRASHES BY LOCATION

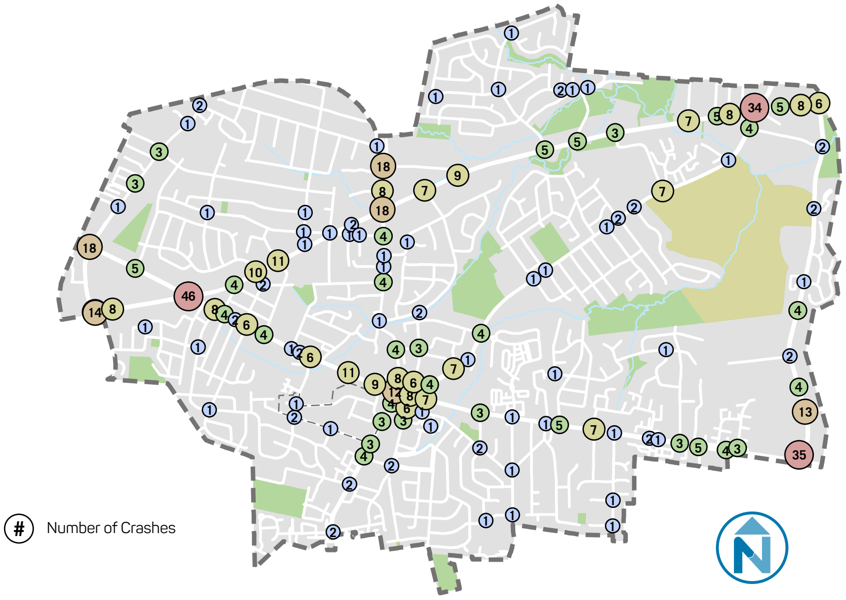
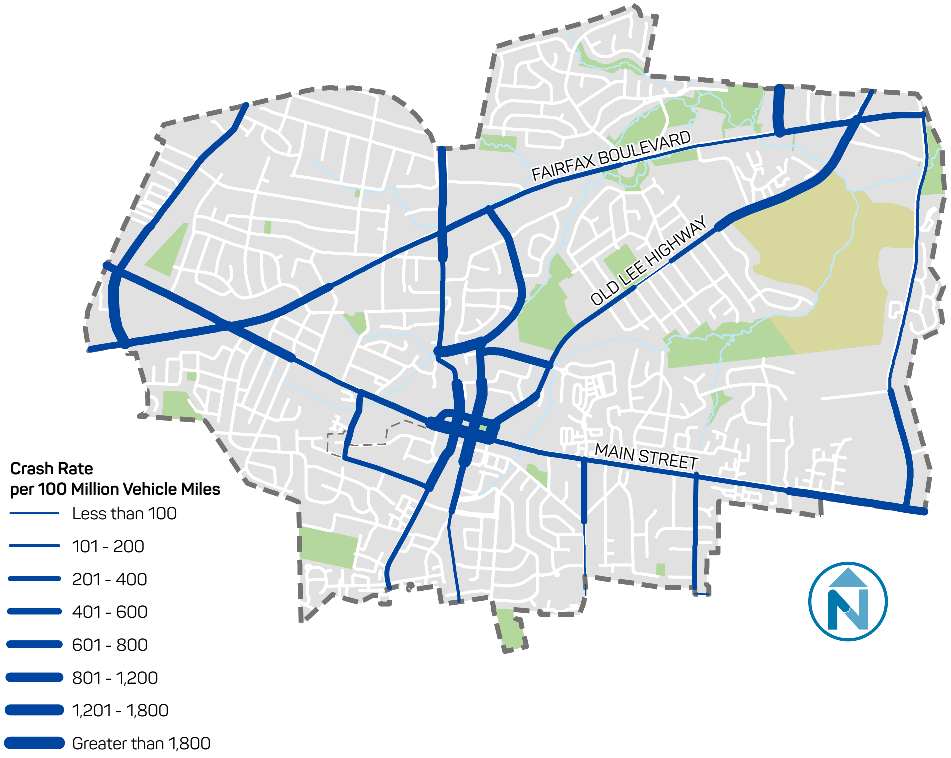


FIGURE 19 2015 VEHICLE CRASH RATES

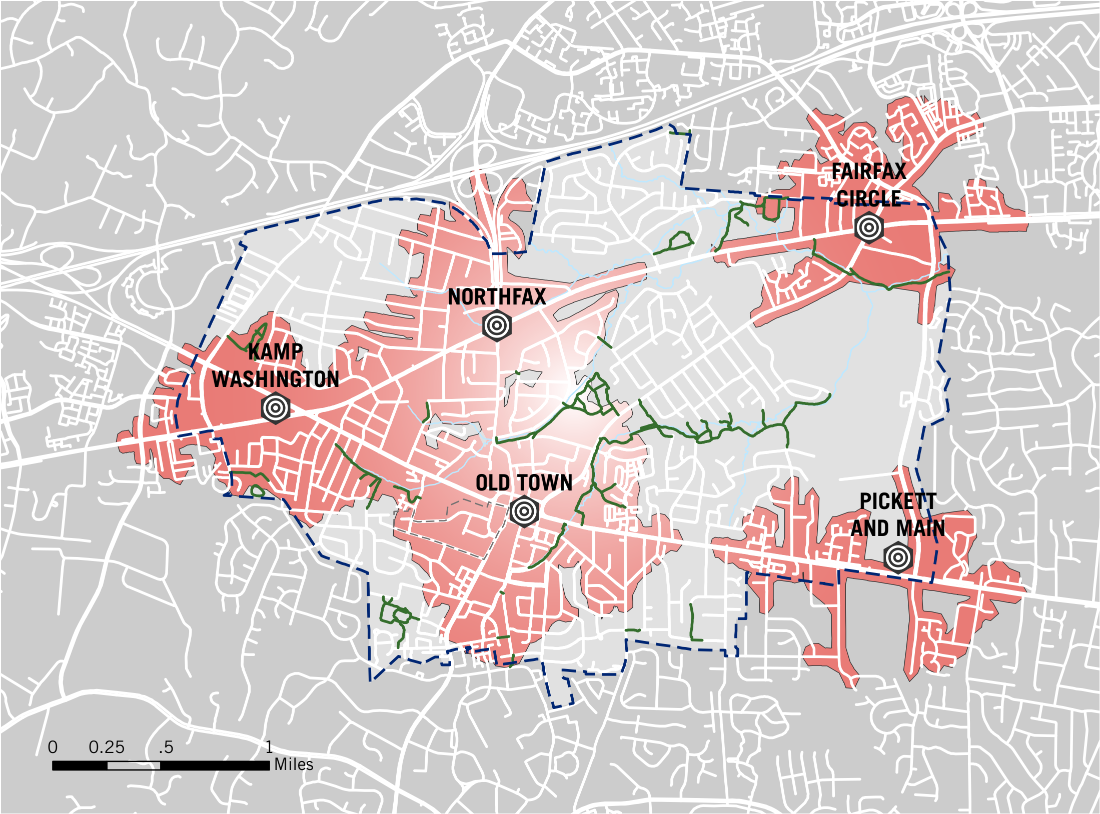


SOURCE: City of Fairfax, 2015

Pedestrian and bicycle access to amenities

Forty-four percent of City housing units are within a 20-minute walk of basic amenities such as shopping, dining, groceries, open space, schools, and other community facilities. Many of these amenities are concentrated within the City's five Activity Centers. Except for Old Town, these centers are generally separated from adjacent residential communities by larger block sizes, busy roadways, and missing or discontinuous pedestrian networks. High-volume roadways are often dangerous for pedestrians to navigate and complicate access to local amenities. While many neighborhoods have relatively complete sidewalk networks, and while the City has a number of bicycle and pedestrian trails, the bicycle and pedestrian network is not well-connected or accessible for all users.

FIGURE 20 ACTIVITY CENTER WALKSHEDS (15 MINUTES)

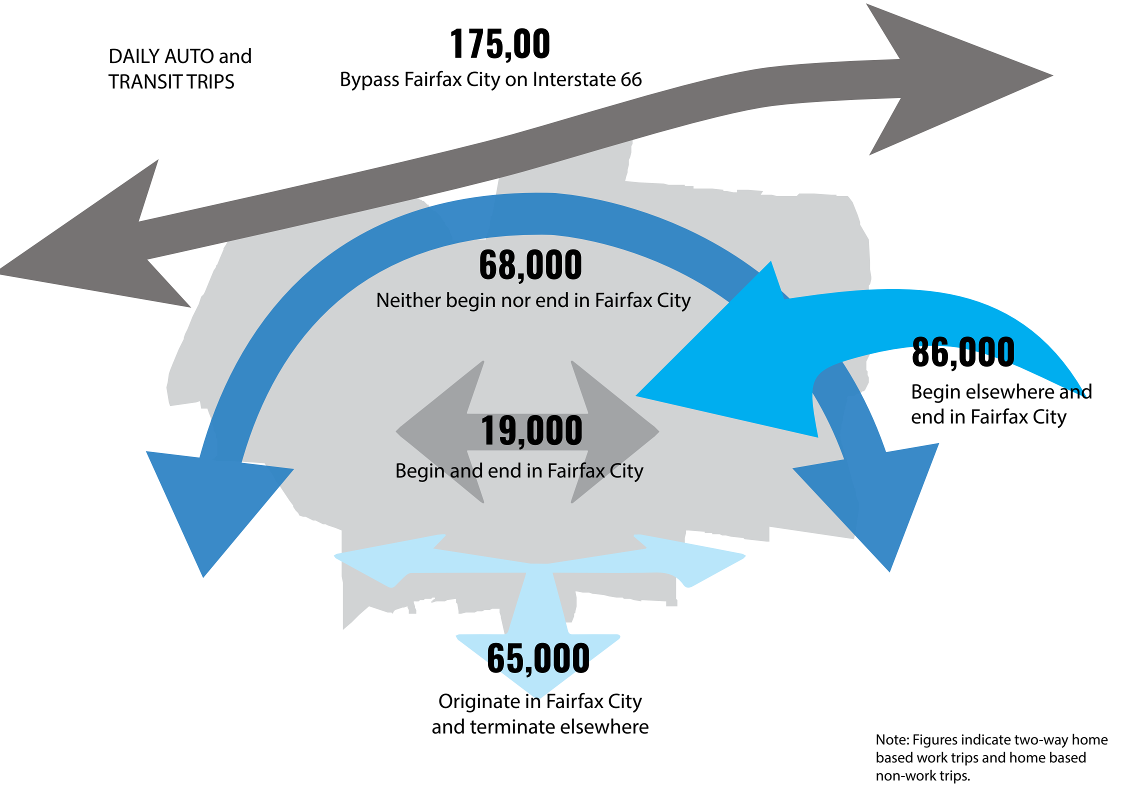


SOURCE: Census Data Set H1, 2010

Regional transportation demand

Every day, 68,000 regional travelers, primarily motorists, travel through the City without making a stop. As traffic congestion continues to increase on major regional corridors such as I-66 and Braddock Road, this regional traffic threatens to similarly increase congestion on City corridors.

FIGURE 21 DAILY TRIPS TO, FROM, AND THROUGH THE CITY

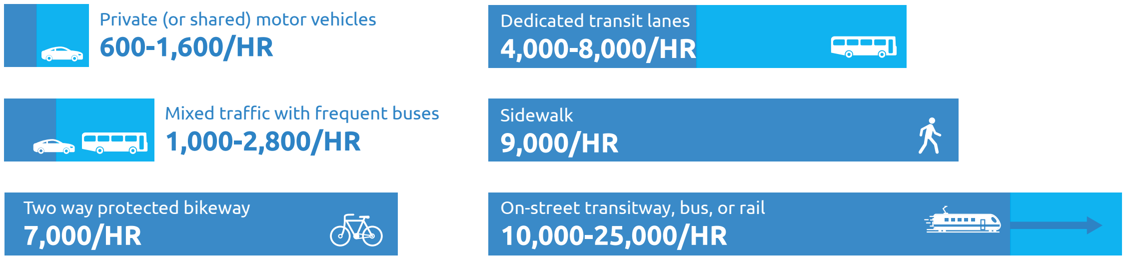


SOURCE: MWCOG 2.3 v57a Model, 2015

Roadway expansion limitations

While the City may continue to add local minor streets to enhance connectivity and access, few opportunities remain to add substantially more vehicle capacity on City streets. As such, the City will need to focus on ways to efficiently move more people within the existing street network. This can be done by encouraging higher occupancy in both private and mass transit vehicles, satisfying more short distance trips with walking and bicycle options, and encouraging people to shift their time of travel away from peak hours to less congested times of the day.

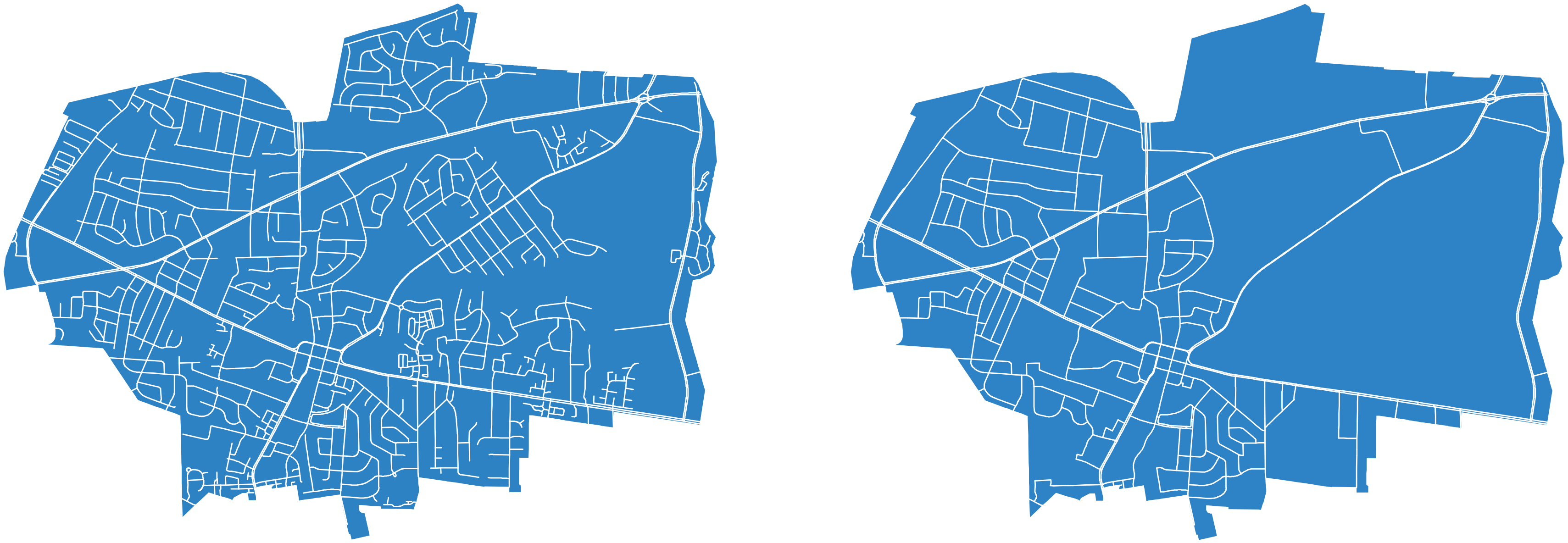
FIGURE 22 PEOPLE MOVING CAPABILITY OF VARIOUS TRANSPORTATION MODES



Street connectivity

The City has 104 centerline miles of streets. However, only 61% of them can connect users to other parts of the City without depending on major corridors. While limited connectivity discourages through traffic on local streets, it also constrains resident access in and out of their neighborhood. Oftentimes bicycle and pedestrian access is equally constrained, causing further conflict, congestion, and potential safety concerns among all road users.

FIGURE 23 TOTAL AND FUNCTIONAL VEHICULAR NETWORKS



TOTAL STREET GRID

A comparison of the entire City street grid to a functional grid paints a stark picture. The east side of the City consists almost entirely of neighborhoods isolated by physical barriers.

FUNCTIONAL STREET GRID

The functional grid is made up of roads that can be used to travel by vehicle to another neighborhood or part of the City. The west side of the City is far more integrated with Old Town and areas immediately northwest, southwest, and south of City boundaries.

Transportation infrastructure, services, and other assets

Among individuals responding to the 2015 City of Fairfax Multimodal Transportation Survey, about two-thirds of residents who currently drive alone to work expressed a desire to have the option to travel by some other means. Current constraints to non-auto travel include limited transit frequency, missing or discontinuous bicycle and pedestrian networks, and general concerns about safety when traveling by non-auto modes.

TRAILS

The City has a 28 mile trail network that provides safe, attractive, and convenient non-motorized access while concurrently promoting physical health and well-being.

CUE

The CUE bus system is well respected and generally well used, and buses generally operate over 16 hours a day on weekdays (with somewhat shorter hours on weekends). Frequency of service is limited, however. Real-time bus tracking and arrival information helps augment the system's usability. Combining transit applications with multimodal trip planning services provides riders with greater choice and convenience to weigh their travel decisions depending on time, cost, or other considerations.

DEVELOPMENT OPPORTUNITIES

The strong Northern Virginia economy continues to make the City an attractive place to live and invest. Following guidance in the Land Use Chapter of this plan, well-designed, concentrated development in Activity Centers can assist in reducing the growth of traffic and congestion. By locating many origins and destinations within a compact, accessible, and walkable area, more residents can fulfill daily needs without depending on driving. Those who drive may take just one vehicle trip and accomplish a number of other errands on foot within the same area. Urban-style development is better able to support more frequent transit service, benefiting travelers across the area.

Evolving shared mobility and technology options

Shared travel options such as carpooling, ride hailing services, or bicycle sharing systems offer opportunities to meet local travel needs conveniently and cost-effectively while reducing single-occupant vehicle travel. Real-time information, intelligent transportation, and other information and technology innovations can also make travel more efficient. Examples of best practices and future trends are shown in Appendix B. Some of these examples may be appropriate components of a sustainable mobility system in the City.

Multimodal Transportation

Goal 1

Connect with the region.

The City is a relatively small jurisdiction within a much larger region. Although regional traffic can congest City streets, City residents rely on the larger region for significant employment, entertainment, and cultural destinations; and City businesses rely on regional patrons and attract employees from the larger area. The City must enhance facilities that connect to the larger region, but do so in a way that supports safety, connection, and robust choices in travel options.

OUTCOME MM1.1:	Corridors for regional travel and better connections to regional networks and destinations are enhanced and improved.
ACTION MM1.1.1	Continue to participate in regional planning efforts to increase connectivity in the regional road, transit, and trail networks.
ACTION MM1.1.2	Collaborate with WMATA and regional partners to support a western extension of Metro's Orange Line, including a station location at I-66 and Route 123 (near Northfax) to benefit City of Fairfax stakeholders with improved access to the Metrorail system.
ACTION MM1.1.3	Increase connectivity to the existing Vienna/Fairfax-GMU Metrorail station including:
1.1.3.1	Improve pedestrian connections from the Fairfax Circle area to the Metro station area.
1.1.3.2	Improve bicycle facility connections and crossings across Fairfax Boulevard from the City to the Metro station.
1.1.3.3	Continue collaboration with George Mason University to enhance bicycle and transit connections between the University and the Metrorail system.
1.1.3.4	Implement the recommendations of the Old Lee Highway "Great Street" conceptual plan.
ACTION MM1.1.4	Expand trail and bicycle networks to connect to regional facilities and destinations, including:
1.1.4.1	Improve connections and logical links to the Cross-County Trail and beyond to the Washington & Old Dominion (W&OD) trail.
1.1.4.2	Improve trail connections south along Route 123 to connect to the Braddock Road Sidepath and on to Lorton.
1.1.4.3	Connect local trails to the planned I-66 trail facility.
1.1.4.4	Coordinate with Fairfax County on the construction of the Main Street/ Little River Turnpike bicycle facility.

Multimodal Transportation

Goal 1

Photo Credit: Virginia Department of Transportation

Photo Credit: Ben Schumin

ACTION MM1.1.5	Improve the Blake Lane-Jermantown Road corridor.
1.1.5.1	Complete a transportation study to determine necessary facility improvements and operational plans.
1.1.5.2	Coordinate with Fairfax County and VDOT on improvements to the Jermantown Road bridge over I-66, including additional capacity for vehicles, bicycles, and pedestrians.
1.1.5.3	Pursue a connection from Jermantown Road to Waples Mill Road north of Fairfax Boulevard.
ACTION MM1.1.6	Support Fairfax County in pursuing improvements to Braddock Road to facilitate its operation as a critical regional corridor.
ACTION MM1.1.7	Complete the Government Center Parkway connection.
ACTION MM1.1.8	Improve safety and ensure continued efficiency of Pickett Road as a regional north-south corridor and important truck route.
OUTCOME MM1.2:	Safety and operations in the regional network are improved.
ACTION MM1.2.1	Conduct a detailed study of Fairfax Circle to improve safety and operations, potentially including geometric changes to the existing circle configuration.
ACTION MM1.2.2	Simplify multi-leg and offset intersections, such as the intersection of McLean Avenue, Warwick Avenue, and Fairfax Boulevard.
ACTION MM1.2.3	Address safety and operational deficiencies at major intersections, such as the intersection of Eaton Place and Chain Bridge Road.
ACTION MM1.2.4	Continue City participation on regional transportation boards.
ACTION MM1.2.5	Promote a regional approach to public transportation planning.
ACTION MM1.2.6	Participate in the regional process for evaluation and recommendation of projects to be applied for state and federal funding.

Multimodal Transportation

Goal 2

Provide viable and attractive mobility choices.

At present, the City is heavily dominated by vehicle traffic. Many surveyed residents expressed a desire to make the City more walkable and bikeable, but walking or bicycling on busy streets can be uncomfortable or even dangerous. The City's bus system is well-used and highly regarded, but is often caught in the same traffic as other vehicles. Improving mobility requires providing a balanced system where people can choose the best travel option for them depending on their needs.

OUTCOME MM2.1:	Pedestrian safety is improved.
ACTION MM2.1.1	Fill critical gaps in the pedestrian network. Develop and act on a prioritized list of sidewalk improvements in the commercial areas and provide sidewalks on at least one side of every residential street in neighborhoods that are in agreement.
ACTION MM2.1.2	Ensure the pedestrian network is accessible to all and meets the requirements of the Americans with Disabilities Act (ADA).
ACTION MM2.1.3	Enhance safe routes to school, safe routes to transit, and safe routes to community facilities, completing specific planning efforts as required.
ACTION MM2.1.4	Improve pedestrian crosswalks. Crosswalks should be provided across all legs of all intersections.
ACTION MM2.1.5	Expand the sidewalk network. Sidewalks should be provided with any significant street maintenance, rehabilitation, or reconstruction project and may be constructed independent of a street project.
ACTION MM2.1.6	Increase pedestrian connectivity to the existing Vienna/Fairfax-GMU Metro station, such as through the Fairfax Circle area.
ACTION MM2.1.7	Expand safety education efforts to educate all road users on pedestrian awareness and safety. Educate residents on proper procedures for traveling as a pedestrian, interacting with pedestrians as a driver, and locating and using pedestrian facilities to increase comfort and safety and encourage more walking.
OUTCOME MM2.2:	The City's existing trail system, including the "Green Ribbon" parks and trail network, is connected and expanded.
ACTION MM2.2.1	Identify and fill gaps in the trail network. Find opportunities for future trails, complete connections to existing segments, implement projects proposed by the Parks and Recreation Master Plan, and pursue new trail connections to create a more functional trail network.
ACTION MM2.2.2	Connect the George Snyder Trail to the planned I-66 trail facility.
ACTION MM2.2.3	Improve trail crossings across arterial streets, including Fairfax Boulevard at Pickett Road and Main Street at Main Street Square and Railroad Avenue.

Multimodal Transportation Goal 2

ACTION MM2.2.4	Provide wayfinding, trailblazing, traffic calming/safety, and non-motorized facility improvements to provide connections between parks and trails.
ACTION MM2.2.5	Increase resident awareness of trail networks and connections.
OUTCOME MM2.3	Bicycle network, facilities, and programs are improved.
ACTION MM2.3.1	Develop and adopt a bicycle network plan linking major destinations including George Mason University, Old Town, Metrorail, and the regional trail system.
ACTION MM2.3.2	Review bicycle facility design standards to ensure best practices in design and delivery of facilities.
ACTION MM2.3.3	Expand the provision of bicycle racks for short-term bicycle parking.
ACTION MM2.3.4	Adopt bicycle-supportive policies for development projects where applicable, including expanded provision of short- and long-term bicycle parking, showers, and changing facilities.
ACTION MM2.3.5	Complete a bikeshare feasibility study including definition of necessary station density, recommended "starter system," operating and management structure, and funding program, preferably in partnership with George Mason University.
ACTION MM2.3.6	Provide initial support to establish bikeshare in the City.
ACTION MM2.3.7	Expand safety education efforts to educate all road users on bicycle awareness and safety. Educate casual cyclists on proper procedures to encourage more cycling through an increased comfort level.
ACTION MM2.3.8	Increase connectivity to the existing Vienna/Fairfax-GMU Metrorail station by improving bicycle facility connections and crossings across Fairfax Boulevard north to the Metro station.

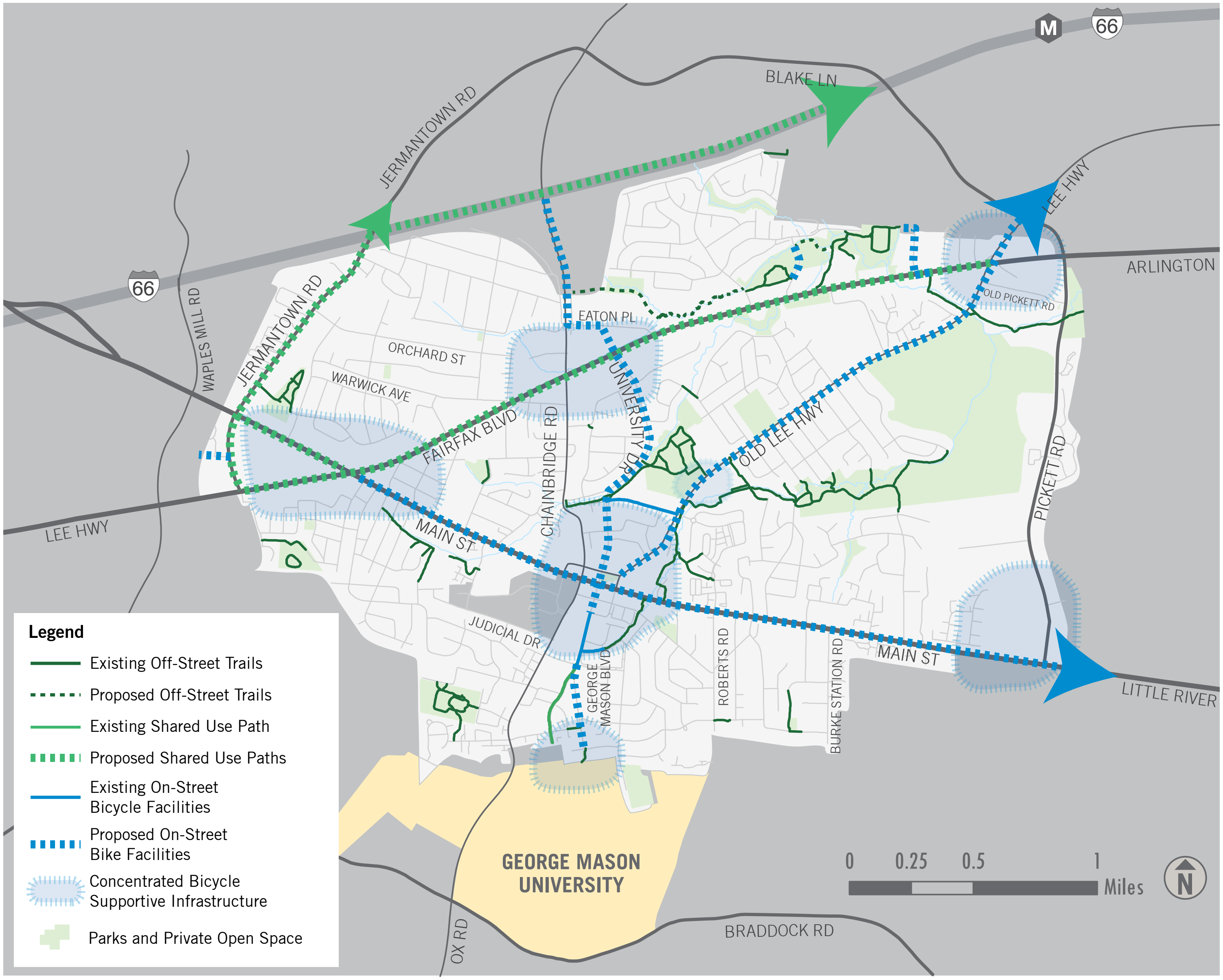
Multimodal Transportation Goal 2

OUTCOME MM2.4	Transit continues to be an effective non-driving alternative.
ACTION MM2.4.1	Improve transit services and facilities.
2.4.1.1	Identify a priority transit network providing enhanced transit operations and more frequent services along key corridors including Main Street, Old Lee Highway, and Fairfax Boulevard.
2.4.1.2	Enhance passenger accommodations to improve comfort and convenience.
2.4.1.3	Improve major transfer locations with quality passenger amenities, expanded information, and improved pedestrian facilities. Significant transfer locations include the Kamp Washington area, Fairfax Circle, Old Town, and Pickett and Main.
2.4.1.4	Implement recommendations of the CUE Transit Development Plan to maintain the highly-valued service of the CUE system.
2.4.1.5	Achieve and maintain 90% on-time performance for the CUE system.
2.4.1.6	Improve connections to other transit routes and facilities through enhancements at significant transfer locations.
2.4.1.7	Promote transit-friendly design features in development projects.
2.4.1.8	Expand ADA-accessible sidewalks and crosswalks serving bus stops.
OUTCOME MM2.5:	Vehicular travel and facilities are effectively managed and maintained.
ACTION MM2.5.1	Design all new facilities and upgrade existing facilities to comply with all federal, state, and local safety standards.
ACTION MM2.5.2	Pursue new technologies that would improve safety on City streets.
ACTION MM2.5.3	Ensure the safety of City streets by incorporating traffic calming measures as needed.
ACTION MM2.5.4	Evaluate opportunities to increase street grid connectivity to distribute traffic and to improve network resiliency. Opportunities for additional connections may be identified at any time but particularly as redevelopment occurs.

FIGURE 24 PROPOSED GREEN RIBBON OF RECREATIONAL TRAILS AND ENVISIONED CONNECTIONS

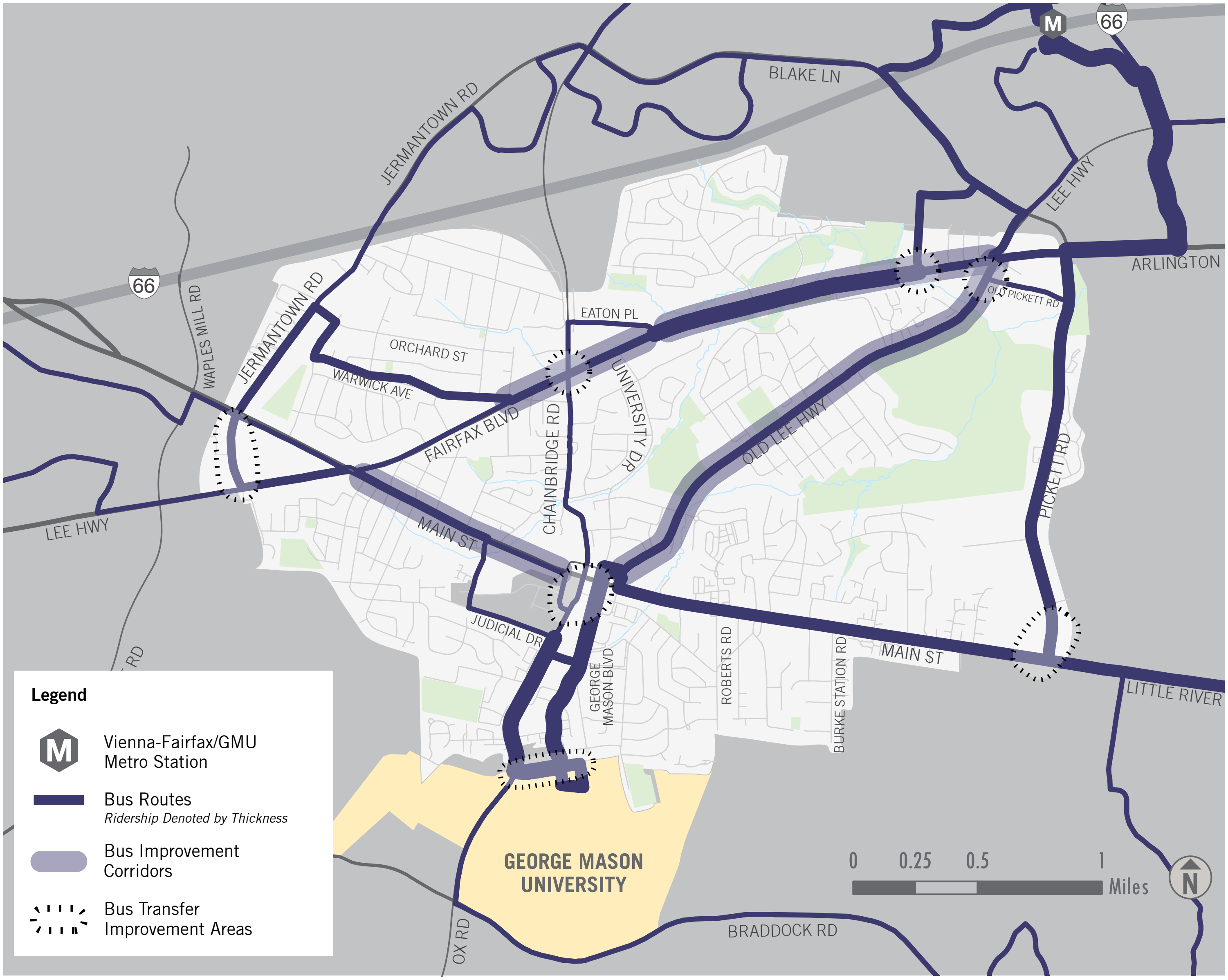
(See Outcome MM2.2)

FIGURE 25 PROPOSED NETWORK FOR BICYCLE TRAVEL



(See Outcome MM2.3)

FIGURE 26 PROPOSED TRANSIT NETWORK ENHANCEMENTS



(See Outcome MM2.4)

Multimodal Transportation Goal 3

Integrate transportation with land use.

Land use and transportation are inextricably linked and must be planned and designed concurrently – the purpose of transportation is to improve access to land use, and development patterns impact the feasibility and attractiveness of mobility choices. Mixing uses in a compact, walkable area – building housing, schools, parks, employment, shops and dining close together – can reduce the need for vehicle trips that contribute to increased congestion and other negative impacts such as eroded air quality and public health. Designing connected street networks increases the accessibility of these areas to surrounding areas. Managing parking and encouraging the use of non-driving modes can further reduce the growth of vehicle traffic while allowing for new development.

OUTCOME MM3.1:	On- and off-street parking and curbside uses are effectively managed.
ACTION MM3.1.1	Effectively locate, design, and manage parking facilities to provide context-appropriate parking availability and accessibility to the surrounding destinations.
ACTION MM3.1.2	Enhance wayfinding and information, with an initial focus on Old Town.
ACTION MM3.1.3	Explore parking pricing and other parking management strategies for public parking spaces and facilities throughout the City.
ACTION MM3.1.4	Explore the creation of parking management districts in Old Town and other Activity Centers to maximize parking resources while minimizing excess parking supply.
ACTION MM3.1.5	Consider policy measures to allow developers to fund public parking or other forms of access infrastructure in lieu of meeting parking requirements on site.
ACTION MM3.1.6	Develop travel marketing material to reduce the demand for long-term commuter/employee parking in the City.
ACTION MM3.1.7	Revise the Residential Parking Permit District Policy to consistently manage on-street public parking in residential neighborhoods.
OUTCOME MM3.2:	Walkability to and within Activity Centers and between neighborhoods is increased.
ACTION MM3.2.1	Whenever possible, increase connections – particularly non-motorized connections – between neighborhoods, community facilities, and Activity Centers.
ACTION MM3.2.2	With development projects, break up large blocks to a more walkable scale. Pursue additional secondary and tertiary street network opportunities. Streets should be well-designed as complete streets and align at regular intersections for a continuous street grid.

Multimodal Transportation Goal 3

The City will improve street design and better guide street management decisions through adoption of a "Link + Place" street typology appropriate to the City's streets and development patterns. The typology provides planners, engineers, and designers with an understanding of the typical and desired users of the street, features to consider for inclusion, and the transportation demands that require accommodation based on the street's size and uses. Link + Place street type designations for all streets in the City are provided in Figure 28, with each street type defined on the following pages.

ACTION MM3.2.3	Increase the number, safety, and frequency of pedestrian crossings, including across major streets. Provide crosswalks at all approaches of all signalized intersections at minimum intervals of 500 feet within Activity Centers. An exception exists in the case where the implementation of a crosswalk would result in operational failure of the corridor.
ACTION MM3.2.4	Improve the overall pedestrian environment, including pedestrian crossings, street trees, and furnishing zones; buffering sidewalk from vehicle travel lanes; improved pedestrian scale lighting; and active ground floor uses along primary street edges.
OUTCOME MM3.3:	Streets are designed to accommodate context and function.
ACTION MM3.3.1	Develop and adopt a "Link + Place" street typology to guide street design and management for public and private streets.
ACTION MM3.3.2	Through community consultation, develop specific design objectives, desired outcomes, and performance metrics for each street type. Link design objectives to the street design and project development process, guidelines, and reference documents.
ACTION MM3.3.3	Ensure quality street design in both the pedestrian zone and travel zone of the street.
ACTION MM3.3.4	Improve access, circulation, walkability, and transportation management in Activity Centers.

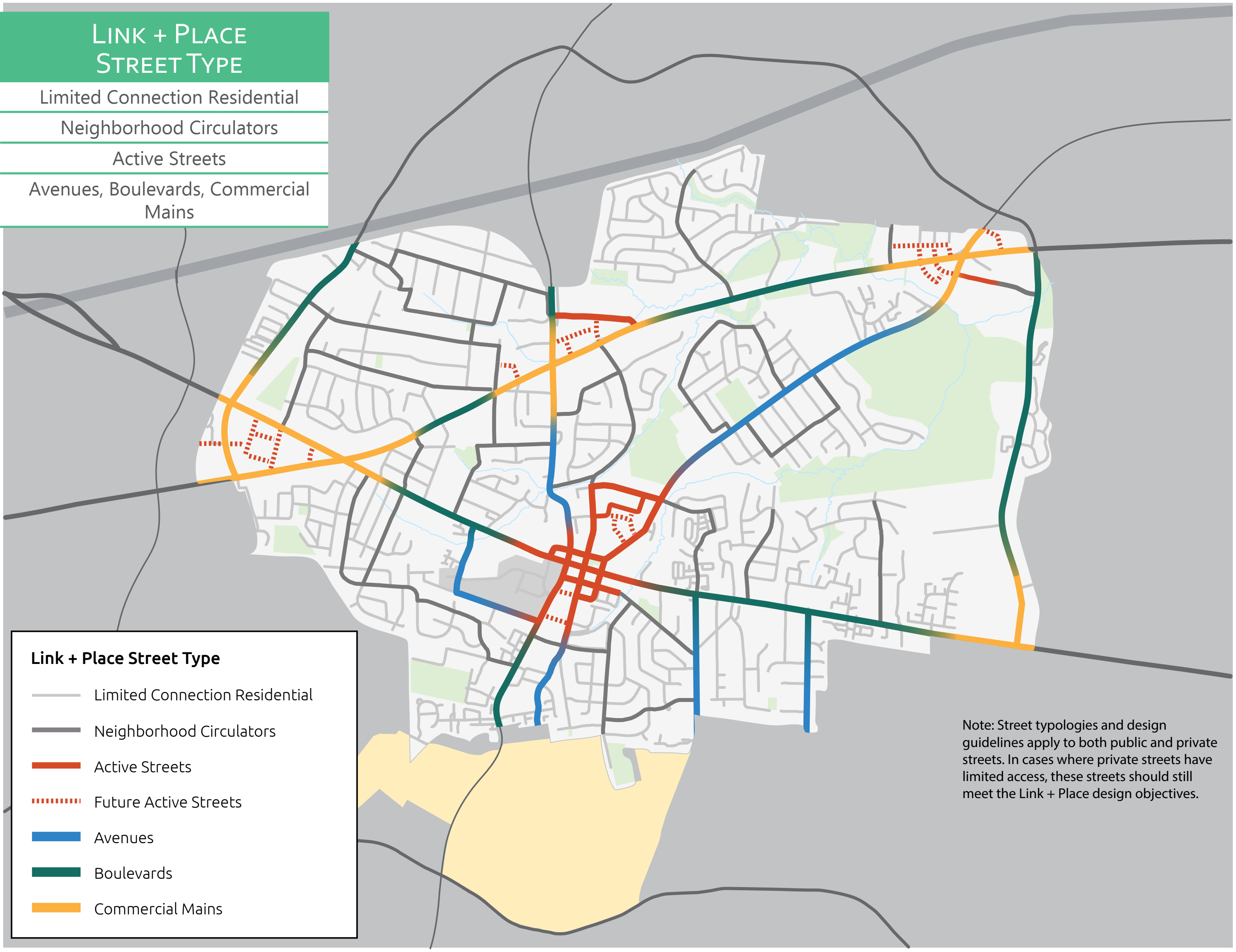
FIGURE 27 PROPOSED ACTIVITY CENTER ENHANCEMENTS

(See Outcome MM3.2)

Note: In June 2020, Small Area Plans were adopted for the Old Town Fairfax and Northfax Activity Centers. Refer to the respective Small Area Plan for specific guidance in each of these Activity Centers.

FIGURE 28 PROPOSED STREET TYPOLOGY DESIGNATIONS

VDOT CLASSIFICATION	LINK + PLACE STREET TYPE
Local	Limited Connection Residential
Minor Collector	Neighborhood Circulators
Major Collector	Active Streets
Minor + Major Arterial	Avenues, Boulevards, Commercial Mains



Note: Street typologies and design guidelines apply to both public and private streets. In cases where private streets have limited access, these streets should still meet the Link + Place design objectives.

(See Outcome MM3.23

Note: In June 2020, Small Area Plans were adopted for the Old Town Fairfax and Northfax Activity Centers. Refer to the respective Small Area Plan for specific guidance in each of these Activity Centers.

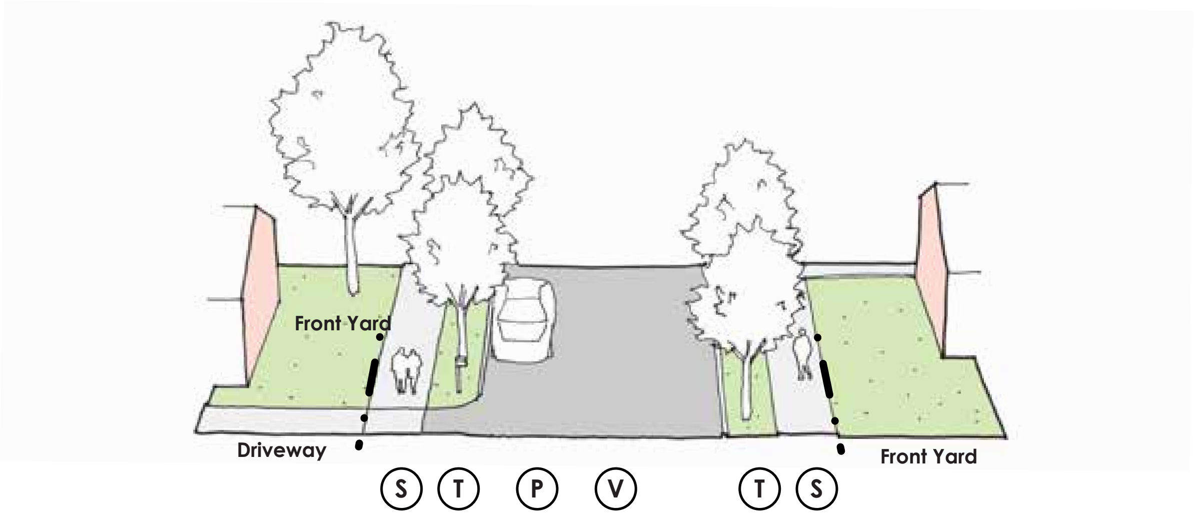
LIMITED CONNECTION RESIDENTIAL STREETS

These are interior neighborhood residential streets that generally do not connect to other streets in the network. These streets are lined with residential front yards and a robust tree canopy, and generally self-regulate both vehicle speeds and volumes.

Typical Transportation Uses

- Local traffic only – typically the home segment of the journey
- Non-motorized trips within the neighborhood
- Bicycles typically share the street with vehicles
- Very low traffic speeds

LIMITED CONNECTION RESIDENTIAL STREETS



TYPICAL ELEMENTS MAY INCLUDE:

- NARROW AND DESIGNED FOR SLOWER SPEEDS
- SINGLE-FAMILY RESIDENTIAL SET BACK WITH DRIVEWAYS
- ON-STREET PARKING (UNMARKED) - WHERE APPLICABLE
- SIDEWALKS

DIAGRAM KEY

Ⓥ	Travel Lanes -10' to 11' Each
Ⓟ	On-Street Parking
Ⓣ	Street Tree Zone - 5'
Ⓢ	Sidewalks - 5'
¦	City Right-of-Way

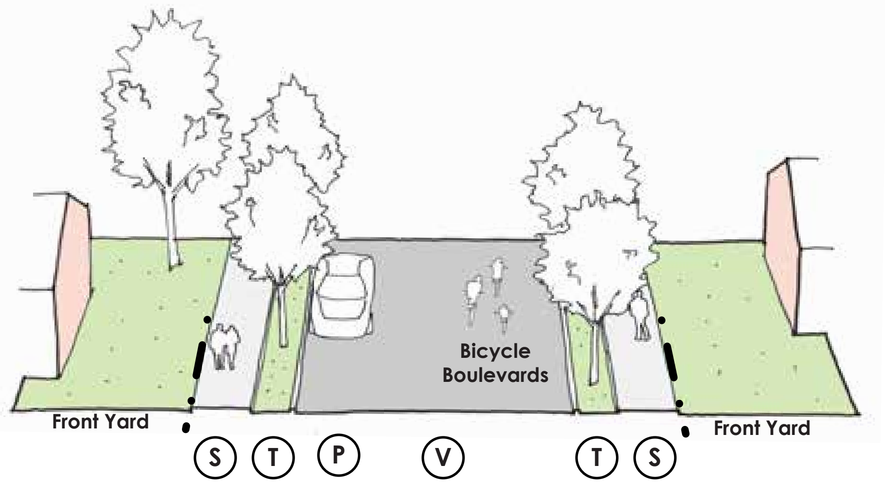
NEIGHBORHOOD CIRCULATORS

Neighborhood Circulators are residential streets that contribute to community connectivity and may include the presence of parks, community centers, schools, or places of worship. Neighborhood Circulators have abundant street trees and open space along them. These streets may need design techniques that reduce travel speeds and traffic volumes.

Typical Transportation Uses

- Mostly local traffic; vehicles from throughout the neighborhood may filter onto these streets
- Some may have transit service
- Non-motorized trips connecting to local destinations (e.g., schools, parks or retail)
- Bicycles typically share the street with vehicles; marked facilities recommended
- Vehicle speeds should be low; speed management may be required

NEIGHBORHOOD CIRCULATORS



Note: Similar to Limited Connection Residential, though provide more connectivity to City street network

TYPICAL ELEMENTS MAY INCLUDE:

- NARROW AND DESIGNED FOR SLOWER SPEEDS
- SINGLE-FAMILY RESIDENTIAL SET BACK WITH DRIVEWAYS
- ON-STREET PARKING (UNMARKED) - WHERE APPLICABLE
- SIDEWALKS
- BICYCLE BOULEVARDS (SEE DEFINITION BELOW)
- STREET LIGHTING

DIAGRAM KEY

Ⓥ	Travel Lanes -10′ to 11′ Each
Ⓟ	On-Street Parking - 8′
Ⓣ	Street Tree Zone - 5′
Ⓢ	Sidewalks - 5′
i	City Right-of-Way

Bicycle Boulevards are streets with low traffic volumes and speeds, designated and designed to give bicycle travel priority within the travel lane.

-National Association of City Transportation Officials

ACTIVE STREETS

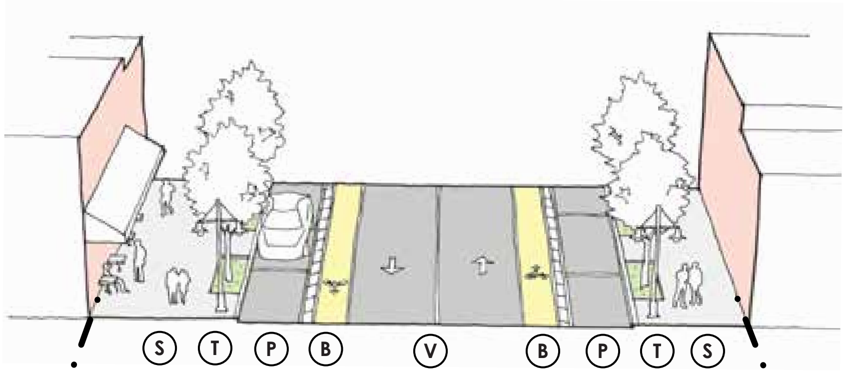
Active Streets connect multiple destinations and are more mixed-use or commercial in nature than residential streets. They are generally the street type for new streets within Activity Centers and are the primary location for commercial property access. Active Streets should be designed to create a comfortable environment for walking while at the same time accommodating circulation by bicyclists, cars, and trucks, and in some cases transit vehicles.

Typical Transportation Uses

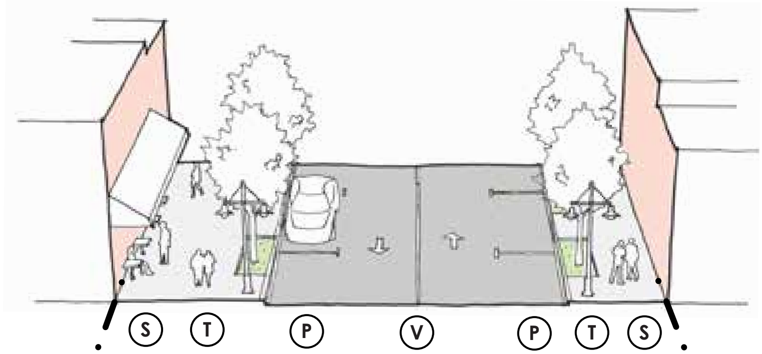
- Mostly local traffic accessing destinations, though some active streets may accommodate regional traffic
- Some may have transit service
- High concentrations of pedestrians
- Bicycles in-street only, preferably on dedicated facilities
- Loading and delivery vehicles need to be accommodated
- Traffic speeds should be low

ACTIVE STREETS

Option 1



Option 2



TYPICAL ELEMENTS MAY INCLUDE:

- NARROW STREETS (TYPICALLY TWO LANES)
- GROUND FLOOR USES ORIENTED TOWARD THE STREET
- ON-STREET PARKING
- SIDEWALKS
- BICYCLE BOULEVARDS
- STREET LIGHTING
- TREES IN PITS, PLANTERS, OR GRATES

DIAGRAM KEY

Ⓥ Travel Lanes -10' to 11' Each
Ⓟ On-Street Parking - 8'
Ⓣ Street Tree Zone - Min. 5'
Ⓢ Sidewalks - Varies 6' to 12'
Ⓑ Bicycle Lanes - Min. 5'
i City Right-of-Way

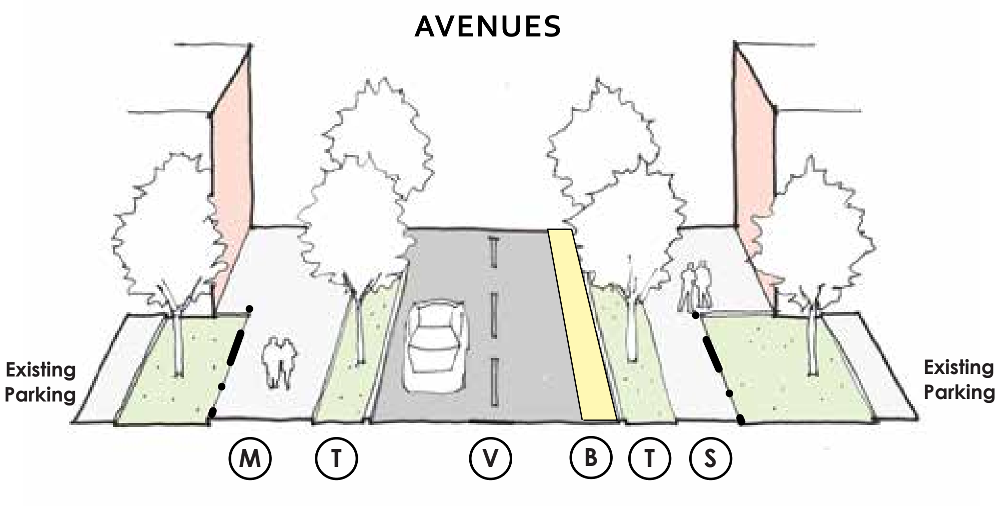
AVENUES

Avenues carry moderate traffic volumes using one travel lane in each direction. As a result, these corridors are more comfortable for transportation users. They include sections of arterial corridors between certain Activity Centers such as Old Lee Highway and Chain Bridge Road. Medians or planted median islands are less common while curb cuts and access drives are numerous. Vehicle throughput can be controlled through these areas due to high volume, naturally lowering traffic speeds to a level consistent with the non-commercial context.

Typical Transportation Uses

- Can be moderate volumes of traffic. Most vehicles are passing through to other local or area destinations
- Transit service is likely
- Moderate concentrations of pedestrians
- Bicycles accommodated on protected or off-street facilities such as shared use paths
- Traffic speeds lower, limited by volume

Image Credit: Google



TYPICAL ELEMENTS MAY INCLUDE:

- LOWER CAPACITY THAN BOULEVARDS (TWO LANES)
- GROUND FLOOR USES ORIENTED TOWARD THE STREET
- LIMITED OR NO ON-STREET PARKING
- SIDEWALKS OR SHARED USE PATHS
- BICYCLE LANES AND/OR SHARED USE PATHS
- VEGETATED BUFFERS FOR TREE ZONE

DIAGRAM KEY

Ⓥ	Travel Lanes -11' to 12' Each
Ⓣ	Street Tree Zone - Min. 5'
Ⓢ	Sidewalks - Varies 6' to 12'
Ⓜ	Shared Use Paths - Min. 10'
Ⓑ	Bicycle Lanes - Min. 5'
┆	City Right-of-Way

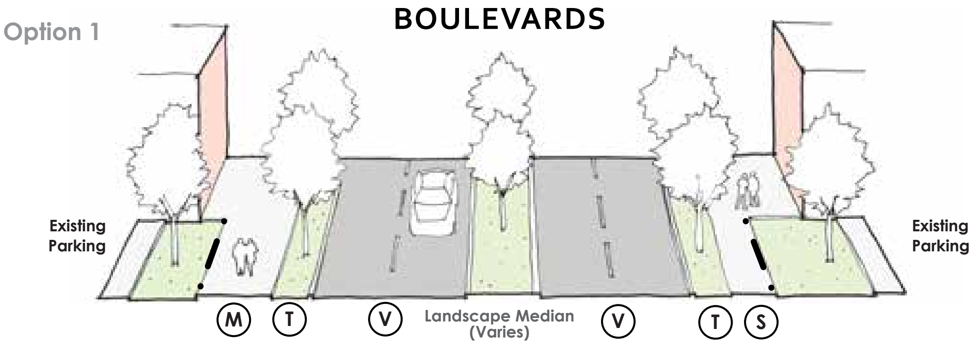
BOULEVARDS

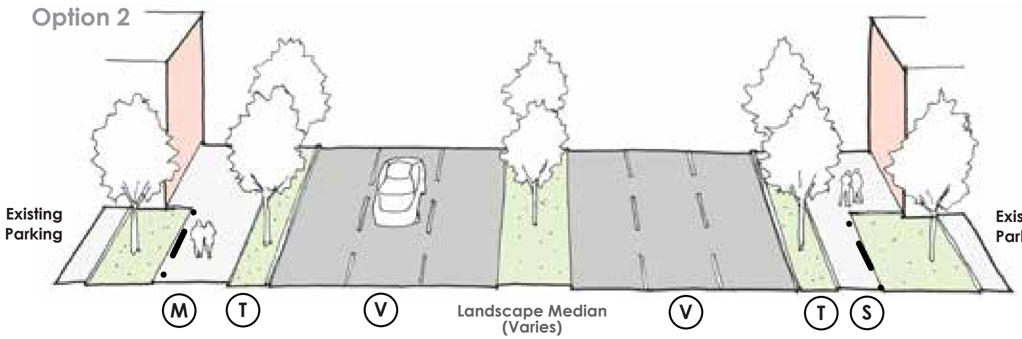
Boulevards carry moderate to high volumes of traffic, but do so through a parkway like setting. They include sections of arterial corridors between the Activity Centers that may be designated as Boulevards, as well as minor arterials such as Pickett Road and Jermantown Road. Medians or planted median islands are common and curb cuts and access drives should be few and far between. While vehicle throughput is generally smooth through these areas, traffic speeds should remain consistent with the residential or park-like setting the streets travel through.

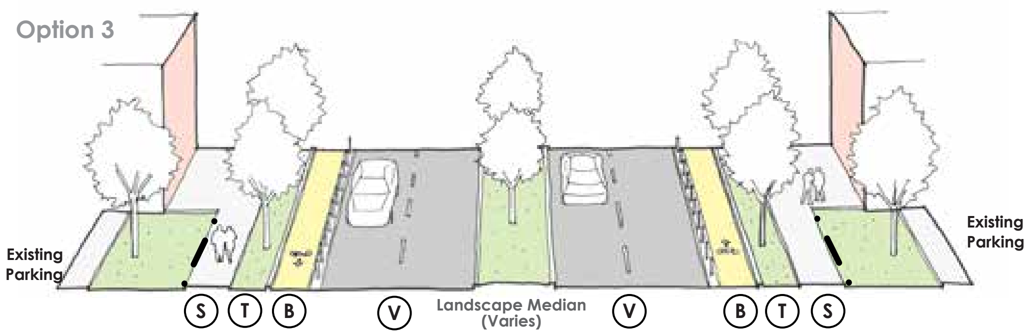
Typical Transportation Uses

- Can be high volumes of traffic. Most vehicles are passing through to other local or area destinations
- Transit service is likely
- Low concentrations of pedestrians
- Bicycles accommodated on protected or off-street facilities such as shared use paths
- Traffic speeds likely higher, but still managed

BOULEVARDS







TYPICAL ELEMENTS MAY INCLUDE:

- MULTI-LANE (TYPICALLY FOUR OR MORE LANES)
- GROUND FLOOR USES ORIENTED TOWARD THE STREET
- NO ON-STREET PARKING
- SIDEWALKS OR SHARED USE PATHS
- BICYCLE LANES OR SHARED USE PATHS
- VEGETATED BUFFERS FOR TREE ZONE

DIAGRAM KEY

Ⓥ Travel Lanes -11′ to 12′ Each
Ⓣ Street Tree Zone - Min. 5′
Ⓢ Sidewalks - Varies 6′ to 12′
Ⓜ Shared Use Paths - Min. 10′
Ⓑ Bicycle Lanes - Min. 5′
/ City Right-of-Way

COMMERCIAL MAINS

Commercial Mains are where commercial activity is concentrated, such as Fairfax Boulevard through Northfax or Main Street around Kamp Washington. Commercial Mains feature high volumes of vehicle traffic that mixes with bicycles, transit vehicles, and pedestrian crossings. Streets should be designed to slow traffic speeds while facilitating traffic flow. The pedestrian zone of the street should buffer pedestrians from the adjacent traffic. Access management on Commercial Mains improves vehicle flow while reducing conflicts with pedestrians or bicyclists.

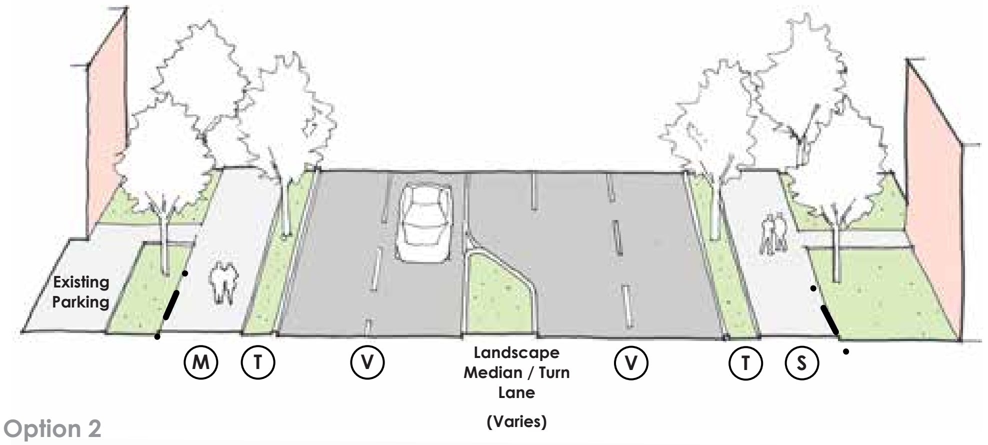
Typical Transportation Uses

- Can be high volumes of traffic. Many vehicles are passing through to other local or regional destinations
- Transit service is likely
- High concentrations of pedestrians
- Bicycles accommodated in dedicated facilities either in-street or in well-designed shared use paths
- Traffic speeds likely higher, but still managed

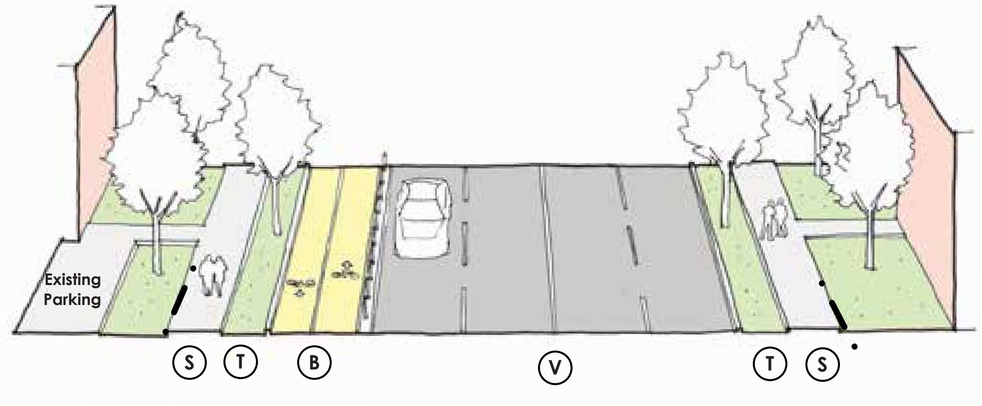
Image Credit: Google

COMMERCIAL MAINS

Option 1



Option 2



TYPICAL ELEMENTS MAY INCLUDE:

- LARGE MULTI-LANE STREETS (TYPICALLY FOUR TO SIX LANES)
- GROUND FLOOR USES ORIENTED TOWARD THE STREET
- NO ON-STREET PARKING
- SIDEWALKS OR SHARED USE PATHS
- BICYCLE LANES OR SHARED USE PATHS
- VEGETATED BUFFERS FOR TREE ZONE

DIAGRAM KEY

Ⓥ	Travel Lanes -11' to 12' Each
Ⓣ	Street Tree Zone - Min. 5'
Ⓢ	Sidewalks - Varies 6' to 12'
Ⓜ	Shared Use Paths - Min. 10'
Ⓑ	Bicycle Lanes - Min. 5'
i	City Right-of-Way

Multimodal Transportation

Goal 4

Adopt policies and procedures for strategic transportation decision making.

The City will work with civic leaders, community members, and other stakeholders to develop and adopt clear and consistent policies and processes based on the community's fundamental values and advance the overall vision for sustainable transportation. These policies are aimed at ensuring the safety of all travelers, enhancing the person-trip efficiency of the system, and preserving the characteristics that make the City unique.

OUTCOME MM4.1:	The City's sidewalk policy is updated.
ACTION MM4.1.1	Adopt a formal sidewalk policy, beginning with the best practices and policy recommendations for Pedestrian Accessibility Policy in Appendix B (Section 4), requiring sidewalks on all new, reconstructed, or substantially rehabilitated streets that respond to local needs and community context.
OUTCOME MM4.2:	A Complete Streets policy is adopted and implemented.
ACTION MM4.2.1	Develop and adopt a Complete Streets policy, beginning with the best practices and policy recommendations for Complete Streets Policy in Appendix B (Section 5).
4.2.1.1	Develop an appropriate policy for the City and adopt as formal policy.
4.2.1.2	Examine existing design practices and processes and adjust to ensure implementation of the adopted policy.
4.2.1.3	Set and track evaluation measures for Complete Streets improvements.
ACTION MM4.2.2	Implement Complete Streets improvements on major corridors including Fairfax Boulevard, Chain Bridge Road, University Drive, Old Lee Highway and Main Street.
OUTCOME MM4.3:	A Transportation Demand Management (TDM) Program is adopted and implemented.
ACTION MM4.3.1	Based on best practices (as defined in Appendix B Section 3), establish a Citywide TDM policy and program framework that can be utilized by the City and adapted by businesses and developers.
ACTION MM4.3.2	Require TDM for all large development projects. Require bi-annual monitoring to assess resident/employee travel patterns.

Multimodal Transportation Goal 4

ACTION MM4.3.3	Create a City TDM brand and website to centralize all available travel option information including transit schedules, bicycle maps, ridesharing opportunities, and education tools.
ACTION MM4.3.4	Increase outreach and education to George Mason University, the Central Fairfax Chamber of Commerce, City of Fairfax Schools, and other markets that can provide strong partnerships with the TDM program.
ACTION MM4.3.5	Evaluate a linked TDM fund for in-lieu developer fees related to parking requirements to enhance the transit system and Citywide TDM programs.
ACTION MM4.3.6	Improve access to ridesourcing programs through enhanced coordination with Fairfax County RideSource, Commuter Connections, or initiate a City-based program.
ACTION MM4.3.7	Explore opportunities for carshare services within the City to address "last mile" connections.
ACTION MM4.3.8	Partner with employer-sponsored wellness programs to highlight and market travel options and associated costs.
OUTCOME MM4.4:	Mobility best practices and emerging technologies, including those described in Appendix B, are considered in transportation policies and projects.
ACTION MM4.4.1	Consider methods of implementing and evaluating new transportation concepts, including trial or pilot programs.
ACTION MM4.4.2	Provide real-time information through both apps and visual displays for transit arrivals, parking availability, and shared bicycles and vehicles.
ACTION MM4.4.3	Promote multimodal travel planning applications and services.
ACTION MM4.4.4	Pursue Intelligent Transportation Systems (ITS) such as transit or emergency vehicle priority, dynamic signal timing, and other strategies.

Multimodal Transportation
Goal 4

ACTION MM4.4.5	Participate with state and regional partners to ensure autonomous vehicle policies protect vulnerable street users and reduce overall vehicle miles traveled.
ACTION MM4.4.6	Consider curbside policies and street design to manage curbside carsharing/ridesourcing activities while preserving the safe and efficient flow of travel.
ACTION MM4.4.7	Consider policies to promote technologies and innovations that reduce environmental impacts from transportation.
OUTCOME MM4.5:	A short-term prioritized transportation project list is developed.
ACTION MM4.5.1	Develop a two-year project list that reflects City Council and community priorities.
ACTION MM4.5.2	Provide opportunities for public input on transportation improvements.
ACTION MM4.5.3	Use all available media to provide transportation information to the public.

Recommended Transportation Policies, And Projects And Cost Estimates

The plan's goals are achieved through accomplishing the policies and projects highlighted in Figure 30. Additionally, in accordance with Virginia Code Section 15.2-2223 relating to Comprehensive Plans, the map is accompanied by cost estimates for the specific projects, as shown below in Figure 29. The map and table include only key recommended projects; all projects under consideration to meet the long-term goals of the Multimodal Plan will be considered annually as part of the development of the City's Two-Year Transportation Program.

FIGURE 29 CITY OF FAIRFAX MULTIMODAL TRANSPORTATION PLAN – COST ESTIMATE

PROJECT #	NAME	PROJECT TOTAL COST ESTIMATE
1	Implement multimodal improvements at Warwick Ave and Fairfax Blvd	$ 7,900,000
2	Improve Jermantown Rd corridor	$ 21,000,000
3	Add sidewalk connection on Chain Bridge Rd between Old Town and Fairfax Blvd	$ 4,580,000
4	Implement Old Lee Hwy multimodal improvements	$ 15,000,000
5	Study Main St bicycle facility feasibility	$ 11,200,000
6	Extend trail along Pickett Rd from Fairfax Blvd to the Cross County Trail	$ 3,500,000
7	Complete the George Snyder Trail	$ 14,000,000
8	Support the study of a Metrorail extension	$ 15,260,000
9	Improve intersection at Eaton Place and Chain Bridge Rd	$ 26,000,000
10	Improve vehicular and pedestrian safety at Fairfax Circle	$ 5,760,000
11	Expand the roadway network in Northfax West	$ 5,000,000
12	Extend South St between University Dr and Chain Bridge Rd	$ 19,750,000
13	Complete the Judicial Drive Trail	$ 350,000
14	Implement University Drive traffic calming measures	$ 500,000
15	Complete the Government Center Parkway connection	$ 5,000,000
Citywide, not location specific	Implement pedestrian spot improvements Citywide	$ 400,000
	Conduct a bikeshare feasibility study	$ 60,000
	Improve Transit facilities	$ 965,000
	Implement roadbed improvements	$ 1,000,000
	Develop a Transportation Demand Management Program	$ 60,000
	Maintain pavement condition of primary extension roadways	$ 970,000
		$ 158,255,000

FIGURE 30 TRANSPORTATION POLICIES AND PROJECTS

Regional Corridors

Continue to participate in regional planning efforts to improve vehicle and freight operations and pedestrian, bicyclist and vehicle safety in regional corridors, such as Blake Lane-Jermantown Road, Braddock Road, Government Center Parkway, and Pickett Road.

City Major Corridors

Implement complete streets improvements to safely accommodate all roadway users in the City on all roads, and in particular on arterials including Fairfax Boulevard, Chain Bridge Road, Old Lee Highway and Main Street.

Local Activity Centers

Within Local Activity Centers:

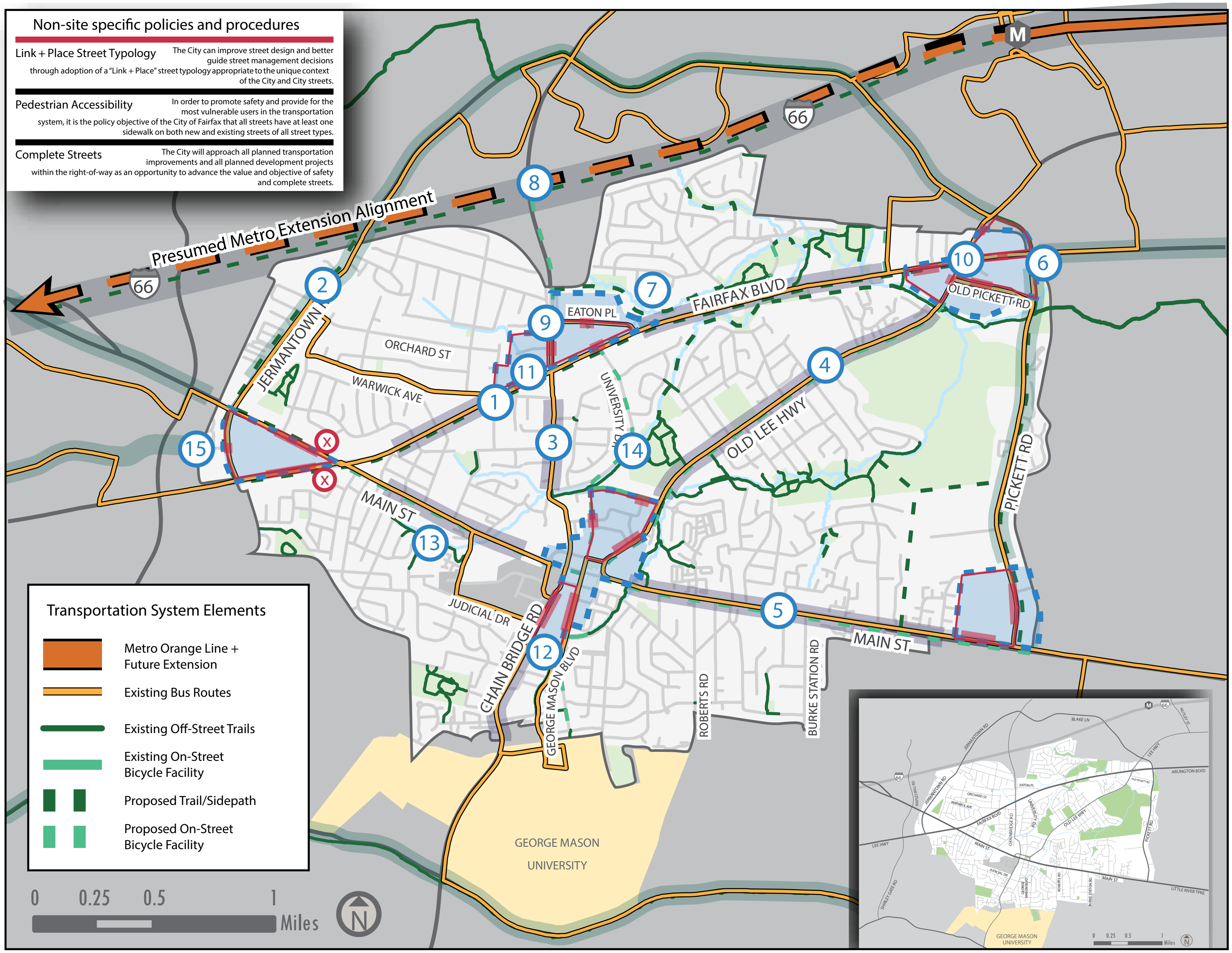
- Break up large blocks to a more walkable scale. Pursue expanded secondary, tertiary, and non-motorized network opportunities.
- Consolidate vehicular access points
- Provide new pedestrian-only connections

Specific Projects

1. Improve Warwick Ave and Fairfax Blvd
2. Improve Jermantown Rd corridor
3. Add sidewalk on Chain Bridge Rd
4. Add Old Lee Hwy multimodal improvements
5. Study Main St bicycle facility feasibility
6. Add Pickett Rd trail connection
7. Complete the George T. Snyder Trail
8. Support the study of a Metrorail extension
9. Improve intersection at Eaton Place and Chain Bridge Rd
10. Improve safety for all users at Fairfax Circle
11. Expand the roadway network in Northfax West
12. Expand the roadway network at South Street
13. Complete the Judicial Drive Trail
14. Implement University Drive traffic calming measures
15. Connect Government Center Parkway

Citywide Projects (Locations TBD)

- Implement pedestrian spot improvements
- Conduct a bikeshare feasibility study
- Improve transit facilities
- Implement roadbed improvements
- Develop a Transportation Demand Management Program
- Maintain pavement condition of primary extension roadways



Non-site specific policies and procedures

Link + Place Street Typology The City can improve street design and better guide street management decisions through adoption of a "Link + Place" street typology appropriate to the unique context of the City and City streets.

Pedestrian Accessibility In order to promote safety and provide for the most vulnerable users in the transportation system, it is the policy objective of the City of Fairfax that all streets have at least one sidewalk on both new and existing streets of all street types.

Complete Streets The City will approach all planned transportation improvements and all planned development projects within the right-of-way as an opportunity to advance the value and objective of safety and complete streets.

Transportation System Elements

- Metro Orange Line + Future Extension
- Existing Bus Routes
- Existing Off-Street Trails
- Existing On-Street Bicycle Facility
- Proposed Trail/Sidepath
- Proposed On-Street Bicycle Facility

Note: In June 2020, Small Area Plans were adopted for the Old Town Fairfax and Northfax Activity Centers. Refer to the respective Small Area Plan for specific guidance in each of these Activity Centers.

4 Environment and Sustainability

This Chapter is supported by two Guiding Principles: Natural Environment and Sustainability Initiatives. The Natural Environment Guiding Principle focuses on the physical and geographic context of the City and the impact on local and regional environmental resources. The City has several types of environmental resources that are easily impaired by urban land uses. Encompassing the headwaters of Accotink Creek, measures taken by the City to protect water quality, riparian and floodplain areas, open space, and the urban forest are critical to support regional efforts to improve environmental health. Located within the Chesapeake Bay Watershed, the City is committed to reducing stormwater runoff in order to protect the Bay through the adoption of the Chesapeake Bay Preservation Act (Appendix A) and enforcement of other federal, state, and local stormwater regulations.

The Sustainability Initiatives Guiding Principle focuses on City practices with a more global interest. This includes specific actions that support sustainable practices that can decrease greenhouse gas emissions from both building energy use and transportation; increase energy efficiency; increase utilization of renewable energy; increase waste reduction and recycling; conserve water; and support healthy lifestyles. It is important to recognize that sustainability practices address a broad range of social, economic, and environmental issues, and therefore are incorporated throughout the Comprehensive Plan.

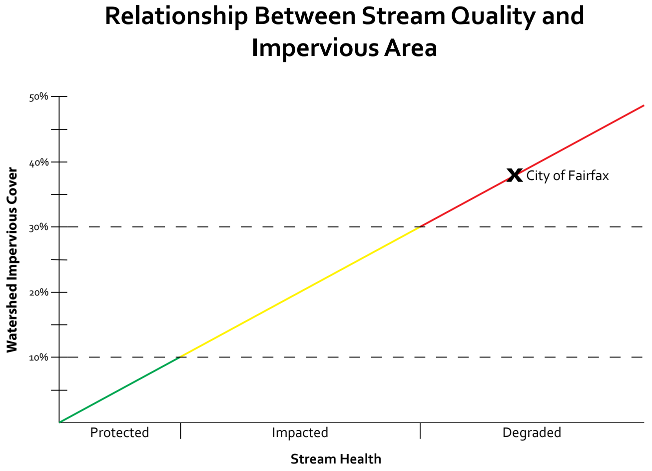
Opportunities and Challenges

Impervious surface

Previous land development has resulted in a large percentage of impervious areas, as shown in Figure 31. Impervious areas have structures such as pavement and buildings that do not allow rainwater to pass through into the ground, and increase the speed and amount of stormwater runoff resulting in negative impacts to streams. As shown in the chart "Relationship Between Stream Quality and Impervious Area," as the percentage of impervious cover in a watershed increases, stream quality declines. At 42.7% impervious cover, the City's streams are classified as "non-supporting streams." Streams in this category are usually so degraded they become a conduit for conveying stormwater and have poor stream quality. As is typical in urban areas, maintaining the health of streams in the City is a continual challenge. The City has an opportunity to increase the amount of pervious areas with redevelopment and to improve the stormwater management system in order to adequately manage stormwater runoff.

FIGURE 31 PERVIOUS AND IMPERVIOUS AREAS

Source: City of Fairfax GIS 2013 Impervious Surfaces

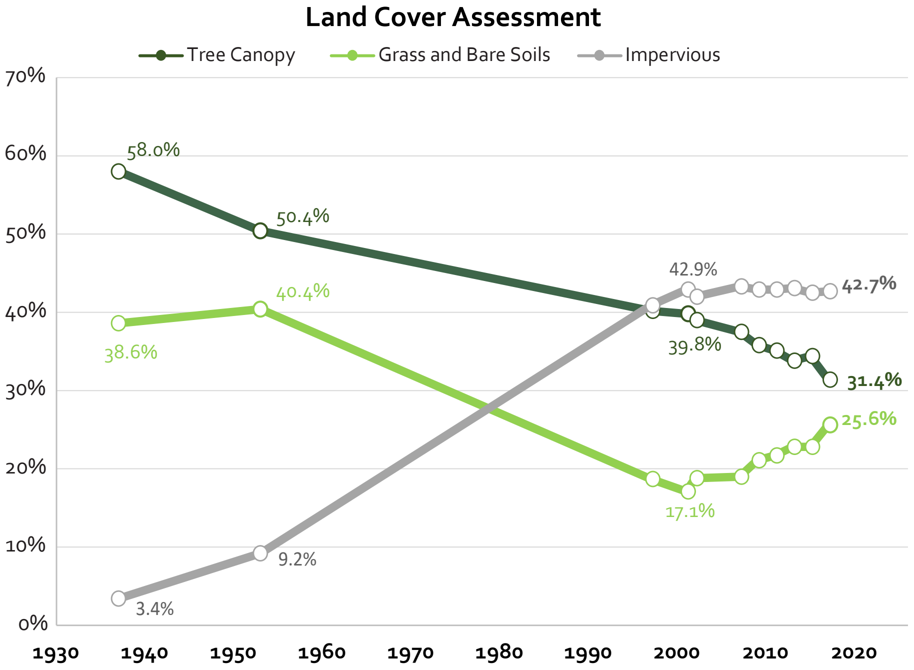


As impervious ground cover increases, stream health and quality declines. With 42.% of its ground area covered by impervious surfaces, the City's streams are considered degraded with poor quality.

Tree cover

Due to urbanization, much of which occurred during rapid post World War II development around Washington, D.C., the City's tree canopy decreased from 58% in 1937 to 31.4% in 2017, while impervious areas have increased from 3.4% to 42.7% as shown in Figure 32. Tree canopy coverage offers many benefits, such as conserving energy due to the reduction of temperatures from shading, improving air quality, reducing stormwater run-off, improving property values, and beautifying our community. Because the City is almost entirely developed, few significant forested areas remain. Those that still exist, whether public or private, deserve specific attention so that their aesthetic and ecological benefits to the City are not lost.

FIGURE 32 TREE CANOPY



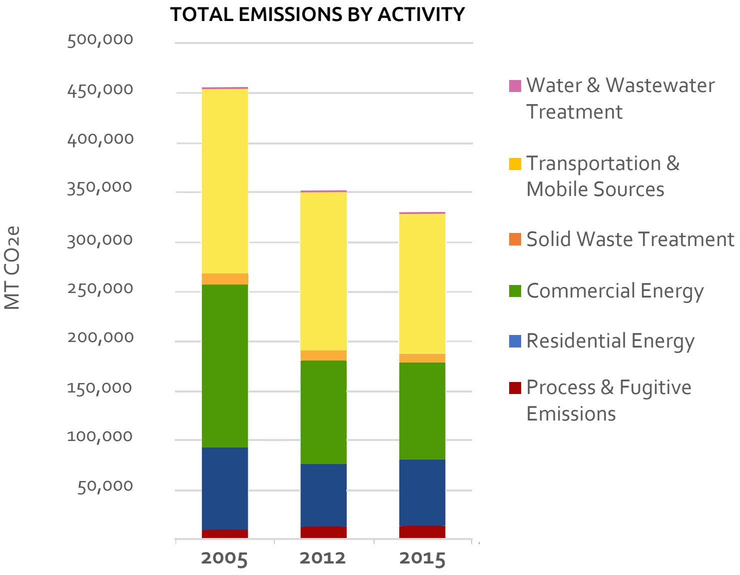
Source: City of Fairfax conducted a tree canopy assessment using the i-Tree Canopy software developed by the US Forest Service. The i-Tree land cover assessment results were estimated using random sampling statistics and have standard deviations ranging from ± .14 to ±1.53.

Source: Individual municipal websites

Greenhouse gas emissions

Scientific consensus accepts the reality of climate change and recognizes that human activity, especially the combustion of fossil fuels that creates greenhouse gases, is an important driver of climate change. The City, along with the entire Mid-Atlantic region, can anticipate changes in temperature, precipitation, water supply, and air quality as a result of the changing climate. Local governments are responding to new demands on infrastructure as well as impacts to natural resources related to weather instability and changing, uncertain climatic conditions. The City is committed to exploring the potential benefits and costs of adopting policies and participating in programs that promote the long-term goal of greenhouse gas emissions reduction while maximizing economic and social benefits. A summary of greenhouse gas emissions from community activities in the City is provided in Figure 33. The City will explore and prioritize strategies that could best aid in reducing greenhouse gas emissions.

FIGURE 33 GREENHOUSE GAS EMISSIONS



Source: Greenhouse Gas Emissions Inventory for the Metropolitan Washington Region (2005-2015): https://www.mwcog.org/documents/2016/04/22/metropolitan-washington-community-wide-greenhouse-gas-emissions-inventory-summary--greenhouse-gas/

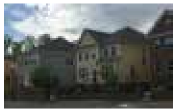
Pumping and treatment of water and wastewater used or produced by residents and activities.

On-road vehicular travel, air travel, and commuter rail travel undertaken by residents, business, and visitors in the city, and off -road activities such as use of construction and landscaping equipment.

Photo Credit: Virginia Department of Transportation

Collection and treatment of solid waste produced by residents and activities within city boundaries.

Emissions from electricity consumption, and combustion of natural gas and other fuels from the commercial sector.



Emissions from electricity consumption, and combustion of natural gas and other fuels from the residential sector.

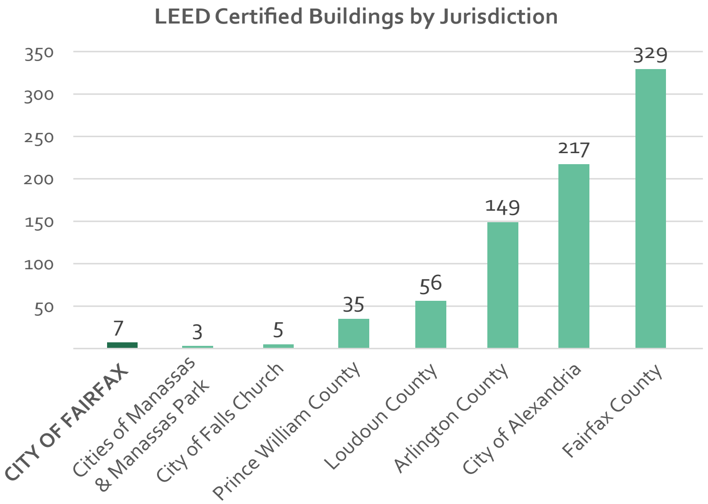
Fugitive emissions from ozone depleting chemicals and natural gas.

Photo Credit: PiccoloNamek

Green building practices

With new public and private development projects, the City has ample opportunity to encourage the use of green building practices (Figure 34). In addition to the environmental benefits of green buildings (e.g., reducing energy use, greenhouse gas emissions, construction waste, etc.), they can also enhance the economics of local development. Recent trends show that office space meeting green building standards generally experiences higher demand and can be a catalyst for bringing new businesses to a community.

FIGURE 34 GREEN BUILDINGS



Fairfax Marketplace

Fair City Mall

Residence Inn

PNC Bank Branch

PROJECT NAME	LOCATION	LEED SYSTEM	POINTS ACHIEVED	CERTIFICATION LEVEL	CERTIFICATION DATE
Fairfax County Health Dept Laboratory	10310 Layton Hall Dr	LEED-NC 2.2	41	Gold	6/8/2011
Barcelo Crestline	3950 University Drive	LEED-CI 2.0	23	Certified	11/5/2010
PNC Bank Branch-Main St & Judicial Ave	10649 Main Street	LEED-NC 2.2	27	Certified	6/28/2013
Fair City Mall	9652 Main St	LEED for Retail (New Construction) Pilot	22	Certified	1/31/2011
Residence Inn	3565 Chain Bridge Road	LEED-NC v2009	42	Certified	6/12/2012
Fairfax Marketplace	10944 Fairfax Boulevard	LEED-EB:OM v2009	40	Certified	4/30/2015
TD Bank - Fairfax Turnpike Shopping Center	Pickett Road and Main Street	LEED-NC Retail v2009	72	Gold	7/25/2012

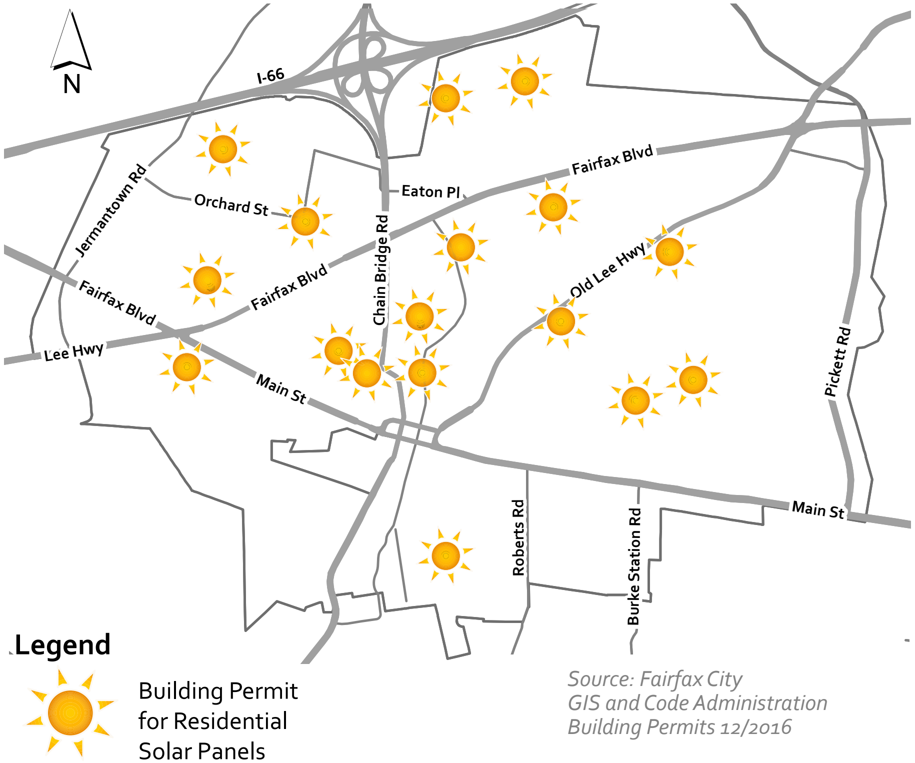
Data Source: The Green Building Information Gateway (GBIG) (http://www.gbig.org/). Data was provided to the City of Fairfax on 10/6/16.

**Data excludes confidential projects and LEED Neighborhood Development (ND) certifications*

Solar installations

In recent years, the City has seen an increase in the number of solar energy installations (Figure 35). Increasing the use of renewable energy sources will benefit the resilience and economic competitiveness of our community. Since 2014, the City has participated in the Solarize NOVA campaign, a yearly effort to encourage incorporation of solar power into individual homes and businesses in Fairfax and several peer jurisdictions. This is accomplished through incentives such as free solar assessments. In 2017, the City received a "Bronze" designation from the national program SolSmart for encouraging solar energy growth and removing obstacles to solar development.

FIGURE 35 BUILDING PERMITS FOR RESIDENTIAL SOLAR PANELS



Source: Fairfax City GIS and Code Administration Building Permits 12/2016

Natural Environment

One of the characteristics of the City that makes it a desirable and healthy place in which to live is the extent, diversity, and quality of its environmental resources. The City's main environmental resources include wetlands, ponds, streams, public parks, open space, and urban forests. As the City continues to grow and redevelop, these resources are at risk of being impaired. Growth and development often cause pollution to the water, air, and soil; degradation to ecosystems; and loss of natural areas that contribute to residents' quality of life. Continuing to preserve and restore our environmental resources ensures a healthy environment by providing access to clean air, clean water, healthy ecosystems, and high quality recreation areas. The City is also at risk from impacts caused by natural and man-made hazards. Reducing threats to the community and environment from these hazards will foster a safer and healthier community.

Guiding Principle:

In 2035, Fairfax is a city with... a healthy ecosystem of naturally flowing streams, native plants, wildlife, contiguous natural habitat areas, and a healthy tree population.

Natural Environment Goal 1

Preserve, promote, and enhance a healthy environment.

The local environment will be preserved and protected through insightful policies and programs that improve the quality of the City's natural resources. Managing the stormwater that runs off land surfaces is a fundamental practice to mitigate the adverse effects of urban development by reducing flow velocities and enhancing water quality. Several federal, state, and local regulations and the City's adoption of the Chesapeake Bay Preservation Ordinance are enacted to protect the region's water resources.

The City has the opportunity to protect and increase the tree canopy by identifying the greatest challenges facing the urban forest (e.g. development, disease, etc.) and developing and implementing an urban forest management plan that includes detailed strategies for attaining a diverse, well-managed urban forest.

OUTCOME NE1.1:	Clean and protected water resources and watersheds in the City.
ACTION NE1.1.1	Reaffirm and implement the City's Chesapeake Bay Preservation Plan (Appendix A) and zoning regulations.
ACTION NE1.1.2	Enhance zoning regulations and support initiatives that encourage the use of green stormwater infrastructure on private and public property.
ACTION NE1.1.3	Retain and acquire riparian areas as open space or parkland.
OUTCOME NE1.2:	Clean, healthy air that supports plant, animal, aquatic, and human life.
ACTION NE1.2.1	Develop and implement a Climate and Energy Action Plan to achieve regional greenhouse gas emissions reduction goals (20% reduction from 2005 level by 2020, 80% reduction from 2005 level by 2050) as committed to in the Greater Washington 2050 Compact.
ACTION NE1.2.2	Identify and implement strategies to reduce airborne pollutants known to cause health problems.
OUTCOME NE1.3:	A diverse, well-managed urban forest dominated by native species.
ACTION NE1.3.1	Develop and implement an urban forest management plan to protect the City's urban forest and increase the quantity, density, and diversity of trees on public and private land.
ACTION NE1.3.2	Support incentives, provide education, and partner with public and private groups to encourage native tree planting and preservation by private property owners.

Natural Environment

Goal 1

ACTION NE1.3.3	Update zoning regulations and public facilities manual for tree preservation, removal, and planting of preferred species of trees located along streets, parking lots, and riparian areas.
OUTCOME NE1.4:	A diverse population of native vegetation protected from invasive plants.
ACTION NE1.4.1	Develop a strategy to control invasive species including identifying and mapping areas impacted by invasive plants.
ACTION NE1.4.2	Support the development of community and habitat gardens on underutilized parcels and public lands.
ACTION NE1.4.3	Provide education and partner with public and private groups to promote the preservation and planting of native plants, sustainable landscaping techniques, and management of invasive plants.
OUTCOME NE1.5:	Restored and preserved natural open spaces and contiguous greenway corridors that provide natural habitats for plants and wildlife.
ACTION NE1.5.1	Restore disturbed areas along streams and in conservation easements with native species.
ACTION NE1.5.2	Pursue opportunities to purchase and preserve in perpetuity privately-owned open space.
ACTION NE1.5.3	Encourage new development that protects and preserves environmentally-sensitive areas and natural features, such as tree cover (especially significant stands of trees and healthy, mature trees), native vegetation, streams, wildlife habitat, and natural topography.

Natural Environment
Goal 2

Prepare for the impacts from natural and man-made hazards.

Extreme weather events such as prolonged heat, hurricanes, and flash flooding have contributed to negative health impacts, damaged homes and businesses, destroyed critical infrastructure, and to interruptions in the region's economic activity. These types of weather events are projected to increase in frequency and magnitude. There is also a risk that the community could be exposed to a variety of pollutants and hazardous chemicals, which may have negative effects on human health and the environment. The City should take steps to prepare for and mitigate these hazards.

OUTCOME NE2.1:	Reduced risk and improved preparedness to meet the challenges associated with natural and man-made hazards.
ACTION NE2.1.1	Participate in the National Flood Insurance Program's (NFIP) Community Rating System, a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.
ACTION NE2.1.2	Develop a resiliency plan to set priorities and allocate resources to manage risks associated with natural and man-made hazards.
ACTION NE2.1.3	Continue to work with the Northern Virginia Hazard Mitigation Advisory Committee to regularly update the Northern Virginia Hazard Mitigation Plan.
OUTCOME NE2.2:	Reduced exposure to pollutants and hazardous chemicals in the environment.
ACTION NE2.2.1	Enhance exterior lighting standards and pursue certification as an International Dark Sky Community to reduce light pollution and protect nighttime skies.
ACTION NE2.2.2	Continue to enforce noise standards.
ACTION NE2.2.3	Promote the proper disposal or recycling of household hazardous waste.
ACTION NE2.2.4	Educate on the identification, risks, and remediation of hazardous materials in buildings, including but not limited to radon, asbestos and volatile organic compounds.
ACTION NE2.2.5	Develop integrated pest management and nutrient management plans.
ACTION NE2.2.6	Promote the responsible use of pesticides and fertilizers.

Sustainability Initiatives

Sustainability can be defined in many ways. In relation to urban planning, sustainability is often defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). The City has a responsibility to future generations to develop sustainably. In 2013, the City executed an energy performance contract to implement energy retrofits at fourteen City-owned buildings. The City pays back the upfront costs of the retrofits using the annual energy cost savings over time.

Sustainability issues extend well beyond City boundaries, so local decisions can impact the region and beyond. The City collaborates with regional partners, such as MWCOG and the Northern Virginia Regional Commission (NVRC) in formulating solutions to sustainability challenges and taking actions to achieve regional goals. In 2010, the Mayor and City Council adopted a resolution endorsing the voluntary Greater Washington 2050 Compact in which the City committed to following the principles and goals set within The Region Forward report, a vision for a more accessible, sustainable, prosperous, and livable metropolitan Washington.

Guiding Principle:

In 2035, Fairfax is a city with...
sustainable practices that
preserve, conserve, reuse and
recycle resources.

Sustainability Initiatives

Goal 1

Increase the use of sustainable practices, technology, design, and materials.

This City should seize the opportunity to promote energy efficient and sustainable redevelopments and retrofits of aging buildings while also encouraging designs that fit within the context of the existing community. This can involve incentives for privately-owned buildings as well as City investment in public facilities. Education about financing options (such as the Fairfax Renaissance Housing Corporation loans) should be provided to property owners. By improving energy efficiency and sustainable design of civic operations and in the greater community, the City will harmonize resources, investments and technology, help reduce utility costs, support "green collar" jobs, and institutionalize change.

OUTCOME SI1.1:	Minimized energy demand with the application of energy efficient design features, technologies, and best practices.
ACTION SI1.1.1	Promote the efficient use of energy by residents, business owners and government facilities and operations to achieve a 30% reduction in energy use from 2018 baseline levels by 2035; a 40% reduction from 2018 baseline levels by 2040; and a 55% reduction from 2018 baseline levels by 2050.
SI1.1.1.1	Use a data-driven assessment process to deploy energy efficiency technologies throughout all government facilities and operations, and promote energy efficiency best practices among government employees.
SI1.1.1.2	Support incentives, provide education, and partner with public and private groups to promote energy efficiency and sustainability improvements by private property owners.
SI1.1.1.3	Promote voluntary benchmarking for commercial buildings.
SI1.1.1.4	Implement programs that offer clean energy financing solutions for residential and commercial sectors, such as the Solarize NOVA campaign, Property Assessed Clean Energy (PACE) program, and Fairfax Renaissance Housing Corporation (FRHC) Loans.
ACTION SI1.1.2	Develop a green building policy that establishes green building standards and incentives for both private and public sector construction and major renovations.
OUTCOME SI1.2:	Increased use of renewable energy sources and advanced sustainable technologies.
ACTION SI1.2.1	Conduct feasibility studies and subsequent plans for government operations to achieve 100% renewable electricity by 2035 and community-wide 100% renewable electricity by 2050.
ACTION SI1.2.2	Revise applicable codes, zoning regulations, policies, and design guidelines to help facilitate local renewable energy deployment and adoption of sustainable technologies.
ACTION SI1.2.3	Provide education and incentives for residents and businesses to install renewable energy systems and sustainable technologies.
ACTION SI1.2.4	Partner with other local governments, organizations, and individuals on renewable energy planning and implementation.

Sustainability Initiatives Goal 1

OUTCOME SI1.3:	Reduced waste and increased reuse and recycling of materials.
ACTION SI1.3.1	Implement the Solid Waste Management Plan, which establishes waste reduction goals and outlines how the City manages solid waste and recycling.
OUTCOME SI1.4:	Minimized potable water demand in the community.
ACTION SI1.4.1	Develop and provide water conservation education and incentive programs for residents and businesses to promote the use of water efficient practices and products.
ACTION SI1.4.2	Support incentives and revise applicable codes, policies, and design guidelines to encourage water efficiency in new construction and landscaping.

Sustainability Initiatives Goal 2

Support physical activity and healthy lifestyles.

Since the City is mostly built out and infrastructure is already in place, it is an ideal location to provide access to healthy food, community facilities, and recreational opportunities. Smart growth concepts should be incorporated in new development and redevelopment to further enhance the ability of residents to take advantage of public transportation, parks, open space, and trails. The City also strives to improve access to healthy, affordable, and regionally-grown foods to promote public health, reduce environmental impacts, and support economic development (Figure 36).

OUTCOME SI2.1:	Access to healthy, regionally-grown foods.
ACTION SI2.1.1	Evaluate regulations that permit urban agriculture on publicly-owned property and/or space for community gardens in new multifamily and mixed-use developments.
ACTION SI2.1.2	Work with Fairfax County to develop a healthy food access plan.
OUTCOME SI2.2:	Access to parks, recreation, community facilities, trails, and open space.
ACTION SI2.2.1	Promote walking and trail use as part of a healthy community initiative.
ACTION SI2.2.2	Partner with Fairfax County and NOVA Parks to improve and expand the local and regional park system.

FIGURE 36 FULL SERVICE GROCERY STORES, FARMERS MARKETS AND COMMUNITY GARDENS

*Approved but not yet constructed at the time of adoption of this plan

Source: Fairfax City GIS Parcels 2018

5 Economic Vitality

Guiding Principle:

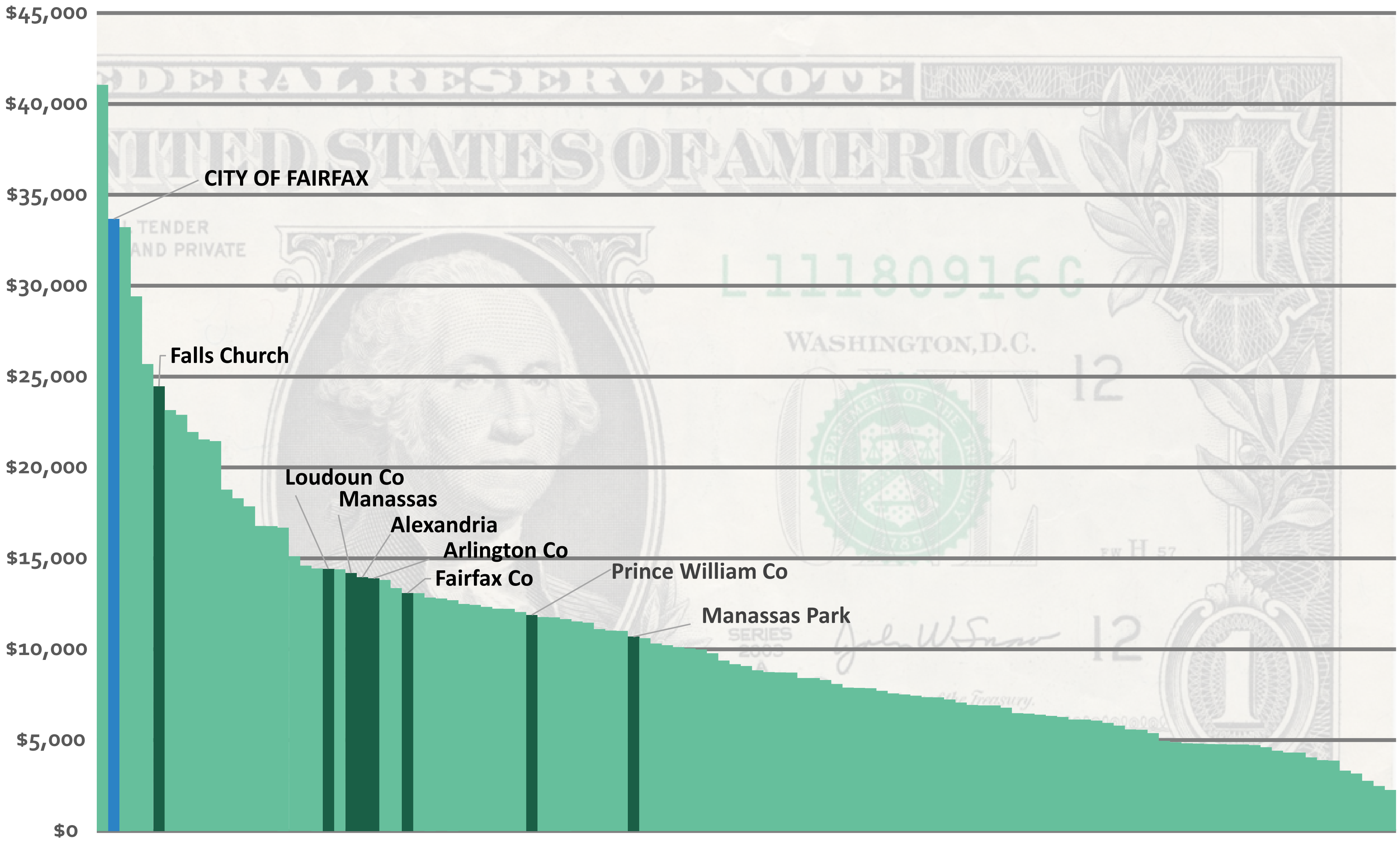
In 2035, Fairfax is a city with... an economy that cultivates and promotes business success and entrepreneurial opportunities for large, small, and independent businesses and capitalizes on national, regional and intellectual partnerships.

The City has long been a hub for economic activity within Northern Virginia. Due to its central location; proximity to regional destinations such as George Mason University, the Fairfax Courts Complex and Inova Fairfax Hospital; and its setting among transportation crossroads, the City has traditionally boasted a larger proportional share of the region's office and retail activity than its relatively small size and population would suggest. This longstanding concentration of economic activity still holds true, with the City achieving the second-highest amount of retail sales per capita of any Virginia jurisdiction (as shown in Figure 37), and a regional share of office space nearly five times the City's share of Northern Virginia's land area.

This cluster of economic vitality provides Fairfax with many benefits, such as a diversified revenue stream that enables the City to rely less on residential tax revenue than do most nearby jurisdictions. Furthermore, a high concentration of office and retail activity enables City residents to have varied employment and shopping opportunities relatively close to home.

Throughout the Comprehensive Planning process, sustaining this historical advantage has emerged as a priority. However, ensuring that the City remains as an economic hub for the region requires both a commitment to maintaining existing commercial infrastructure and positioning the City to be at the forefront of emerging marketplace trends.

FIGURE 37 2016 TAXABLE SALES PER CAPITA FOR VIRGINIA JURISDICTIONS WITH POPULATION OVER 10,000



Source: Virginia Department of Taxation

Opportunities and Challenges

Shifts in the office market

While the City has seen significant increases in office vacancies over the past decade, this trend is present in Fairfax County and Northern Virginia as well. In fact, the City has generally kept a lower office vacancy rate than the region as a whole. With previous regional overbuilding, increases in teleworking and more efficient office space utilization, however, an overall downward trend in office demand is expected to continue for the foreseeable future. The 2013 Fairfax Boulevard Market Analysis only forecasted a net absorption of 50,000 square feet of office space along the corridor over the ten-year study period.

The City office market, while large in size, is overwhelmingly comprised of Class B structures that offer few modern amenities. Given the increasing interdependence and fluidity of Northern Virginia's office market, this can make office space in the City less competitive and less desirable to prospective tenants than Class A office space in surrounding areas, particularly in more rapidly expanding sectors of the economy.

FIGURE 38 OFFICE VACANCY RATE

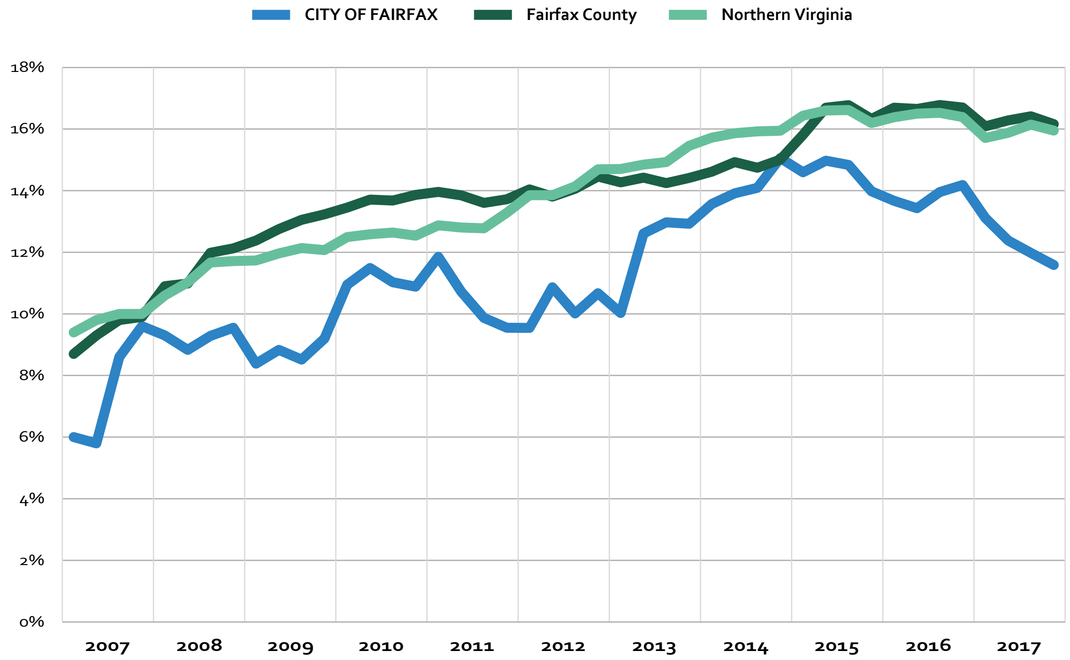


FIGURE 39 OFFICE MARKET BY CLASS, 2017

Source: CoStar, Dec 2017

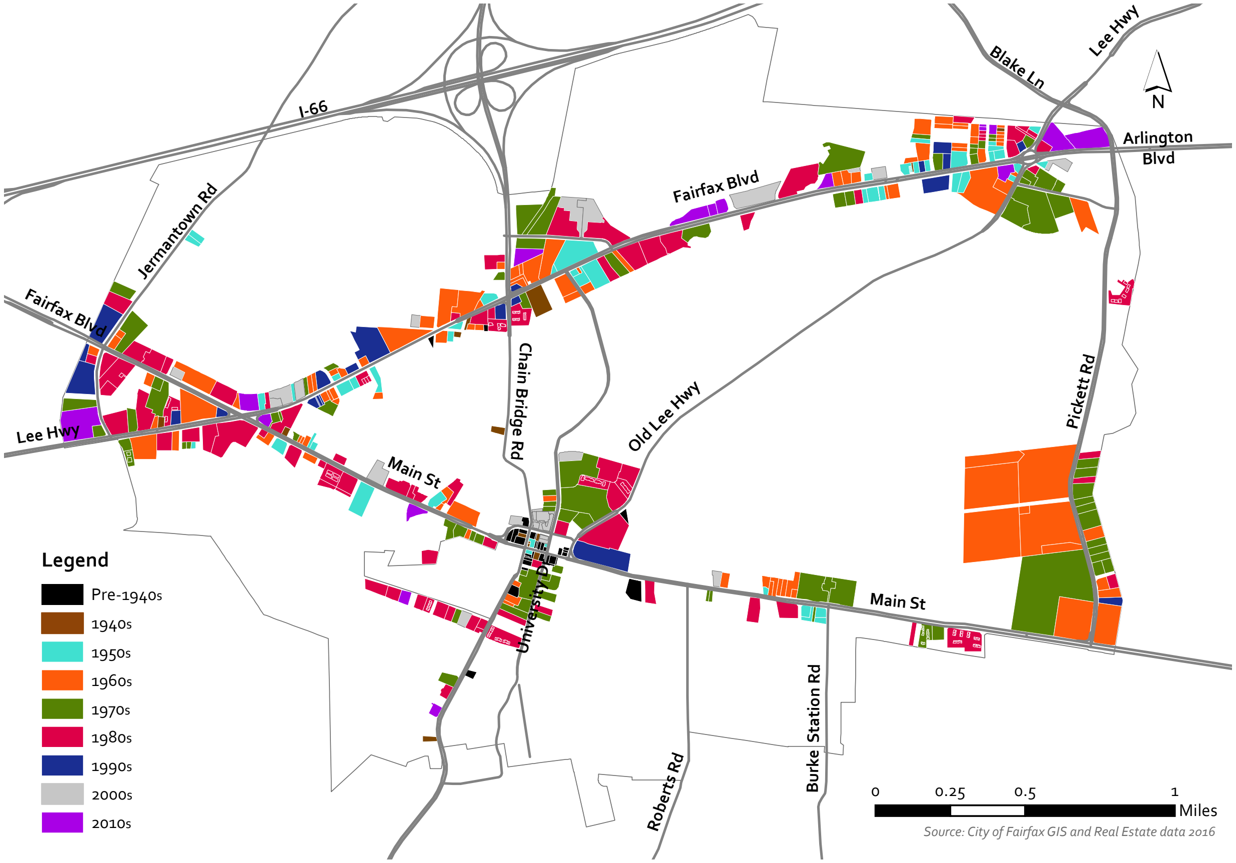
Shifts in the retail market

With consumers gravitating to online purchases and larger format retailers, demand for retail space has been decreasing region-wide in recent years. This has been especially true for older retail spaces that lack modern design requirements. The reduction in demand for traditional retail has been partially offset by increases in demands for food and drink and service type establishments.

These trends have combined to create vigorous regional competition for high-value retailers. As shown in Figure 6 (p. 21), numerous mixed-use centers have been built, or are being planned, within 10 miles of the City. All of these centers use retail as a linchpin to their fiscal success. In order to thrive in this competitive and interdependent retail market, the City must both be mindful of the pragmatic limits of regional retail demand, and must also offer high-quality retail spaces for prospective tenants.

With the vast majority of the City's existing commercial space constructed in the 1960s and 1970s, ensuring that both area consumers and retailers have updated commercial space will greatly enhance the City's retail sector's appeal in this increasingly competitive retail marketplace.

FIGURE 40 COMMERCIAL AND INDUSTRIAL BUILDING AGE BY DECADE BUILT



Source: City of Fairfax GIS and Real Estate data 2016

Economic Vitality

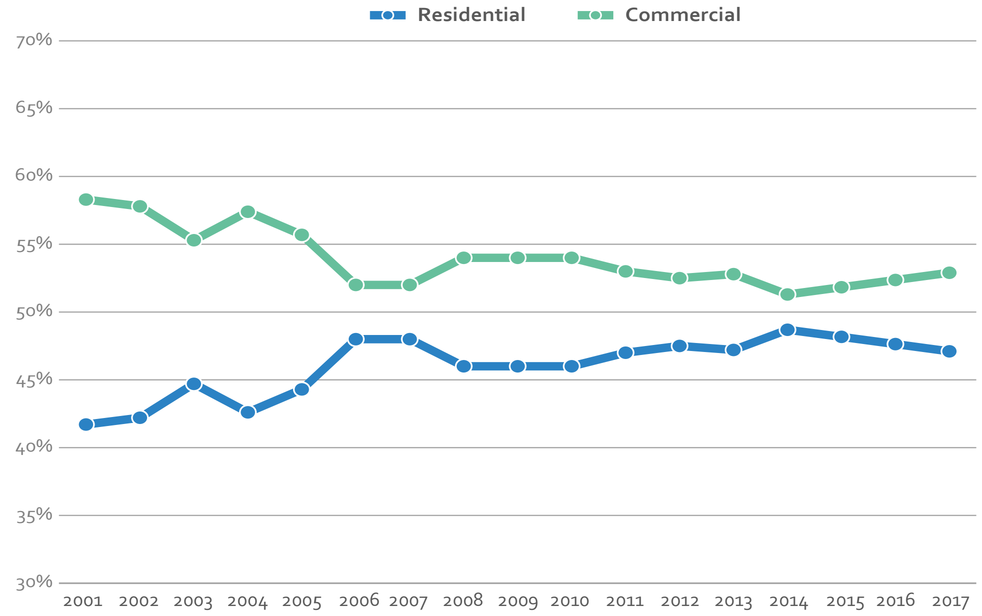
Goal 1

Increase the City's ratio of commercial to residential real estate.

Commercial properties tend to contribute more to the tax base than they consume in public expenditures because of relatively high real estate values and lower dependence on public services. The City has historically benefited from having a high ratio of commercial to residential development, resulting in a lesser tax burden on residences. As commercial properties have aged and new commercial development has slowed, this ratio has begun to shift. The City can offset this shift by supporting measures to increase values of existing commercial properties and encouraging new commercial development so that the value of nonresidential properties continues to comprise a greater proportion of the City's taxable properties.

OUTCOME EV1.1:	New development and redevelopment that maximize revenue generation from nonresidential buildings and uses.
ACTION EV1.1.1	Attract new commercial businesses while supporting and retaining existing businesses.
ACTION EV1.1.2	Leverage proximity to George Mason University to attract university spin-outs and startups.
ACTION EV1.1.3	Capitalize on proximity to Inova Fairfax Hospital to attract health- and wellness-related businesses.
ACTION EV1.1.4	Capitalize on regional growth in the technology-based, creative, and innovative sectors and encourage related businesses to establish in the City.
ACTION EV1.1.5	Pursue corporate headquarters to locate in the City.

FIGURE 41 ESTIMATED REVENUES GENERATED BY COMMERCIAL AND RESIDENTIAL SECTORS



NOTE: 2001-2014 data from City budgets. 2015-2017 data estimated based on revenue allocation assumptions from the City of Fairfax Finance and Accounting Department.

Source: City of Fairfax Budget.

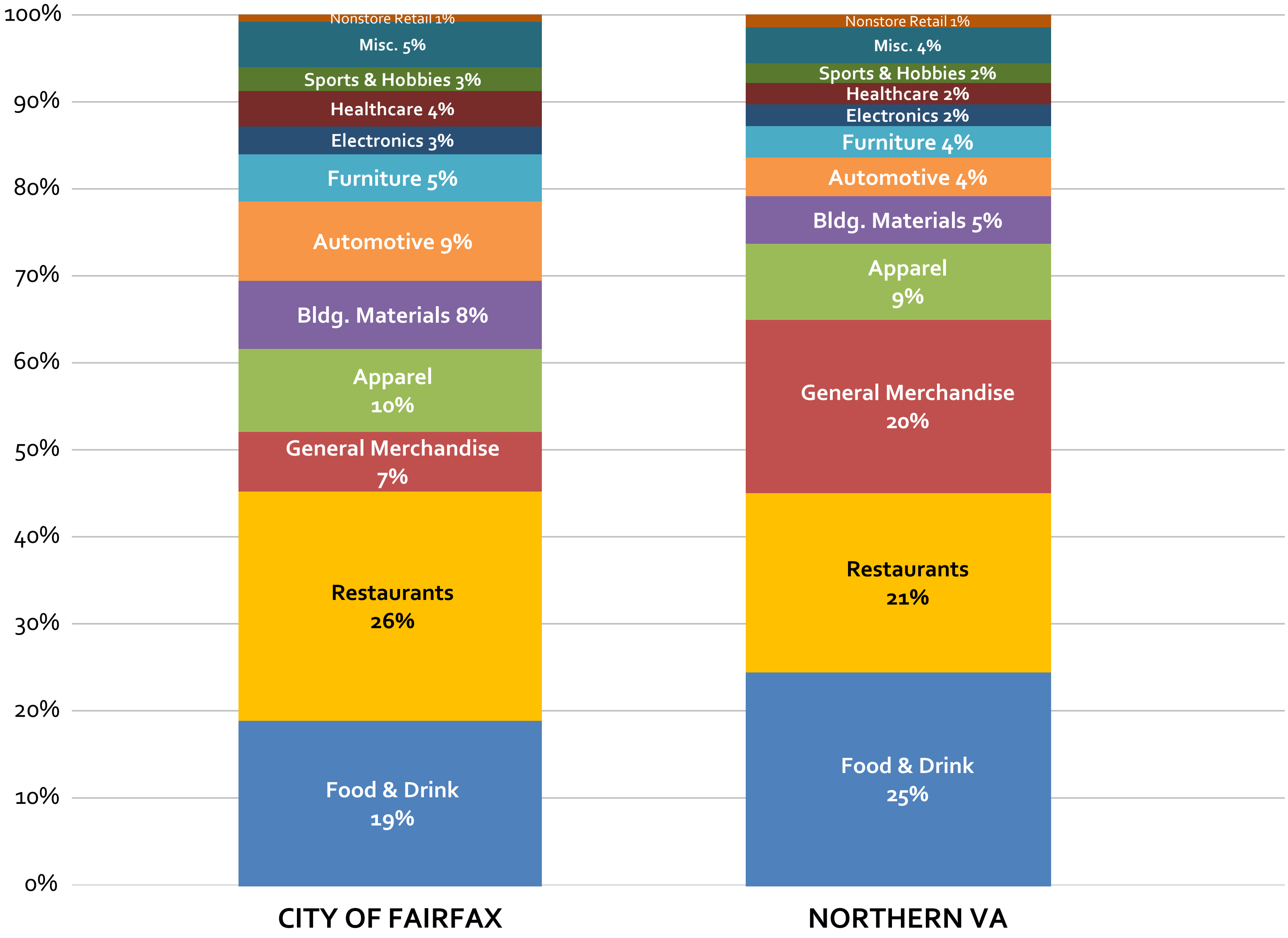
Economic Vitality
Goal 2

Support diversification of the retail, service, and office sectors.

While the City has strong current levels of retail and restaurant sales, some critical sectors are underrepresented in Fairfax's current retail inventory, as shown in Figure 42. This lack of retail diversity – coupled with an inventory of buildings heavily composed of 1960s-70s structures – points to a potential loss of market share to nearby retail areas that are more reflective of current tastes and consumer demand. With a high percentage of Class B office space, the office market in the City may also be less competitive than surrounding office development in Fairfax County. The City will strive to support existing and attract new businesses that fill market or growth opportunities and support an improved office space inventory.

OUTCOME EV2.1:	The retail and service sectors more effectively compete with other regional commercial sectors, resulting in increased desirability as a destination.
ACTION EV2.1.1	Attract new retail and service businesses representing sectors that have the ability to become regional destinations.
ACTION EV2.1.2	Create new commercial areas that contain the amenities and atmosphere necessary to attract top-tier commercial tenants.
OUTCOME EV2.2:	An improved office space inventory attracts high-value tenants.
ACTION EV2.2.1	Work with owners and operators of existing office buildings to encourage property renovations and upgrades needed to bring properties to Class A status.
ACTION EV2.2.2	Encourage the provision of Class A office space in new commercial development projects and renovations.
OUTCOME EV2.3:	A strong relationship with George Mason University is leveraged to support new development and investment that capitalizes on the needs of the University and supports the Comprehensive Plan Vision for the City.
ACTION EV2.3.1	Use the newly-created position of MEC Business Incubator Director to graduate a consistent pipeline of at least one tenant per year to a permanent location within the City.
ACTION EV2.3.2	Explore the establishment of a local development corporation or other formal partnership between the City and George Mason University.

FIGURE 42 PERCENTAGE OF TAXABLE RETAIL SALES BY STORE CLASSIFICATION



Source: Virginia Department of Taxation

Economic Vitality

Goal 3

Transform the Commercial Corridors and Activity Centers.

Being within the economically robust Northern Virginia region presents great opportunity for the City to leverage its many advantages to create and strengthen further economic vitality. The City's varied Commercial Corridors and downtown area provide excellent opportunities to capitalize on the region's growing economy, and to continue being an economic hub for future generations. The City will strive to transform these areas into distinctive regional destinations that can compete effectively with other development and mixed-use centers in Northern Virginia.

OUTCOME EV3.1:	Redevelopment projects in the Commercial Corridors and Activity Centers create destinations that attract tenants, customers, and residents.
ACTION EV3.1.1	Develop a branding and marking strategy for individual Activity Centers.
ACTION EV3.1.2	Create a commercial targeting strategy to focus the City's efforts on attracting businesses that would have the greatest impact in competing with other regional commercial sectors.
ACTION EV3.1.3	Prepare conceptual designs for the Activity Centers and present in dynamic marketing materials that clearly demonstrate the desired mix of uses, residential density, building intensity, design aesthetic, multimodal connections, and parking.

Economic Vitality

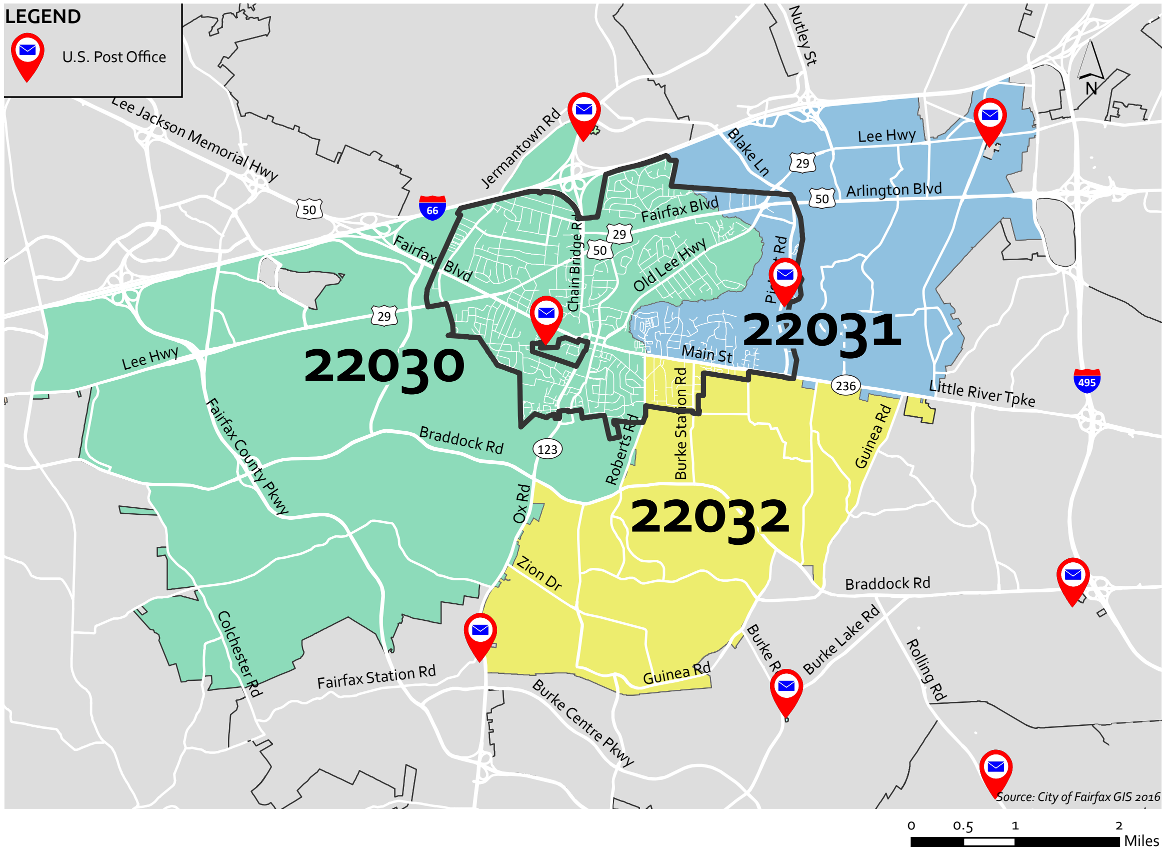
Goal 4

Create a single ZIP Code for the City.

The City currently contains portions of three ZIP Codes, all of which contain large portions of Fairfax County in addition to City addresses. This creates a complicated web of addresses, which leads to confusion among residents and businesses regarding which areas are located within the City or Fairfax County. Significantly, this has also led to difficulties in revenue collection, since some businesses have reported their addresses in the incorrect jurisdiction – and with e-commerce based revenue becoming more common, this may become a more noteworthy problem in the future. Creating a common ZIP Code for City addresses mitigates these revenue-related problems with an exclusive way of identifying City addresses and allowing business revenue to be more accurately collected. This would also serve a unifying function to easily distinguish the City from the surrounding portions of Fairfax County in terms of economic competitiveness.

OUTCOME EV4.1:	The U.S. Postal Service designates a ZIP Code that is unique to addresses within City limits.
ACTION EV4.1.1	Conduct a cost-benefit analysis.
ACTION EV4.1.2	If supported by the cost-benefit analysis, request a ZIP Code Boundary Review from the U.S. Postal Service.

FIGURE 43 CITY OF FAIRFAX ZIP CODES



Source: City of Fairfax GIS 2016

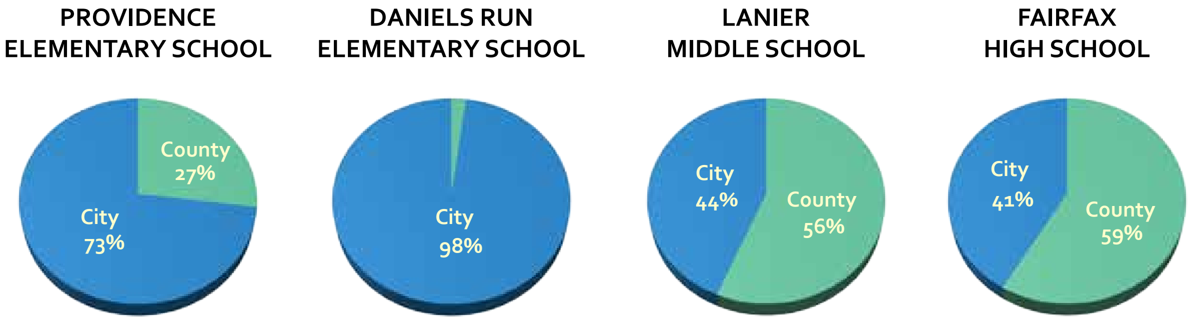
6 Community Services

One of the most crucial elements in the long term desirability of the City is maintaining and improving the high-quality services that residents and businesses have come to expect. This Chapter examines health, safety and welfare issues for which the City provides or facilitates services to its citizens, businesses and visitors. As an independent jurisdiction, Fairfax emphasizes providing quality public facilities and services. Public facilities are the institutions and land intended for the community's general use and benefit. Some of the primary services provided by the City addressed in this Chapter are Education, Parks and Recreation, Cultural Arts, Public Safety, and Utilities and Infrastructure as described below.

Education

Over 3,100 children who are City residents are enrolled in Fairfax County Public Schools (FCPS), with the vast majority of those students attending one of Fairfax's four schools. Through a School Services Agreement with FCPS, the City of Fairfax School Board manages the school buildings, while FCPS hires staff and develops curricula. The agreement also accommodates students from Fairfax County in the City school facilities where capacity allows. The percentage of City and Fairfax County students who attend each of the City's four public schools is provided below.

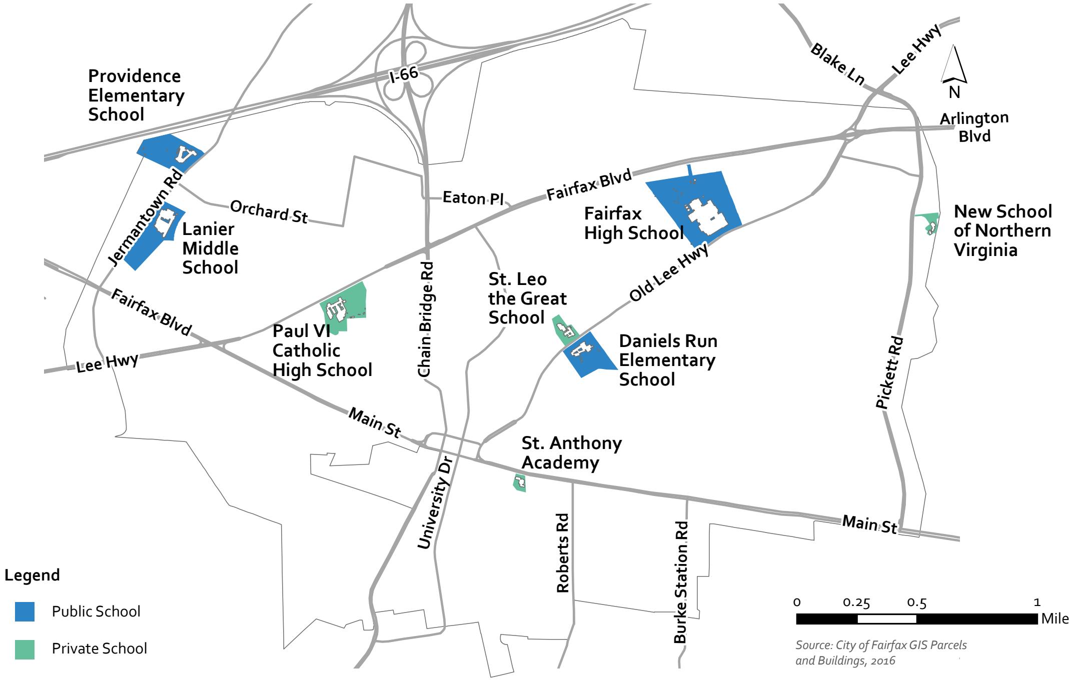
FIGURE 44 SCHOOL ENROLLMENT BY STUDENTS' PLACE OF RESIDENCE



There are also four private schools currently located in the City. Paul VI Catholic High School serves grades 9-12 with just over 1,000 students currently enrolled. A new location for this school is under construction outside the City, and the current location is anticipated to close once the new location is operable. Saint Leo the Great Catholic School serves grades Pre-K-8 with a current enrollment of 410 students. The New School of Northern Virginia is a private liberal arts and science school serving grades 6-12 with a current enrollment of approximately 150 students. Saint Anthony Academy serves grades K-12 with a current enrollment of over 30 students. All public and private schools currently located in the City are shown in Figure 45.

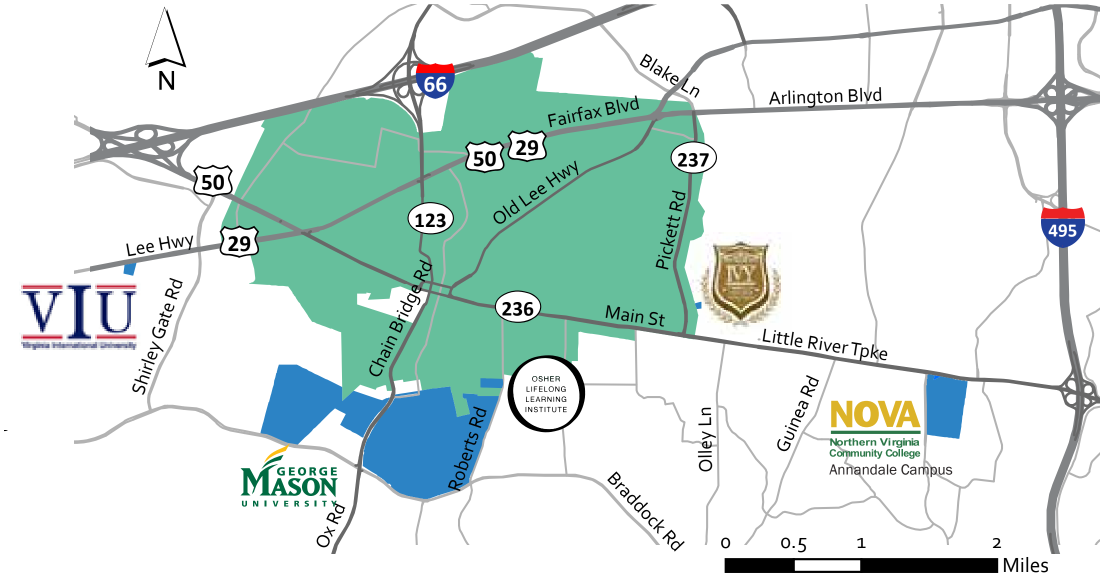
The City is also surrounded by several higher education facilities. George Mason University's Fairfax Campus began with 356 students in 1964, after the completion of construction of the first four buildings. Today, 21,442 full-time equivalent students come to the Fairfax Campus, which includes 80% of the enrollment of all Mason's campuses. The Annandale campus of Northern Virginia Community College opened in 1967 and is now the largest of all NOVA campuses. The 2014-2015 enrollment for all campuses was 34,586 full-time equivalent students. Virginia International University was founded in 1988 and had 1,876 students enrolled as of the July 2015 - June 2016 semester. Ivy Christian College was founded in March 2006 and received accreditation in May 2014. The reported enrollment for 2013 was 319 students. Osher Lifelong Learning Institute (OLLI) offers classes to Northern Virginia residents in their retirement years.

FIGURE 45 PUBLIC AND PRIVATE SCHOOLS, K-12



Source: City of Fairfax GIS Parcels and Buildings, 2016

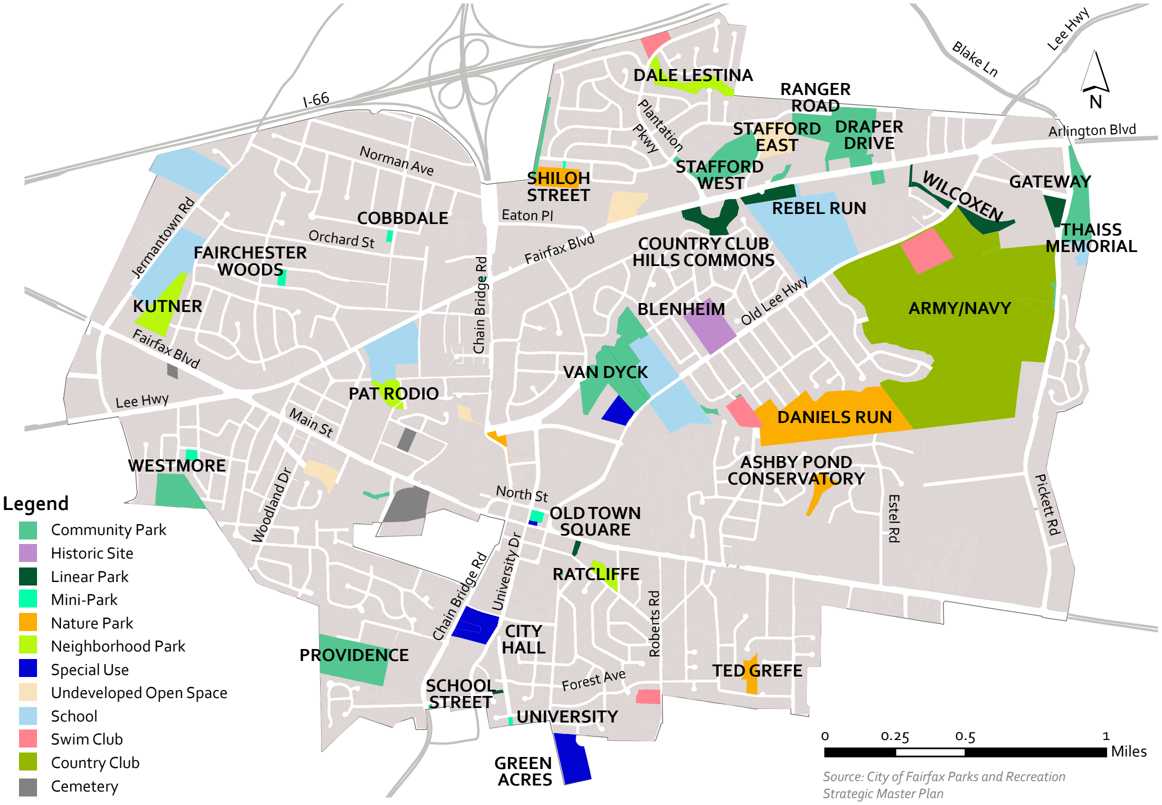
FIGURE 46 LOCAL HIGHER EDUCATION AND LIFELONG LEARNING



Parks and Recreation

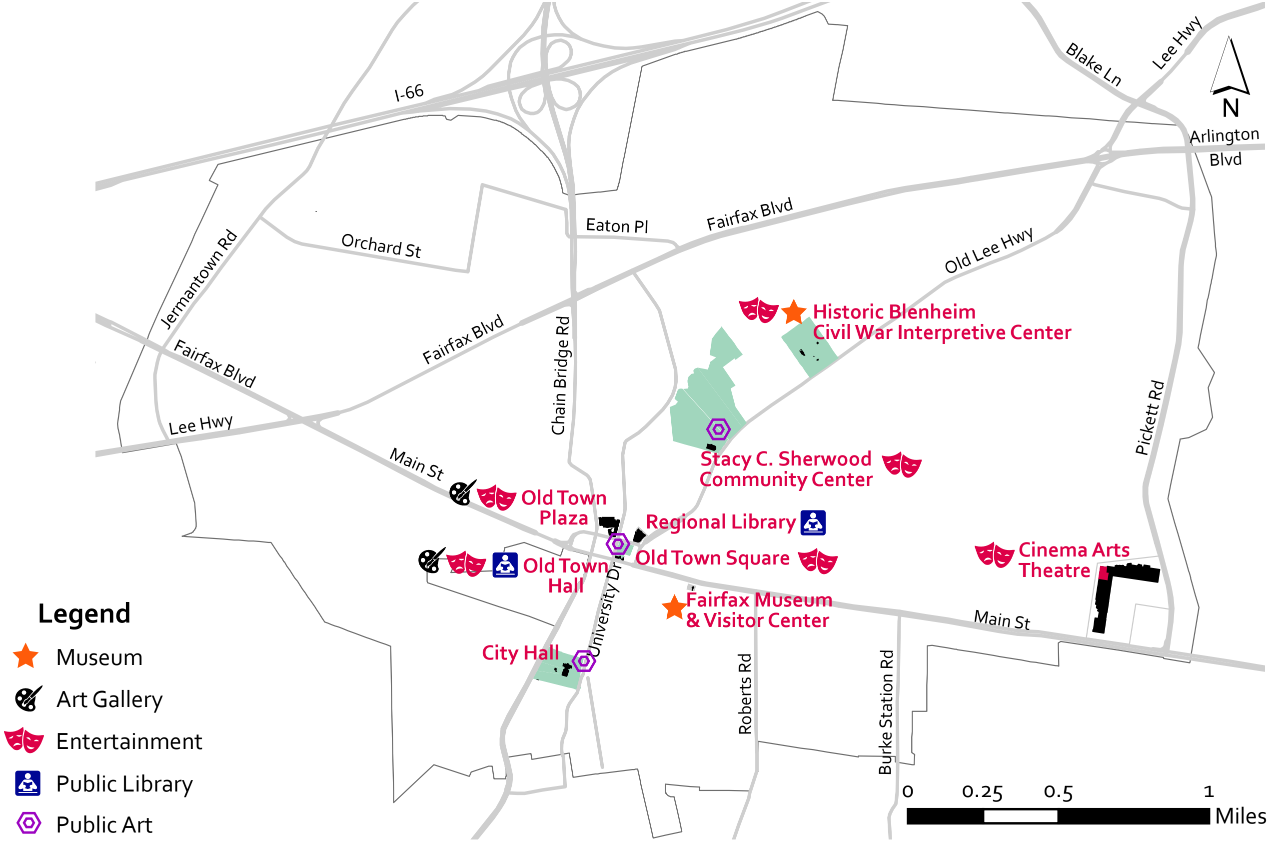
A diverse network of public parks and open space areas, including recreation fields, natural areas, informal open spaces, and a trail system is provided throughout the City. Containing approximately 200 acres of land, the City's parks fall into four categories: regional parks, community parks, neighborhood parks, and vest pocket parks as shown in Figure 47. Most trails in the City are multipurpose recreational trails serving the needs of pedestrians, joggers, and bicyclists.

FIGURE 47 OPEN SPACE AND PARKS BY TYPE



Source: City of Fairfax Parks and Recreation Strategic Master Plan

FIGURE 48   CULTURAL FACILITIES AND PUBLIC ART



Source: City of Fairfax GIS and Cultural Arts information

Cultural Arts

The City's cultural arts activities and special events draw people to the City and contribute to the unique sense of place and close-knit community, offering distinctive venues to unite members of the community. Currently, public art and cultural facilities are focused mainly in and around Old Town, as shown in Figure 48. The City has a museum, art galleries, and other performance venues; however, there is a lack of performing arts venues for theater and other performance groups.

Police

The Police Department, the City's primary law enforcement agency, is responsible for protecting life and property, preventing crime, detecting and apprehending criminal suspects, and maintaining order. The ability to anticipate, prevent, and manage crime; minimize threats to property; and minimize damage from environmental hazards all contribute to public safety.

Fire

The Fire Department furnishes fire suppression, rescue, emergency medical services, and emergency medical transportation both within the City and in an approximately 14-square mile area of Fairfax County. In return, Fairfax County provides a computer-aided dispatch (CAD) service for all fire and rescue vehicles as well as "first due" engines and rescue response in the areas along Pickett Road near the tank farm and along Jermantown Road near the schools, as well as backup response in the remainder of the City.

Emergency Management

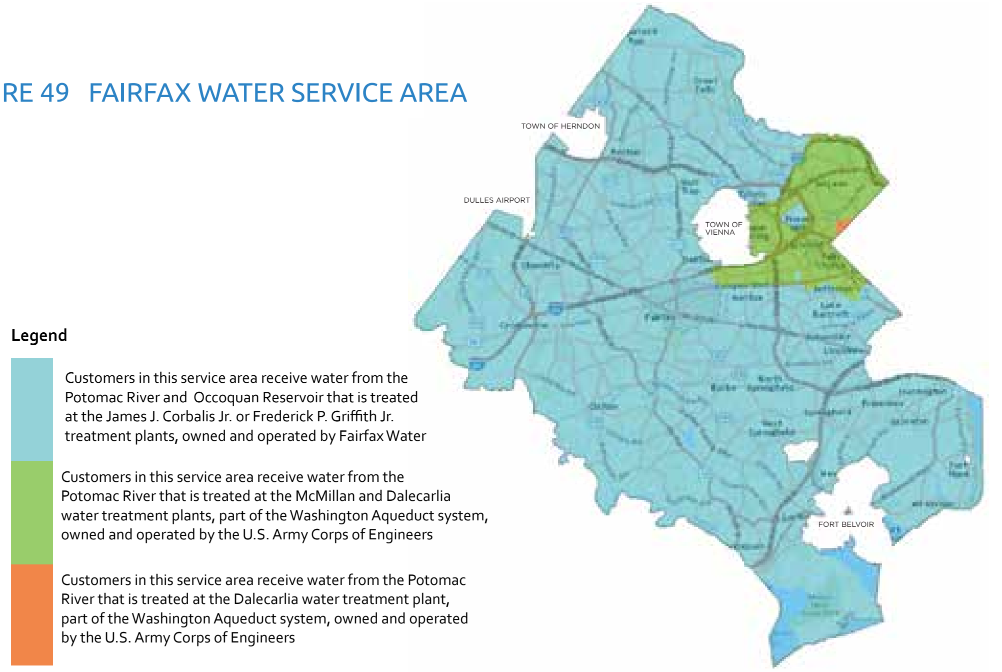
The Office of Emergency Management (OEM) acts as liaison to all emergency response agencies, monitors for and alerts of any impending natural or man-made safety issues, and develops training schedules for emergency personnel. OEM also ensures that safety documents are kept current, such as the state-mandated Comprehensive Emergency Management Plan and the Northern Virginia Hazard Mitigation Plan.

Utilities

The City sold its water system to Fairfax Water on January 2, 2014. Since that sale, Fairfax Water has been providing water services to the City as shown in Figure 49. The City operates its own wastewater collection system as shown in Figure 50. Wastewater originating in the City's wastewater system is treated by Fairfax County at its Noman M. Cole, Jr., Pollution Control Plant by a contractual agreement that provides a guaranteed treatment capacity for the City. The City manages, maintains, and repairs its stormwater system, which consists of approximately 60 miles of storm drain pipe and 3,650 storm sewer structures throughout the City.

The City does not own or operate any electric, telephone or cable utilities. It does, however, own the rights-of-way where transmission lines are located. Approximately 67 miles of City streets contain utility poles supporting overhead electric, telephone, and cable television wires.

FIGURE 49 FAIRFAX WATER SERVICE AREA

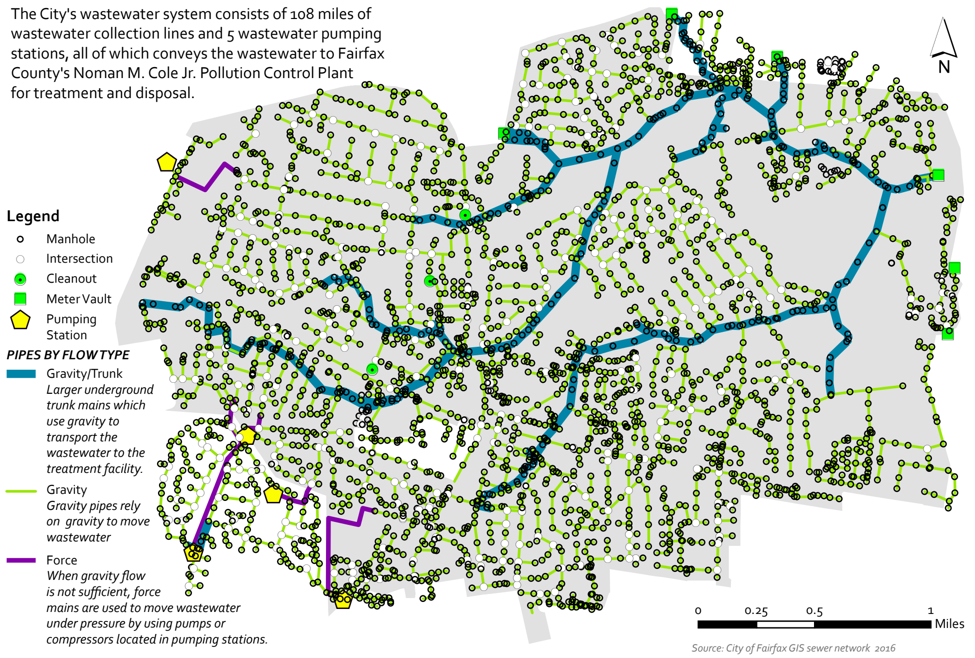


Legend

- Customers in this service area receive water from the Potomac River and Occoquan Reservoir that is treated at the James J. Corbalis Jr. or Frederick P. Griffith Jr. treatment plants, owned and operated by Fairfax Water
- Customers in this service area receive water from the Potomac River that is treated at the McMillan and Dalecarlia water treatment plants, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers
- Customers in this service area receive water from the Potomac River that is treated at the Dalecarlia water treatment plant, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers

Source: Fairfax Water 2016 Annual Water Quality Report

FIGURE 50 WASTEWATER COLLECTION SYSTEM



The City's wastewater system consists of 108 miles of wastewater collection lines and 5 wastewater pumping stations, all of which conveys the wastewater to Fairfax County's Noman M. Cole Jr. Pollution Control Plant for treatment and disposal.

Legend

- Manhole
- Intersection
- Cleanout
- Meter Vault
- Pumping Station

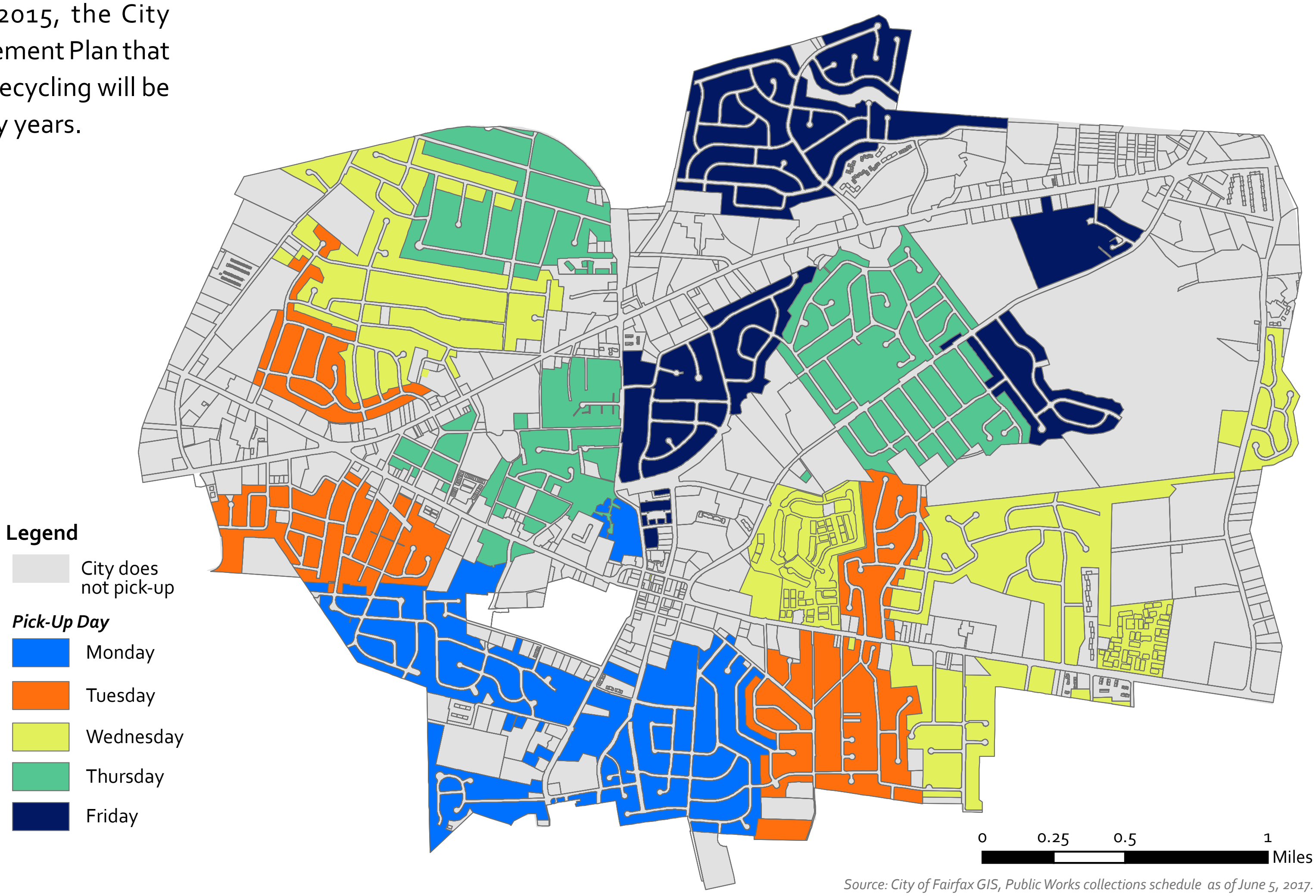
PIPES BY FLOW TYPE

- Gravity/Trunk *Larger underground trunk mains which use gravity to transport the wastewater to the treatment facility.*
- Gravity *Gravity pipes rely on gravity to move wastewater*
- Force *When gravity flow is not sufficient, force mains are used to move wastewater under pressure by using pumps or compressors located in pumping stations.*

Source: City of Fairfax GIS sewer network 2016

The City provides weekly refuse and recycling collection for residents in detached homes, duplexes, and townhouses. Curbside collection service is shown in Figure 51. City businesses and multifamily complexes use private refuse and recycling services. In 2015, the City adopted a Solid Waste Management Plan that outlines how solid waste and recycling will be managed over the next twenty years.

FIGURE 51 RESIDENTIAL REFUSE AND RECYCLING CURBSIDE COLLECTION



Source: City of Fairfax GIS, Public Works collections schedule as of June 5, 2017.

Opportunities and Challenges

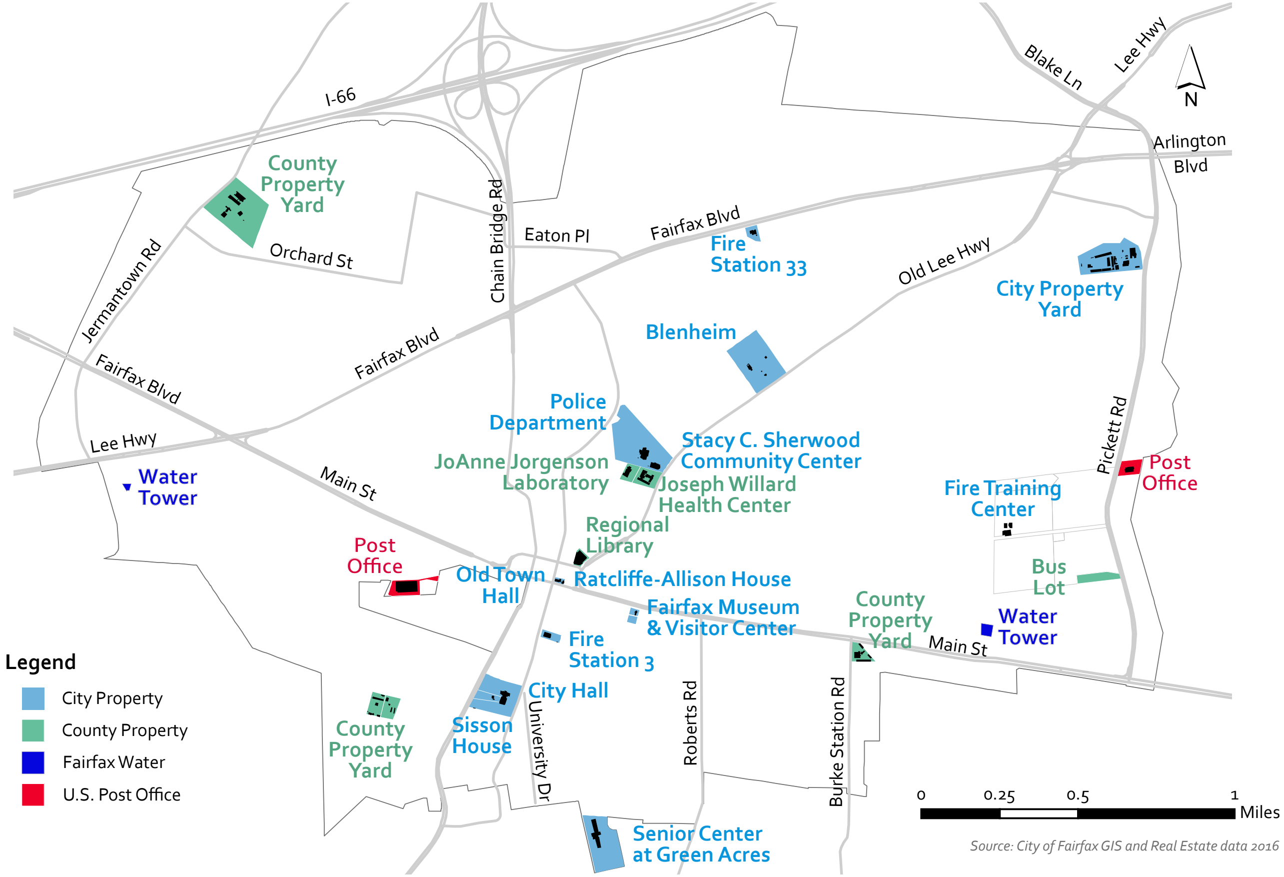
Ongoing maintenance of public facilities

Public facility locations are shown in Figure 52. Several of these facilities in the City are historic structures that have withstood years of service. Ensuring that community services and facilities are phased with changing demand is a major component of facility management, since the quality of public facilities contributes to the City's quality of life.

Service agreements

The relatively small size of the City makes provisions for some public services inefficient. The City provides many services to its citizens through contractual agreements with Fairfax County and regional agencies. This provides for more efficient service delivery while allowing the City to retain some control. Aside from the School Services Agreement with FCPS, City residents may use any of eight regional and fourteen community libraries that compose the Fairfax County library system. Fairfax County also provides health and human services assistance, including environmental health, communicable disease programs, and public health services.

FIGURE 52 PUBLIC FACILITIES



Source: City of Fairfax GIS and Real Estate data 2016

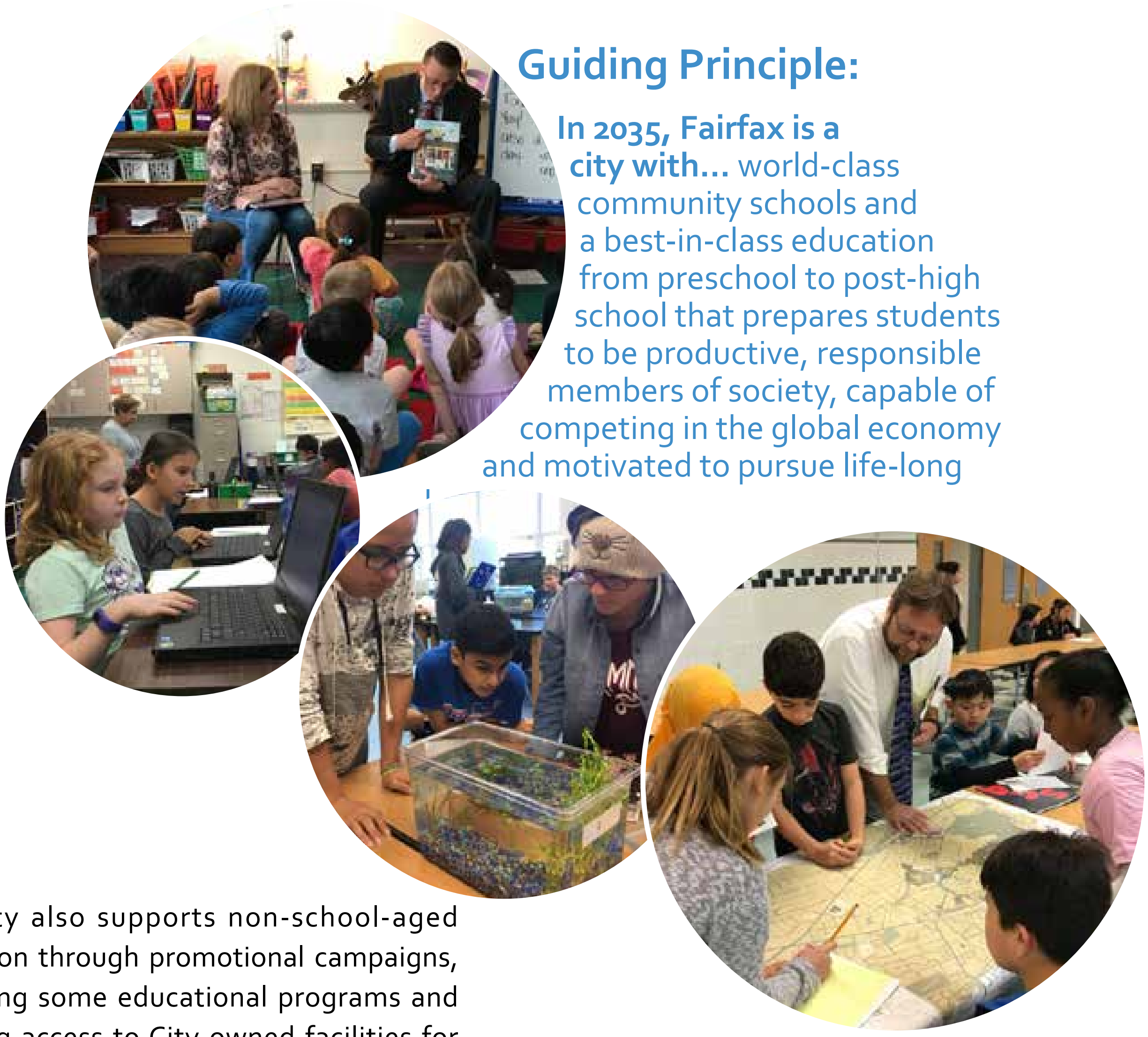
Growth and development

Population growth and new development can impact demands on public facilities and services. Demands, however, can be monitored to ensure that the resulting impacts are realized in advance and factored into the decision-making process for accommodating new development.

Education

Between the City's public schools, its proximity to higher education institutions, and its accessibility to lifelong learning offerings, education factors heavily into the City's quality of life. Excellent public education is not just a priority for current residents, but is also an investment in the City's future, and City policies should continue to ensure that educational opportunities are prioritized for future generations. The City will strive to provide excellent instructional services and superior facilities, geared to the needs of our evolving and diverse population. The City of Fairfax School Board maintains its own Strategic Plan and is responsible for the School Services Agreement with FCPS, through which the City is able to ensure outstanding facilities and instructional accommodations for the 3,100 public school students who reside within City limits. As the City grows and student needs evolve, both the City government and the City of Fairfax School Board should continue to prioritize educational services in order to provide the highest possible levels of service for the future needs of the City's school-aged population.

The City also supports non-school-aged education through promotional campaigns, operating some educational programs and allowing access to City owned facilities for educational programs provided by other entities.



Guiding Principle:

In 2035, Fairfax is a city with... world-class community schools and a best-in-class education from preschool to post-high school that prepares students to be productive, responsible members of society, capable of competing in the global economy and motivated to pursue life-long

Education
Goal 1

Ensure the City's public education needs are met.

The school services agreement with FCPS has provided outstanding instructional programs for City students, combined with an impressive amount of local control. While all four of the City's public schools have been renovated since 2000, changes in student needs, technology and enrollment must continually be monitored to ensure facilities remain exceptional.

The City School board possesses a deed of covenant on the existing Green Acres site at the south end of the City to accommodate a third elementary school should enrollment increase to a point where Daniels Run and Providence Elementary Schools could not reasonably be expanded to accommodate the growth. The School Board has selected Providence Park as an alternative site for a future school, which would be particularly more appropriate if it is consolidated with the adjacent West Drive Property Yard. Further discussion on this site is provided in the Parcel Specific Recommendations in the Land Use Chapter of this plan.

OUTCOME E1.1:	The School Services Agreement with FCPS, guided by the City of Fairfax School Board, continues to provide City students with the highest quality education.
ACTION E1.1.1	Continue to follow the established guidelines of the School Services Agreement and to monitor its implementation.
ACTION E1.1.2	Maintain a close working relationship with the Mayor, City Council and City staff regarding school needs and continue to provide information to the elected officials and staff.
OUTCOME E1.2:	Public school facilities and grounds meet the current and future needs of the school-aged population.
ACTION E1.2.1	Continue cooperation between City government and the City of Fairfax School Board to assess and plan for impacts from future residential development.
ACTION E1.2.2	Monitor potential Fairfax County school boundary adjustments to anticipate impacts on City school enrollment.
ACTION E1.2.3	Continue to examine potential need for additional school facilities and the best use for the City of Fairfax School Board's Deed of Covenant on Green Acres.
ACTION E1.2.4	Continue to ensure a safe learning environment, proper program capacities, and the availability of the latest technology and functional accommodations.
ACTION E1.2.5	Promote environmentally friendly practices for school facilities and grounds.

Education
Goal 2

Ensure access to educational and training opportunities for all generations.

City residents place a high priority on education at all stages of life – from early childhood education up to continuing education and adult lifelong learning. Prioritizing the continued growth and development of the City's educational offerings and linkages by collaborating with local education providers and institutions will help enhance the City's livability for future generations.

OUTCOME E2.1:	All children will be well-prepared to begin elementary school.
ACTION E2.1.1	Continue to promote Pre-K instructional opportunities for all City Pre-K children.
ACTION E2.1.2	Increase access to early childhood literacy and after school care at the City's community facilities, City of Fairfax Regional Library, and other institutions.
OUTCOME E2.2:	The City's residents will have access to facilities and programs that foster an informed community.
ACTION E2.2.1	Maintain access to the City's community facilities, City of Fairfax Regional Library, and other institutions for ongoing dialogue in educational events and discussions.
ACTION E2.2.2	Continue to provide residents and businesses with access to timely information on City government programs and initiatives via the monthly CityScene newsletter, Cityscreen-12 television station, City website, and email alerts.
OUTCOME E2.3:	Partnerships and community resources provide opportunities for training and continuing education.
ACTION E2.3.1	Continue to foster good relations with nearby education providers such as George Mason University and Osher Lifelong Learning Institute (OLLI).

Parks and Recreation

Recreation and open space make an essential contribution to a healthier population and a greener city. They are integral to the City's quality of life and provide beauty, respite, and opportunity to enjoy the outdoors. In addition, City staff takes pride in providing quality experiences for the community through services and programs that enrich people's lives and contribute to total development of the individual, family, and the community.

In June 2014, the Parks and Recreation Advisory Board (PRAB) presented the City of Fairfax Strategic Master Plan for Parks, Recreation, Trails, Open Space, Events and Cultural Arts to the City Council. Referred to as the Strategic Master Plan, it contains measurable goals, objectives and policies that the City Council, PRAB and the Commission on the Arts use as guidance when determining program and facility needs. The Strategic Master Plan should be referenced for specific contributions toward the actions listed for this Guiding Principle.

Guiding Principle:

In 2035, Fairfax is a city with... inviting, well-maintained parks, trails, open spaces and multi-generational community centers.

Parks and Recreation Goal 1

Develop high-quality park infrastructure.

A high-quality park system should serve the community's needs with a range of services and facilities for all age groups and abilities provided in a safe environment. As the City's population grows, new interests and demand for a variety of activities will require periodic evaluation of the facilities the City offers. It is also important to look at the locations of facilities to ensure all neighborhoods are provided with equitable access to parks and recreation amenities and programs. High-quality, accessible parks, facilities, recreation, and open space should be acquired, preserved, developed, and redeveloped throughout the City for public health, enjoyment and environmental purposes. (Actions specifically relating to the City's trail network may be found under Multimodal Transportation Outcomes MM2.2 and MM2.3.)

OUTCOME PR1.1:	A well-connected system of parks that provides citizens with healthy choices for recreation.
ACTION PR1.1.1	Identify and address gaps in the connections between the City's parks and open space.
ACTION PR1.1.2	Identify opportunities for future open space in neighborhoods that are undersupplied in public recreation and open space opportunities.
ACTION PR1.1.3	Enhance public access to parks and recreational facilities by making necessary infrastructure improvements.
ACTION PR1.1.4	Partner with the Department of Public Works on efforts to improve pedestrian and bicycle networks throughout the City.
OUTCOME PR1.2:	A greater awareness of the City's natural resources and commitment to protect and enhance them.
ACTION PR1.2.1	Implement measures to preserve privately-owned land adjacent to parks and trails in perpetuity, e.g., utilizing conservation easements, deed restrictions, etc.
ACTION PR1.2.2	Adopt tree preservation guidelines for parks, open space, and trails.

Parks and Recreation

Goal 2

Provide programs and services that meet the needs of the community.

High-quality programs, facilities, and services – including large-scale community events that draw significant attendance – can improve the tax base, increase property values, attract businesses, produce revenue to offset operating costs, and provide indirect benefits to our economy, contributing to the City's continued growth and development.

OUTCOME PR2.1:	Robust programming of the City's parks and public facilities that provides opportunities for individuals of all ages and abilities to participate.
ACTION PR2.1.1	Conduct a study to determine how the City's long-term needs for a community center and senior center can be best met, and implement the recommendations of this study, including construction of recommended facilities.
ACTION PR2.1.2	Update Parks and Recreation facilities to ensure they are accessible to individuals of all abilities.
ACTION PR2.1.3	Expand and enhance facility, program, and service offerings through innovative funding, management best practices, and cost recovery efforts.
ACTION PR2.1.4	Enhance Old Town Square as a destination and community gathering place by providing a venue for arts, recreation, and green space.
OUTCOME PR2.2:	Expanded and enhanced partnerships with City businesses and other organizations such as City of Fairfax Schools, Fairfax County Park Authority, NOVA Parks, FCPS, George Mason University, Fairfax County Neighborhood and Community Services, and others to complement the services provided by the City.
ACTION PR2.2.1	Identify opportunities to expand partnerships with institutional and business communities.
ACTION PR2.2.2	Establish relationships and partnerships with various underrepresented, underserved, or diverse demographic groups in the City to assist with developing programs and services to meet the needs of these communities.
OUTCOME PR2.3:	Rehabilitation or construction of public facilities to meet the programmatic and recreational needs of the community.
ACTION PR2.3.1	Enhance safety, accessibility, quality of service, and cost effectiveness through comprehensive operations and maintenance programs and services.
ACTION PR2.3.2	Inventory the condition of existing public facilities and identify any necessary updates and repairs.

Parks and Recreation Goal 3

Market programs, special events, facilities, and services.

A broad range of marketing and public relations techniques are necessary to develop public awareness, strengthen community relations, bring a larger audience from outside of the City to our events, and further invigorate the local economy. The City will use innovative promotional and marketing initiatives to increase awareness, participation and support of programs, special events, facilities and services.

OUTCOME PR3.1:	A well-informed community that utilizes the City's quality programs and attends events.
ACTION PR3.1.1	Conduct public opinion surveys of Parks and Recreation customers to identify desired changes in facilities and programming.
ACTION PR3.1.2	Utilize a variety of communications platforms to publicize facilities, programs and events to the community.
OUTCOME PR3.2:	City facilities and events are a regional draw, resulting in increased economic vitality for local businesses.
ACTION PR3.2.1	Increase awareness, participation, and support of programs, facilities, and services using innovative promotional and marketing initiatives.

Cultural Arts

Guiding Principle:

In 2035, Fairfax is a city with...
a thriving cultural arts program that supports a variety of special events, art spaces and performance venues.

The City takes pride in the wide variety of cultural events, programs, and facilities it provides to enhance the quality of life for its residents. The City is committed to preserving and protecting its heritage, recognizing evolving socioeconomic and cultural patterns, and promoting the arts as an integral part of our spirit and vitality with wide ranging economic benefits.

In January 2013, the Commission on the Arts (COA) prepared a Strategic Plan with near-term (one to three years) and long-range objectives for cultural arts in the City. The plan "envisions an economically and culturally booming City with a vibrant arts community serving as a leading arts destination," supporting the Comprehensive Plan Vision. The goals of this Guiding Principle seek to support and build upon the COA Strategic Plan, exploring opportunities for inclusion of the arts as the City develops.

Historically, the arts organizations in our community have been the City of Fairfax Band and the Fairfax Art League. Over the past two decades, four theater companies have emerged, as well as several smaller performance groups. The range of performances is constrained by the lack of theater spaces.

Public art has also sprouted in the last decade with art at the Library, in front of City Hall, and in front of the Sherwood Center. More is planned for Old Town Square.

Cultural Arts
Goal 1

Integrate cultural facilities into the City.

The City currently lacks adequate facilities for performing arts, including a community theater that could provide space for the larger audiences that regional and national artists could bring to the City. Although Fairfax High School and Lanier Middle School have auditorium/theater spaces, theater groups are severely challenged to obtain time in these facilities and are concerned about rental fees. The City must continue to evaluate and expand its cultural venues and to cater to the increasing entertainment expectations of its residents and promote the character and economic vitality of the City, making it a regional arts destination. This should be supported through expanded public art facilities.

OUTCOME CA1.1:	Cultural facilities that provide opportunities for local, regional and national artists to perform for audiences of all sizes.
ACTION CA1.1.1	Create a broad-based special commission charged with the mission of identifying short- and long-term needs for performance spaces and other facilities to support a robust City arts program.
ACTION CA1.1.2	Based on conclusion of CA1.1.1, create a capital program for arts facilities, including a priority for a performing arts facility. This may include upgrading of school arts-related facilities.
ACTION CA1.1.3	Support the creation of Arts and Entertainment Districts with priority to Old Town Fairfax.
ACTION CA1.1.4	Identify underutilized or vacant private facilities that can function as temporary performance spaces.
OUTCOME CA1.2:	Public art such as murals and sculptures displayed to identify, enhance, and promote the cultural nature of the City.
ACTION CA1.2.1	Promote the City's cultural arts identity through public art.
ACTION CA1.2.2	Implement the City of Fairfax Public Art Policy and consider additional policies and practices that promote cultural vitality.
ACTION CA1.2.3	Create a cultural arts bike and pedestrian trail (e.g. Indianapolis Cultural Trail).

Cultural Arts
Goal 2

Encourage a broad representation of arts.

There are a wide variety of interests in arts programs and events resulting from the ever-changing demographics of the City. Strategic partnerships with local institutions, such as George Mason University's Center for the Arts and Northern Virginia Community College's Fine Arts Program should be constantly sought and promoted to expand opportunities for City residents of all ages, ethnicities and abilities. Alternative means of providing and promoting programs must continually be explored as well.

OUTCOME CA2.1:	Collaboration and partnership with local schools, colleges, and universities to provide performance, rehearsal and educational opportunities for artists.
ACTION CA2.1.1	Collaboration and partnerships support establishment of performance, rehearsal and educational opportunities for artists.
ACTION CA2.1.2	Establish a mechanism for continuous collaboration with local schools, colleges, universities and arts organizations on education for artists, and for arts programming.
ACTION CA2.1.3	Explore public-private partnerships to develop performance and rehearsal spaces.
OUTCOME CA2.2:	Cultural programming in the City increases opportunities for a wide range of cultural experiences.
ACTION CA2.2.1	Consider creating a Cultural Affairs office with a full-time director.
ACTION CA2.2.2	Identify and create plan to optimize use of existing and future public facilities for cultural arts programs.
ACTION CA2.2.3	Enhance awareness of current and future programs and facilities.
ACTION CA2.2.4	Develop and execute strategies to increase funds by charging admission to selected events and to increase sponsorships, contributions, and grants.
OUTCOME CA2.3:	Expanded and enhanced partnerships with city businesses and other organizations such as City of Fairfax Schools, Northern Virginia Community College, George Mason University, Virginia Commission for the Arts and other local arts agencies.
ACTION CA2.3.1	Expand partnerships with institutional and business communities for funding and facilities usage.

Government and Public Safety

Guiding Principle:

In 2035, Fairfax is a city with… exceptional governmental, police and fire safety services.

Municipal government services directly affect daily life for residents and businesses including trash pick-up, dog licensing, sign permits, facility rentals, or emergency services. These services not only allow a community to function, but also impact its overall quality of life.

Public safety services include law enforcement, fire protection, emergency medical services and emergency management. The continuity of governmental services offers reassurance that essential services are in place to respond to basic community concerns and needs.

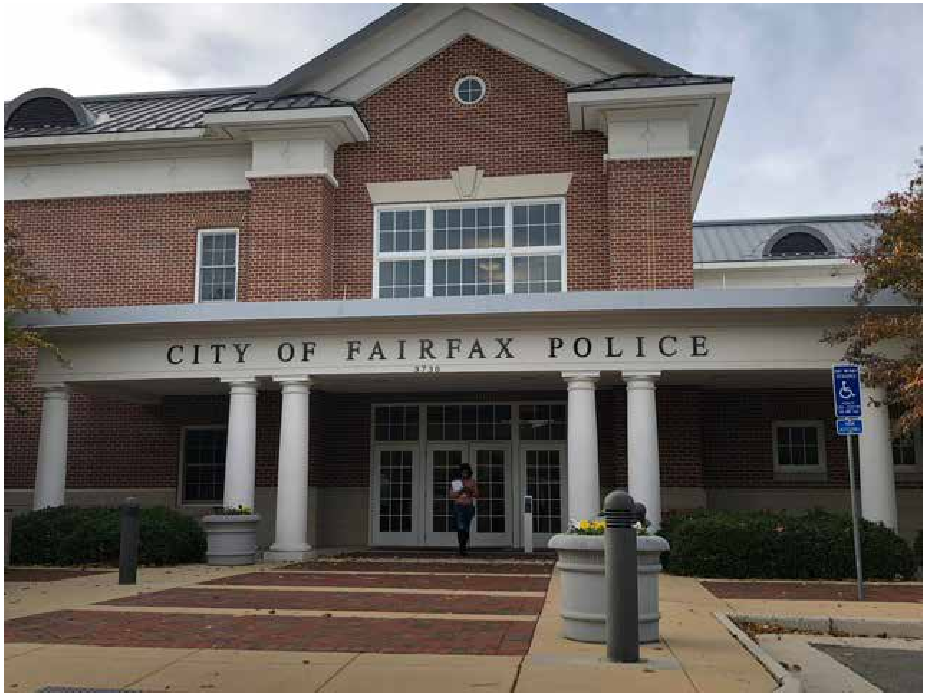
Government and Public Safety

Goal 1

Provide state-of-the-art-facilities for local government and public safety operations.

Anticipating future growth patterns and planning for infrastructure and services to meet the needs of such growth are critical elements in determining the future of the City and its development framework. The City's location in the metropolitan Washington, D.C. area promises to provide the stimulus for continued growth. This growth will affect the resources required to provide the desired level of public services, safety response, and protection. The City must continually monitor demands on government and public safety resources in order to determine needs for facility and service enhancements.

OUTCOME GPS1.1:	Public facilities and equipment that properly support the efficient functioning of City staff to provide valued services to City residents and businesses.
ACTION GPS1.1.1	Maintain and update City facilities to ensure all are safe, accessible to individuals of all abilities, energy efficient, and modernized to meet the changing needs of the community and operations.
ACTION GPS1.1.2	Construct new buildings, when warranted, that are accessible, sustainable, and properly located, including co-locating multiple uses to meet the needs of the community and operations.
ACTION GPS1.1.3	Pursue right of first refusal agreement with Fairfax County on County-owned property located within the City.



Government and Public Safety

Goal 2

Provide high-quality community services.

The City must balance fiscal challenges with the need to maintain public facilities and equipment. Improper maintenance and inadequate facilities can result in disruptive needs for repair and costly replacements. The City will provide high-quality, efficient and cost-effective community services with optimal levels of service to meet public needs on a daily basis, as well as during times of stress.

OUTCOME GPS2.1:	User-friendly and convenient customer service tools using the latest technology available.
ACTION GPS2.1.1	Monitor trends and advancements in technology as they become available to determine if they would benefit City staff's ability to deliver services.
OUTCOME GPS2.2:	Police protection and service that maintain a safe environment for residents, workers and visitors.
ACTION GPS2.2.1	Prevent crime through safe environmental design.
ACTION GPS2.2.2	Support the implementation of the Police Department's long-range plans.
OUTCOME GPS2.3:	Responsive fire and rescue services that protect lives and property.
ACTION GPS2.3.1	Support the implementation of the Fire Department's long-range plans.
ACTION GPS2.3.2	Maintain and update City fire facilities and equipment to ensure all are safe, accessible to individuals of all abilities, energy efficient, and modernized to meet the changing needs of the community and staff.
OUTCOME GPS2.4:	Continued coordination and collaboration with appropriate jurisdictions, agencies and groups for emergency preparedness and response.
ACTION GPS2.4.1	Survey assets and expand upon them to best capitalize on investment in preparedness.
ACTION GPS2.4.2	Continue education programs focused on establishing survivable spaces and promoting emergency preparedness.
OUTCOME GPS2.5:	Essential health and human services are readily available for all community members.
ACTION GPS2.5.1	Improve access and availability to health and human services, amenities, and products.
ACTION GPS2.5.2	Increase transit service options available to destinations where healthy food is sold or distributed such as food banks, farmers markets and grocery stores.
ACTION GPS2.5.3	Recognizing many human services are provided by outside agencies and are not directly marketed for the City, develop a marketing strategy targeting individuals in the City who could benefit from those services.

Infrastructure and Utilities

Guiding Principle:

In 2035, Fairfax is a city with... safe, well-maintained infrastructure and use of advanced technology.

Well-maintained infrastructure and utility systems are critical to the City's continued growth and development. The services covered under this Guiding Principle include water, wastewater, stormwater, energy, telecommunications, and solid waste and recycling. These services support existing and future development and contribute to the health, safety and welfare of the community's residents, businesses and visitors. As technology advances, the City will have greater opportunity to expand the use of information and communications technologies to enhance livability, economic growth, public safety and sustainability.

The proper functioning of infrastructure systems can have major environmental implications. Water, wastewater, and stormwater systems are embedded in the region's hydrology, and the quality of our watersheds is heavily influenced by the operation of these systems. Overhead utility wires are a distracting visual element within the streetscape and present a maintenance concern. Trees must be trimmed away from the overhead lines on a regular basis, resulting in odd-shaped and unnatural-looking trees unable to grow to their fullest potential. Undergrounding utilities can enhance safety, improve aesthetics, reduce maintenance, and improve street tree health.

Infrastructure and Utilities

Goal 1

Provide quality utility services and infrastructure systems.

Utilities and infrastructure will be compliant with applicable federal and state standards and requirements to meet anticipated growth and development needs. The City should continue to ensure its infrastructure and utility systems meet the demand of projected growth and the community's needs. Significant investments in infrastructure (such as stormwater management facilities) will be needed to keep pace with maintenance, regulatory requirements and advancing technology.

OUTCOME IU1.1:	Access to a clean, safe and reliable potable water supply.
ACTION IU1.1.1	Continue to work with Fairfax Water to ensure the City has access to safe and reliable drinking water.
ACTION IU1.1.2	Encourage residents and businesses to conserve water in an effort to protect and preserve the water supply.
OUTCOME IU1.2:	A reliable and efficient wastewater system that collects, conveys and treats wastewater.
ACTION IU1.2.1	Maintain the ability to collect and transmit wastewater.
ACTION IU1.2.2	Continue to perform regular testing, maintenance and improvements to the City's wastewater collection system to ensure compliance with federal and state environmental regulations.
OUTCOME IU1.3:	A sustainable and efficient stormwater system.
ACTION IU1.3.1	Continue to implement the Virginia Stormwater Management Program (VSMP) and the City's stormwater management program to ensure compliance with federal and state regulations.
ACTION IU1.3.2	Continue to maintain and improve the City's stormwater system, utilizing green stormwater infrastructure where practical.
OUTCOME IU1.4:	Access to reliable energy and telecommunications infrastructure.
ACTION IU1.4.1	Partner with utility providers, local municipalities, and regional groups to improve access to utility data and service outage data.
ACTION IU1.4.2	Coordinate upgrades and replacement of non-City provided utilities, including electricity, water, natural gas and communications networks.
ACTION IU1.4.3	Work with utilities, developers, and state agencies to relocate above-ground utility lines underground, where feasible, with an emphasis on major corridors.

Infrastructure and Utilities

Goal 1

ACTION IU1.4.4	Encourage the placement and appearance of utility infrastructure (e.g. substations, transmission towers and lines, and switching boxes) to minimize visual disruption and negative effects on quality of life, and to enhance streetscapes.
ACTION IU1.4.5	Work with utility companies to ensure the reliability and availability of electricity, water, natural gas, and communications services during both normal times and times of stress (e.g. storm events, flooding, extreme heat, etc.).
OUTCOME IU1.5:	A safe and well-connected right-of-way system that provides a functional surface transportation system and utility infrastructure services throughout the City.
ACTION IU1.5.1	Evaluate and ensure that there is adequate lighting along all major streets.
ACTION IU1.5.2	Convert light fixtures and street lights to light emitting diodes (LEDs) and down-cast lighting.
ACTION IU1.5.3	Develop an inventory of existing public right-of-way infrastructure assets (e.g., street lights), current infrastructure conditions, and priorities for maintenance or rehabilitation.
ACTION IU1.5.4	Provide rights-of-way that will permit the expansion of tree planting strips and tree wells to provide more suitable growing conditions for street trees.
OUTCOME IU1.6:	Access to reliable and efficient solid waste and recycling services and infrastructure.
ACTION IU1.6.1	Maintain and enhance solid waste and recycling infrastructure in City parks, trails, sidewalks, and public facilities, and at events.

Infrastructure and Utilities

Goal 2

Expand the use of advanced technology.

Advanced technology infrastructure helps support economic growth and public safety, improve access to information, and ensure a broad range of communications services. Technology is rapidly progressing while the price of these advanced technologies is decreasing. The City will monitor, evaluate, and utilize advances in technology to improve efficiency, connectivity and quality of life.

OUTCOME IU2.1:	All City residences, businesses and institutions have access to reliable and affordable advanced technology and telecommunications infrastructure and services.
ACTION IU2.1.1	Periodically update policies and regulations for the design and siting of telecommunications facilities to ensure they remain applicable with fast-changing technologies.
ACTION IU2.1.2	Explore public-private partnerships as a way to enhance the City's telecommunications infrastructure.
ACTION IU2.1.3	Consider implementing innovative pilot initiatives that advance new technologies (e.g., regenerative power, solar-powered charging stations, etc.).

Appendices

Appendix A: Chesapeake Bay Preservation Plan

Appendix B: Transportation Practices and Policy

A Chesapeake Bay Preservation Plan

The City recognizes the importance of preserving its valuable water resources for future generations and the need to protect them from the adverse effects of pollution generated by urban land uses. The City also recognizes that land use activities adversely affecting City streams also impact the health and viability of downstream resources, the most important of which is the Chesapeake Bay. The Chesapeake Bay is an economic, social, and ecological resource whose continued health is of benefit to all citizens of the Commonwealth.

The City of Fairfax has a vested interest and a responsibility to maintain and promote a healthy environment, including the protection of local waterways from further degradation as a result of development. In addition, steps must be taken to improve currently degraded resources to ensure the long-term health of both the City's resources and the Chesapeake Bay. The City has risen to the challenge of natural resources and water quality protection and is committed to implementing the Chesapeake Bay Preservation Area Designation and Management Regulations as manifest by the Chesapeake Bay Preservation Act of 1988. These regulations apply to all localities within Tidewater Virginia; however, the individual jurisdictions are responsible for identifying and implementing Chesapeake Bay preservation strategies.

The City has made progress towards maintaining and promoting a healthy environment; nonetheless, significant environmental issues still need to be addressed. This Chesapeake Bay Preservation component to the City's Comprehensive Plan serves as a planning tool for the City Council, the Planning Commission, City agencies, and citizens to help guide the City in its protection of the Chesapeake Bay and the City's natural resources.

Contents

Section 1. Introduction, Purpose, and Legal Authority

Recognizing the economic and social importance of long-term viability of State waters, and in particular the Chesapeake Bay and its tributaries, the Virginia General Assembly enacted the Chesapeake Bay Preservation Act of 1988. The Chesapeake Bay Preservation Area Designation and Management Regulations as adopted in 1989 and amended in 1991, 2001, and in 2012, state that local programs shall contain "a comprehensive plan or revision that incorporates the protection of Chesapeake Bay Preservation Areas and of the quality of state waters, in accordance with criteria set forth in Part V (9VAC25-830-160 et seq.)."

The waters of the Chesapeake Bay have been degraded significantly by many sources of pollution, including nonpoint source pollution from land uses and development. Existing high-quality waters are worthy of protection from degradation to guard against further pollution. Certain lands that are proximate to shorelines have intrinsic water quality value due to the ecological and biological processes that they perform. Other lands have severe development constraints as a result of flooding, erosion, and soil limitations. With proper management, they offer significant ecological benefits by providing water quality maintenance and pollution control, as well as flood and shoreline erosion control.

To achieve these ends, the City Council and the Planning Commission have, in accordance with the Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC25-830), developed a Chesapeake Bay preservation program which is centered around the City's Chesapeake Bay Preservation regulation of the Zoning Ordinance. This Chesapeake Bay Preservation component to the City's Comprehensive Plan builds upon the City's regulation and is designed to protect those qualities of life held important by the citizens of the Commonwealth and the City and to encourage future development that enhances and compliments the growth of the City as well as protects it natural resources.

Section 2. Water Resources Protection Programs and Regulations

The City has made substantial progress towards ensuring the protection and balanced management of its natural resources through the implementation of various City regulations and water quality protection and pollution prevention programs. While the Chesapeake Bay Preservation regulation is the City's primary tool for protecting water resources within the City, water quality and natural resources protection requires an integrated approach.

This involves not only regulation but also citizen participation through the use of public education and volunteer programs. Enforcement of the City's Chesapeake Bay Preservation regulation must be coupled with a comprehensive examination of how the City's various land use regulations, including its Zoning and Subdivision ordinances, may be better utilized to protect the natural environment.

The following is an overview of the City's existing regulations and programs related to water quality and natural resources protection. These regulations and programs are then reexamined and options are presented for their improvement in light of an analysis of the City's water resources (Section 3), existing and potential sources of pollution (Section 4), and constraints to development (Section 5).

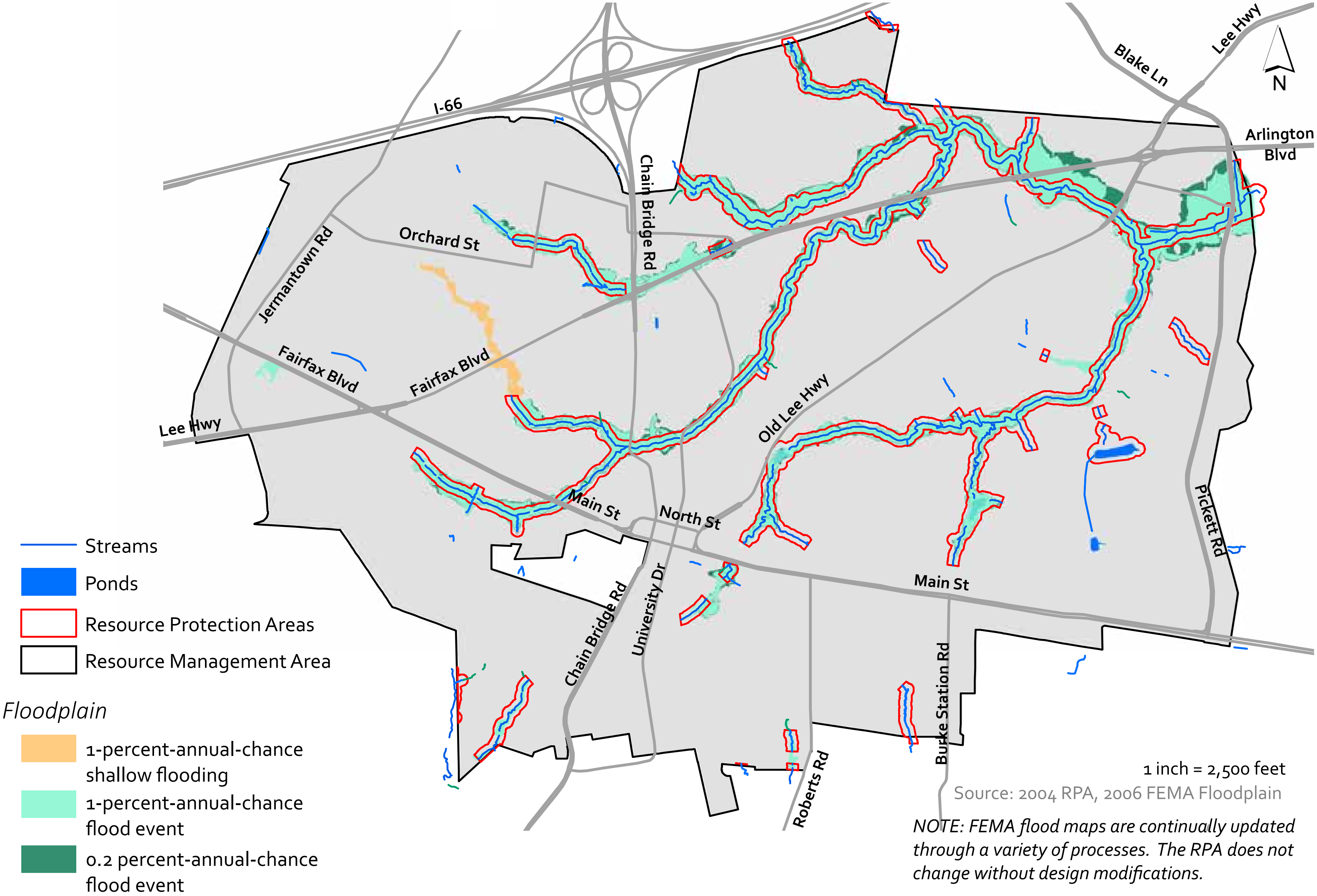
2.1. Chesapeake Bay Preservation Regulation

The Chesapeake Bay Preservation Act (Chapter 3.1 of Title 62.1 of the Code of Virginia) establishes a program to protect environmentally sensitive features which, when disturbed or developed incorrectly, lead to reductions in water quality in the Chesapeake Bay. The Act provides a framework for local government to identify these sensitive areas and to enact regulations to better plan land use activities on and around them. Under the regulations, the City of Fairfax is called to promote the following:

- Protection of existing high quality State waters and restoration of all other State waters to a condition or quality that will permit all reasonable public uses, and will support the propagation and growth of all aquatic life which might reasonably be expected to inhabit them;
- Safeguarding the clean waters of the Commonwealth from pollution;
- Prevention of any increase in pollution;
- Reduction of existing pollution; and,
- Promotion of water resource conservation in order to provide for the health, safety, and welfare of the present and future citizens of the Commonwealth.

In accordance with State guidelines, Chesapeake Bay Preservation Areas (CBPAs) were mapped for the City and the City adopted a Chesapeake Bay preservation area map as part of the City's Zoning Ordinance in October, 1990 and was most recently amended in March, 2015 (§4.18. et seq.). The Chesapeake Bay Preservation Areas were delineated for the city according to criteria established by the State Department of Conservation and Recreation. Figure A1 presents the City's Floodplain and Chesapeake Bay Preservation Area Map.

FIGURE A1 FLOODPLAIN AND CHESAPEAKE BAY PRESERVATION AREA MAP



1 inch = 2,500 feet

Source: 2004 RPA, 2006 FEMA Floodplain

NOTE: FEMA flood maps are continually updated through a variety of processes. The RPA does not change without design modifications.

The resource protection area (RPA) includes (1) tidal wetlands; (2) nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow; (3) tidal shores; (4) intermittent streams that remain largely in a natural condition and that have not been significantly impacted by adjacent development; (5) water bodies with perennial flow; and (6) a 100-foot vegetated buffer area located adjacent to and landward of the components listed above, and expanded to include noncontiguous wetlands within the floodplain that are partially located within the buffer, along both sides of any water body with perennial flow.

In general, development within the RPA is limited to water dependent uses, passive recreational uses, utilities and public facilities, and certain types of redevelopment so long as the proposed land use is carried out in accordance with the provisions of the City's Zoning Ordinance.

The resource management area (RMA) includes all lands in the city that are not designated as an RPA. All development or redevelopment within a Chesapeake Bay preservation area exceeding 2,500 square feet of disturbed land area shall be subject to the general performance standards in §4.18.7 of the Zoning Ordinance as well as the development review procedures of §6.13 of the Zoning Ordinance.

The performance standards establish the means to minimize erosion and sedimentation potential, reduce land application of nutrients and toxics, and maximize rainwater infiltration. Natural ground cover, especially woody vegetation, is most effective in holding soil in place and preventing site erosion. Indigenous vegetation, with its adaptability to local conditions without the use of harmful fertilizers or pesticides, filters stormwater runoff. Minimizing impervious cover enhances rainwater infiltration and effectively reduces stormwater runoff potential.

The performance standards are intended to prevent a net increase in nonpoint source pollution from new development and to achieve a 10 percent reduction in nonpoint source pollution from redevelopment.

2.2. Erosion and Sediment Control Regulation

The purpose of the City's Erosion and Sediment Control Regulation is to prevent the degradation of properties, stream channels, waters, and other natural resources by providing that adequate soil erosion and sediment control measures are taken before, during, and after the period of site clearance, development, and construction. The Erosion and Sediment Control Ordinance implements the Virginia Erosion and Sediment Control Law (§ 62.1-44.15:51 et seq of the Code of Virginia (2013)) as well as the Chesapeake Bay Preservation Act.

Under this ordinance, land owners proposing a nonexempt regulated land disturbing activity of greater than 2,500 square feet must first submit an erosion and sediment control plan to the City Department of Public Works. The City's erosion and sediment control requirements are detailed in Erosion and Sediment Control section of the Zoning Ordinance (§4.17).

2.3. Landscaping Regulation

The City's landscaping regulations are intended to encourage the planting and proper care of vegetation and trees throughout the City, to enhance tree canopy, and to provide for appropriate screening. These actions are intended to contribute to the health, safety, and welfare of the city by enhancing pedestrian facilities, decreasing flooding, soil erosion, air pollution and noise, and improving aesthetics.

The regulation controls the removal of trees from public and private property and establishes standards limiting tree removal and ensuring the replacement of trees sufficient to safeguard the ecological and aesthetic integrity of the community's environment. In addition, the regulation was enacted: to prevent the unnecessary clearing and disturbing of land so as to preserve, insofar as is practicable, the natural and existing growth of vegetation; to replace the removed trees with new trees or large shrubs on the same property and in the same general location; to provide protective regulations against hazardous trees and diseased trees or shrubs; to control activities related to trees and plantings upon the streets or public properties of the City; and to establish a permit procedure for tree contractors. The City's landscaping requirements are detailed in the landscape section of the Zoning Ordinance (§4.5).

Tree cover has long been recognized as serving to protect water quality. Tree canopy provides a buffer between precipitation and the soil by slowing the rate and velocity of rainfall.

Tree roots serve to keep soil particles in place and from washing away due to rainfall. Vegetation of all types also extract nutrients from water for use in plant tissues. In addition, tree cover in riparian areas serves to protect aquatic habitat by lowering and stabilizing stream temperature.

2.4. Floodplain Regulation

In 1981, the Federal Emergency Management Agency (FEMA) investigated the existence and severity of flood hazards in the City of Fairfax to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The study was also meant to be used by local and regional planners in their efforts to promote sound floodplain management. To these ends, the City established a floodplain district as part of the City's Zoning Ordinance in 1982, which has been continually updated. The current Floodplain regulation was adopted by the City in March 2015.

The purpose of the City's floodplain regulation is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services and the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

- Regulating uses, activities, and development which, alone or in combination with their existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies.
- Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding.
- Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or flood proofed against flooding and flood damage.
- Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

In addition to protecting life and property, the floodplain regulation serves to protect water quality by decreasing the potential for stream bank erosion and by providing, in many instances, vegetated stream buffer areas which filter runoff from surrounding impervious areas. Figure A1 on page 3 depicts areas of Fairfax that have been designated as flood prone (the one-hundred year floodplain) for which the City's regulation applies. The City's floodplain regulations are detailed in §4.15 of the Zoning Ordinance.

2.5. Zoning and Subdivision Ordinances

The City's Zoning and Subdivision ordinances provide the City with valuable tools for natural resources protection through better development and redevelopment practices. Many of the City's water quality protection regulations, including the City's Chesapeake Bay Preservation regulation and Floodplain regulation are contained within the City's Zoning Ordinance as overlay districts. Protection of water resources may be accomplished through the application of Zoning Ordinance provisions which relate to impervious coverage requirements, land use densities, etc. For instance, creative parking requirements to minimize impervious areas, including cooperative parking arrangements between businesses, may be used to minimize impervious cover.

2.6. City Source Control Programs

The control of pollutants before they enter stormwater or groundwater is recognized as the most cost effective and environmentally sound method of environmental protection. While the effectiveness of source control programs are difficult to ascertain due to their heavy reliance on human behavior modification, they are nevertheless integral components of the Commonwealth's Chesapeake Bay preservation effort. The City has addressed source control on a number of fronts, many of which are specifically geared at water quality protection and some of which have water quality protection as direct benefit. Among the City's source control programs which benefit water quality are its street sweeping program, curbside leaf and brush pickup service, and recycling program.

Street sweeping is effective in removing harmful pollutants, particularly litter and sand from deicing and snow removal activities. Under the City's street sweeping program, main streets are swept once a week from mid-March through mid-November and subdivision streets are swept three times a year. In order for the City's program to have a more substantial effect on water quality, more frequent and concentrated street sweeping would need to be implemented. Specifically, more intense street sweeping efforts in downtown areas, where nutrients and other pollutants tend to accumulate at higher rates, may be of direct benefit to water quality.

In addition to street sweeping, the City conducts a curbside leaf and brush pickup service which discourages those whose properties lie within a RPA from dumping yard waste near streams where it can kill vegetation. This practice can result in erosion and the leaching of excess nutrients into the local stream. In conducting its program, the City should take care to make sure that leaves are not placed directly in the gutter where they can be washed into the local stream course.

The City has an extensive recycling program which has collections for most recycling materials including plastics, glass, metals, etc. The City also collects potentially hazardous substances such as used oil, oil filters, rechargeable batteries, and car batteries at the Property Yard Recycling Center. The City advertises its recycling program in the Public Works Department's insert to the City's monthly newsletter several times a year. New homeowners are provided with a packet of information on recycling requirements and facilities within the City.

In addition to City source control efforts, the Department of Environmental Quality (DEQ), Water Division, works directly with owners of underground storage tanks (USTs) to ensure that these tanks do not impact on groundwater quality. The DEQ, Water Division, has an extensive monitoring program to detect and mitigate any leaking USTs before substantial groundwater quality degradation can occur.

2.7. Local and Regional Watershed Management Efforts

For many years, the City's stormwater drainage system has been under considerable stress as the result of a rapid increase in the City's jurisdiction-wide imperviousness. Several types of stormwater system problems have been identified within the Accotink Creek watershed including streambank and streambed erosion, sedimentation, localized flooding, deteriorated drainage facilities, limited capacity of the drainage system as originally designed, and finally, pollutants affecting water quality.

In the last few decades, several water quality related regulations, as summarized below, have been enacted that has made it necessary for the City to investigate and address these problems on a watershed-wide basis.

- **National Pollution Discharge Elimination System:** Established by the United States Environmental Protection Agency (EPA) in 1987 as an amendment to the Clean Water Act, the National Pollution Discharge Elimination System requires permits for discharges from municipal separate storm sewer systems to limit pollutant discharges into streams, rivers, and bays. The DEQ administers the program as the Virginia Pollutant Discharge Elimination System.

- **Chesapeake Bay Preservation Act:** Established by the DEQ in 1988 to improve water quality in the Chesapeake Bay. Localities are required to adopt programs to protect water quality in the Chesapeake Bay from excessive nutrients caused by stormwater runoff from impervious surfaces.

- **Virginia Stormwater Management Program:** These regulations were established by the DEQ and include requirements for erosion and sediment control during the construction process and for the installation of BMPs to address stormwater runoff post-construction.

- **MS4 Permits:** Issued by the DEQ and EPA, these regulatory permits require local governments to implement a variety of programs (ranging from detection and correction of illicit discharges to public outreach and education) to lessen the volume of pollutants carried by their municipal stormwater conveyance systems. These permits require consistency with the pollution budgets of applicable total maximum daily loads (TMDLs); and have been issued over time.

- **Local TMDL:** Established by the DEQ and EPA, these TMDLs set target reductions for pollutants (nutrients, sediment, bacteria, trash, and PCBs) in a number of waters in the region that have been designated as 'impaired'.

- **Chesapeake Bay TMDL:** Established by the EPA in December 2010, this historic and comprehensive "pollution diet" requires reductions in nutrient (nitrogen and phosphorus) and sediment pollution throughout the Chesapeake Bay watershed and for major tributaries such as the Potomac River.

To determine how the City will face its watershed challenges, the City completed a Watershed Management Plan in July 2005. The plan evaluated watershed conditions and included recommendations on how to improve watershed health. The City also completed an Accotink Creek Stream Stability Assessment and Prioritization Plan in October 2007 and a supplement report for Daniels Run in October 2008. These reports captured the scale and extent of stream bank erosion in the Accotink Creek watershed and included a prioritization plan for future restoration activities based upon observed conditions.

The City has been continually implementing the recommendations identified in these reports. For example, the City has made significant efforts to stabilize the stream banks to handle the urban stormwater runoff and flows by implementing stream restoration and stabilization improvements at numerous locations on Accotink Creek.

The City also participates in regional efforts by being a member of the Chesapeake Bay Policy Committee, which was established by the MWCOG Board of Directors. Elected officials and staff from MWCOG's member governments, and water and wastewater utilities comprise the committee's membership. The Committee tracks developments under the federal-state Chesapeake Bay Program for implications to local governments and recommends Bay-related policies to the Board.

On June 16, 2014, the Chesapeake Bay Watershed Agreement was signed. Signatories include representatives from the entire watershed, including the Commonwealth of Virginia, committing for the first time the Chesapeake Bay's headwater states to full partnership in the Chesapeake Bay Program. This plan for collaboration across the Bay's political boundaries establishes goals and outcomes for the restoration of the Bay, its tributaries and the lands that surround them.

Section 3. Inventory of Existing Water Resources

The City contains a wealth of natural resources which benefit both residents and businesses within the City. Of its natural resources, the City's water resources are among the most important from an economic, social, and ecological point of view, as well as the most sensitive. Land uses and development, air pollution, and human carelessness all contribute to the degradation of water resources.

The City has been able to protect many stream corridors through the expansion of its public park system and the preservation of vegetative buffers. However, as the population grew from only 1,946 in 1950 to 24,097 in 2017, development pressures resulted in a dramatic increase in the City's impervious acreage and a loss of natural vegetation. While past responses to the pressures of development have resulted in the implementation of erosion and sediment control measures, stormwater quantity measures to control flooding, and floodplain protection, only recently have the post-development effects of urbanization on water quality been fully appreciated and addressed.

With the adoption of the City's Chesapeake Bay Preservation regulation in 1990, the City committed itself to a comprehensive and integrated approach to water quality protection. In order to better plan for future development and redevelopment within the City and to identify ways to enhance the quality of life through the preservation and restoration of the City's water resources, it is important to understand the resources which exist within the City. The following section presents an inventory of the water resources within the City including watersheds and streams, water supplies, water supply protection, and groundwater.

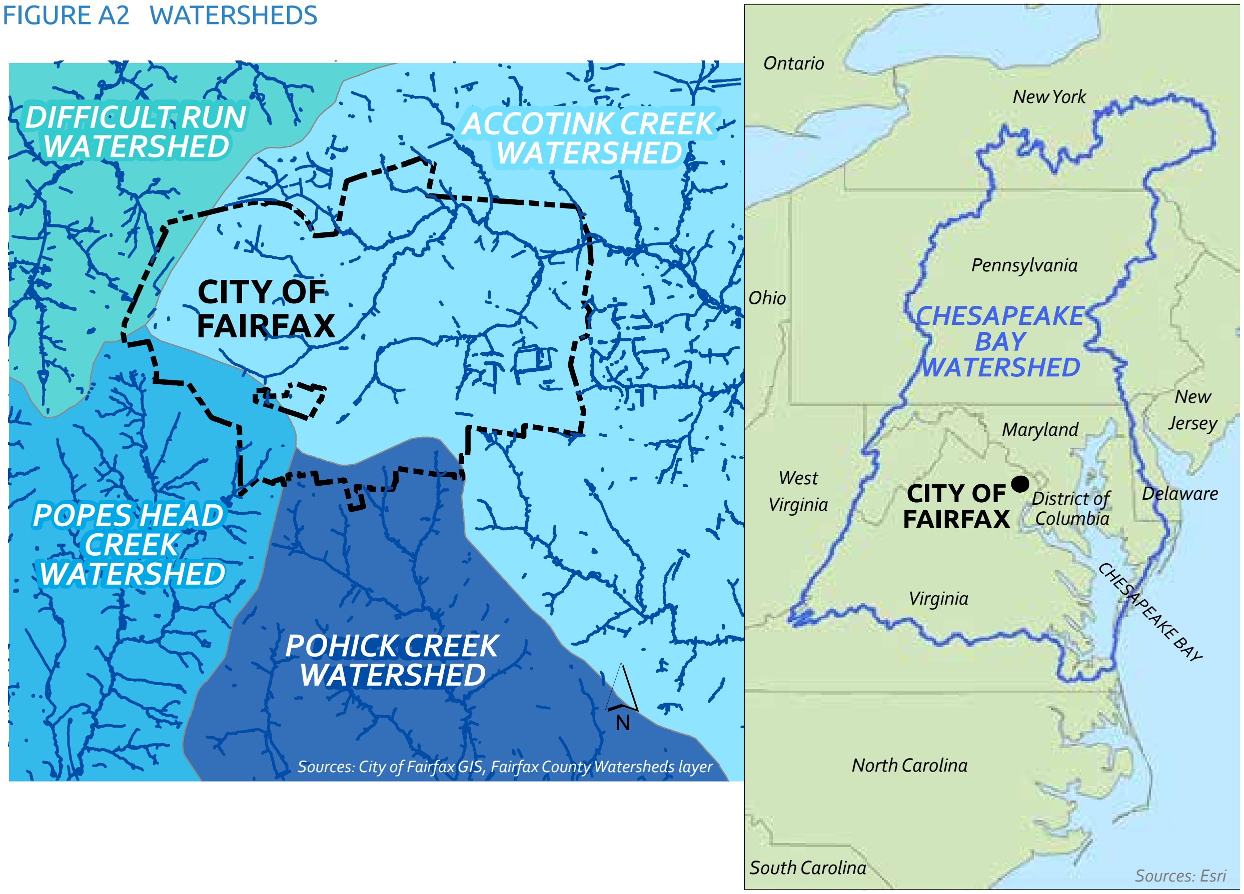
3.1. Streams and Watersheds

The City is located at the confluence of four major drainage divides and includes portions of the Accotink Creek, Pohick Creek, Popes Head Creek, and Difficult Run watersheds. As a unique consequence, practically all watercourses within the City (with the exception of a few tributaries to Accotink Creek in the northeastern portion of the City) originate within its boundaries and are not directly affected by activities from neighboring jurisdictions. This provides a considerable level of control to the City over the water quality of its streams. Major perennial streams which flow through the City include Accotink Creek (north and central forks) and Daniels Run (also known as the south fork of Accotink Creek), which drains to Accotink Creek within the City. Many smaller tributaries drain to Accotink Creek and Daniels Run in a roughly dendritic (branched) pattern which has been substantially modified by development and channelization.

The City contains the headwaters of Accotink Creek, which flows through southern Fairfax County and empties into Accotink Bay and Gunston Cove and then into the Potomac River. Within the City, Accotink Creek is primarily a gravelly bottomed fast flowing stream. However, in some wide, shallow, or slower moving areas, particularly in areas upstream of culverts, thick layers of sediments have been deposited over the gravel as a result of excessive erosion and both natural and man-made stream course blockage. Throughout much of the City, Accotink Creek is only five to ten feet wide and relatively shallow. However, the creek widens to ten to twenty-five feet and is several feet deep where it exits the northeastern edge of the City near the intersection of Pickett Road and Old Pickett Road in Thaiss Park.

According to the Division of Soil and Water Conservation's Hydrologic Units Map of Northern Virginia, the City lies primarily within the Accotink Creek watershed (HUC Code: 020700100402) which drains approximately 90% of the City. The Pohick Creek watershed (HUC Code: 020700100401), which drains the southeastern portion of the City covers approximately 3% of the City. The Difficult Run watershed (HUC Code: 02070081004), which drains the area west of Jermantown Road, covers approximately 3% of the City while the Popes Head Creek watershed (HUC Code: 020700100705), which drains the southwestern portion of the City, covers approximately 4% of the City. Popes Head Creek flows through south-central Fairfax County, bisecting the Town of Clifton, and eventually empties into the Occoquan Reservoir. This is significant due to the fact that the Occoquan serves as a primary drinking water supply for a large percentage Northern Virginians. Figure A2 presents a schematic of the City's major watersheds. Figure A3 presents a schematic of the major streams within the City.

FIGURE A2 WATERSHEDS



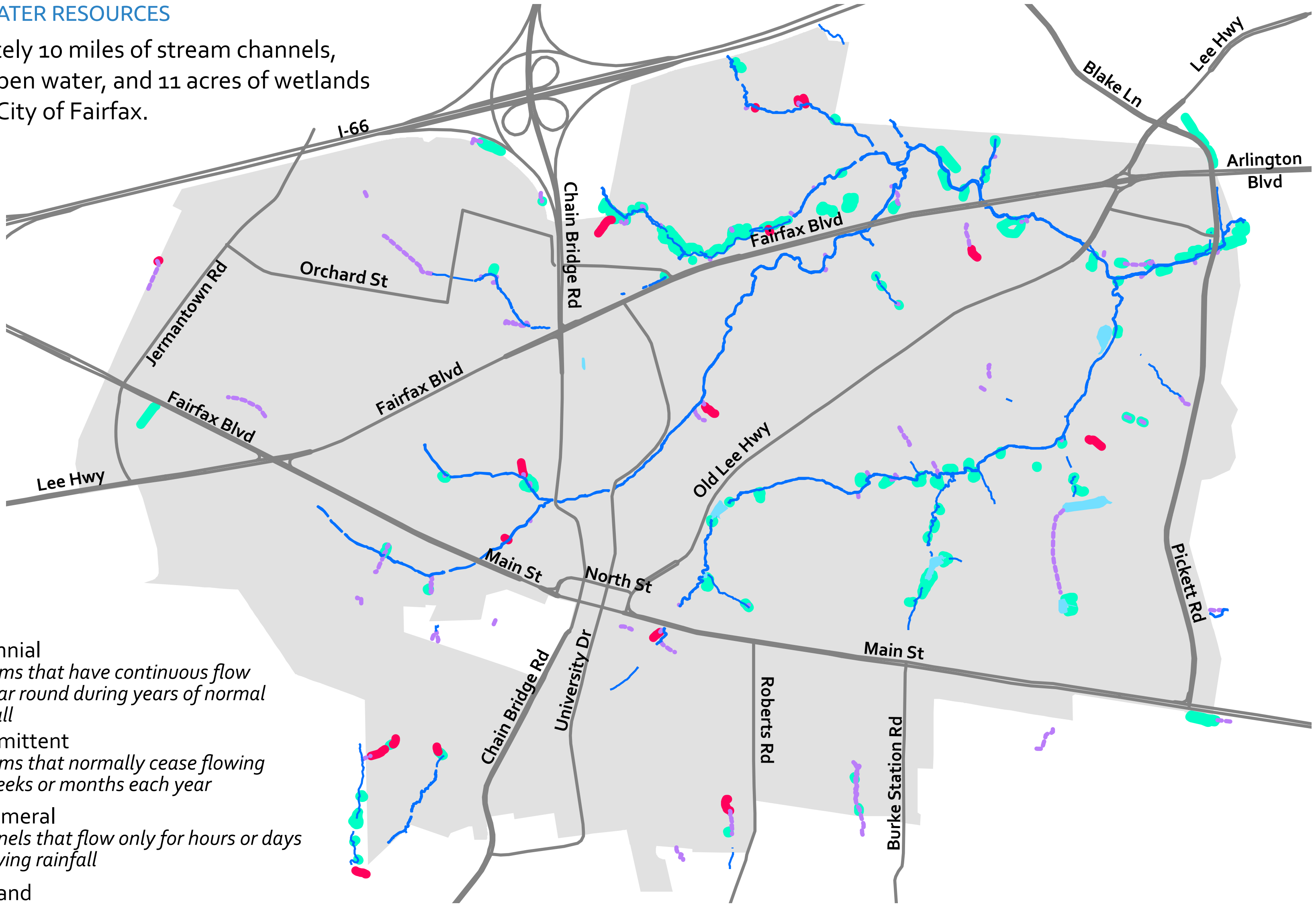
Sources: City of Fairfax GIS, Fairfax County Watersheds layer

Sources: Esri

Tributary streams within the City are subject to runoff from shopping centers, garages, parking lots, and other potentially high pollution areas. Storm drains feed the majority of the streams passing through the City and have been implicated as sources of pollution from improperly disposed petroleum products. Although many tributaries have been cleared to their banks, or have been modified to enhance drainage capacity, only a relatively small proportion of the City's perennial streams have actually been piped or channelized with concrete. The implications that the City's land uses, impervious cover, and human activities have on water quality are further detailed in Section 4.

FIGURE A3   WATER RESOURCES

Approximately 10 miles of stream channels, 9 acres of open water, and 11 acres of wetlands exist in the City of Fairfax.



— Perennial
Streams that have continuous flow all year round during years of normal rainfall

┅ Intermittent
Streams that normally cease flowing for weeks or months each year

▬ Ephemeral
Channels that flow only for hours or days following rainfall

▬ Wetland
Land area that is saturated with water, either permanently or seasonally

🟦 Pond
A body of standing water (either natural or artificial)

1 inch = 2,500 feet

Source: City of Fairfax GIS , Watershed Management Plan, July 2005 and the Accotink Creek Stream Stability Assessment and Prioritization Plan, 2008; Stream Assessment/Mapping and Chesapeake Bay Preservation Area Mapping Project, 2003

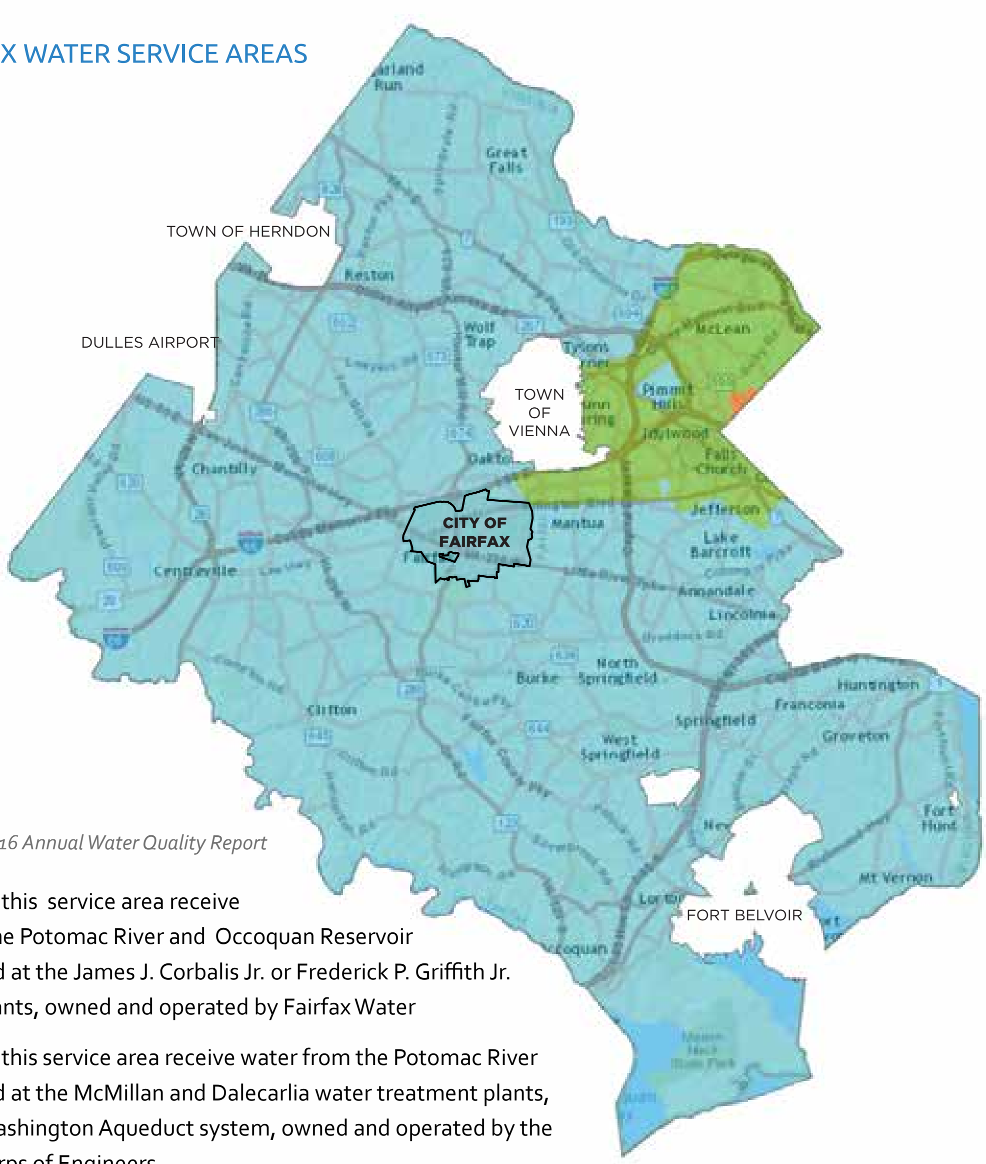
3.2. Water Supply

The City sold its water system to Fairfax Water on January 2, 2014. Since that sale, Fairfax Water has been providing water services to the City as presented on Figure A4.

Per the Fairfax Water Strategic Plan 2020, "Fairfax Water owns and operates the two largest water treatment facilities in Virginia with an average daily water production of 163 million gallons and combined maximum capacity of 376 million gallons per day. The James J. Corbalis Jr. treatment plant is at the northern tip of Fairfax County and the Frederick P. Griffith Jr. treatment plant is on the southern border of Fairfax County. Fairfax Water also purchases water from the McMillan and Dalecarlia treatment plants in Washington DC. They are part of the Washington Aqueduct, owned and operated by the U.S. Army Corps of Engineers. Fairfax Water draws raw water from two primary sources: the Potomac River and the Occoquan Reservoir, which is fed by the Occoquan River."

The principal source of potable water for the City is the Potomac River and Occoquan Reservoir that is treated at the James J. Corbalis Jr. or Frederick P. Griffith Jr. treatment plants. Fairfax Water continually works to reliably meet the needs of present and future

FIGURE A4 FAIRFAX WATER SERVICE AREAS



Source: Fairfax Water 2016 Annual Water Quality Report

🟦 Customers in this service area receive water from the Potomac River and Occoquan Reservoir that is treated at the James J. Corbalis Jr. or Frederick P. Griffith Jr. treatment plants, owned and operated by Fairfax Water

🟩 Customers in this service area receive water from the Potomac River that is treated at the McMillan and Dalecarlia water treatment plants, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers

🟧 Customers in this service area receive water from the Potomac River that is treated at the Dalecarlia water treatment plant, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers customers. The City will continue to work with Fairfax Water to ensure the City has access to safe and reliable drinking water.

In compliance with federal Safe Drinking Water Act, the Virginia Department of Health (VDH) conducts source-water assessments, which consist of figures of the evaluated watershed area, an inventory of known land-use activities, and documentation of known source-water contamination. The Potomac River and the Occoquan Reservoir were determined to be of high susceptibility to contamination.

In addition to protecting the City's water supply from pollution, water conservation practices help conserve and protect it from depletion. Conservation also reduces the amount of potable water that reaches the City's sanitary sewer system and reduces the potential that landscape irrigation and car washing will result in water pollution. The City should develop a program to encourage City residents on a more regular basis to practice water conservation, including the voluntary replacement of water-intensive (or leaky) fixtures in the home with new low consumption fixtures. Incorporation of water conservation into the school curriculum is also an effective approach and has been used elsewhere in Northern Virginia, including Arlington County.

3.3. Water Quality Monitoring

Protecting the quality of surface water resources is a concern for many urban jurisdictions. The removal of tree canopy cover, which serves to stabilize and cool stream temperatures, as well as increased imperviousness of surrounding areas, which increases the volume and velocity of stormwater runoff into local streams, have a generally negative effect on stream water quality. Water quality may be decreased as a result of pesticide and fertilizer-laden runoff from adjacent lawns or by runoff from parking lots which may contain nutrients, heavy metals, and hydrocarbons. Eroding stream banks contribute to urban water quality problems by choking local streams with sediment. Illegal dumping into storm sewers, trash and litter, animal and pet wastes, and leaking above ground and underground storage tanks also take their toll on urban water quality.

The City's established Water Quality Monitoring Program (WQMP) helps the City meet the requirements contained in Section I.B.2.e of the City's Municipal Separate Storm Sewer System (MS4) permit, and Item 9 in the City of Fairfax's DEQ approved TMDL Action Plans. It was designed to assist in assessing the effectiveness of all the City's Local TMDL Action Plans. Under the program, the City collects water quality samples which are analyzed for water quality parameters including Total Suspended Solids (TSS), Bacteria (E. coli), temperature, specific conductance, Dissolved Oxygen (DO), pH, turbidity, nitrate + nitrite, total phosphorus, and volatile suspended solids. Samples are collected twice a year from six representative MS4 outfalls located within the drainage sheds of the impaired reaches of Difficult Run, Accotink Creek, and Popes Head Creek.

The City utilizes the water quality sampling data to address multiple objectives including: screening for potential sources of the pollutants of concern discharging into the City's MS4; targeting locations within the MS4 permit area for implementation of BMPs; educating the public on the potential water quality impacts of their actions and behavior within the MS4 drainage area; and ultimately to aid in assessing the overall effectiveness of the Action Plan in reducing the discharge of the pollutants of concern from the City's MS4.

At the end of each MS4 permit reporting period, the City prepares annual Water Quality Monitoring Reports, which are included with the City's MS4 Annual Report. Once appropriate amounts of sampling data have been collected under the WQMP, the City will analyze the results to determine the next steps to take with the MS4 Permit Program and local TMDL Action Plans.

3.4. Groundwater Resources

While the City no longer relies on groundwater resources for its potable water supply, groundwater is nonetheless an important water resource. An investigation of the groundwater resources of the City is important because groundwater is intimately connected with the ecosystem as it provides the base flow to many rivers, streams, ponds, lakes, and wetlands. Groundwater is also an issue of regional importance due to its dynamic nature, as was shown when a leaking oil storage tank at the Fairfax Tank Farm formed a plume which spread from the eastern edge of the City into the Mantua neighborhood of Fairfax County. Because the City no longer relies on groundwater for its potable water supply, recent data on City-wide groundwater dynamics and quality is not available.

Section 4. Existing and Potential Sources of Water Pollution

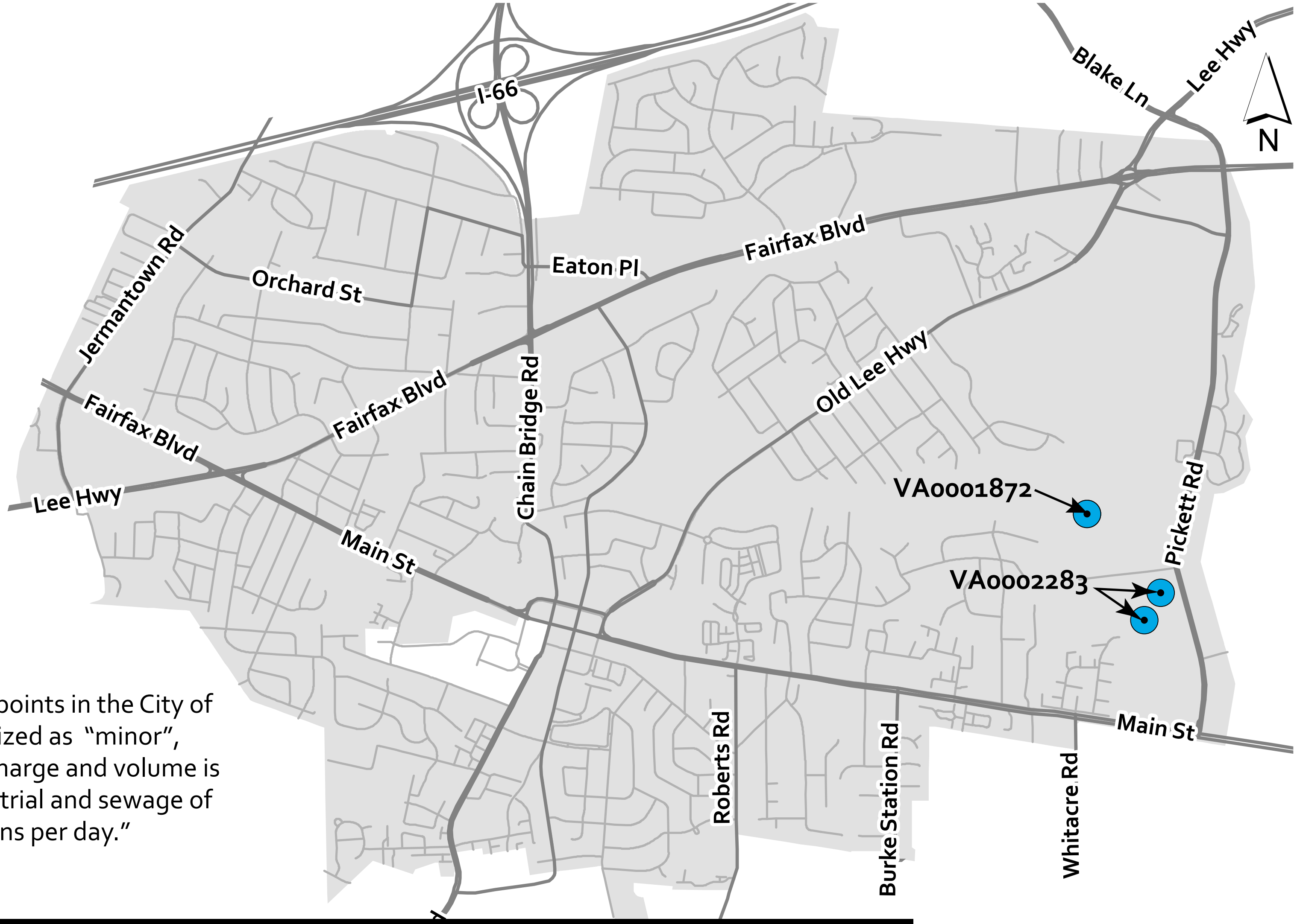
While some level of environmental pollution resulting from human activity may be inevitable, the cost of pollution and its effects on quality of life should not be ignored. Unmanaged pollution can result in surface and groundwater contamination, poor air quality, aesthetic degradation of the landscape, and the destruction of important ecological habitats, all of which detract from the City's basic character. The most cost-effective approach to the problem of pollution is to prevent it at its source. A number of tools are available to the City to aid in pollution prevention, including public education and awareness programs, water conservation, lawn care programs, and recycling efforts, to name only a few. The cost to the City once environmental damage is done includes not only short term clean-up costs, but long-term costs including decreased property values and loss of tax base. The following section describes the City's existing sources of pollution as well as potential sources of pollution which the City may face as it grows and develops.

4.1. Point Source Pollution

Point source pollution is pollution which can be attributed to a specific outfall and is therefore often the most easily recognizable and regulatable form of pollution. Industries and municipalities, under the federal Clean Water Act, National Pollution Discharge Elimination System, are required to report pollution discharges to water courses above a certain threshold, and to the maximum extent practicable, mitigate the effects of the pollution on the environment. The DEQ, Water Division, maintains records on these sources of pollution and is charged with ensuring that environmental regulations are enforced.

There are two National Pollution Discharge Elimination System discharge points located within the City (VA0001872 and VA0002283), both of which drain to tributaries of Accotink Creek (see Figure A5). The discharge points are associated with ongoing activities at the Fairfax Tank Farm Terminal Complex located on Colonial Avenue. The City's water quality is not affected by any upstream point source discharges from surrounding Fairfax County or other jurisdictions. There are currently no municipal discharge points on property owned by the City which fall under the National Pollution Discharge Elimination System

FIGURE A5 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) DISCHARGE POINTS



● VPDES Outfall Individual Permit

There are two discharge points in the City of Fairfax. Both are categorized as "minor", meaning the type of discharge and volume is "commercial, small industrial and sewage of less than 1.0 million gallons per day."

1 inch = 2,500 feet

Source: Virginia Department of Environmental Quality (DEQ) Virginia Environmental Geographic Systems (VEGIS), Accessed March 12, 2018

Permit Number	Facility	Address	Permit Expiration
VA0001872	Joint Basin Corporation - Fairfax Terminal Complex	9601 Colonial Ave	11/30/2020
VA0002283	Motiva Enterprises LLC - Fairfax	3800 Pickett Rd	7/25/2018

regulations. Stormwater runoff, which is considered nonpoint source pollution, unless piped, is further discussed under Section 4.2.

4.2. Nonpoint Source Pollution

Nonpoint source pollution is pollution which cannot be attributed to a single source but is the result of many diffuse sources. Considered singularly, each small source would not constitute a problem, but together these nonpoint sources constitute a substantial threat to water quality. Most commonly, nonpoint source pollution is caused by rainfall running off roadways, parking lots, roof tops, and other urban land uses. Urbanization increases the imperviousness of a land area, thereby increasing the amount and velocity of stormwater runoff delivered to nearby streams. Pollutants which would normally settle out or infiltrate through the soil are carried directly to local waterways. On a per acre basis, urban land use including residential development generally produces higher annual nonpoint source pollutant loadings of nutrients, heavy metals, and oxygen-depleting substances than do rural agricultural uses. Oil contamination, sediments, pesticides, metals, and other toxic substances can kill fish and destroy bottom life. In addition to transporting pollution, increased runoff also increases instream flow during and immediately after periods of precipitation. This results in increased soil erosion and the destruction of wildlife habitat.

The effect on local waterways is a general degradation of water quality and a phenomenon known as eutrophication. Eutrophic conditions, caused by excessive nutrients in the water, are characterized by low dissolved oxygen levels and high algal growth. The primary detrimental effect on water resources, particularly on large bodies of water such as the Potomac River and the Chesapeake Bay, is algal blooms, which block sunlight from aquatic life and deplete the dissolved oxygen content during decay. Eutrophication also destroys the recreational use of water resources and results in strong odor and undesirable taste.

Because the City lies within the Tidewater area of Virginia, which has a significant impact on the health of the Chesapeake Bay, controlling nonpoint source pollution is an important aspect of the City's environmental protection efforts. The Virginia Division of Soil and Water Conservation has designated the control of nonpoint source pollution as a high priority for all watersheds within the City.

Nonpoint source pollution from urban areas can be controlled by minimizing impervious areas from new development, reducing impervious areas through redevelopment, utilizing open space and preserving indigenous vegetation, restoring denuded vegetative stream buffers, and by employing the use of structural or nonstructural best management practices (BMPs), which operate by trapping stormwater runoff and detaining it until unwanted nutrients, sediment, and other harmful pollutants are allowed to settle out or be filtered through the underlying soil. The City's Chesapeake Bay Preservation regulation requires the achievement of certain performance standards for any development which takes place in designated Chesapeake Bay Preservation Areas.

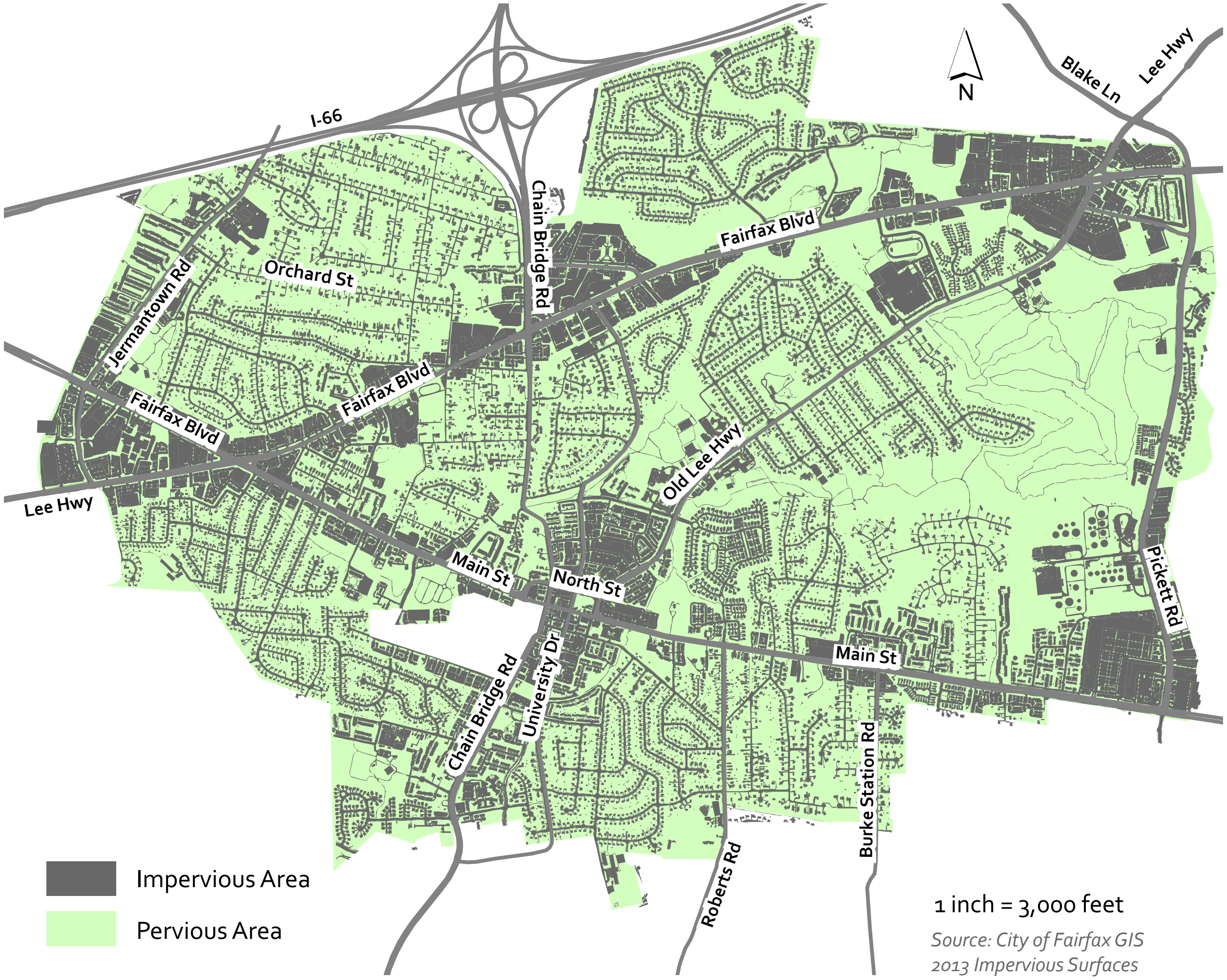
A useful analysis tool in nonpoint source pollution mitigation is to examine where highly impervious areas of the City are in relation to the City's water resources. In this way, various nonpoint source pollution control efforts, from educational programs to redevelopment, can be concentrated on those areas most likely to produce the greatest impact on the quality of City water. Since the City is largely built out, these figures are helpful when considering where to concentrate redevelopment or retrofit to improve water quality. It is also useful in deciding where and what types of public education programs may be beneficial. The City consists of approximately 42.7% impervious land areas and 57.3% pervious land areas (Figure A6).

The City's nonpoint source pollution control program also includes the City's Erosion and Sediment Control Ordinance. This ordinance requires that stormwater management facilities be installed during construction to help control increased stormwater runoff created by development thereby reducing the possibility of downstream flooding and erosion.

4.3. Streambank Erosion and Sedimentation

While streambank and land erosion is a natural process, land development has greatly accelerated this process. As large areas of once forested land have been replaced with impervious land cover, a greater quantity of stormwater is directly piped into local waterways at a much higher velocity. Signs of stormwater erosion include undercut streams and fallen banks, felled bushes and trees which once lined the banks, and exposed sewer and other utility pipes. Suspended sediments choke and muddy local waterways making them uninhabitable to local species of aquatic

FIGURE A6 PERVIOUS AND IMPERVIOUS AREAS



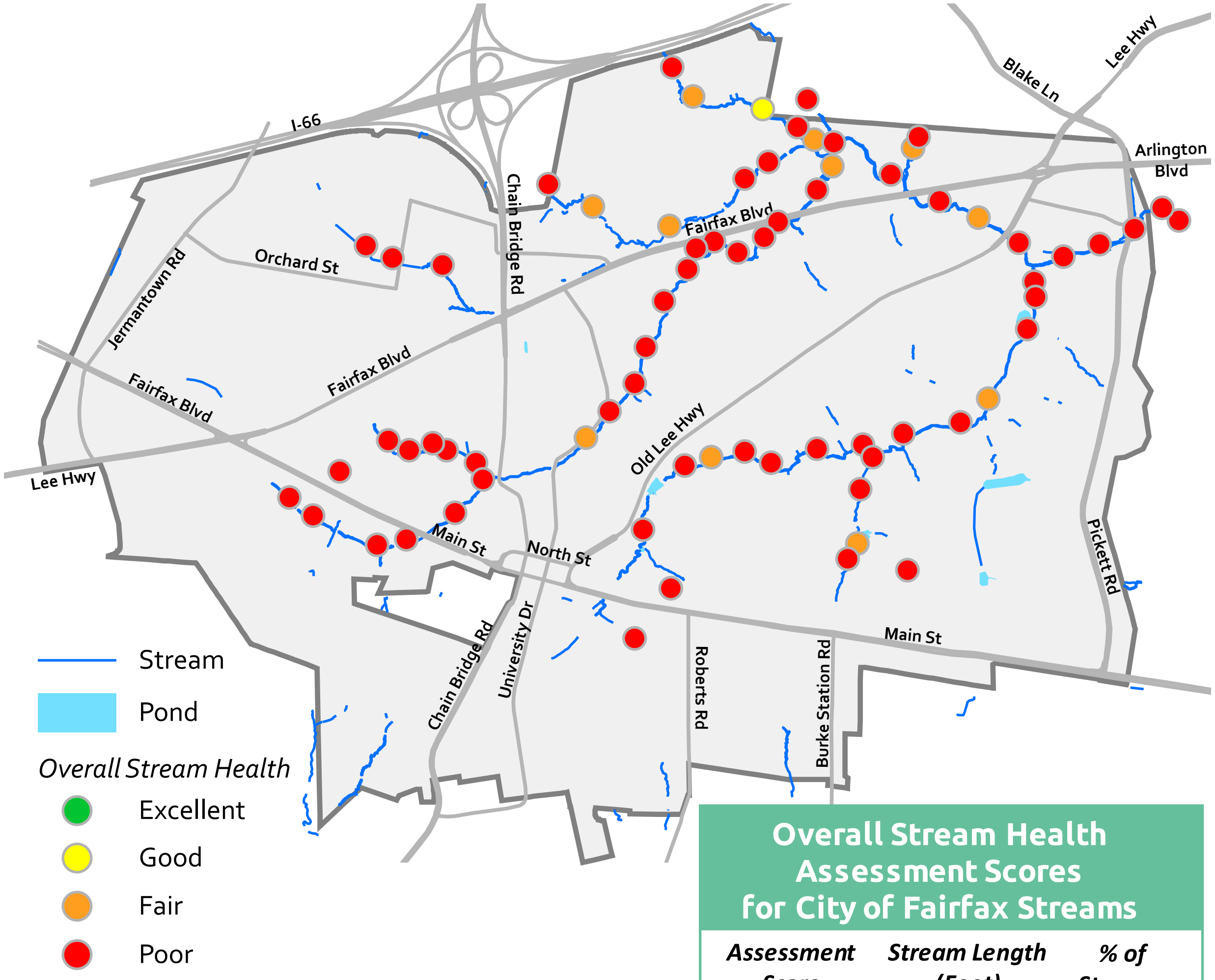
Source: City of Fairfax GIS
2013 Impervious Surfaces

life. In addition, nutrients and other pollutants attach themselves to sediment particles and contribute to eutrophic conditions in the Potomac River and the Chesapeake Bay. Eventually, suspended sediments are deposited in slower moving portions of the stream course, causing buildup, destruction of benthic life forms, and a decreased stream capacity for floodwaters, thus resulting in greater potential for further erosion and property damage.

Completed in 2005, the City's Watershed Management Plan found that overall stream health to be fair to poor in the majority of the City (Figure A7); erosion potential remains at a very high level; there is evidence of sediment deposition which can cause water quality degradation and have negative impacts on aquatic life; and down-cutting streams threaten City utilities and surrounding property.

A bank erosion hazard index (BEHI) assessment was conducted on Accotink Creek (Figure A8) and Daniels Run (Figure A9). The BEHI is a methodology used to assess and predict stream bank erosion potential. Based on the BEHI results, over 90% of studied stream reach length had at least a high potential for stream bank degradation and over half of all stream

FIGURE A7 OVERALL STREAM HEALTH



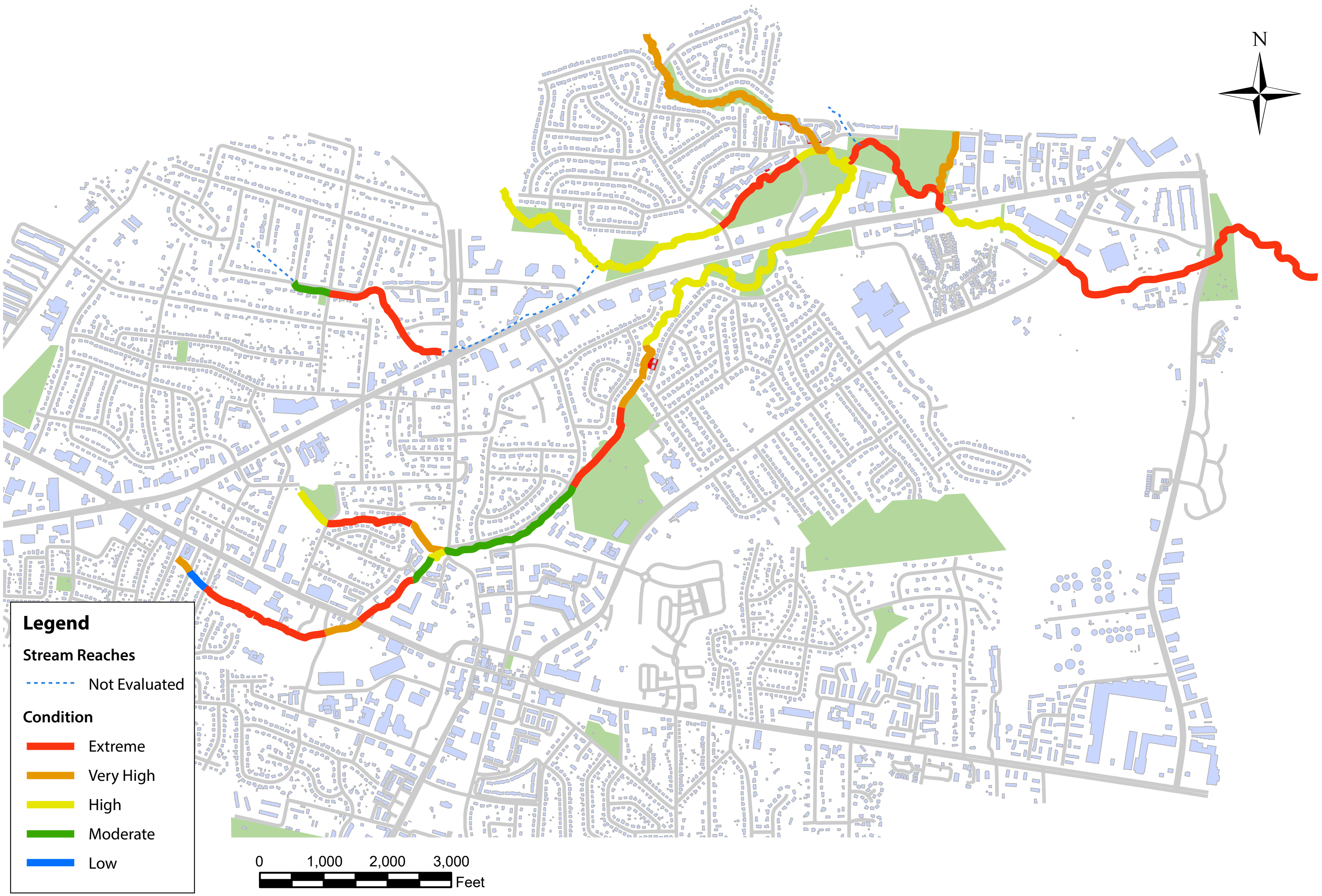
1 inch = 3,200 feet

Source: City of Fairfax GIS, Stream Assessment/Mapping and Chesapeake Bay Preservation Area Mapping Project, 2003; Accotink Creek Stream Stability Assessment and Prioritization Plan Supplemental Report for Daniels Run, 2008

Overall Stream Health Assessment Scores for City of Fairfax Streams

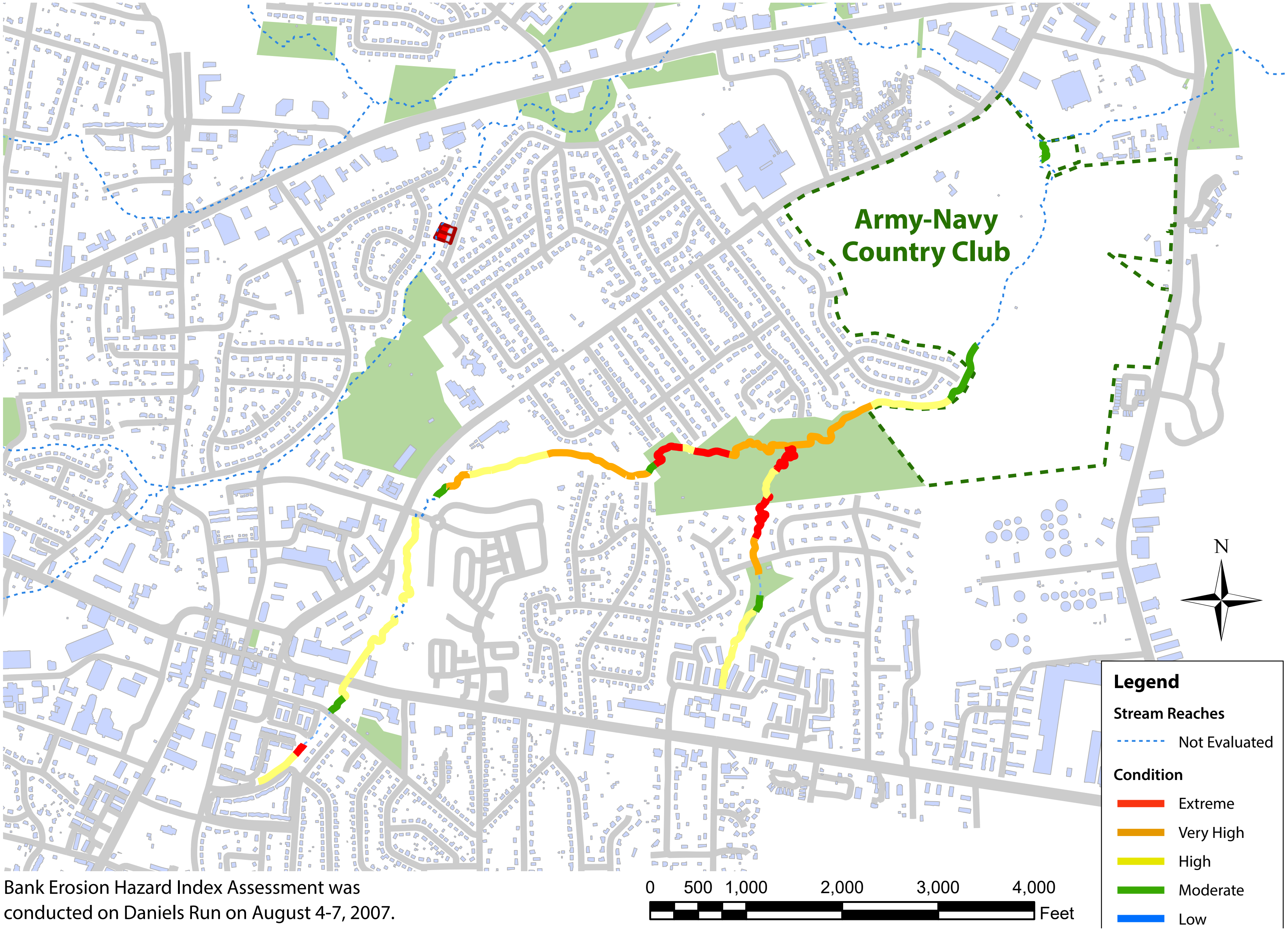
Assessment Score	***Stream Length (Feet)***	***% of Streams***
Excellent	0	0
Good	1,350	3
Fair	10,900	20
Poor	41,360	77

FIGURE A8 BANK EROSION HAZARD INDEX ASSESSMENT RESULTS FOR ACCOTINK CREEK



Bank Erosion Hazard Index Assessment was conducted on Accotink Creek on January 16-19, 2007.

FIGURE A9 BANK EROSION HAZARD INDEX ASSESSMENT RESULTS FOR DANIELS RUN



Bank Erosion Hazard Index Assessment was conducted on Daniels Run on August 4-7, 2007.

reaches were found to be at a very high or extreme risk for stream bank degradation. It is evident from these results that stream bank erosion is a major impact on the stability and overall health of the City's streams

4.4. Malfunctioning Water Quality BMPs

In response to the water quality requirements of the Chesapeake Bay Preservation Act, many development sites within the City will be called upon to establish water quality best management practices (BMPs). These BMPs are designed to detain polluted stormwater runoff until harmful pollutants have had a chance to settle, at which time the stormwater is slowly released. However, BMPs, like most other structural facilities, will deteriorate over time and require regular maintenance. Adequate maintenance will prolong the expected lifespan of a facility, therefore saving considerable money in the long-run. Further, while a properly functioning facility enhances downstream environments by mitigating the environmental impacts of land development, pollutant removal efficiencies will decline over time if regular maintenance is not performed.

Pursuant to the BMP Maintenance and Monitoring Agreement, Erosion and Sediment Control Plan, or Site Plan governing the facilities throughout the City, it is responsibility of the owner(s) to maintain the BMP facility in good working order. The maintenance agreement, Erosion and Sediment Control plan or Site Plan, provides the City of Fairfax with authority to conduct inspections of BMPs and Stormwater Management Facilities.

The City conducts a Citywide assessment to ensure all facilities are in working order on an annual basis. A representative from the City or an authorized consultant visits the property (or HOA property) to conduct an inspection of the stormwater control measures and BMPs in place to ensure proper maintenance is being performed in accordance with the suggested maintenance schedule for each facility.

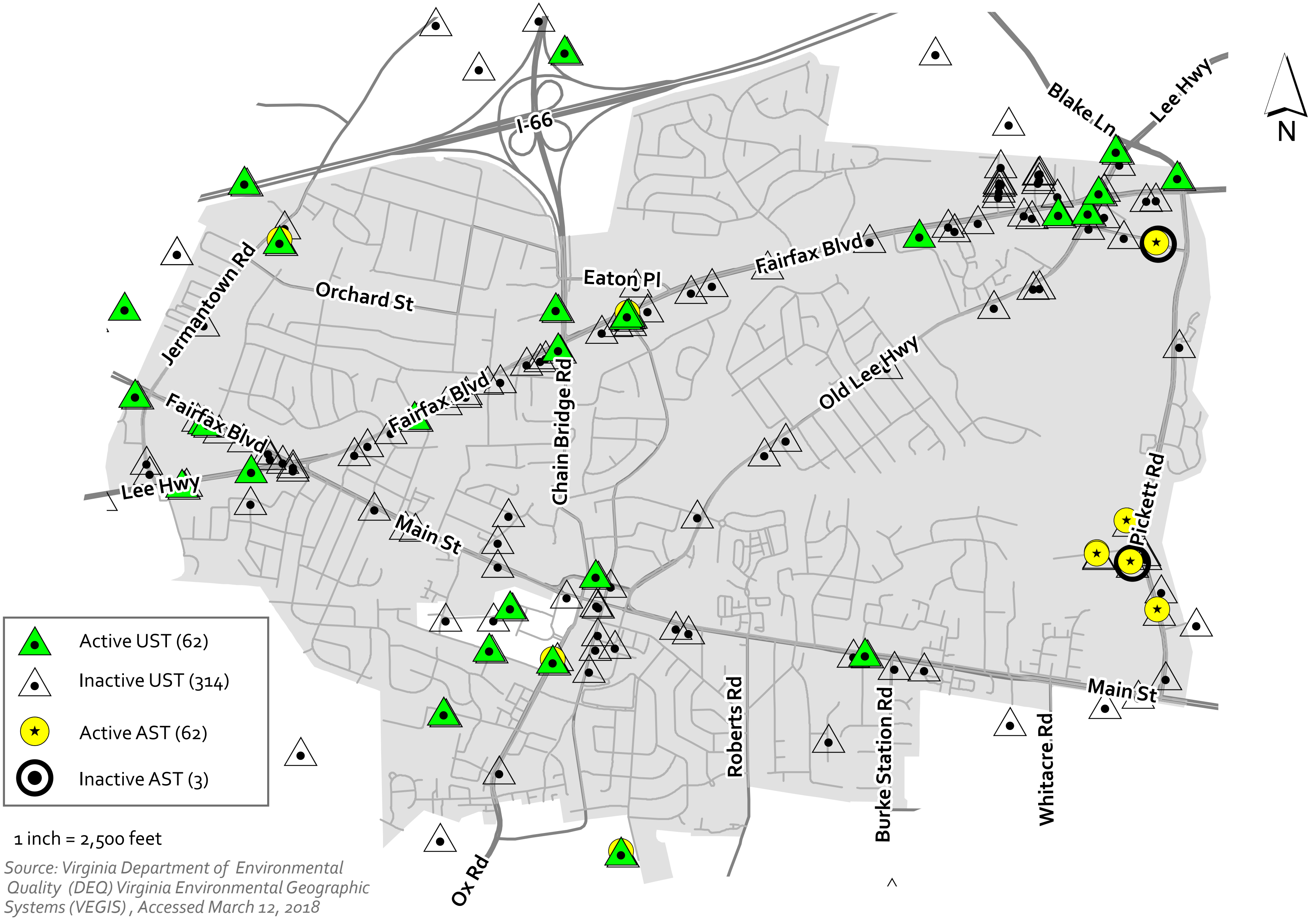
4.5. Underground Storage Tanks

The Virginia Department of Environmental Quality (DEQ), Water Division, is responsible for permitting and tracking underground storage tanks (USTs). Within the City limits, there are approximately 376 USTs of varying capacity at 118 street addresses. Of these USTs, only 62 are still active. The USTs are currently being used to store gasoline, diesel, used oil, heating oil, and other substances. Due to the fact that the City is a major commercial and transportation corridor, the City has a relatively high concentration of USTs for its land area. Underground storage tanks are concentrated along the City's commercial and industrial corridors including lower Pickett Road, Old Town Fairfax, the Kamp Washington area, the intersection of Chain Bridge Road and Fairfax Boulevard, and the Fairfax Circle area (Figure A8).

When properly maintained, underground storage tanks are safe, save space, and are a more aesthetically pleasing alternative than above ground storage tanks. However, leaking tanks are a major source of soil and groundwater contamination. Leaking USTs also have the potential to affect surface waters since many streams are fed by groundwater aquifers. Underground storage tanks often pose a greater threat than other sources of pollution because a leak or spill may not be detected until it has already created extensive damage. Further, there exist many underground storage tanks which were installed before more stringent regulations were applied. The location and condition of these tanks are often unknown.

Another important factor affecting the incidence of leaking tanks is the age of the tanks. Particularly in an area such as Fairfax where soils tend to be acid, older tanks are more likely to be subject to leakage than

FIGURE A10   LOCATION OF UNDERGROUND AND ABOVE GROUND STORAGE TANKS (USTS & ASTS)



1 inch = 2,500 feet

Source: Virginia Department of Environmental Quality (DEQ) Virginia Environmental Geographic Systems (VEGIS), Accessed March 12, 2018

newer tanks designed to counter acid soil. Areas where age may be a factor are scattered throughout the City which should be a consideration when targeting areas for further investigation or for public/business education. Another factor to consider is the proximity of USTs to stream sites. Streams which are located near USTs of above average age may be at particular risk to contamination. Most of the commercial areas of the City directly impact on at least one perennial stream.

The City has and will continue to work with the owners of leaking underground storage tanks and the DEQ to ensure that any existing or future contamination is properly addressed and corrected.

4.6. Above Ground Storage Tanks

The Virginia State Water Control Board in 1998 adopted the regulation, 9 VAC 25-91-10 et seq., which consolidated three repealed regulations, that is, (i) Oil Discharge Contingency Plans and Administrative Fees, 9 VAC 25-90-10 et seq. (ii) Facility and Aboveground Storage Tank Registration Requirements, 9 VAC 25-130-10 et seq., and (iii) Aboveground Storage Tanks Pollution Prevention Requirements, 9 VAC 25-140-10 et seq.

The AST regulations were revised primarily to incorporate new performance standards for certain aboveground storage tanks (1 million gallon or more AST facilities) located in the City as mandated by the 2011 General Assembly (CH 884 of the 2011 Acts of Assembly). By July 1, 2021, the impacted facilities must satisfy specific requirements for strength testing, and release prevention barriers.

Individual tanks with a capacity of less than 660 gallons or multiple tanks with an aggregate capacity of less than 1,320 gallons are not currently regulated by the State or the federal government. Within the City limits, there are 65 regulated ASTs of varying capacity at 9 street addresses (Figure A 8). Of these ASTs, 62 are currently active. Most home fuel oil tanks are only 200 to 660 gallons. It is therefore the responsibility of the individual owner to ensure that leaks and spills do not occur. While individual household tanks do not pose a significant risk to the environment, the aggregate of tanks may pose a serious threat if small problems are not taken seriously. Releases from individual tanks may occur as a result of overfill or the tipping over of the tank. To reduce the risk of accidental spill, the homeowner or fuel company should inspect a tank before filling to ensure that it is sturdy and does not exhibit signs of corrosion. An owner should also have the capacity of the tank clearly marked on the tank and specifically indicate the filling cap location.

4.7. Illegal Dumping of Petroleum and Litter

The reported presence of petroleum products in City streams is a major water quality concern. Petroleum can severely damage the ecosystem by destroying plant life and killing aquatic lifeforms. While some petroleum products in the water may be attributable to leaking automobiles on nearby parking areas or leaking underground storage tanks, the most common source of petroleum is illegal dumping by do-it-yourself (DIY) automotive maintenance activities. A DIY is an individual who removes used oil from a motor vehicle, utility engine, or other piece of equipment that he or she operates as opposed to someone who takes the equipment to a lube shop or auto mechanic.

There is a risk that DIYers may pour the oil down a storm drain or throw it out in the trash, resulting in a release of oil into the environment. For areas such as the City of Fairfax, where streams are primarily fed by residential storm drains, only a few careless instances can result in a significant degradation in water quality.

The City provides and advertises for the collection of used oil and oil filters at its Property Yard Recycling Center, implements a storm drain marking program, and works with local civic organizations and volunteers to install storm drain markers, which state "Only rain down the storm drain." These markers are used to educate residents that the storm drain eventually empties to the Chesapeake Bay watershed and to prevent the amount of pollution that reaches local creeks and rivers. The City may wish to consider the implementation of a public education program which not only informs residents what to do with used oil, but also tells them what to do if he/she witnesses a neighbor pouring oil down a storm drain.

4.8. Pet and Animal Wastes

Fecal coliform is a pollutant of concern in the City of Fairfax. While there are several potential sources of fecal coliforms, the most likely source is from pet waste, and particularly dog waste, which is not disposed of properly. City paths and walkways along streams (or near storm drains) provide for public access and scenic areas to walk, run, and bicycle. However, these public areas are also used by some pet owners who leave pet wastes which are then easily transported by the next storm directly into the water course.

Fecal coliform can severely impact on the viability of the City's water resources. Control mechanisms include enforcing local animal waste control provisions, BMPs, and natural stream buffers. While BMPs and natural buffers are established as part of the City's overall Chesapeake Bay Program, the most effective manner of control is through public education and better enforcement of the City's animal waste control regulation. Better enforcement and education can reduce the levels of fecal coliforms and nutrients in stormwater runoff.

The City will continue to promote and maintain the dog waste disposal stations along the park trail. The City will also add brochure holders to each waste station that contain public education / outreach materials related to the water quality impacts of dog waste.

4.9. Air Quality as it Relates to Water Quality

Recent evidence suggests that atmospheric deposition, as a result of poor air quality, has a greater impact on water quality than previously assumed. According to the EPA, air sources contribute about one-third of the total nitrogen loads to the Chesapeake Bay by depositing onto the tidal surface waters of the Bay and Bay watershed. Direct deposition to the Bay's tidal surface waters is estimated to be six to eight percent of the total (air and non-air) nitrogen load delivered to the Bay. Nitrogen deposited onto the land surface of the Bay's watershed and subsequently transported to the Bay is approximately 25 to 28 percent of the total nitrogen load delivered to the Bay.

The Clean Air Act requires significant air quality planning and implementation at local, State, and regional levels. The Clean Air Act regulations and programs are expected to achieve significant decreases in air deposition of nitrogen by 2020.

Nitrogen is the primary pollutant of concern for brackish waterbodies such as the Chesapeake Bay. While very little atmospheric deposition will fall directly into the City's streams, pollutants deposited on impervious surfaces, which make up approximately 42.7% of the City's land area, will be washed into local waterways via curbs, gutters, and storm drains during storm events. This has the potential to contribute significantly to water quality problems within the City and beyond.

The City has already contributed to improving air quality through the establishment of pedestrian and bicycle trails in accordance with the Comprehensive Plan and by keeping CUE bus fares low to encourage ridership. The City also continues to work with George Mason University and Fairfax County to encourage alternative forms of transportation.

Many approaches to improving air quality from mobile source emissions will be implemented at the State and regional levels through transportation control measures such as increased public transportation and high occupancy vehicle lanes. Technological advances such as alternative fuel vehicles and tighter tailpipe standards are other measures whose widespread application is expected. The City continues to contribute to these regional efforts through participation on the Metropolitan Washington Council of Government's Air Quality Committee and The Climate, Energy and Environment Policy Committee (CEEPC).

The City seeks to continue its commitment to clean air by expanding its efforts and adopting policies to increase public awareness of the environmental problems associated with air pollution.

Section 5. Environmentally Sensitive Features and Constraints on Development

Land use planning that takes into account sensitive natural features and water resources has the dual benefit of enhancing quality of life through protecting the environment from degradation as well as protecting businesses and homeowners from potentially harmful environmental hazards. Although land use patterns within much of the City are well established, a few vacant parcels still have development potential. These properties deserve special consideration and should be developed in a manner which integrates the man-made and natural environments.

Most development within the City, however, will take place as a result of redevelopment. Development prior to the late 1980s took place without the benefit of many environmental protection constraints; therefore some existing development is not sensitive to the potential for water quality degradation that development brings. With recent concern raised over environmental degradation, and particularly the effects of increased stormwater runoff on the City's streams, the City has begun to reevaluate past practices. Good planning now prescribes that when possible, development should avoid sensitive environmental features. The following section provides an overview of the sensitive natural resources within the City of Fairfax and an analysis of how these resources are currently being managed and additional management options.

5.1. Floodplains

The relatively flat or low land area adjoining a river, stream, or water course which is subject to partial or complete inundation is known as a floodplain. Encroachment on floodplains, such as artificial fill, reduces a stream's flood-carrying capacity, increases flood heights, and increases flood hazards in areas beyond the encroachment itself. In addition, floodplain soils are often unsuitable for development due to high water table, shrink-swell potential, and highly permeable and hydric soil conditions. Floodplains also provide important habitat for a range of vegetative and animal species.

In 1974, the Federal Emergency Management Agency (FEMA) conducted a study of flooding potential and hazards in the City as part of its national flood insurance program. The plan was also meant to be used as a tool to assist local governments in effective floodplain management. As a result of the study, the City adopted a Floodplain regulation which establishes an overlay as part of the Zoning Ordinance in 1993. As discussed in Section 2.4, the current Floodplain regulation was adopted by the City in March, 2015. The overlay district severely limits the type and location of any development in the floodplain district. The floodplain district includes areas subject to inundation by waters of the one-hundred year flood. The one-hundred year floodplain within the City is associated with areas along the north and central forks of Accotink Creek, Daniels Run, and some major tributaries. A denuded or improperly developed floodplain can result in erosion and a significant reduction in water quality and reduce the effectiveness of the RPA. Figure A1 delineates the approximate extent of the one-hundred year floodplain (1 percent annual chance flood event) in the City.

5.2. Geologic and Sensitive Soil Conditions

It is difficult to overemphasize the importance of geology and soils characteristics when planning for new development and redevelopment. Development should be guided away from sensitive or unstable areas in order to protect the safety of residents, the structural soundness of buildings, and the water quality of Accotink Creek, Pohick Creek, Popes Head Creek, Difficult Run, and eventually the Potomac River and the Chesapeake Bay.

Common constraints placed by geologic conditions or sensitive soils include but are not limited to hydric conditions, shrink-swell potential, wetness, flooding potential, depth to bedrock, and high water table. Proper management of soils will help maintain clean water and will provide areas to recharge groundwater. However, poor management of soils will choke local waterways with silt and sediments and result in the erosion of valuable topsoil as well as spoil the landscape.

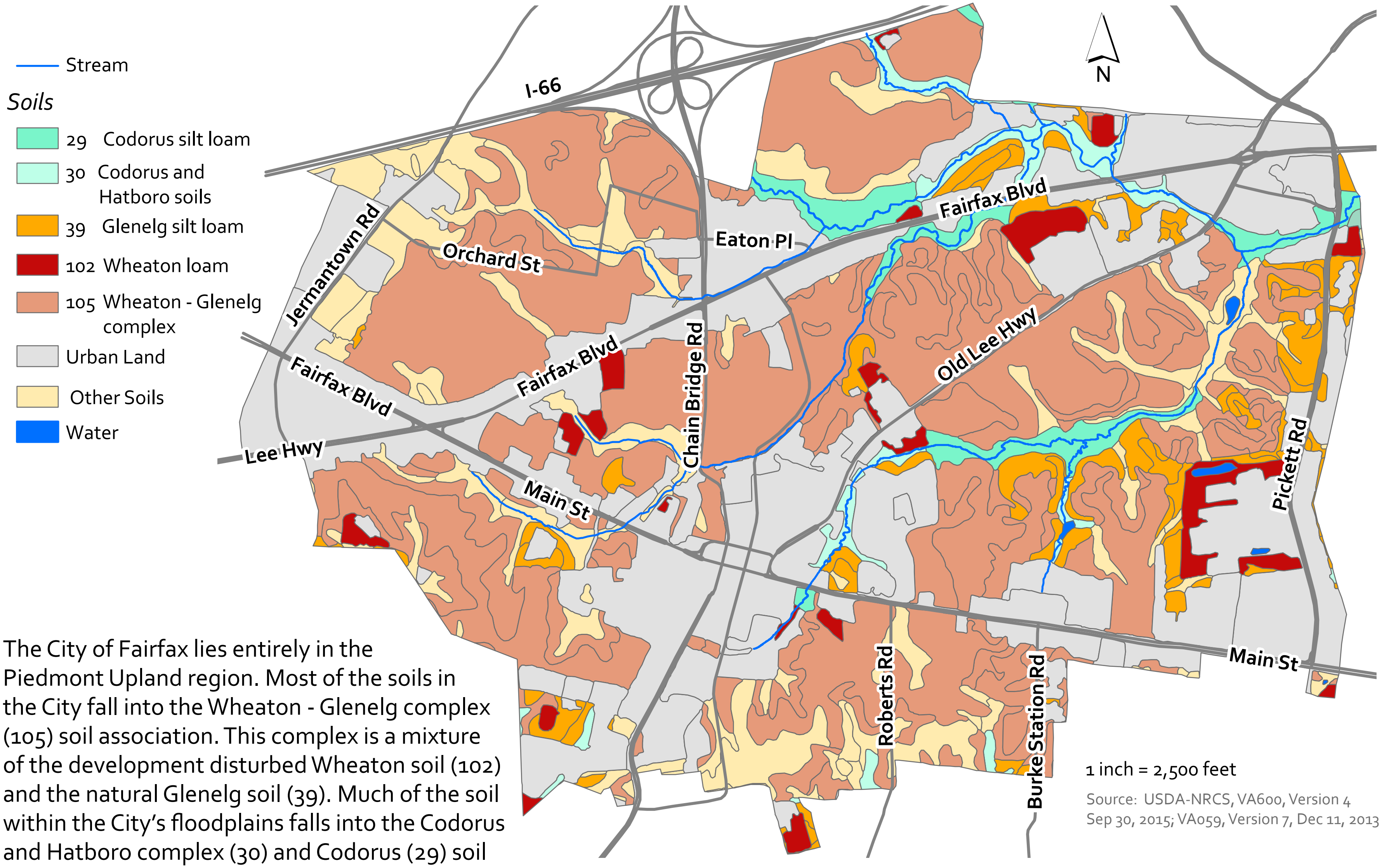
According to the USDA Natural Resources Conservation Service soil survey data (2015), most of the City falls into the Wheaton-Glenelg complex soil association. This complex is a mixture of the development disturbed Wheaton soil and the natural Glenelg soil which is well suited for development. Much of the soil within the City's floodplains falls into the Codorus and Hatboro complex and Codorus silt loam soil associations. These soils are poorly drained, subject to flooding, and not suitable for urban development. Figure A 9 presents the distribution of soil associations in the City.

The underlying geology of the City, along with climate, determines soils characteristics, which offers both constraints and opportunities for development. In order to promote soil conservation and protect water quality, as well as safeguard residents and businesses from potential hazards, including hazards such as radon, it is imperative that future development within the City takes geologic constraints into consideration. Most areas of the City are generally suitable for development purposes if a site is properly engineered. A discussion of the engineering capacity of underlying geology is inappropriate for this Plan due to its technical and detailed nature. Developers must refer to the City's Department of Public Works for more information and recommended resources.

5.3. Vegetative Buffers and Areas with Mature Tree Canopy Cover

To the maximum extent possible, the City wishes to maintain and enhance its urban tree cover. During development, provisions must be made to protect existing trees and replace trees when they are damaged or removed.

FIGURE A11 SOILS



Source: USDA-NRCS, VA600, Version 4 Sep 30, 2015; VA059, Version 7, Dec 11, 2013

The City of Fairfax lies entirely in the Piedmont Upland region. Most of the soils in the City fall into the Wheaton - Glenelg complex (105) soil association. This complex is a mixture of the development disturbed Wheaton soil (102) and the natural Glenelg soil (39). Much of the soil within the City's floodplains falls into the Codorus and Hatboro complex (30) and Codorus (29) soil associations.

The City's Chesapeake Bay Preservation regulation also requires that a 100-foot buffer area along perennial streams be maintained or established during development or redevelopment in order to protect streams from the adverse effects of increased impervious surfaces and resultant runoff.

Since the City is almost entirely developed, few significant vegetation stands remain. Those that still exist deserve special protection so that their aesthetic and ecological benefits to the City are not lost. The largest City-owned vegetation stand is located at Daniels Run Park. The park covers 48 acres, most of which is in a natural state. It contains deciduous vegetation with an oak canopy and a beech understory. Other tree types found there are hickory, sycamore, tulip poplar, and holly. The 20-acre Van Dyck Park is partially wooded as is the 10-acre Ranger Road Park. The 20-acre Providence Park is largely wooded, and contains many of these same tree types.

The City's concern for trees is reflected in its Arbor Day tree planting activities and its designation every year starting in 1987 as a Tree City by the National Arbor Day Foundation.

5.4. Non-Tidal Wetlands

Wetlands provide a variety of environmental and socio-economical benefits and also serve as important fish and wildlife habitat. Wetlands enhance water quality by filtering water as it passes through, thereby reducing sediments, nutrients, and chemical and organic pollutants flowing to open water. Wetlands also assist with flood control and serve as groundwater discharge and recharge areas. The U.S. Fish and Wildlife Service estimates that up to 43% of the threatened and endangered species rely directly or indirectly on wetlands for their survival.

The City has a total of 11 acres of wetlands. Figure A2 presents the City's water resources, including wetland areas. There are 8.6 acres of woody wetlands, which consist of areas where forest or shrubland vegetation accounts for 25-100 percent of the cover and the soil or substrate is periodically saturated with or covered with water. The remaining 2.4 acres of wetlands are classified as emergent herbaceous wetlands, which consist of areas where perennial herbaceous vegetation accounts for 75-100 percent of the cover and the soil or substrate is periodically saturated with or covered with water.

Pertinent law protecting non-tidal wetlands includes Section 404 of the federal Clean Water Act, which addresses dredge and fill operations and is administered through the Army Corps of Engineers, and the Virginia Water Protection Permit Act. Other programs, such as those under the Virginia Endangered Species Act and various floodplain management regulations, also serve to protect non-tidal wetlands.

Under the City's Chesapeake Bay Preservation regulation, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow are designated as RPAs. All other non-tidal wetlands are protected as part of the RMA. Most wetlands within the City are located contiguous to a tributary stream and within the confines of the floodplain.

5.5. Topography

Poorly designed and constructed developments on steep slopes frequently result in substantial costs to the public, either for repairs or for protective measures to prevent further damage. Increased runoff and sedimentation from denuded hillsides require increased public expenditures for flood control and stormwater management. Further, improperly planned development of hillsides affects the equilibrium of vegetation, geology, slope, and soil.

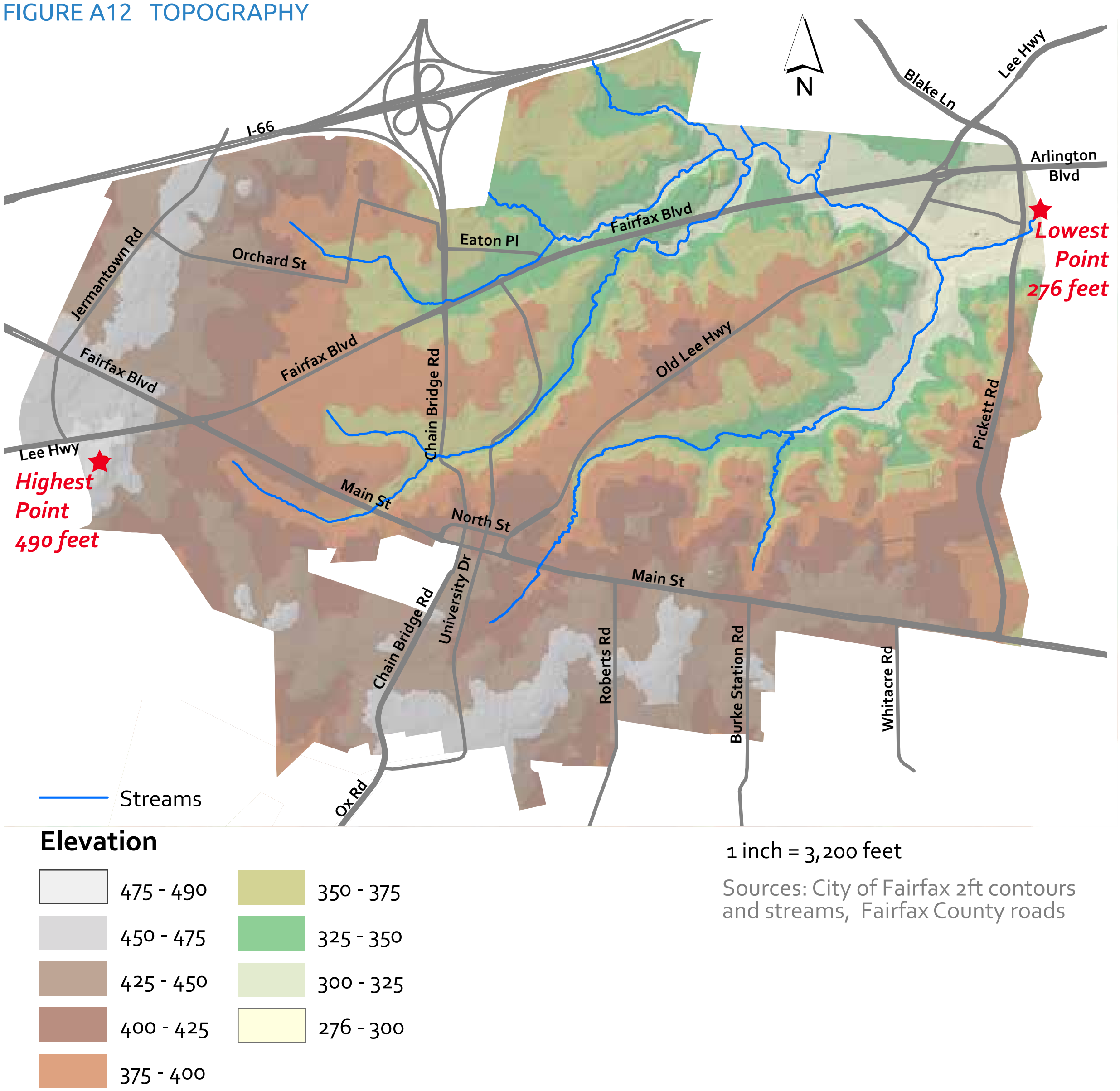
While the City is largely built out, any redevelopment within the City must take topographic constraints into consideration for the following reasons:

- Disturbance of hillsides can result in soil instability and increased erosion.
- Disturbances of hillside can increase runoff.
- Disturbance of hillsides can destroy a community's aesthetic resources.

Steep slopes in excess of 15 percent and slopes located along streams are susceptible to erosion; therefore, particular care must be taken when planning to develop a site with this characteristic. In some instances, special engineering may be required to stabilize slopes. Figure A10 presents a topographic map of the City.

Only a very small portion of the City's land area has slopes of over 15%. These areas are primarily associated with reaches of Accotink Creek and Daniels Run and lie within the City-owned Van Dyck and Daniels Run Parks and in the Army Navy Country Club Property.

FIGURE A12 TOPOGRAPHY



1 inch = 3,200 feet

Sources: City of Fairfax 2ft contours and streams, Fairfax County roads

5.6. Groundwater Protection

The importance of groundwater protection was recognized by the Commonwealth of Virginia when the General Assembly enacted the Groundwater Act of 1973 and the Groundwater Management Act of 1992. The Groundwater Management Act reads "... unrestricted usage of groundwater is contributing and will contribute to pollution and shortage of groundwater, thereby jeopardizing the public welfare, safety, and health."

Although the City now receives a treated water supply from the Potomac River and Occoquan Reservoir, protection of the City's groundwater must be a consideration during development and redevelopment. When development occurs, it affects the natural balance of the groundwater flow. Increased imperviousness as a result of development reduces the potential for groundwater recharge and should be taken into consideration when designing a site plan. Generally, high topographic areas are groundwater recharge areas and impervious surface areas in defined groundwater recharge areas should be minimized. By providing recharge areas for stormwater, groundwater equilibrium can be maintained. If recharge areas are not taken into consideration, wells may go dry, base flow to streams is reduced, and wetlands may shrink.

Once contaminated, the usefulness of an aquifer as a resource may be limited or destroyed depending on the toxicity of the contamination and the effort, time, and money involved in clean-up. In most cases it is impractical and sometimes impossible to restore a contaminated aquifer to its original level of purity. Common sources of groundwater contamination include but are not limited to leaking underground storage tanks, antiquated sewer lines, septic systems situated on improper soils, and improperly capped wells. In addition, improperly maintained water quality best management practices may present a groundwater threat. In the City, the most common source of groundwater contamination on record with the DEQ, Water Division, is from petroleum leaks and spills. More stringent underground tank standards enacted in recent years should reduce the level of contamination from these sources.

Recommendations

The City recognizes the importance of the Chesapeake Bay as an economic and social resource and is committed to its protection through the implementation of the Chesapeake Bay Preservation Area Designation and Management Regulations. The following provides the background information and analysis necessary for the City to arrive at informed and proactive policies and goals which address the issue of water quality protection in City streams and the Chesapeake Bay.

These recommendations approach water quality protection from the viewpoint that environmental regulations and healthy economic development are not mutually exclusive, but rather that both may be accomplished simultaneously, and that the result is a better quality of life for all City residents.

Recommendation 1: Protect the quality of the City's surface water resources, the Potomac Estuary, and the Chesapeake Bay from the avoidable impacts of land development.

- **Enforce the provisions of the City's Chesapeake Bay Preservation regulation.**

  The Chesapeake Bay Preservation regulation is the City's primary water quality protection tool. The regulation is designed to protect the overall quality of the City's water resources and the health of the Chesapeake Bay as it relates to impacts from existing and new development.

- **Enforce the City's Erosion and Sediment Control Ordinance.**

  The Erosion and Sediment Control Ordinance serves to protect City streams during site development by minimizing erosion and sedimentation.

- **Maintain strong City oversight of private BMP maintenance programs.**

  Review the effectiveness of the City's current BMP maintenance program and determine whether stronger inspection and maintenance measures are warranted. Make recommendations for how to improve the City's maintenance program, if necessary.

- **Continue implementation of stream restoration and improvement efforts.**

  Continue efforts to stabilize the physical conditions and restore the stream habitat to enable the natural restoration of the streams' biological integrity. The City should continue to prioritize the worst stream reaches, and coordinate improvements with overall watershed strategy.

- **Ensure that development avoids where possible, or minimizes, disturbance of sensitive environmental features, including problem soils.**

  Improper development of sensitive environmental features, and particularly soils, may result not only in structural damage to buildings, but also to a loss of soil to erosion, a decrease in local water quality, and the loss of important habitat and aesthetic resources.

- **Improve the City's ability to identify sensitive environmental features.**

  Readily available information concerning environmentally sensitive features will help the City to better plan for and avoid negative environmental impacts resulting from land disturbing activities. The development and redevelopment processes often result in the generation of substantial information on environmental features. During the development process, the City should take the opportunity to collect information, generated from site plans, reports, etc. on sensitive environmental areas, and particularly on soils.

  The City should arrange a protocol to compile this information to create an overlay map identifying environmentally sensitive features within the City including steep slopes, soils, wetlands, floodplains, undisturbed natural areas, and features that are unique or integral to the City's character.

Recommendation 2: Ensure the adequacy of the City's future stormwater management system while emphasizing the need to protect tributary streams and water quality.

- **Continue to conduct and implement watershed management plans to allow for a holistic approach to local water resource protection.**

  The City should continue to conduct watershed studies and planning to evaluate conditions and identify actions that would improve watershed health. The City should also continue to assess the effectiveness of capital projects and examine long-term trends in the City's water quality.

- **Minimize exposure of the City's natural floodplains to new development.**

  Natural floodplains are essential to the conveyance of stormwater in that they provide extra holding capacity during storms. Floodplains left in their natural condition form a filter for polluted runoff from surrounding land uses. Protection of the City's floodplain is achieved through enforcement of the City's Floodplain regulation.

- **Encourage the use of shared or regional stormwater control measures during development and redevelopment.**

  The implementation of a large number of small, site-specific stormwater quality/quantity management facilities increases maintenance costs and consumes valuable land. The City should seek to facilitate cooperative agreements among developers to encourage the establishment of shared or regional stormwater management facilities.

- **Continue to allocate dedicated and sustainable funding to guarantee the stormwater program's continued viability.**

  Provide the funds necessary to meet MS4 permit and TMDL requirements and to address other stormwater infrastructure needs, such as ensuring adequate capacity for flood control, replacing aging infrastructure, and performing preventive maintenance on all City stormwater management facilities.

  Reassess the Stormwater Fund on a regular basis to ensure that revenue generated adequately covers program needs.

Recommendation 3: Reduce existing sources and prevent potential sources of point and nonpoint source pollution resulting from residential, commercial, and industrial activities within the City.

- **Continue implementation of the City's Water Quality Monitoring Program.**

  At the end of each MS4 permit reporting period, the City prepares annual Water Quality Monitoring Reports, which are included with the City's MS4 Annual Report. Once appropriate amounts of sampling data have been collected under the Water Quality Monitoring Program, the City will analyze the results to determine the next steps (e.g. potentially pinpoint areas that could to be targeted for pollution prevention or source control programs).

- **Encourage the use of green stormwater infrastructure and low impact design on private and public property.**

  Enhance zoning regulations and support initiatives that encourage the use of green stormwater infrastructure and low impact design on private and public property. Consider providing incentives for developers to incorporate green infrastructure and low impact design in their plans.

- **Continue efforts to improve the region's air quality.**

  The City should continue to pursue measures to improve air quality through support of pedestrian access and mass transportation. Since air quality is a regional concern, continued participation on the Metropolitan Washington Air Quality Committee is necessary to achieve many air quality goals.

- **Improve the City's ability to respond to the potential hazards of leaking underground and above ground storage tanks and pipelines.**

  The City should continue to work closely with the DEQ, Water Division, to monitor and enforce clean-up of underground storage tanks.

  The City should support programs to educate residents on how to safely manage above ground storage tanks and should promote policies aimed at providing opportunities to reduce reliance on above ground storage tanks through conversion to alternative forms of fuel.

- **Expand public education and outreach programs.**

  Continue to develop and implement education and outreach programs to improve awareness and encourage the community to protect and improve the quality of area waters. The City will include appropriate public involvement and participation to meet MS4 requirements and satisfy other watershed objectives.

- **Continue to improve upon the City's strong recycling program.**

  A well-publicized recycling program will decrease illegal disposal of materials, and particularly of oil, into the City's storm sewer system.

Recommendation 4: Protect the quality of the City's potable water supply and safeguard the City's groundwater resources against contamination that may adversely affect the ecosystem.

- **Work with the Department of Environmental Quality's Water Division to protect groundwater from contamination from underground storage tanks.**

  The primary threat to the City's groundwater is contamination from underground storage tanks. While the City has no legal authority to regulate underground storage tanks, it should work closely with the DEQ's Water Division to identify areas with high contamination potential and to quickly remediate areas where contamination has already occurred.

B Transportation Practices and Policy

Contents

The Multimodal Transportation Chapter of the Comprehensive Plan references several innovative practices that can help the City achieve its goals in improving transportation infrastructure and services. Many of these practices require further study before the proper implementation strategy can be determined. This includes analyses of new advancements in technology as they occur, as well as policy priorities for the City.

Specific actions in the Comprehensive Plan refer to the Transportation Practices and Policy Appendix for more information. This appendix provides detailed information which should be used as an initial step in implementing the recommendations of the Comprehensive Plan that reference these innovative practices.

Section 1. Best Practices/Future Trends

BIKESHARE

The central jurisdictions of the region (Washington, D.C. and Arlington County) launched Capital Bikeshare (CaBi) in 2010 with 400 bikes and 50 stations. Since that time the system has expanded to 2,500 bikes at over 400 stations across a number of additional jurisdictions in the region, including Fairfax County. City stakeholders and partners expressed an interest in bringing bikeshare to the City, either expanding CaBi or establishing an independent system serving local travel needs.

CARSHARING

Carsharing has been operational in the region for over a decade. Zipcar is the largest operator in the region at the present time, offering round-trip as well as point-to-point or one-way rental options. Round-trip carsharing requires that users return the vehicle to the same designated spot when finished with their rental period.

One-way carshare allows a user to take the car from one point within a service area and leave it at a different legal parking space within the area. Car2go operates within the District of Columbia and Arlington County offering one-way service. The fee for round-trip carshare is typically on an hourly or daily basis while the cost for a one-way carshare trip is typically calculated on a minute and distance basis.

Peer-to-peer carsharing closely mimics the round-trip carshare service provided by carshare companies but is instead provided by individual auto owners listing their personal car available for use to other "members" via an electronic platform.

Photo Credit (all photos): Nelson\Nygaard

RIDESOURCING

Taxis are a traditional form of ridesourcing where a passenger calls into a central dispatch or hails a clearly branded vehicle to provide a one-way ride. Smartphones and app-based services have enabled the rise of Transportation Network Companies (TNCs) such as Uber and Lyft. TNCs use an online mobile platform to connect passengers to drivers, who use their personal vehicles. With less oversight and regulation, the cost of a TNC ride at present is generally lower than that of a taxi trip.

Image Credit: Lyft

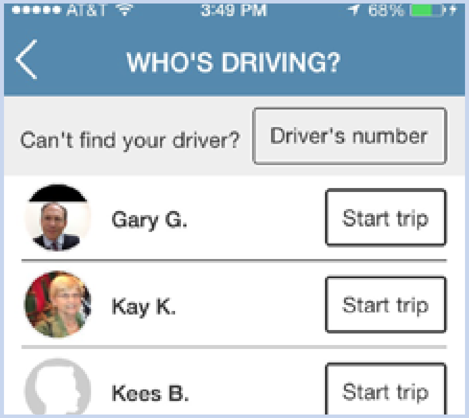
AGGREGATED RIDE SOURCING

The platforms used for ridesourcing have become progressively more sophisticated. Several TNCs now offer riders the option of sharing a ride with others traveling along their general line of travel to further lower trip costs, concurrently increasing travel efficiency with higher vehicle occupancy within the same roadway space. Uber offers "Uber Pool" while Lyft supports "Lyft Line." These aggregated ridesourcing options pool riders, thus lowering travel costs.

Photo Credit: Nelson\Nygaard

PRE-ARRANGED OR DYNAMIC CARPOOLING

Multiple web or smartphone based applications facilitate carpooling both on a regular basis (pre-arranged) or sporadically. Apps like Zimride and RideAmigos match drivers with passengers along a pre-determined route and planned time of day. If desired, some applications permit drivers and riders to be matched across complementary characteristics such as employment or student status, gender, age, and even music preferences. Dynamic carpooling is the electronic equivalent of the traditional Washington region practice of "slugging" where drivers can spontaneously be matched with a rider in real time along their intended route. Under both models, drivers and passengers share costs and take advantage of high occupancy lanes by capitalizing on empty seats in their vehicles.



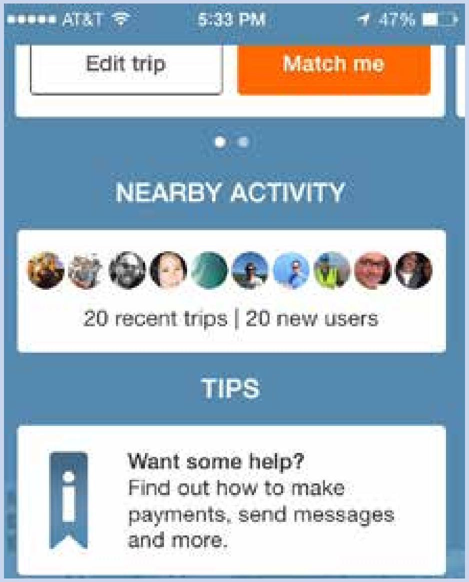
Can't find your driver?

Gary G.

Kay K.

Kees B.

Image Credit: ZimRide



20 recent trips | 20 new users

Want some help?
Find out how to make payments, send messages and more.

Image Credit: ZimRide

MICROTRANSIT

Microtransit follows the same principle as aggregated ride sourcing, but generally with more added efficiency. It uses online services to dynamically generate on-demand routes along an efficient travel path. Rather than picking each passenger up at their door of origin, passengers may need to walk a short distance to a collector road and arrive at the designated location shortly before the vehicle arrives. By reducing the amount of circling and the dwell time waiting for passengers, microtransit reduces travel time and delay, increases vehicle efficiency, and reduces individual travel costs.

Image Credit: Via

Image Credit: Via

CONNECTED + AUTONOMOUS VEHICLES

Vehicular technology continues to progress at a rapid rate, and the time is soon coming when human drivers may no longer be needed to operate passenger vehicles. Connected vehicles have the ability to communicate with one another and with the surrounding infrastructure, provided the infrastructure has "smart" capabilities. Autonomous Vehicles can operate independently by observing cues in the built environment. Future vehicles will likely utilize the capabilities of both connected and autonomous technologies. Such vehicles may have the ability to dramatically increase the efficiency and capacity of existing roadway facilities and decrease the need to operate and store (e.g. park) private vehicles. Thus, autonomous vehicles, with the right policy guidance, may reduce vehicle ownership, reduce the need for long-term parking, and increase accessibility and mobility across the economic spectrum.

Image Credit: Bosch

Photo Credit: EasyMile

Section 2. Smart Infrastructure + Real-Time Information

Improved technology in both Intelligent Transportation Systems (ITS) and better information for users provides great promise for more efficiency in mobility systems and greater predictability and control for users. The following system elements have been implemented elsewhere in the greater Washington D.C. area. Some elements may be appropriate for managing traffic and improving trip making in the City.

SMART SIGNALS

These signals are connected to a central control center and may be adjusted either according to a programmed algorithm or by central control. Smart signals can adjust to changing demands in the roadway network and may be used to facilitate the advancement of transit vehicles (transit signal priority or TSP), passively detect pedestrians and bicyclists, and/or meter traffic volumes to even out the flow of traffic and mitigate congestion, improving the operation and efficiency of multiple modes.

DYNAMIC SIGNAGE

Dynamic signage includes variable message boards and variable speed signs such as those found along I-66, and also includes urban signage indicating the location and availability of parking spaces. These signs provide real-time information to motorists without requiring the use of a smartphone or app. Dynamic signage at transit stops can indicate the next bus anticipated to arrive and the time of arrival. Dynamic signage can help to better distribute traffic loads, minimize unnecessary circling of vehicles searching for parking, and increase user confidence with regard to transit. Dynamic signage can reduce traffic volumes by 10% to 30%, particularly in central business areas.

DEMAND-RESPONSIVE PRICING

Applying basic economic principles to encourage more efficient use of the transportation system, demand-responsive pricing uses real time and/or historical information on parking or travel demand to optimize supply and demand. When demand is high and available supply (or capacity) is low, mobility services are priced higher. During periods of low demand, the cost of travel or parking is correspondingly low. Such strategies reduce congestion, increase efficiency in the system, and ensure the availability of reliable capacity (for a price) for essential trips. When coupled with lower cost, higher capacity travel options such as transit, ridesharing/ride sourcing, and safe non-motorized options, demand-responsive pricing can appropriately meet travel needs without necessarily resulting in higher overall transportation costs to users.

TRAVEL PLANNING APPS

The best travel planning apps integrate a number of different travel options including driving (in a personal vehicle or ridesource vehicle), transit, bicycle, walking and/or a combination of multiple modes. These apps provide users with real time information on both travel time and cost, including the probability of travel delay, while some also provide information on personal and environmental health benefits or impacts of various choices. Smart applications link directly to other applications to help the traveler arrange the mode of travel they selected, such as hailing an Uber or reserving a carshare vehicle. Travel apps and mobility service payment systems are evolving such that in the near future, travelers will also be able to pay for their transit trip, bikeshare use, or high-occupancy tolls all from a single point of transaction. This should help to even the playing field of awareness and convenience across all travel options.

Section 3. Transportation Demand Management

Cities have traditionally approached transportation from the supply side of the equation, and this is a critical role for cities to play. Cities have significant control over how much vehicle capacity, bicycle accommodation, or parking is provided in their communities. But some economists advise cities that they must also consider and manage the demand side of the equation as well. Managing demand requires a more nuanced approach, but is, in many ways, more effective than supply-side management alone.

Transportation Demand Management (TDM) provides information and incentives to allow travelers to make the best choices for themselves. It is also a way for jurisdictions to make the most of transportation systems they have already built and optimize investments they have made by encouraging the use of excess capacity before adding additional capacity. Excess capacity exists in the form of empty seats on buses or in cars. It exists on sidewalks, trails, and bike lanes. It exists in the 20 hours of the day outside of the peak hours of traffic congestion. And it exists in the parking spaces that remain empty when the vehicle they are intended for is at another destination.

TDM serves cities, but it also brings benefit to users as well – often saving money on transportation costs, improving reliability and predictability in their travel, giving greater freedom of choice, lowering stress, and perhaps even improving personal health.

Section 4. Pedestrian Accessibility Policy

Best Practice

The best pedestrian-supportive infrastructure policies are applicable to the entire community and focus on safety and connectivity. Best practice policies are compliant with all applicable state and federal regulations, including the Americans with Disabilities Act (ADA) ,and establish a methodology for prioritization and performance evaluation.

The following are potential policies to improve pedestrian-supportive infrastructure.

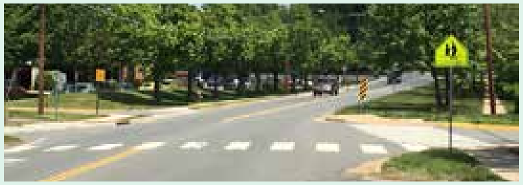
- Prioritize walking connections to transit stops, schools and parks. Implement first-last mile walking connection to transit and prioritize access to transit stops.
- Support projects that improve pedestrian connectivity.
- Improve pedestrian access to destination areas in the City.
- Improve pedestrian routes that connect students to schools.
- Maintain a sidewalk inventory.
- Establish a methodology for project prioritization and performance evaluation.
- Improve pedestrian access across major roadways that create barriers to connecting the network. Comply with all state and federal regulations including the ADA.

Policy Recommendation

The following is a draft recommended policy for the City.

In order to promote safety and provide for the most vulnerable users in the transportation system – children, seniors, and persons with disabilities – it is the policy objective of the City that all streets have at least one sidewalk on both new and existing streets of all street types.

- All new streets should provide sidewalks on both sides of the street irrespective of anticipated traffic volumes, unless explicitly designed as a shared street.
- Sidewalks should be considered with every major maintenance, restoration, or street reconstruction project. Sidewalks may be constructed independent of other street projects.
- Streets with moderate to high vehicle volumes (5,000 or more vehicles per day) should have sidewalks on both sides of the street. Moderate volume streets should have a continuous sidewalk at least along one side. Local streets (less than 5,000 vehicles per day) should have a sidewalk on at least one side of the street, unless specifically designed as a shared street.
- Sidewalks should be a minimum of five feet wide.
- The sidewalk network should be continuous and connected. Curb ramps must be provided at street crossings.



Section 5. Complete Streets Policy

Best Practice

A Complete Streets policy should include a community's vision for transportation, account for many types of uses and community needs, and allow for flexible implementation.

The following are potential policies by which to implement Complete Streets principles:

- Approach every planned transportation improvement as an opportunity to apply the Complete Streets principles.
- Apply Complete Streets policies to all public and private projects and developments that impact the right-of-way.
- Allow Complete Streets elements to be phased over time.
- Identify regional, state, and federal funding for Complete Streets improvements.
- Collaborate and coordinate between departments and transportation agencies to efficiently utilize funds.
- Identify performance measures and report progress annually.
- Maintain an inventory of bicycle and pedestrian infrastructure to identify gaps.
- Identify and prioritize projects based on infrastructure needs.
- Train staff and decision makers on the technical content and best practices of Complete Streets principles.

Policy Recommendation

The City will approach all planned transportation improvements and all development projects with right-of-way impacts as opportunities to advance the value and objective of safety and Complete Streets. It shall be the policy of the city that:

- Every street safely accommodate all users.
- Any street subject to major maintenance, rehabilitation or reconstruction will provide safe accommodation for all users of all abilities.
- The means of accommodation will be appropriate to the street context and developed in consultation with community stakeholders.
- The city will pursue regional, state, and federal funding opportunities to support Complete Streets improvements.
- City agencies and departments will collaborate and coordinate with one another and adjacent jurisdictions to apply Complete Streets principles and provide continuous networks.
- Progress on Complete Streets will be measured in concert with the adopted measures of the City of Fairfax Multimodal Transportation Plan.

Index

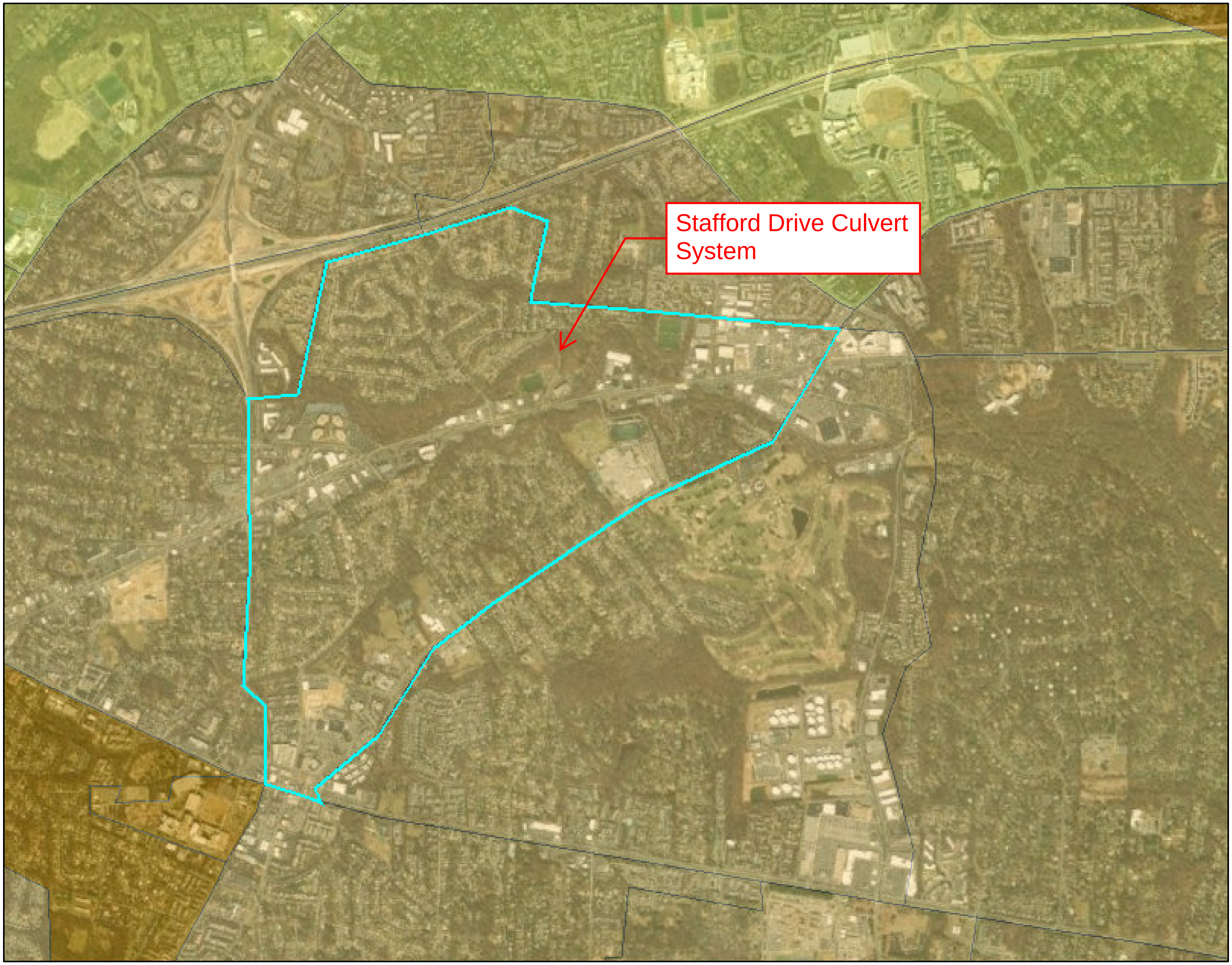
Attachment 3.6

Study Area – ADAPT VA Vulnerability Map

Mosby Wood Study

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- ⬜ Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟫 High Social Vulnerability
- 🟥 Very High Social Vulnerability
- ▨ Not inlcuded in the analysis



March 29, 2022

1:36,112

0 0.2 0.4 0.8 mi

0 0.35 0.7 1.4 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management

Virginia Institute of Marine Science

ADAPTVA

Attachment 3.7

United States Census Median Household Income Virginia & City of Fairfax

QuickFacts

Fairfax city, Virginia; Virginia

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

Income & Poverty ▼	Fairfax city, Virginia	Virginia
Total accommodation and food services sales, 2012 ($1,000) (c)	**218,575**	**17,795,901**
PEOPLE		
Income & Poverty		
Median household income (in 2019 dollars), 2015-2019	$116,979	$74,222
Per capita income in past 12 months (in 2019 dollars), 2015-2019	$50,029	$39,278
Persons in poverty, percent	⚠ 9.3%	⚠ 9.2%

About datasets used in this table

Value Notes

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info ⓘ icon to th
row in TABLE view to learn about sampling error.

The vintage year (e.g., V2021) refers to the final year of the series (2020 thru 2021). Different vintage years of estimates are not comparable.

Fact Notes

(a)	Includes persons reporting only one race
(c)	Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
(b)	Hispanics may be of any race, so also are included in applicable race categories

Value Flags

-	Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper in open ended distribution.
F	Fewer than 25 firms
D	Suppressed to avoid disclosure of confidential information
N	Data for this geographic area cannot be displayed because the number of sample cases is too small.
FN	Footnote on this item in place of data
X	Not applicable
S	Suppressed; does not meet publication standards
NA	Not available
Z	Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and
Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

City of Fairfax - CFPF Grant Application Submittals

1 message

Eto, Satoshi <Satoshi.Eto@fairfaxva.gov> Fri, Apr 8, 2022 at 7:04 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Good morning,

Please follow this link to download two CFPF grant applications from the City of Fairfax.
https://www.dropbox.com/sh/blwg7yl4zo41nbr/AAAx6EfEfrMXYagxxz5REBgMa?dl=0

The applications could not be attached directly to this email due to file size (50MB/ea).

Please feel free to reach out to me if you have any questions. Thank you!

FAIRFAX CITY

Satoshi Eto, CPM

Public Works Program Manager

703 385 7810 **O**• 703 273 6073 **Direct**

TTY:711

www.fairfaxva.gov

City of Fairfax

Resilience Plan Grant Request

2022 Virginia Community Flood Preparedness Fund (Round 3) Application Package

Introduction

The City of Fairfax (City) has prepared this 2022 Virginia Community Flood Preparedness Fund (CFPF) Application Package to request matching funds for the preparation of a City Resilience Plan. The City intends to apply for matching funds in the Planning and Capacity Building category. The City of Fairfax is a 6.27 square mile independent city located within Fairfax County in northern Virginia. The City is highly developed and is mainly compromised of residential and commercial lots. The City has a low social vulnerability index score based on the ADAPT VA Social Vulnerability Index.

Background

As rainfall intensity and frequency increase annually, the City's stormwater waterways have been unable to meet the flow demand. The increase in rainfall intensity coupled with the City's unique topographic and hydrologic features has led to local urbanized flooding that affects critical infrastructure and City residents. There are four (4) main watersheds throughout the City:

1. Accotink Creek,
2. Difficult Run Creek,
3. Lower Bull Run Creek, and
4. Pohick Creek

Attachment 1.1 included with this grant application package contains a City-Wide Floodplain Exhibit that illustrates the geographic location of the four (4) main watersheds along with a floodplain overlay. The City is the headwater of Accotink Creek with a majority of the City draining to the north fork or the mainstem. Additionally, small portions of the City drain to the south and west discharging to the remaining three (3) watersheds.

The stream reaches throughout the City cross residential, commercial, educational, and industrial properties. Due to the development within the watershed, the existing waterway have begun to experience increased flooding. Certain portions of the City infrastructure were developed within the 100 and 500 year floodplain. The City residents are aware of the impact that flooding has had in their community and are very vocal about the need to find a solution.

Utilizing the proposed Resilience Plan, the City will have an outline that will focus on upgrading, modifying, and installing new stormwater and flood control practices in strategic locations within the City. The Resilience Plan will aim to implement nature-based solutions to the maximum extent practicable in order to mitigate current flooding as well as increase Citywide resilience to future flooding situations.

Scope of Work Narrative

Capacity Needs

The City, in conjunction with an engineering consulting firm, will develop the Resilience Plan. The City currently lacks the capacity or in house expertise to undertake this effort singularly and thus outside resources are required for the completion of this task.

Goals and Objectives

The goal in development of the City of Fairfax Resilience Plan is to provide a City-wide approach to address the increased flooding within the community through nature-based solutions. This planning level document will provide the City with the ability to complete vulnerability assessments and develop an action-oriented approach to flood preparedness and resiliency.

Stakeholders

Initially, the stakeholders associated with the development of the Resilience Plan will primarily be the City Department of Public Works. As items and projects identified in the Resilience Plan come to fruition, an expansion of the stakeholders will include citizens, businesses, and ultimately the overarching City of Fairfax community.

Implementation Plan and Timeline

The implementation of this plan will start once the grant has been awarded to the City and when the new fiscal year begins in July 2022. The City would like to note this is an anticipated timeline and could be subject to change.

Outputs and Measures

The output of this task is a comprehensive approach to flood preparedness and resilience in the form of a City-wide Resilience Plan. No other outputs are expected from this task.

Maintaining Capacity

At this time, the City does not anticipate the need for continuing support for development of the Resilience Plan. Once the plan has been finalized and certified by the Virginia Department of Conservation & Recreation (DCR), the City will utilize the plan for subsequent grant requests for a period of three (3) years in accordance with the 2022 CFPF Grant Manual.

Budget Narrative

Estimated Total Project Cost

The estimated total project cost for the development of the City of Fairfax Resilience Plan is $159,672.58. The City has coordinated with a consultant to provide an estimated summary of proposed services and associated cost. This document has been included in Attachment 1.2 and includes an hourly breakdown based on anticipated tasks to be conducted by a consultant in the development of the Resilience Plan.

Amount of Funds Requested

Per the 2022 CFPF Manual, the Resilience Plan development is categorized as a Planning and Capacity Building activity. According to the latest U.S census data, the City of Fairfax has a median household income of $116,979. This is 58% higher than the Virginia median household income of $74,222 thus not qualifying as a low-income geographic area. The U.S census data can be seen in Attachment 3.6 of this application package.

Per the 2022 CFPF Manual, the City is requesting a 25% City match and a 75% CFPF match of the total project cost. Based on the Estimated Total Project cost highlighted above, the City is requesting $119,754.44 with this grant application package. This match will be utilized to assist with the overall cost of developing the Resilience Plan. As mentioned above, an estimated summary of proposed services and associated cost has been included in Attachment 1.2. This includes an hourly breakdown based on anticipated tasks to be conducted by a consultant in the development of the Resilience Plan.

Amount of Cash Funds Available

The City intends to allocate a portion of the City of Fairfax Stormwater Utility Fund for this project. The project has been included within the approved 2023 proposed budget as “Flood Mitigation Planning & Resilience”, which has an available budget of $225,000. The City has reserved $39,918.14 of available matching funds from the City of Fairfax Stormwater Utility Fund as part of this application package. The Flood Mitigation Planning & Resilience project sheet from the 2023 proposed Stormwater Utility Fund can be seen in Attachment 1.3. The Stormwater Utility Fund is available to the City’s Public Works division to complete engineering functions and manage capital improvement projects for stormwater related needs within the City.

Authorization To Request Funding

A signed authorization to request for funding has been included below:

> “I certify that I am requesting matching grant funds from the Virginia Community Flood Preparedness Fund on behave of the City of Fairfax in the Planning and Capacity Building category for the development of a Resilience Plan.”

3-31-22

Signature

Date

2022 Virginia CFPF Grant Application

Appendix Table of Contents / Attachments

Attachment 1 – CFPF Grant Narratives Supporting Documents

1. City Wide Floodplain Exhibit
2. Kimley-Horn – Summary of Proposed Services
3. City of Fairfax – 2023 Stormwater Utility Fund Project Information Sheet
4. City of Fairfax – 2023 Complete Stormwater Utility Fund

Attachment 2 – CFPF Grant Manual Appendix A

1. Appendix A: Application Form for Grant Request for All Categories

Attachment 3 – CFPF Grant Manual Appendix D

1. Appendix D: Scoring Criteria for Capacity Building & Planning
2. Appendix D: Checklist All Categories
3. City of Fairfax - Current Floodplain Ordinance (4.15 Floodplain Regulations)
4. City of Fairfax – 2035 Comprehensive Plan
5. City of Fairfax - ADAPT VA Vulnerability Map
6. United States Census Median Household Income – Virginia & City of Fairfax

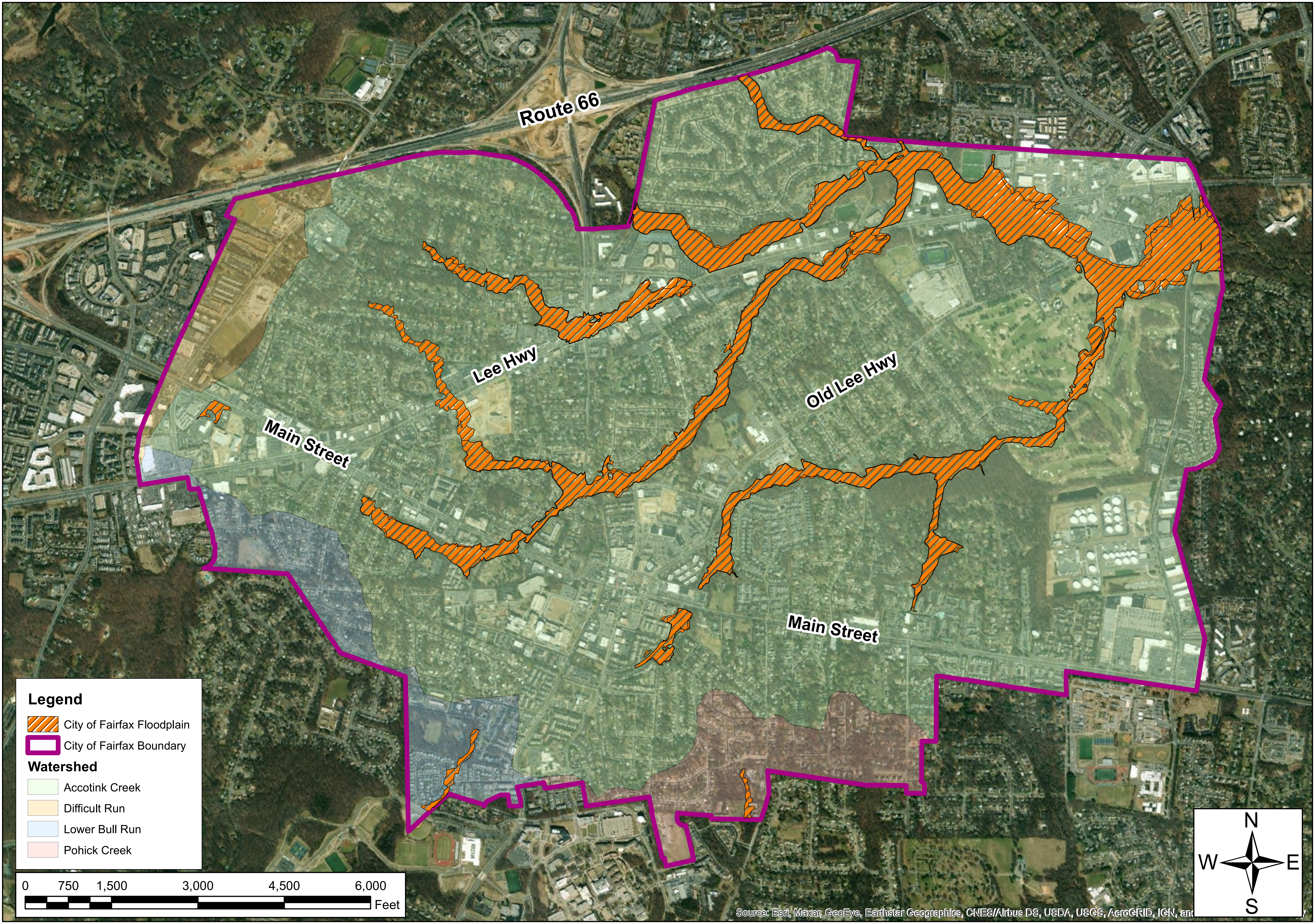
Attachment 1 – CFPF Grant Narratives Supporting Documents

Attachment 1 – Outline

1. City Wide Floodplain Exhibit
2. Kimley-Horn - Summary of Proposed Services
3. City of Fairfax – 2023 Stormwater Utility Fund Project Information Sheet
4. City of Fairfax – 2023 Complete Stormwater Utility Fund

Attachment 1.1

City Wide Floodplain Exhibit



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and

KIMLEY-HORN - NORTHERN VIRGINIA OFFICE
11400 COMMERCE PARK DRIVE, SUITE 400
RESTON, VIRGINIA 20191

Kimley»Horn
Expect More. Experience Better.

DATE: 03/28/2021

DRAWN BY: J.A.C

CHECKED BY: J.A.C

CITY OF FAIRFAX FLOODPLAIN EXHIBIT

CITY WIDE FLOODPLAIN EXHIBIT
CITY OF FAIRFAX, VIRGINIA

SCALE: 1" = 1,500'

PROJECT NUMBER: EXHIBIT

SHEET NUMBER: EXHIBIT

Attachment 1.2

Kimley-Horn – Summary of Proposed Services

Kimley»Horn

March 28, 2020

Satoshi Eto
Public Works Program Manager
City of Fairfax, Department of Public Works
10455 Armstrong Street, Room 200
Fairfax, Virginia 22030

Re: City of Fairfax – Stormwater and Flooding Resilience Plan Development

Dear Mr. Eto:

Kimley-Horn and Associates, Inc. (Kimley-Horn) is pleased to submit this summary of proposed services to the City of Fairfax (City) to provide professional consulting services related to the City of Fairfax – Stormwater and Flooding Resilience Plan Development (Resilience Plan). It is Kimley-Horn's understanding that the City wants to develop a Resilience Plan to prepare for the increase in urban flooding due to higher frequency storm events caused by climate and environmental changes. The Resilience Plan is intended to serve as a planning level document aimed at assisting the City and its citizens by outlining flood reduction methodologies that could potentially reduce impacts to properties and community assets, while providing equitable treatment for all communities. The language outlined below identifies our project understanding, summary of proposed services, and estimated fee related to the City of Fairfax – Stormwater and Flooding Resilience Plan Development.

PROJECT UNDERSTANDING

At the City's request, Kimley-Horn is providing this summary of proposed services outlining the development of a Resilience Plan. On October 22, 2020, Virginia's Governor Ralph S. Northam signed into effect the Virginia Coastal Resilience Master Planning Framework. This encouraged local jurisdictions to develop localized Resilience Plans in accordance with the following principles:

1. Acknowledge climate change and its consequences, and base decision making on the best available science.
2. Identify and address socioeconomic inequities, and work to enhance equity through adaptation and protection efforts.
3. Utilize community and regional scale planning to the maximum extent possible, seeking region-specific approaches tailored to the needs of individual communities.
4. Understand fiscal realities and focus on the most cost-effective solutions for the protection and adaptation of communities, businesses, and critical infrastructure. The solutions will, to the extent possible, prioritize effective natural solutions.
5. Recognize the importance of protecting and enhancing green infrastructure in all regions and in the coastal region, natural coastal barriers, and fish and wildlife habitat by prioritizing nature-based solutions.

It is the City's intent to develop a Resilience Plan to assist in management of increased flooding frequency. The Resilience Plan is also intended to serve as a guidance document for the City's involvement in the Virginia Department of Conservation & Recreation (VA DCR) Community Flood Preparedness Fund (CFPF)

Grant and the Federal Emergency Management Agency (FEMA) Community Rating System (CRS) program. Kimley-Horn will develop the Resilience Plan in accordance with the guidance provided in Appendix G of the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund and Section 512 titled Floodplain Management Planning (FMP) of the FEMA Community Rating System Coordinator's Manual.

SCOPE OF SERVICES

This proposal has been divided into ten (10) tasks. Each task is outlined below with a brief summary defining the Scope of Services for each task. A time and materials not-to-exceed cost to perform this work is provided (Attachment 1) and includes Kimley-Horn project management and coordination time.

Task 100 – Organize to Prepare the Plan

Kimley-Horn will draft a document to establish the "office" that will be utilized in the development of the Resilience Plan. It is anticipated that the City of Fairfax Public Works Department and Kimley-Horn staff will be utilized to develop the Resilience Plan and will constitute as members of the "office". Relevant staff member roles will be identified and agreed upon prior to commencement of Resilience Plan development and shall be actively involved in the coordination, writing, and/or review of the Resilience Plan.

Task 200 - Involve the Public

Kimley-Horn will conduct six (6) in-person outreach activities to obtain public input related to City flooding. If outreach activities cannot be conducted in person, Kimley-Horn will attempt to conduct the meetings virtually. The outreach activities shall be conducted based on the minimum requirements for Resilience Plan preparation to receive input at different stages of the process. Kimley-Horn staff will prepare the necessary meeting materials, coordinate meeting location, and assist with public outreach. It is anticipated that City staff will assist and provide access to the City's existing public outreach channels (i.e Engage Fairfax, Cityscene, City of Fairfax News) to maximize outreach.

The first public meeting will be held within the first two months of the planning process to obtain public input on the localized natural hazards, community flooding problems, and solicit community opinions on possible solutions. This meeting will be held in one of the City's flood prone neighborhoods and will be utilized to gather citizen input. The meeting will consist of a brief presentation explaining the intent of the Resilience Plan but the main intent of the meeting will be to document citizens' concerns and comments.

Kimley-Horn will conduct up to four (4) additional outreach activities. These activities will be conducted to explain the planning process and encourage input from the constituents. The content and outreach method will be discussed and agreed upon with City staff prior to their development. Examples of anticipated outreach activities are: public webcasts, questionnaires, brochures, public information booths, presentations at civic organizations, and website/blog postings.

Lastly, Kimley-Horn staff will conduct a public meeting to obtain input on the draft Resilience Plan. This meeting will take place at the end of the planning process and be at least two weeks prior to submittal of the recommended Resilience Plan to the City's council. Kimley-Horn will work in conjunction with City staff to determine the necessary revisions to the Resilience Plan based on public input. All revisions to the Resilience Plan will be made prior to submittal to City Council.

Task 300 – Coordinate

Kimley-Horn will coordinate and contact agencies and communities outside of the City of Fairfax governmental structure to obtain readily available rainfall and flooding data and hazard mitigation input for the resilience planning process. In accordance with the guidance document, Kimley-Horn will prioritize attempts for meetings or telephone conference calls with agencies or organizations over written communication. For the purpose of this scope of service, "coordinate and contact" means to:

- Contact the agency or organization and keep a record of the contact
- Ask for data or information related to the hazard
- Ask if the agency or organization is doing anything that might affect flooding or properties in flood prone areas
- Offer the agency or organization an opportunity to be involved in the planning effort

Kimley-Horn will attempt to coordinate and contact up to thirty (30) different agencies and communities to gather relative information related to the City's resilience efforts. Special emphasis will be placed on data related to past flood studies, disaster damage reports, natural area plans, and existing floodplains. Once all the requisite data has been gathered, Kimley-Horn will review the existing studies, reports, and technical information. The review will focus on how the gathered data impacts the community's needs, goals, and plans for the area. The data gathered will be utilized as part of the assessment of Task 400 and Task 500. A summary of the data along with a conclusion of the review process will be included in Task 800.

Task 400 – Asses the Hazard

Kimley-Horn will compile and asses the data obtained in Task 300 into base maps and assessments that can be utilized in the development of the Resilience Plan. This scope of services does not include any new studies, engineering reports, construction documents, or analyses beyond what is exclusively stated in this proposal. If the City wishes to conduct further investigations, a separate of scope of services can be submitted for this work. The assessments of the existing data will be broken down into the following four (4) categories:

Known Flood Hazards

For known flood hazard areas, Kimley-Horn will identify the locations based on the Special Flood Hazard Areas (SFHA) as depicted in the Flood Insurance Rate Map (FIRM), areas of documented repetitive loss within City limits, areas not mapped on the FIRM that have recorded flood events in the past, and other surface flooding areas identified in previous studies. The flood hazard areas will be utilized to derive an ArcGIS map depicting the known flood hazards areas along with a description of the known flood hazards, the source of water, the depth of flooding, known velocities, warning times, and past flooding events.

Less Frequent Flood Hazard Areas

For the less-frequent flood hazard areas, Kimley-Horn will provide: an inventory of known levees, an inventory of dams that would result in flood of developed areas if failed, and identification of any flood-related special hazards. The assessment will utilize this information to derive an ArcGIS map depicting the affected areas. For the purpose of this task, Kimley-Horn will only assess existing information and any less-frequent flood hazards area shown is intended as an approximation for planning purposes only. A detailed review of any existing study is not included within this scope of services and previously approved information will assumed to be correct.

Future Areas of Increased Hazards

For the future areas of increased hazards, Kimley-Horn will identify areas likely to be flooded or experience flood problems in the future based on the following three (3) criteria: changes in floodplain development and demographics, development in the watershed, and climate change or sea level rise. This assessment will be based on the City of Fairfax Comprehensive Plan and is intended as a planning level exercise only. No future population trends or forecasting is included with this scope of services.

None Flood Hazards

For none-flood hazards, Kimley-Horn will provide descriptions of the magnitude or severity, history, and probability of future events for other natural hazards, such as earthquakes, wildfires, or tornados that may affect the City of Fairfax. Any analysis or projections will be based on the best available data and will include the source of the information.

Task 500 – Assess the Problem

Kimley-Horn will identify the impact of the hazards outlined in Task 400 onto City of Fairfax neighborhoods, infrastructure, natural floodplain, and discuss the impact of development on future flooding.

An overall summary of the City's vulnerability to each identified flood hazard will be incorporated within the Resilience Plan along with its associated impact on the community. Additionally, Kimley-Horn will provide an assessment on how each hazard identified in Task 400 impacts each of the following six (6) categories:

- Life safety and the need for warning and evacuating residents and visitors
- Public health, including health hazards to individuals from flood waters and mold
- Critical facilities and infrastructure
- Community's economy and major employers
- The quantity and types of affected building
- Historical damage to building to include repetitive loss properties and properties that have received flood insurance claims payments

Kimley-Horn will also provide a description of development, redevelopment, population trends, and include information about future development and redevelopment in the community, the watershed, and within the City's natural resource areas. All forward based projections will be derived on information outlined in the City of Fairfax Comprehensive Plan.

Task 600 – Set Goals

Kimley-Horn will prepare a statement of the goals of the resilience plan to address the community and City flooding concerns identified in Task 500. The goals will be identified in conjunction with City of Fairfax Public Works staff and will be based on the City's current and projected available resources.

Task 700 – Review Possible Activities

Kimley-Horn will review different activities that could prevent or reduce the severity of the problem(s) identified in Task 500 to achieve the Resilience Plan goals outlined in Task 600. All activities identified will include a pros/cons assessment, a narrative as to why the activity is appropriate for the community and will identify a potential funding mechanism available that could fund the activity.

As part of this task, Kimley-Horn will review preventive flood control activities, such as revisions to zoning ordinances, more stringent stormwater management regulations, building codes, subdivision ordinances, and preservation of open space, and as well as review the effectiveness of current regulatory and preventive standards and programs. The review will highlight how these activities can reduce future flood losses, a discussion on the current standards in the community's plan and regulations, and whether the community should adopt or revise such plans and regulations. The review will specifically highlight possible activities within the following four (4) sections:

1. Activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection.
2. Emergency services activities, such as warning and sandbagging.
3. Existing and upcoming structural projects, such as levees, reservoirs, and channel modifications.
4. Public information activities, such as outreach projects and environmental education programs.

Task 800 – Draft A Resilience Plan

Kimley-Horn will compile information derived in task 100-700 into a preliminary Resilience Plan. The Resilience Plan will identify the departments responsible for implementing action items, an anticipated schedule to implement action items, and anticipated funding mechanisms. Action items listed within the Resilience Plan will be prioritized based on discussions with City of Fairfax Public Works staff. The Resilience Plan will provide action items for the four (4) sections identified in Task 700 and the areas identified as having none flood related hazards (Task 400). Additionally, Kimley-Horn will work with the City of Fairfax Office of Emergency Management (OEM) to obtain any existing documentation with regards to post-disaster redevelopment and mitigation policies, plans, and procedures. If available, the post-disaster policies, plans, and procedures will be incorporated into the Resilience Plan.

Kimley-Horn anticipates a total of two (2) submissions of the draft Resilience Plan to the City of Fairfax Public Works Department. Revisions to the draft Resilience Plan will be made after each submission based on comments received from City staff. If necessary, Kimley-Horn will conduct up to (2) meetings to review comments with City staff. If more than two (2) submissions and accompanying revisions are required, Kimley-Horn can provide a separate scope of services to address the required revisions.

Task 900 – Adopt the Resilience Plan

Kimley-Horn will submit the Resilience Plan to the City of Fairfax Public Works Department. It is anticipated the Resilience Plan will be presented to the City of Fairfax City Council for a vote on adoption of the plan. Kimley-Horn will assist and attend one (1) City Council meeting to provide technical support to the City staff. If the Resilience Plan is not approved by City Council, Kimley-Horn will meet with City staff to determine the next step. Revision to the Resilience Plan to address City Council comments or satisfy any requirements that may arise are not included within this scope of services. Kimley-Horn may provide additional support to the City under a separate scope of services, if requested.

Task 1000 – Implement, Evaluate, and Revise

Kimley-Horn will develop a document outlining procedures for monitoring, implementing, reviewing progress, and recommending revisions to the Resilience Plan. Once finalized, the document will be submitted to the City of Fairfax Public Works Department to assist in the future management of the Resilience Plan. Any task included with the process for monitoring, implanting, reviewing progress, or providing recommendations for revisions to the plan are excluded from this scope of services. In accordance with the guidance document, it is anticipated the Resilience Plan will be required to be updated at a minimum once every five (5) years. If requested, Kimley-Horn may provide a separate scope of services to assist in any required plan updates.

Task 1100 – Meetings & Coordination

Kimley-Horn staff will be available for up to three (3) project coordination meetings, in person (if requested), to discuss the project. Kimley-Horn anticipates meeting at the following stages:

1.) Completion of Task 400 to present the hazards identified.
2.) Prior to Task 500 to establish goals.
3.) Prior to Task 800 to discuss the outline of the Resilience Plan.

In addition, Kimley-Horn staff will participate in calls to discuss the project with City staff. If additional meetings and coordination activities are requested, Kimley-Horn will prepare a separate Scope of Services and cost estimate for client approval prior to proceeding with the additional work.

DELIVERABLES

The following items are anticipated as project deliverables for this Scope of Services.

- Six (6) public outreach presentations and accompanying presentation material.

- City-wide base maps for the following four (4) categories: areas of known flood hazards, areas of less frequent flood hazards, future areas of increased hazards, and areas of none flood hazards
- A Resilience Plan to be approved by the City of Fairfax City Council.
- Technical support for one (1) City Council meeting to assist in approval of the Resilience Plan
- A document outlining procedures revising the Resilience Plan in the future.
- Maps, models, presentation, calculations, and associated documentation utilized throughout the plan development process (if requested).

OVERALL PROJECT ASSUMPTIONS

For the purposes of developing this proposed scope of services and the accompanying cost estimate, we have made the following assumptions:

- This Resilience Plan is intended as a planning level document and will not be stamped and sealed by a Virginia Professional Engineer (PE).
- All previously approved studies, engineering reports, construction documents, or analyzes is assumed to be correct. This scope of services does not include a detailed review of previously approved documents. Kimley-Horn will not be held accountable for the accuracy of the data created by others and utilized in the development of the Resilience Plan.
- The Resilience Plan is intended to be an element in the City of Fairfax participation in the Community Rating System (CRS) program. This proposal does not include submission to the Federal Emergency Management Agency (FEMA) or revisions necessary for approval into the program.
- The Resilience Plan will utilize readily available existing data. This scope of services does not include new studies, engineering reports, construction documents, or any analyses beyond what is exclusively stated in this proposal. If the City wishes to conduct further investigations, a separate of scope of services can be submitted for this work.
- All previous project information developed by others will be provided by the City to Kimley-Horn in a timely manner to accommodate anticipated project schedule.
- The City will provide site and facility access permission to Kimley-Horn Horn for conducting all necessary fieldwork related tasks in a timely manner to facilitate the project schedule.
- Kimley-Horn will be able to utilize the City's public outreach channels to facilitate outreach activities announcements.
- Kimley-Horn will be able to schedule and conduct meetings within agreed-upon City of Fairfax government facilities. If facility rental is required, a separate scope of services can be submitted for these costs.
- The City will provide all coordination with inter-city departments with regards to this project. This scope of services is for the submittal of a Resilience Plan to the Public Works Department exclusively. If any other submission is required, a separate scope of services can be submitted.
- Any permit application fees, review fees, and/or data request fees required for the development of the Resilience Plan will be paid directly by the City of Fairfax.
- This proposal and the accompanying cost estimate are valid for a period of 60 days and will expire if not accepted within that timeframe.

OVERALL PROJECT EXCLUSIONS

Services that are not currently anticipated as part of this project and are therefore outside the scope of this task order proposal include the following:

- Environmental Site Assessments
- Perennial Stream Assessments and/or Flow Determinations
- Wetland Permit Compliance
- Project Renderings
- VSMP Compliance
- Floodplain Studies and Submittals
- Dam Safety Compliance
- Dam Break Inundation Zone (DBIZ) Modeling / Mapping
- FEMA CLOMR or LOMR Applications
- Design Plan Submittals
- All other services not explicitly stated in this Scope of Services

SCHEDULE

The tasks referenced in this scope will be coordinated with City of Fairfax Public Works Staff. Meetings, action items, and deliverables will be tracked on a monthly basis and reported to the City with a monthly progress report for documentation of services provided Kimley-Horn is aware that this summary of proposed services will be included as an attachment to the Virginia Community Flood Preparedness Fund (CFPF) grant request, and commencement of this work will be dependent on the funds award date. A detailed schedule will be developed for the City outlining project workflow and deliverables after contract execution.

FEE AND BILLING

Kimley-Horn will provide the following scope of services under our term contract #17007-2017-KHA. The following tasks will be provided on a time and materials basis not to exceed a total project cost of **$159,672.58**. A detailed breakdown (by task) of Kimley-Horn Horn's fee estimate is provided in Attachment 1 and utilizes the rate schedule as provided for in the City of Fairfax Task Order Contract #17007-2017-KHA, Year 5. Please note that hourly fees will be invoiced monthly based upon hours expended for services performed and payment will be due within 25 days of receipt of invoices related to this project.

CLOSURE

The work described with this proposal will be completed in accordance with the terms and conditions of Contract #17007-2017-KHA between the City of Fairfax and Kimley-Horn. We appreciate the opportunity to provide these services to you. Please contact either of us if you have any questions.

Very truly yours,
KIMLEY-HORN AND ASSOCIATES, INC.

Juan A. Campos

Jennifer R Koopman

Juan A. Campos, P.E.
Project Manager

Jennifer Koopman, P.E.
Vice President

Attachment 1 – Kimley-Horn Horn Fee Breakdown

City of Fairfax, Virginia
Stormwater and Flooding Resilience Plan Development
March 28, 2022
T&M not-to-exceed Cost Estimate

	Loaded Hourly Rate[1]	$326.73	$274.77	$220.46	$184.28	$146.89	$124.39	$110.29					10%	
Task	**Description**	Senior Technical Specialist	Senior Professional II	Senior Professional I	Professional II	Professional I	Analyst	Project Admin / Support Staff	**Budget Total Hours**	**Budget Labor Cost**	**Reimbursable Expenses**	**Subconsultant Services**	**Subconsultant Mark-up**	**Budget Total Cost**
100	**Organize to Prepare the Plan**		**4**		**12**		**4**		**20**	**$3,808.00**	**$0.00**	**$0.00**	**$0.00**	**$3,808.00**
200	**Involve the Public**		**20**		**52**		**56**		**128**	**$22,043.80**	**$1,500.00**	**$0.00**	**$0.00**	**$23,543.80**
300	**Coordinate**		**12**		**28**		**64**		**104**	**$16,418.04**	**$0.00**	**$0.00**	**$0.00**	**$16,418.04**
400	**Assess the Hazard**		**30**		**36**		**52**		**118**	**$21,345.46**	**$0.00**	**$0.00**	**$0.00**	**$21,345.46**
500	**Assess the Problem**		**32**		**80**		**116**		**228**	**$37,964.28**	**$0.00**	**$0.00**	**$0.00**	**$37,964.28**
600	**Set Goals**		**8**		**12**		**0**		**20**	**$4,409.52**	**$0.00**	**$0.00**	**$0.00**	**$4,409.52**
700	**Review Possible Activities**		**12**		**60**		**44**		**116**	**$19,827.20**	**$0.00**	**$0.00**	**$0.00**	**$19,827.20**
800	**Draft an Action Plan**		**26**		**36**		**20**		**82**	**$16,265.90**	**$0.00**	**$0.00**	**$0.00**	**$16,265.90**
900	**Adopt the Plan**		**2**		**4**		**4**		**10**	**$1,784.22**	**$0.00**	**$0.00**	**$0.00**	**$1,784.22**
1000	**Implement, Evaluate, and Revise**		**4**		**16**		**16**		**36**	**$6,037.80**	**$0.00**	**$0.00**	**$0.00**	**$6,037.80**
1100	**Meetings & Coordination**		**12**		**12**		**8**	**16**	**48**	**$8,268.36**	**$0.00**	**$0.00**	**$0.00**	**$8,268.36**
	TOTAL	**0**	**162**	**0**	**348**	**0**	**384**	**16**	**910**	**$158,172.58**	**$1,500.00**	**$0.00**	**$0.00**	**$159,672.58**

[1] **Rates (Year 5) per City of Fairfax Task Order Contract #17007-2017-KHA**

Attachment 1.3

City of Fairfax – 2023 Stormwater Utility Fund Project Information Sheet

PROJECT INFORMATION

Name:	**Flood Mitigation Planning & Resiliency**	**Project #**	**--**
2035 Comprehensive Plan Reference:	**NE2.1 pg 108**	**2035 Comprehensive Plan Timeframe:**	**Long-Term**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project supports the development of two flood mitigation initiatives. The first is a Flood Resilience Plan for the city. This plan provides project-based improvements for flood control and resilience, leverages nature-based infrastructure, considers all parts of a locality, includes coordination with other local and inter-jurisdictional activities, and is based on best available science. The plan will be developed to also provide credits towards FEMA's Community Rating System.

During the design of the Stafford Drive Stream Restoration Project, the effects to the floodplain were reviewed through hydraulic modeling. It was found that the culvert under Stafford Drive is a contributing factor in the floodplain impacts to the Mosby Woods condominium community. A flood study is proposed to evaluate the current condition of the Stafford Drive culvert and investigate options to improve the flood conditions in this area.
.
The city intends to apply for Community Flood Preparedness Fund grants for two projects which can, if approved, provide up to 75% funding for the flood preparedness plan, and 50% for the flood mitigation study. Development of a Flood Resilience Plan is a prerequisite to applying for any future grant funding for construction of a mitigation project, which can fund 50-70% of the project costs.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	225,000	-	-	-	-	225,000
Total Costs	**$ -**	**$ 225,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 225,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
State - Other	-	148,250	-	-	-	-	148,250
Stormwater Utility Fund	-	76,750	-	-	-	-	76,750
Total Funding	**$ -**	**$ 225,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 225,000**

Estimated Project Timeline	
Project Origination Date	02/01/22
Project Design Start Date	07/01/22
Construction Start Date	
Project Completion Date	06/30/23

New Project ✓

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):

Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

Attachment 1.4

City of Fairfax – 2023 Complete Stormwater Utility Fund

STORMWATER UTILITY FUND

City of Fairfax, Virginia
FY 2023 Stormwater Utility Fund
Budget Summary

	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed	Variance to Budget $	Variance to Budget %
Expenditures						
Salaries	$ -	$ -	$ -	$ 966,189	$ 966,189	0.00%
Fringe Benefits	-	-	-	433,138	433,138	0.00%
Purchased Services	-	-	-	414,246	414,246	0.00%
Internal Services	-	-	-	489,866	489,866	0.00%
Other Charges	-	-	-	210,850	210,850	0.00%
Supplies & Materials	-	-	-	225,900	225,900	0.00%
Capital Outlay	-	-	-	2,819,257	2,819,257	0.00%
Total Expenditures	**$ -**	**$ -**	**$ -**	**$ 5,559,445**	**$ 5,559,445**	**0.00%**
Revenues						
Revenue Bond Funds	$ -	$ -	$ -	$ 1,775,000	$ 1,775,000	0.00%
Annual Billing Units Revenue	-	-	-	2,718,634	2,718,634	0.00%
Grants	-	-	-	1,065,811	1,065,811	0.00%
Total Revenues	**$ -**	**$ -**	**$ -**	**$ 5,559,445**	**$ 5,559,445**	**0.00%**
Net Cost to the City	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**0.00%**
Total FTE	**-**	**-**	**-**	**14.60**		

FUNCTION:	**Stormwater Utility Fund**
DEPARTMENT:	**Public Works**
DIVISION OR ACTIVITY:	**Storm Drainage Operations & Maintenance**

BUDGET COMMENTS:

The FY2023 budget creates the Stormwater Utility Fund. The Storm Drainage function will be transferred from the General Fund to the Stormwater Utility Fund.

Cost Center 438120: Stormwater Utility Operations & Maintenance

Title	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed	Variance to Budget $	Variance to Budget %
Salaries	$ -	$ -	$ -	$ 623,546	$ 623,546	0.00%
Fringe Benefits	-	-	-	265,168	265,168	0.00%
Purchased Services	-	-	-	262,746	262,746	0.00%
Internal Services	-	-	-	154,216	154,216	0.00%
Other Charges	-	-	-	67,000	67,000	0.00%
Supplies & Materials	-	-	-	205,374	205,374	0.00%
Capital Outlay	-	-	-	5,000	5,000	0.00%
Total	**$ -**	**$ -**	**$ -**	**$ 1,583,050**	**$ 1,583,050**	**0.00%**

Personnel Classification	Grade	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed
Crew Supervisor	119	-	-	-	1.00
Asst Crew Supervisor	114	-	-	-	1.00
Equip Operator I	111	-	-	-	2.00
Utility Worker II	109	-	-	-	2.00
Truck Driver I	107	-	-	-	4.00
Total FTE		**-**	**-**	**-**	**10.00**

FUNCTION: **Stormwater Utility Fund**
DEPARTMENT: **Public Works**
DIVISION OR ACTIVITY: **Storm Drainage Operations & Maintenance**

PROGRAM:

The Storm Drainage division maintains the city's stormwater collection systems, which consist of 300,000 linear feet of storm pipe, 1,840 catch basins, 145 outfalls, 28 box culverts, 324 driveway culverts, 7 bridges, and 37 bridge culverts. Crews replace deteriorated storm lines, perform preventative maintenance tasks biannually, clear blocked streams, repair box culverts, and repair damaged driveway pipe and ditch lines.

OBJECTIVES:

- Clean ditch lines, storm pipes, and catch basins
- Repair and replace storm pipes and catch basins.
- Clean and clear stream beds of brush/obstacles to improve flow without affecting downstream properties.
- Repair box culverts.

SERVICES AND PRODUCTS:

- Catch basin repair
- Creek and stream maintenance
- Drainage ditch maintenance
- Storm sewer pipe maintenance, repair, and replacement
- Culvert repairs
- Bridge repairs
- Install lining to storm pipe and culverts
- Concrete lid/top replacement and repair
- Perform emergency drainage repairs and projects
- Provide sandbags and emergency response to flooding

FUNCTION: **Stormwater Utility Fund**
DEPARTMENT: **Public Works**
DIVISION OR ACTIVITY: **Stormwater Utility Administration & Engineering**

Budget Comments:

The FY2023 budget creates the Stormwater Utility Fund. The stormwater related costs from Public Works Administration and Engineering will be transferred from the General Fund to the Stormwater Utility Fund.

Cost Center 438130: Stormwater Utility Administration & Engineering

Title	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed	Variance to Budget $	Variance to Budget %
Salaries	$ -	$ -	$ -	$ 342,643	$ 342,643	0.00%
Fringe Benefits	-	-	-	167,969	167,969	0.00%
Purchased Services	-	-	-	151,500	151,500	0.00%
Internal Services	-	-	-	335,650	335,650	0.00%
Other Charges	-	-	-	143,850	143,850	0.00%
Supplies & Materials	-	-	-	20,526	20,526	0.00%
Capital Outlay	-	-	-	2,814,257	2,814,257	0.00%
Total	**$ -**	**$ -**	**$ -**	**$ 3,976,395**	**$ 3,976,395**	**0.00%**

Personnel Classification	Grade	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed
Director of Public Works	**	-	-	-	0.15
Program Manager	S02	-	-	-	0.30
Sustainability Coordinator	121	-	-	-	0.15
Utilities Analyst	121	-	-	-	0.50
Utilities Coordinator	121	-	-	-	0.50
Stormwater Program Specialist	119	-	-	-	0.70
Stormwater Plan Reviewer	118	-	-	-	0.25
Urban Forester	117	-	-	-	1.00
Facilities Inspectors	117	-	-	-	0.60
Contract Manager	114	-	-	-	0.15
Admin Assistant IV	113	-	-	-	0.30
Total FTE		**-**	**-**	**-**	**4.60**

FUNCTION: **Stormwater Utility Fund**
DEPARTMENT: **Public Works**
DIVISION OR ACTIVITY: **Stormwater Utility Administration & Engineering**

PROGRAM:

The office of the director manages seven public works divisions, including Stormwater Management, and provides professional engineering services for constructing and maintaining stormwater infrastructure, environmental projects, and drainage improvements.

OBJECTIVES:

- Maintain compliance with the city’s Municipal Separate Storm Sewer System (MS4) permit.
- Meet the city’s Total Maximum Daily Load (TMDL) goals for the Chesapeake Bay and local waterways.
- Administrate erosion and sediment control and stormwater pollution prevention programs for public and private development projects.
- Maintain records of the layout and condition of the city’s storm sewer infrastructure.
- Deliver adopted capital drainage improvement projects that provide direct benefit to affected property owners.
- Provide public outreach and education on stormwater management and pollution prevention topics.
- Encourage the public to engage in stormwater-positive actions and activities.
- Administrate Stormwater Utility capital programming.
- Assist city residents and businesses with finding solutions to drainage problems.

SERVICES and PRODUCTS:

- Administrative services for the Stormwater Utility.
- Drainage improvement projects.
- Environmental projects; stream restoration, stormwater facility upgrades and retrofits.
- Evaluation of drainage concerns, both public and private.
- Printed and electronic outreach and education materials on stormwater topics.
- Administration of Virginia Erosion & Sediment Control and Virginia Stormwater Management Program laws through inspections and enforcement.

Stormwater Utility Fund Expense Detail

Account	Account Title	FY 2021 Actual	FY 2022 Budget	FY 2022 Estimate	FY 2023 Proposed	Variance to Budget $	Variance to Budget %
SWU Operations & Maintenance (438120)							
511105	Salaries - Full Time	-	-	-	540,921	540,921	0.00%
511115	Salaries - Overtime	-	-	-	68,125	68,125	0.00%
511125	Temporary Help	-	-	-	6,000	6,000	0.00%
511130	On Call Pay	-	-	-	8,500	8,500	0.00%
512110	Fringe Benefits	-	-	-	265,168	265,168	0.00%
530113	Contract Services	-	-	-	262,746	262,746	0.00%
540102	Motor Pool Charges	-	-	-	154,216	154,216	0.00%
550430	Equipment Rental	-	-	-	1,000	1,000	0.00%
550501	Travel & Training	-	-	-	6,000	6,000	0.00%
550806	Other Services	-	-	-	60,000	60,000	0.00%
560110	Office Supplies	-	-	-	6,000	6,000	0.00%
560120	Small Equipment	-	-	-	10,500	10,500	0.00%
560416	Uniforms	-	-	-	4,389	4,389	0.00%
560420	Operating Supplies	-	-	-	38,900	38,900	0.00%
560421	Pipe & Accessories	-	-	-	10,000	10,000	0.00%
560422	Construction Materials	-	-	-	20,000	20,000	0.00%
560424	Concrete	-	-	-	7,000	7,000	0.00%
560430	Operating Materials	-	-	-	101,585	101,585	0.00%
560435	Soil & Mulch	-	-	-	7,000	7,000	0.00%
580214	Capital Outlay	-	-	-	5,000	5,000	0.00%
	Subtotal	**-**	**-**	**-**	**1,583,050**	**1,583,050**	**0.00%**
SWU Admin & Engineering (438130)							
511105	Salaries - Full Time	-	-	-	342,643	342,643	0.00%
512110	Fringe Benefits	-	-	-	167,969	167,969	0.00%
530113	Contract Services	-	-	-	151,500	151,500	0.00%
540060	Management Fee	-	-	-	335,650	335,650	0.00%
560110	Office Supplies	-	-	-	20,526	20,526	0.00%
580501	Ashby Pond Dredging	-	-	-	984,927	984,927	0.00%
580523	Flood Mitigation Planning & Resiliency	-	-	-	76,750	76,750	0.00%
580503	Mosby Road Drainage Improvements	-	-	-	45,000	45,000	0.00%
580504	Municipal Separate Storm Sewer Systen	-	-	-	155,000	155,000	0.00%
580506	Northfax Linear Park	-	-	-	80,000	80,000	0.00%
580507	Private BMP/SWM Inspection	-	-	-	130,000	130,000	0.00%
580508	Public BMP/SWM Inspection & Mainter	-	-	-	130,000	130,000	0.00%
580509	Reline Bridge Culvert Storm Structures	-	-	-	85,000	85,000	0.00%
580510	Replacement of Failing Galvanized Stor	-	-	-	120,000	120,000	0.00%
580514	Storm Drainage Repair for Paving Schec	-	-	-	110,000	110,000	0.00%
580516	Storm Pipe Lining Rehabilitation	-	-	-	120,000	120,000	0.00%
580517	Storm Sewer Evaluation & Update Progr	-	-	-	100,000	100,000	0.00%
580519	Stream Evaluation and Restoration	-	-	-	200,000	200,000	0.00%
580520	TMDL Action Plans	-	-	-	477,580	477,580	0.00%
590102	Reserve	-	-	-	143,850	143,850	0.00%
	Subtotal	**-**	**-**	**-**	**3,976,395**	**3,976,395**	**0.00%**
Total Stormwater Utility Fund		**$ -**	**$ -**	**$ -**	**$ 5,559,445**	**$ 5,559,445**	**0.00%**

PROJECT INFORMATION

Name:	**Replacement of Failing Galvanized Storm Drainage Systems**	**Project #**	**340-644411-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project provides for the replacement of the City's galvanized storm drain systems located within the city's right-of-ways and citizen properties. Failed storm sewer mains create sinkholes and hazards. The failing systems would be replaced with HDPE pipe and new structures.

FY 2022 - Old Lee Highway

FY 2023 - Old Lee Highway

FY 2024 - Orchard Street & Burrows Avenue

FY 2025 - Maple Street

FY 2026 - Towlston, appx. 70' X12"

FY 2027 - TBD

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	120,000	120,000	120,000	120,000	120,000	120,000	600,000
Total Costs	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 600,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	120,000	120,000	120,000	120,000	120,000	120,000	600,000
Total Funding	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 600,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	✓
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Storm Drainage Repair for Paving Schedule**	**Project #**	**340-644408-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project is to address all storm drainage infrastructure issues prior to road overlay paving construction. Work would include storm pipe replacement and structure reconstruction.

- Storm pipe replacement - 68' LF
- Storm pipe lining - 590' LF
- 13 Throat reconstructions
- 9 Storm top reconstructions
- 5 Manhole rehabilitations

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	110,000	110,000	110,000	110,000	110,000	110,000	550,000
Total Costs	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 550,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	110,000	110,000	110,000	110,000	110,000	110,000	550,000
Total Funding	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 110,000**	**$ 550,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	✓
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Storm Pipe Lining Rehabilitation**		**Project #**	**340-644410-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1**	**p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project is necessary to extend the life of the storm pipe lines. As concrete storm pipe linings age and deteriorate, sections can collapse and lose capacity. A plastic liner is installed on the inside wall of the pipe to maintain pipe integrity and stormwater flow.

Project includes mobilization, pre TV inspection, heavy cleaning, post TV inspection, and linear installation.

FY 2022: Hill Street - 400' at 24" LF

FY 2023: Country Club Hills Area - 288' at 15" LF

FY 2024: Westmore Area - 230' at 12" LF

FY 2025: Green Acres Area - 370' at 12" LF

FY 2026: Layton Hall Area - 126' at 12" LF and 150' at 18" LF

FY 2027: Rust Hill Neighborhood; to Truro Church

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	120,000	120,000	120,000	120,000	120,000	120,000	600,000
Total Costs	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 600,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	120,000	120,000	120,000	120,000	120,000	120,000	600,000
Total Funding	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 120,000**	**$ 600,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	✓
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name: **Mosby Road Drainage Improvements**	**Project #** **340-344429-580330**
2035 Comprehensive Plan Reference: **IU1.3.2** **p. 144**	**2035 Comprehensive Plan Timeframe:** **Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project is needed to reduce flooding on Mosby Road. During heavy rain storms stormwater from Burke Station Road and floods the road. This project will fund the design and construct curb and gutter, curb inlets and stormwater pipes to collect and direct the stormwater from Burke Station Road to an existing stormwater sewer main on Mosby Road. Design will be completed in FY23 with construction scheduled for FY24.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	45,000	-	-	-	-	45,000
Construction	-	-	250,000	-	-	-	250,000
Total Costs	**$ -**	**$ 45,000**	**$ 250,000**	**$ -**	**$ -**	**$ -**	**$ 295,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	-	45,000	250,000	-	-	-	295,000
Total Funding	**$ -**	**$ 45,000**	**$ 250,000**	**$ -**	**$ -**	**$ -**	**$ 295,000**

Estimated Project Timeline		New Project
Project Origination Date	07/01/20	
Project Design Start Date		
Construction Start Date	07/01/23	
Project Completion Date	06/30/24	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	✓
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Neighborhood Drainage Projects**	**Project #**	**340-644414-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**		✓	**Environment and Sustainability**
	Multimodal Transportation			**Economic Vitality**
✓	**Community Services**		✓	**Other City Plan/Policy**

Statement of Need:

These projects provide for stormwater improvements in residential neighborhoods to alleviate existing drainage problems. The projects have been requested by residents and represent the projects recommended for design and construction by staff.

FY23 - Orchard Dr. & Evergreen Dr., Design
Park Rd. & Fern St., Final Design & Construction

FY24 - Virginia St. & Dwight Ave., Design
Orchard Dr. & Evergreen Dr., Construction

FY25 - Orchard St. & Howerton Ave., Design
Virginia St. & Dwight Ave., Construction

FY26 - Norman Ave & Cobb Dr, Design
Orchard St. & Howerton Ave., Construction
.
FY27 - Parklane Rd, Design
Norman Ave & Cobb Dr, Construction

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	100,000	100,000	100,000	50,000	100,000	450,000
Construction	-	420,000	400,000	600,000	600,000	200,000	2,220,000
Total Costs	**$ -**	**$ 520,000**	**$ 500,000**	**$ 700,000**	**$ 650,000**	**$ 300,000**	**$ 2,670,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	-	520,000	300,000	-	-	-	820,000
Stormwater Utility Fund	-	-	200,000	700,000	650,000	300,000	1,850,000
Total Funding	**$ -**	**$ 520,000**	**$ 500,000**	**$ 700,000**	**$ 650,000**	**$ 300,000**	**$ 2,670,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	✓
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Reline Bridge Culvert Storm Structures**	**Project #**	**320-631318-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project is necessary to extend the life of the storm structures that bridge vehicular traffic over the creek systems. The existing galvanized pipe has deteriorated and will not support the road bed if a new system is not installed. There are approximately 37 bridge culverts throughout the city with diameters exceeding 24”.

FY 2022 - Stratford Avenue and Fairchester Drive

FY 2023 - Woodhaven Drive & Jancie Road

FY 2024 - Scott Drive

FY 2025 - Shiloh Street

FY 2026 - Raider Lane

FY 2027 - Ashby Road/Ashby pond

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	85,000	85,000	85,000	85,000	85,000	85,000	425,000
Total Costs	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 425,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	85,000	85,000	85,000	85,000	85,000	85,000	425,000
Total Funding	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 85,000**	**$ 425,000**

Estimated Project Timeline	
Project Origination Date	
Project Design Start Date	
Construction Start Date	
Project Completion Date	Ongoing

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	✓
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Ashby Pond Dredging & Retrofit**	**Project #**	**340-644430-580330**
2035 Comprehensive Plan Reference:	**IU1.3.2 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Short-Term**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

When the Ashby Pond project was completed in 2011, the project did not include the complete removal of silt. Instead, only a portion was removed. Since then the City has taken steps to help the water quality through the installation of aeration bubblers and native plantings along the pond banks. 30% design plans for restoration of the channel that feeds the east side of the pond, and restoration of the inflow channel on the south side of the pond, as well as the pond dredging and retrofit were completed in FY21 & FY22. Stormwater Local Assistance Fund grants were applied for in FY22. This project will contribute to the TMDL pollutant load reduction for the City. All available grant funding opportunities will be pursued.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	175,000	-	-	-	-	-	-
Construction	-	1,575,000	-	-	-	-	1,575,000
Total Costs	**$ 175,000**	**$ 1,575,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,575,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	-	590,073	-	-	-	-	590,073
Grant	87,500	588,231	-	-	-	-	588,231
Stormwater Utility Fund	87,500	396,696	-	-	-	-	396,696
Total Funding	**$ 175,000**	**$ 1,575,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,575,000**

Estimated Project Timeline		New Project
Project Origination Date	07/01/18	
Project Design Start Date	06/30/19	
Construction Start Date	07/01/21	
Project Completion Date	06/30/23	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):

Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Plantation Parkway Culvert Repairs**	**Project #**	**320-644427-580330**
2035 Comprehensive Plan Reference:	**IU1.3.2 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Short-Term**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project will replace the erosion/scour slab, riprap and repair the wing walls on the upstream and downstream ends of this double 10' diameter corrugated metal pipe culvert across two phases. FY23 funding will provide for repair of the eastern/outlet side headwall and wingwall, and outlet apron/plunge pool area. The wingwalls and headwalls will also be sealed with graffiti resistant paint.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Construction	500,000	500,000	-	-	-	-	500,000
Total Costs	**$ 500,000**	**$ 500,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 500,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	500,000	500,000	-	-	-	-	500,000
Total Funding	**$ 500,000**	**$ 500,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 500,000**

Estimated Project Timeline	
Project Origination Date	07/01/19
Project Design Start Date	07/01/19
Construction Start Date	07/01/21
Project Completion Date	06/30/22

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P	✓	PW Admin	✓
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Flood Mitigation Planning & Resiliency**		**Project #**	**--**
2035 Comprehensive Plan Reference:	**NE2.1**	**pg 108**	**2035 Comprehensive Plan Timeframe:**	**Long-Term**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

This project supports the development of two flood mitigation initiatives. The first is a Flood Resilience Plan for the city. This plan provides project-based improvements for flood control and resilience, leverages nature-based infrastructure, considers all parts of a locality, includes coordination with other local and inter-jurisdictional activities, and is based on best available science. The plan will be developed to also provide credits towards FEMA's Community Rating System.

During the design of the Stafford Drive Stream Restoration Project, the effects to the floodplain were reviewed through hydraulic modeling. It was found that the culvert under Stafford Drive is a contributing factor in the floodplain impacts to the Mosby Woods condominium community. A flood study is proposed to evaluate the current condition of the Stafford Drive culvert and investigate options to improve the flood conditions in this area.
.

The city intends to apply for Community Flood Preparedness Fund grants for two projects which can, if approved, provide up to 75% funding for the flood preparedness plan, and 50% for the flood mitigation study. Development of a Flood Resilience Plan is a prerequisite to applying for any future grant funding for construction of a mitigation project, which can fund 50-70% of the project costs.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	225,000	-	-	-	-	225,000
Total Costs	$ -	**$ 225,000**	$ -	$ -	$ -	$ -	**$ 225,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
State - Other	-	148,250	-	-	-	-	148,250
Stormwater Utility Fund	-	76,750	-	-	-	-	76,750
Total Funding	$ -	**$ 225,000**	$ -	$ -	$ -	$ -	**$ 225,000**

Estimated Project Timeline		New Project
Project Origination Date	02/01/22	✓
Project Design Start Date	07/01/22	
Construction Start Date		
Project Completion Date	06/30/23	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Northfax Linear Park Design**	**Project #**	**--**
2035 Comprehensive Plan Reference:	**CCAC 2.3.5 p.52**	**2035 Comprehensive Plan Timeframe:**	**Immediate**

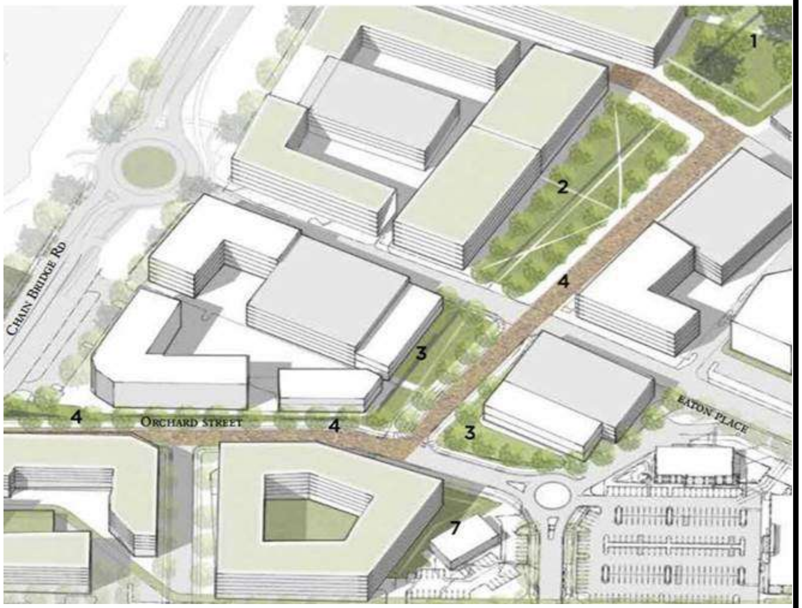
Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
✓	**Multimodal Transportation**	✓	**Economic Vitality**
	Community Services		**Other City Plan/Policy**

Statement of Need:

Funding is requested for consultant services to develop a unified stormwater strategy, landscape design and standards for the Northfax Linear Park as recommended in the Northfax Small Area Plan adopted in June 2020. This project will establish a phasable conceptual plan to be implemented across multiple properties and timelines. Final design and construction will occur incrementally as development proceeds on impacted parcels. A unified stormwater strategy and landscape plan are specifically recommended as implementation items to precede development of impacted parcels in the plan.

Picture:



Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	80,000	-	-	-	-	80,000
Total Costs	$ -	**$ 80,000**	$ -	$ -	$ -	$ -	**$ 80,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	-	80,000	-	-	-	-	80,000
Total Funding	$ -	**$ 80,000**	$ -	$ -	$ -	$ -	**$ 80,000**

Estimated Project Timeline	
Project Origination Date	06/23/20
Project Design Start Date	07/01/22
Construction Start Date	
Project Completion Date	

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P	✓	PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	✓
Parks & Rec	✓	PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Stormwater & Wastewater Plan Review**	**Project #**	**340-644439-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p.144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

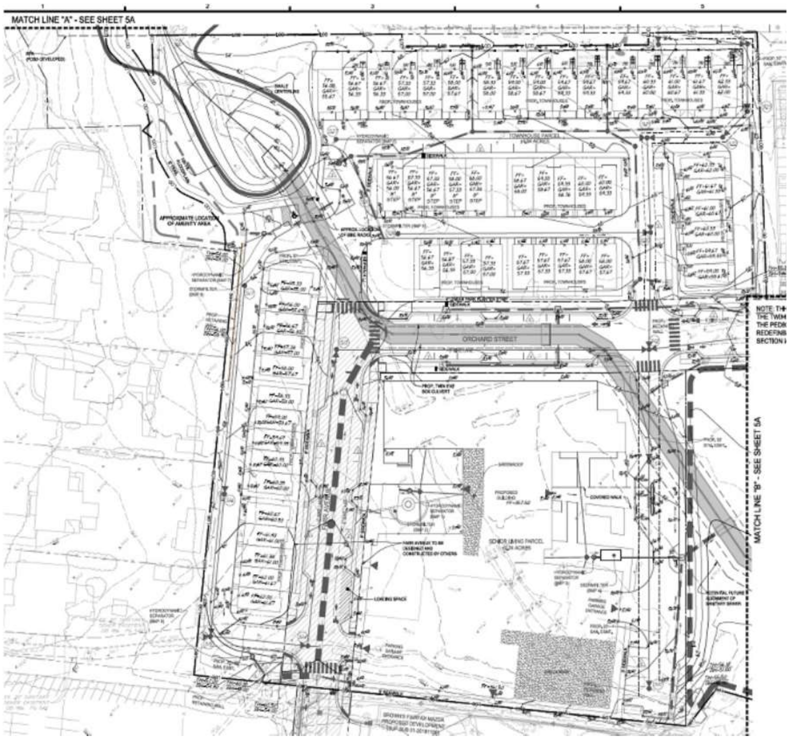
Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

Stormwater quality and quantity designs for larger development projects are becoming more complex due to the increasingly urban nature of the City. Wastewater contributions to the City's system also increase through development projects. This project will allow for an additional layer of plan review assistance by specialized storm/waste water engineering firms to ensure that regulatory requirements are met, no adverse stormwater impacts to the proposed development or surrounding properties will occur, and wastewater capacities are adequate.

Picture:



Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	75,000	40,000	80,000	80,000	80,000	80,000	360,000
Total Costs	**$ 75,000**	**$ 40,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 360,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Stormwater Utility Fund	50,000	-	55,000	55,000	55,000	55,000	220,000
Wastewater Fund	25,000	40,000	25,000	25,000	25,000	25,000	140,000
Total Funding	**$ 75,000**	**$ 40,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 360,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	✓
Personnel		Schools	

PROJECT INFORMATION

Name:	**Municipal Separate Storm Sewer System (MS4)**	**Project #**	**340-644424-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project is required to comply with the 2018-2023 Municipal Separate Storm Sewer System (MS4) permit requirements. The new permit has new significant milestones that the City must meet each year of the 5 year permit term. The permit requirements include updating GIS files for DEQ, updating the City's website, revising the 5 year program plan, updating and implementing nutrient management plans, conducting outfall screening, conducting public outreach & education, and compiling our MS4 annual report. Funding will also provide for inspections, materials/equipment/signage, and staff training necessary to maintain Stormwater Pollution Prevention Plan compliance at the City's Property Yard facility. This permit will be active from 2018-2023, with this fiscal year being permit year 5.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	155,000	155,000	165,000	165,000	165,000	165,000	815,000
Total Costs	**$ 155,000**	**$ 155,000**	**$ 165,000**	**$ 165,000**	**$ 165,000**	**$ 165,000**	**$ 815,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	120,000	-	-	-	-	-	-
Stormwater Utility Fund	35,000	155,000	165,000	165,000	165,000	165,000	815,000
Total Funding	**$ 155,000**	**$ 155,000**	**$ 165,000**	**$ 165,000**	**$ 165,000**	**$ 165,000**	**$ 815,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):

Cable TV		H-17	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Private BMP/SWM Inspection**	**Project #**	**340-644432-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project provides for the annual inspection of all the private Best Management Practice/Storm Water Management (BMP/SWM) systems throughout the City. Currently there are 440 privately owned facilities in inventory. Annual inspection of these facilities is required under the Virginia Pollution Discharge Elimination System (VPDES) and Phase II-Municipal Separate Storm Sewer System (MS4) permit. While BMP facilities are engineered to meet state requirements for pollutant load reduction and water quantity, their continued performance is dependent upon inspections and maintenance. The number of facilities in inventory will continue to increase with future development / redevelopment of properties.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	120,000	130,000	130,000	135,000	135,000	140,000	670,000
Total Costs	**$ 120,000**	**$ 130,000**	**$ 130,000**	**$ 135,000**	**$ 135,000**	**$ 140,000**	**$ 670,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	120,000	-	-	-	-	-	-
Stormwater Utility Fund	-	130,000	130,000	135,000	135,000	140,000	670,000
Total Funding	**$ 120,000**	**$ 130,000**	**$ 130,000**	**$ 135,000**	**$ 135,000**	**$ 140,000**	**$ 670,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Public BMP/SWM Inspection and Maintenance**	**Project #**	**340-644415-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project provides for the annual inspection and maintenance of all the public Best Management Practice/Storm Water Management (BMP/SWM) systems throughout the City, including prior stream restoration project areas. There are currently 38 City owned and maintained facilities, plus two stream restoration areas that are inspected annually. Annual inspection of these facilities is required under the Virginia Pollution Discharge Elimination System (VPDES), Phase II-Municipal Separate Storm Sewer System (MS4) permit, and grant funding agreements with Virginia Department of Environmental Quality. Maintenance of BMP facilities is necessary to ensure that they continue to function as designed to provide water quality and quantity control. Implementation of Best Management Practices is required to offset the impacts of development activity, and the number of facilities in inventory will increase with future development/redevelopment of City properties, and roadway / transportation projects.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Infrastructure Maint/Repair/Upgrade	130,000	130,000	135,000	135,000	140,000	140,000	680,000
Total Costs	**$ 130,000**	**$ 130,000**	**$ 135,000**	**$ 135,000**	**$ 140,000**	**$ 140,000**	**$ 680,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	110,000	-	-	-	-	-	-
Stormwater Utility Fund	20,000	130,000	135,000	135,000	140,000	140,000	680,000
Total Funding	**$ 130,000**	**$ 130,000**	**$ 135,000**	**$ 135,000**	**$ 140,000**	**$ 140,000**	**$ 680,000**

Estimated Project Timeline		New Project
Project Origination Date		
Project Design Start Date		
Construction Start Date		
Project Completion Date	Ongoing	

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Stream Evaluation and Restoration**	**Project #**	**340-644422-580330**
2035 Comprehensive Plan Reference:	**IU1.3.1 p. 144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

✓	**Land Use**	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**	✓	**Other City Plan/Policy**

Statement of Need:

The Accotink Creek Stream Stability Assessment and Prioritization Plan was developed in October 2007 and has been used as a guide to select future stream restoration project areas. This report is now 15-years old and an update is needed. A comprehensive stream condition assessment is proposed for FY23 which will document improvements made through completed environmental projects and help prioritize stream segments for future restoration projects. All grant opportunities will be explored for this project.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	150,000	200,000	200,000	-	200,000	200,000	800,000
Construction	2,200,000	-	-	2,500,000	1,300,000	-	3,800,000
Total Costs	**$ 2,350,000**	**$ 200,000**	**$ 200,000**	**$ 2,500,000**	**$ 1,500,000**	**$ 200,000**	**$ 4,600,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	-	-	-	250,000	-	-	250,000
Grant	1,175,000	-	-	1,250,000	750,000	-	2,000,000
Stormwater Utility Fund	1,175,000	200,000	200,000	1,000,000	750,000	200,000	2,350,000
Total Funding	**$ 2,350,000**	**$ 200,000**	**$ 200,000**	**$ 2,500,000**	**$ 1,500,000**	**$ 200,000**	**$ 4,600,000**

Estimated Project Timeline	
Project Origination Date	
Project Design Start Date	
Construction Start Date	
Project Completion Date	Ongoing

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name: **TMDL Action Plans**

Project # **340-644426-580330**

2035 Comprehensive Plan Reference: **IU1.3.1** **p. 144**

2035 Comprehensive Plan Timeframe: **Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

This project is needed to comply with the annual milestone requirements of the Municipal Separate Storm Sewer System (MS4) permit and state mandated TMDL allocations for waterways located within the regional watershed. A Chesapeake Bay Total Maximum Daily Load (TMDL) action plan was completed in 2015 and updated in 2019, as well as nine additional local TMDLs allocated to the City. Each action plan outlines what the pollutant of concern (POC) loads and required reductions are for the City to meet the permit requirements, and how the City will achieve them. The City met the Chesapeake Bay TMDL 5% reduction requirements for 2018. The Chesapeake Bay TMDL requires that the City achieve a 40% pollutant reduction goal by 2023, and 100% pollutant reduction goal by 2028. This project will provide for design and construction of stormwater outfall channel retrofits, and BMP retrofits. Both types of projects will provide for TMDL credit towards the City's pollutant reduction goals. Alternative compliance methods will be explored, including nutrient credit purchases. This project will also provide for development of a required chloride TMDL Action Plan. All grant opportunities will be explored.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	100,000	100,000	100,000	100,000	100,000	100,000	500,000
Construction	200,000	400,000	400,000	400,000	400,000	400,000	2,000,000
Total Costs	**$ 300,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 2,500,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	300,000	-	-	-	-	-	-
Grant	-	477,580	-	-	-	-	477,580
Stormwater Utility Fund	-	22,420	500,000	500,000	500,000	500,000	2,022,420
Total Funding	**$ 300,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 500,000**	**$ 2,500,000**

Estimated Project Timeline	
Project Origination Date	
Project Design Start Date	
Construction Start Date	
Project Completion Date	Ongoing

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

PROJECT INFORMATION

Name:	**Storm Sewer Evaluation & Update Program**	**Project #**	**340-644407-580330**
2035 Comprehensive Plan Reference:	**IU1.3.2 p.144**	**2035 Comprehensive Plan Timeframe:**	**Ongoing**

Comprehensive Plan Element

	Land Use	✓	**Environment and Sustainability**
	Multimodal Transportation		**Economic Vitality**
✓	**Community Services**		**Other City Plan/Policy**

Statement of Need:

A multi-phase evaluation program to prioritize areas for CCTV camera inspection of pipes and manholes was developed in FY22. This project will continue inspections to provide asset condition data and guide future maintenance and upgrade priorities. This project will also allow for collection of updated storm sewer inventory data that will be accessible through GIS. Data to be collected will include coordinate location, pipe size, material, depth, inlet/manhole type, and pipe connectivity layout.

Picture:

Funding Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Feasibility/Planning/Design/Engineering	-	250,000	250,000	250,000	250,000	250,000	1,250,000
Total Costs	**$ -**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 1,250,000**

Funding Sources	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Totals
Financing	-	150,000	150,000	150,000	-	-	450,000
Stormwater Utility Fund	-	100,000	100,000	100,000	250,000	250,000	800,000
Total Funding	**$ -**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 1,250,000**

Estimated Project Timeline	
Project Origination Date	
Project Design Start Date	
Construction Start Date	
Project Completion Date	Ongoing

New Project

Financial Impacts	
Annual Revenue Generated:	$ -
Annual Cost Savings:	$ -
Annual Increase in Operating Costs:	$ -
Projected Future Savings:	$ -

Responsible Department(s):			
Cable TV		Police	
CD&P		PW Admin	
City Manager		PW Fleet	
Finance		PW Operations	
Fire		PW Signs/Signal	
Historic		PW Stormwater	✓
Human Svc		PW Streets	
IT		PW Transport	
Parks & Rec		PW Wastewater	
Personnel		Schools	

Attachment 2 – CFPF Grant Manual Appendix A

Attachment 2 – Outline

1. Appendix A: Application Form for Grant Request for All Categories

Attachment 2.1

Appendix A: Application Form for Grant Request for All Categories

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

City of Fairfax

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

____ **Project**

____ **Study**

NFIP/DCR Community Identification Number (CID) 515524

If a state or federally recognized Indian tribe, Name of tribe ____

Name of Authorized Official: Robert A. Stalzer, City Manager

Signature of Authorized Official: ____

Mailing Address (1): 10455 Armstrong St

Mailing Address (2): ____

City: Fairfax **State:** Virginia **Zip:** 22030

Telephone Number: (703) 385-7850 **Cell Phone Number:** (____) ____

Email Address: rob.stalzer@fairfaxva.gov

Contact Person (If different from authorized official): Satoshi Eto, Public Works Program Mgr.

Mailing Address (1): 10455 Armstrong St

Mailing Address (2): ______

City: Fairfax **State:** VA **Zip:** 22030

Telephone Number: (703) 273-6073 **Cell Phone Number:** (571) 641-0839

Email Address: satoshi.eto@fairfaxva.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☒ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): City of Fairfax

NFIP Community Identification Number (CID#):(See appendix F 515524

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Not Applicable

Flood Insurance Rate Map Number(s) (If Applicable): Not Applicable

Total Cost of Project: $159,672.58

Total Amount Requested $119,754.44

Attachment 3 – CFPF Grant Manual Appendix D

Attachment 3 – Outline

1. Appendix D: Scoring Criteria for Capacity Building & Planning
2. Appendix D: Checklist All Categories
3. City of Fairfax – Current Floodplain Ordinance (4.15 Floodplain Regulations)
4. City of Fairfax – 2035 Comprehensive Plan
5. City of Fairfax – ADAPT VA Vulnerability Map
6. United States Census Median Household Income Virginia & City of Fairfax

Attachment 3.1

Appendix D: Scoring Criteria for Capacity Building & Planning

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Fairfax	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☒ **Yes** ☐ **No**
Applicant Name:	City of Fairfax

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	
Development of a new resilience plan.	**55**	X
Resource assessments, planning, strategies and development.	**45**	
Policy management and/or development.	**40**	
Stakeholder engagement and strategies.	**25**	
Goal planning, implementation and evaluation.	**25**	
Long term maintenance strategy.	**25**	
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based **on ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	X
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	X
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	X
10. Does this project provide "community scale" benefits?		
Yes	**20**	X
No		
Total Points		75

Attachment 3.2

Appendix D: Checklist All Categories

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Attachment 3.3

City of Fairfax – Current Floodplain Ordinance (4.15 Floodplain Regulations)

§4.14.6. Radioactivity

There shall be no radioactive emission that would be dangerous to health.

§4.14.7. Electrical interference

There shall be no electrical disturbance adversely affecting the operation of any equipment other than that of the creator of such disturbance.

§4.14.8. Liquid or solid wastes

There shall be no discharge of any liquid or solid wastes into any stream, except as authorized by a public agency.

§4.14.9. Glare and heat

There shall be no direct or reflected glare, whether from floodlights or from high-temperature processes (for example, combustion or welding) so as to be visible from within any residential district. There shall be no discharge of heat or heated air from any source so as to be detectable beyond the lot line.

§4.15. FLOODPLAIN REGULATIONS

§4.15.1. Authority

These regulations are adopted pursuant to the authority granted to localities by Code of Virginia, §15.2 - 2280.

§4.15.2. Purpose

The purpose of these provisions is to prevent: the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

A. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;

B. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;

C. Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or floodproofed against flooding and flood damage; and

D. Protecting individuals from buying land and structures that are unsuited for intended purposes because of flood hazards.

§4.15.3. General Provisions

A. Applicability

These regulations shall apply to all privately and publicly owned lands within the city and identified as areas of special flood hazard according to the flood insurance rate map (FIRM) that is provided to the city by the Federal Emergency Management Agency (FEMA)

B. Compliance and liability

1. No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of these regulations and any other applicable ordinances and regulations, which apply to uses within the city.

2. The degree of flood protection sought by the provisions of these regulations is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study, but does not imply total flood protection. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. These regulations do not imply that districts outside the floodplain district or land uses permitted within such district will be free from flooding or flood damages.

3. These regulations shall not create liability on the part of the city or any officer or employee thereof for any flood damages that result from reliance on these regulations or any administrative decision lawfully made thereunder.

C. Records

Records of actions associated with administering these regulations shall be kept on file and maintained by the floodplain administrator.

D. Abrogation and greater restrictions

These regulations supersede any regulations currently in effect in flood-prone districts. Any existing regulation, however, shall remain in full force and effect to the extent that its provisions are more restrictive than the provisions of these regulations.

§4.15.4. Administration

A. Designation of the floodplain administrator

The zoning administrator shall serve as the floodplain administrator and is hereby appointed to administer and implement the regulations of this section and is referred to herein as the floodplain administrator. The floodplain administrator may:

1. Administer and implement floodplain regulations himself or delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees.

2. Enter into a written agreement or written contract with another community or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the city of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program (NFIP) as set forth in the Code of Federal Regulations at 44 CFR 59.22.

B. Duties and responsibilities of the floodplain administrator

The duties and responsibilities of the floodplain administrator shall include but are not limited to:

1. Review applications for floodplain permits to determine whether proposed activities will be located in the special flood hazard area.

2. Interpret floodplain boundaries and provide available base flood elevation and flood hazard information.

3. Review applications to determine whether proposed activities will be reasonably safe from flooding and require new construction and substantial improvements to meet the requirements of these regulations.
4. Review applications to determine whether all necessary permits have been obtained from the federal, state or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the 100-year frequency floodplain of free-flowing nontidal waters of the state.
5. Verify that applicants proposing an alteration of a watercourse have notified adjacent communities, the Department of Conservation and Recreation (DCR) Division of Dam Safety and Floodplain Management, and other appropriate agencies (Virginia Department of Environmental Quality [VADEQ], United States Army Corps of Engineers [USACE]) and have submitted copies of such notifications to FEMA.
6. Approve applications and issue floodplain permits to develop in flood hazard areas if the provisions of these regulations have been met, or disapprove applications if the provisions of these regulations have not been met.
7. Inspect or cause to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with these regulations or to determine if non-compliance has occurred or violations have been committed.
8. Review elevation certificates and require incomplete or deficient certificates to be corrected.
9. Submit to FEMA, or require applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the city, within six months after such data and information becomes available if the analyses indicate changes in base flood elevations.
10. Maintain and permanently keep records that are necessary for the administration of these regulations, including:
    - **(a)** Flood insurance studies, FIRMs (including historic studies and maps and current effective studies and maps) and letters of map change; and
    - **(b)** Documentation supporting issuance and denial of permits, elevation certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been floodproofed, other required design certifications, special exceptions and special use permits, and records of enforcement actions taken to correct violations of these regulation
11. Enforce the provisions of these regulations, investigate violations, issue notices of violations or stop work orders, and require permit holders to take corrective action.
12. Advise the board of zoning appeals, or the city council, as appropriate, regarding the intent of these regulations and, for each application for special exceptions and special use permits, prepare a staff report and recommendation.

13. Administer the requirements related to proposed work on existing buildings:
    - **(a)** Make determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged.
    - **(b)** Make reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.
14. Undertake other actions which may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other Federal, State, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in special flood hazard areas; and assisting property owners with documentation necessary to file claims for Increased Cost of Compliance coverage under NFIP flood insurance policies.
15. Notify FEMA when the corporate boundaries of the city have been modified and:
    - **(a)** Provide a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to these regulations has either been assumed or relinquished through annexation; and
    - **(b)** If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the city council for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to DCR Division of Dam Safety and Floodplain Management and FEMA.
16. Upon the request of FEMA, complete and submit a report concerning participation in the NFIP which may request information regarding the number of buildings in the special flood hazard area, number of permits issued for development in the special flood hazard area, and number of special exceptions and special use permits issued for development in the special flood hazard area.
17. Take into account flood, mudslide and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the city, whether or not those hazards have been specifically delineated geographically (e.g. via mapping or surveying).

C. Use and interpretation of FIRMs

The floodplain administrator shall make interpretations, where needed, as to the exact location of special flood hazard areas, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of FIRMs and data:

1. Where field surveyed topography indicates that adjacent ground elevations:

- **(a)** Are below the base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as special flood hazard area and subject to the requirements of these regulations;
- **(b)** Are above the base flood elevation, the area shall be regulated as special flood hazard area unless the applicant obtains a letter of map change that removes the area from the special flood hazard area.

2. In FEMA-identified special flood hazard areas where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified special flood hazard areas, any other flood hazard data available from a federal, state, or other source shall be reviewed and reasonably used.

3. Base flood elevations and designated floodway boundaries on FIRMs and in flood insurance studies shall take precedence over base flood elevations and floodway boundaries by any other sources if such sources show reduced floodway widths and/or lower base flood elevations.

4. Other sources of data shall be reasonably used if such sources show increased base flood elevations and/or larger floodways than are shown on FIRMs and in flood insurance studies.

5. If a Preliminary FIRM and/or a Preliminary Flood Insurance Study has been provided by FEMA:

- **(a)** Upon the issuance of a letter of final determination by FEMA, the preliminary flood hazard data shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering these regulations.
- **(b)** Prior to the issuance of a letter of final determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to §4.15.6.C regarding A Zones, and used where no base flood elevations and/or floodways are provided on the effective FIRM.
- **(c)** Prior to issuance of a letter of final determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary base flood elevations or floodways exceed the base flood elevations and/or designated floodway widths in existing flood hazard data provided by FEMA. Such preliminary data may be subject to change and/or appeal to FEMA.

D. Jurisdictional boundary changes

1. The city floodplain regulations then in effect on the date of annexation or agreed upon boundary line adjustment shall remain in effect and shall be enforced by the city for all annexed areas until the city adopts and enforces an ordinance which meets the requirements for participation in the NFIP. It is a requirement that municipalities with existing floodplain ordinances shall pass a resolution acknowledging and accepting responsibility for enforcing floodplain ordinance standards prior to annexation of any area containing identified flood hazards. If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, the city shall prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the city council for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to the DCR Division of Dam Safety and Floodplain Management and FEMA.

2. In accordance with the Code of Federal Regulations, Title 44 Subpart (B) Section 59.22 (a) (9) (v) all NFIP participating communities must notify the Federal Emergency Management Agency and optionally the State Coordinating Office (Virginia Department of Conservation and Recreation – Division of Dam Safety and Floodplain Management) in writing whenever the boundaries of the community have been modified by annexation or the community has otherwise assumed or no longer has authority to adopt and enforce floodplain management regulations for a particular area.
3. In order that all FIRMs accurately represent the city's boundaries, a copy of a map of the city suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority must be included with the notification.

E. District boundary changes

The city council may modify the boundaries of the floodplain in accordance with the procedures established for zoning map amendments contained in §6.4. Any such modification shall be based upon hydrologic and hydraulic analyses performed by an engineer who shall certify that the technical methods used correctly reflect accepted engineering design methods. Prior to any such modification, approval shall be obtained from FEMA.

F. Interpretation of district boundaries

The zoning administrator shall be responsible for the interpretation of floodplain boundaries and may approve minor refinements after consulting with the city engineer to more accurately determine the true location of such boundaries. Such approval shall be based on hydrologic and hydraulic analyses performed by an engineer, who shall certify that the technical methods used correctly reflect accepted engineering design methods. The determination of the floodplain boundary by the zoning administrator may be appealed by an aggrieved party to the board of zoning appeals pursuant to §6.21.

G. Submitting technical data

The city's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the city shall notify FEMA of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

H. Letters of map revision

When development in the floodplain causes a change in the base flood elevation, the applicant, including state agencies, must notify FEMA by applying for a conditional letter of map revision prior to construction, and a letter of map revision after construction. For example:

1. Any development that causes a rise in the base flood elevations within the floodway.

2. Any development occurring in Zones A1-30 and AE without a designated floodway, which will cause a rise of more than one foot in the base flood elevation.

§4.15.5. Alteration or relocation of a stream

Alteration or relocation of a stream, including but not limited to installing culverts and bridges. [44 CFR 65.3 and 65.6(a)(12)]

§4.15.6. Establishment of special flood hazard districts

A. Description of special flood hazard districts

The various special flood hazard districts shall include the special flood hazard areas. The basis for the delineation of these districts shall be the flood insurance study and the FIRM for the city prepared by FEMA, dated June 2, 2006, and any subsequent revisions or amendments thereto. The city may identify and regulate local flood hazard or ponding areas that are not delineated on the FIRM. These areas may be delineated on a local flood hazard map using best available topographic data and locally derived information such as flood of record, historic high water marks or approximate study methodologies. The boundaries of the special flood hazard areas are established as shown on the FIRM which is declared to be a part of these regulations and which shall be kept on file at the city.

1. The floodway district is in an AE Zone and is delineated, for purposes of These regulations, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one percent annual chance flood without increasing the water surface elevation of that flood more than one foot at any point. The following provisions shall apply within the floodway district of an AE Zone [44 CFR 60.3(d)]:

   (a) Within any floodway, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in flood levels within the community during the occurrence of the base flood discharge. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the floodplain administrator.

   (b) Development activities which increase the water surface elevation of the base flood may be allowed, provided that the applicant first applies – with the city's endorsement – for a conditional letter of map revision (CLOMR), and receives the approval of FEMA.

   (c) If §4.15.6.A.1(a) is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of §4.15.7, §4.15.8, §4.15.9, §4.15.10, and §4.15.11.

B. The AE, or AH Zones on the FIRM accompanying the Flood Insurance Study shall be those areas for which one-percent annual chance flood elevations have been provided and the floodway has not been delineated. The following provisions shall apply within an AE or AH Zone [44 CFR 60.3(c)]:

1. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as Zones A1-30 and AE or AH on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the city.

2. Development activities in Zones Al-30 and AE or AH, on the city FIRM which increase the water surface elevation of the base flood by more than one foot may be allowed, provided that the applicant first applies – with the city's endorsement – for a conditional letter of map revision, and receives the approval of FEMA

C. The A Zone on the FIRM accompanying the Flood Insurance Study shall be those areas for which no detailed flood profiles or elevations are provided, but the one percent annual chance floodplain boundary has been approximated. For these areas, the following provisions shall apply [44 CFR 60.3(b)]:

1. The approximated floodplain district shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the Flood Insurance Study. For these areas, the base flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one percent annual chance flood elevation cannot be determined for this area using other sources of data, such as the USACE Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this base flood elevation. For development proposed in the approximate floodplain the applicant must use technical methods that correctly reflect currently accepted non-detailed technical concepts, such as point on boundary, high water marks, or detailed methodologies hydrologic and hydraulic analyses. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the floodplain administrator.

2. The floodplain administrator reserves the right to require a hydrologic and hydraulic analysis for any development. When such base flood elevation data is utilized, the lowest floor shall be elevated at least 18 inches above the base flood level.

3. During the permitting process, the floodplain administrator shall obtain:

   (a) The elevation of the lowest floor (including the basement) of all new and substantially improved structures; and,

   (b) If the structure has been floodproofed in accordance with the requirements of this article, the elevation (in relation to mean sea level) to which the structure has been floodproofed.

4. The AO Zone on the FIRM accompanying the Flood Insurance Study shall be those areas of shallow flooding identified as AO on the FIRM. For these areas, the following provisions shall apply [44 CFR 60.3(c).

   (a) All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM plus 18 inches. If no flood depth number is specified, the lowest floor, including basement, shall be elevated no less than three and one-half feet above the highest adjacent grade.

(b) All new construction and substantial improvements of nonresidential structures shall:

(1) Have the lowest floor, including basement, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM plus 18 inches. If no flood depth number is specified, the lowest floor, including basement, shall be elevated at least three and one-half feet above the highest adjacent grade; or,

(2) Together with attendant utility and sanitary facilities be completely floodproofed to the specified flood level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

(c) Adequate drainage paths around structures on slopes shall be provided to guide floodwaters around and away from proposed structures.

D. Overlay Concept

The floodplain districts described above shall be overlays to the existing underlying districts as shown on the city’s zoning map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

1. If there is any conflict between the provisions or requirements of the floodplain districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.
2. In the event any provision concerning a floodplain district is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

§4.15.7. Permit and application requirements

A. Permit requirement

All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a zoning permit. Such development shall be undertaken only in strict compliance with the provisions of these regulations and with all other applicable codes and ordinances, as amended, such as the Virginia Uniform Statewide Building Code (USBC) and the city’s subdivision ordinance and regulations appertaining thereto. Prior to the issuance of any such permit, the floodplain administrator shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system. A floodplain permit shall be issued by the zoning administrator after an application has been submitted along with any documentation required by the zoning administrator and a fee in accordance with §6.2.4.

B. Site plans and permit applications

All applications for development within any floodplain district and all building permits issued for the floodplain shall incorporate the following information:

1. The elevation of the base flood at the site.
2. The elevation of the lowest floor (including basement).
3. For structures to be floodproofed (nonresidential only), the elevation to which the structure will be floodproofed.
4. Topographic information showing existing and proposed ground elevations.

C. Allowed uses

The following uses shall be permitted within the floodplain by right or with a special use permit, as specified; provided, that such uses are permitted in the zoning district within which they are located, the review criteria contained in §4.15.7 are met, and a floodplain permit is obtained as specified in §4.15.4.C.

1. Permitted uses

(a) Utilities and public facilities and improvements such as streets, channel improvements, bridges, utility pipes, utility transmission lines and stormwater management facilities shall be permitted.

(b) The following uses and improvements shall be permitted, provided that the development or use is otherwise permitted in this chapter and that the area of impervious surface shall not exceed 2,500 square feet and such uses or improvements shall not contain areas of fill in excess of 12 inches in depth:

(1) Agricultural uses such as farming, gardening, grazing and similar uses.

(2) Outdoor recreational uses such as parks, trails, picnic grounds, athletic fields, play grounds, golf courses, tennis courts and archery ranges.

2. Special uses

The following uses and improvements shall be permitted with a special use permit issued by the city council in accordance with the provisions of §6.7, provided that such use is permitted in the zoning district in which the proposed use or improvement is located:

(a) Area specified

The uses permitted and specified in §4.15.7.C.1 where the area of impervious surface will exceed 2,500 square feet or such uses or improvements will contain areas of fill in excess of 12 inches in depth.

(b) Redevelopment of property

(1) For the purposes of §4.15, redevelopment shall be any reconstruction, conversion, structural alteration, relocation or enlargement of any structure or any extension of the use of the land. No redevelopment shall be permitted in any floodplain until the developer submits to the zoning administrator a study performed by an engineer, which addresses the review criteria contained in §4.15.8.

(2) Redevelopment shall only be permitted if construction techniques are employed which floodproof each structure located within the floodplain in accordance with the NFIP, USBC floodproofing standards and all other applicable requirements. Within Zone AO the underside of the lowest floor (including basement) of any structure shall be a minimum of three and one-half feet above the highest adjacent grade. In addition, the underside of the lowest floor (including basement) of any structure shall be a minimum of 18 inches above the floodplain elevation.

§4.15.8. Approval criteria

A. Permitted uses, activities or developments (including redevelopments) within the floodplain shall be permitted only when all available alternative locations not within the floodplain have been properly considered and it is not possible to accommodate reasonable development outside the floodplain boundaries. Each application for a floodplain permit, together with required supporting documentation, shall clearly demonstrate that the proposed use, activity or development:

1. Shall minimize grading to the maximum possible extent.
2. Shall minimize the amount of impervious surface to the maximum possible extent through site design, the use of porous construction materials, grid or modular pavement, and other reasonable methods.
3. Shall minimize the loss of natural vegetation and natural stormwater characteristics.
4. Shall minimize the susceptibility of structures and their contents to flood damage.
5. Shall not negatively affect water quality.
6. Shall not increase the intensity or extent of flooding of lands above or below the property or jeopardize property or human life.
7. Shall not adversely affect the capacity of the floodplain channel or increase erosion within or adjacent to the floodplain. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within the city all applicable permits shall be obtained from the USACE, the VADEQ, and the Virginia Marine Resources Commission. Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the DCR, and the Federal Insurance Administration.
8. Shall minimize negative impacts upon wildlife habitat.
9. Shall have its design incorporate base (100-year) flood elevation data for any proposed new activity or development greater than 50 lots or five acres, whichever is the lesser, if located within Zone A. In addition, the best available floodway information from federal, state, or other sources acceptable to the zoning administrator shall be used.
10. Shall not result in more than a one-foot increase in the base (100-year) flood elevation. This shall include the cumulative effect of the proposed use, activity, or development when combined with all other existing and anticipated uses, activities, or development.
11. Shall not negatively affect drainage.

§4.15.9. General standards

A. New construction and substantial improvements shall be according to the Virginia USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.

B. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

C. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

D. Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

E. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

F. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters.

G. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

§4.15.10. Elevation and construction standards

In all identified flood hazard areas where base flood elevations have been provided in the Flood Insurance Study or generated by a certified professional in accordance with §4.15.6.C, the following provisions shall apply:

A. Residential Construction

New construction or substantial improvement of any residential structure in Zones A1-30, AE, AH and A with detailed base flood elevations shall have the lowest floor, including basement, elevated at least 18 inches above the base flood level.

B. Non-Residential Construction

New construction or substantial improvement of any commercial, industrial, or nonresidential building shall have the lowest floor, including basement, elevated at least 18 inches above the base flood level. Buildings located in all A1-30, AE, and AH Zones may be floodproofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the base flood elevation plus one foot are water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this §4.15.10 are satisfied. Such certification, including the specific elevation (in relation to mean sea level) to which such structures are floodproofed, shall be maintained by the zoning administrator).

C. Space Below the Lowest Floor

In Zones A, AE, AH, AO, and A1-A30, fully enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

1. Not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

2. Be constructed entirely of flood resistant materials below the regulatory flood protection elevation;

3. Include measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:

(a) Provide a minimum of two openings on different sides of each enclosed area subject to flooding.

(b) The total net area of all openings must be at least one square inch for each square foot of enclosed area subject to flooding.

(c) If a building has more than one enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.

(d) The bottom of all required openings shall be no higher than one foot above the adjacent grade.

(e) Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.

(f) Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

D. Manufactured homes

All manufactured homes shall be prohibited within the city. No special exceptions or variances will be granted.

E. Recreational vehicles

All recreational vehicles shall be prohibited within any special flood hazard area. No special exceptions or variances will be granted.

§4.15.11. Subdivision standards

A. All subdivisions shall minimize flood damage;

B. All subdivisions proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

C. All subdivisions shall have adequate drainage provided to reduce exposure to flood hazards, and

D. Base flood elevation data shall be obtained from other sources or developed using detailed methodologies, hydraulic and hydrologic analysis, comparable to those contained in a Flood

Insurance Study for subdivision proposals and other proposed development proposals (including subdivisions) that exceed 50 lots or five acres, whichever is the lesser.

§4.15.12. Existing structures in floodplain areas

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

A. Existing structures in the floodway shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion would not result in any increase in the base flood elevation.

B. Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain areas to an extent or amount of less than 50 percent of its market value shall conform to the Virginia USBC and the appropriate provisions of these regulations.

C. The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its location in a floodplain area to an extent or amount of 50 percent or more of its market value shall be undertaken only in full compliance with these regulations and shall require the entire structure to conform to the Virginia USBC.

§4.15.13. Special exceptions

A. The board of zoning appeals may, by special exception, permit within the floodplain additional uses where such uses are not permitted uses specified in §4.15.6, provided that:

1. Such additional use is permitted in the underlying zoning district;
2. Special exceptions shall be granted only in accordance with the procedures and limitations established for special use permits in §6.7; and
3. The special exception granted represents the minimum variation necessary to afford relief.

B. In reviewing a special exception request, the board of zoning appeals shall consider the following additional factors:

1. The danger to life and property due to increased flood heights or velocities caused by encroachments. No special exception shall be granted for any proposed use, development, or activity within any floodway that would cause any increase in the 100-year flood elevation.
2. The compatibility of the proposed use with existing development and nearby development anticipated in the foreseeable future.
3. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
4. For historic structures, a determination that the exception is the minimum necessary to preserve the historic character and design of the structure and would not preclude the structures continued designation as a historic structure.
5. The danger that materials may be swept on to other lands or downstream to the injury of others.

6. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.
7. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.
8. The importance of the services provided by the proposed facility to the community.
9. The requirements of the facility for a waterfront location.
10. The availability of alternative locations not subject to flooding for the proposed use.
11. The safety of access by ordinary and emergency vehicles to the property in time of flood.
12. The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters expected at the site.

C. A special exception shall be granted only after the board of zoning appeals has determined that the granting of such would not (i) result in unacceptable or prohibited increases in flood heights, (ii) pose additional threats to public safety, (iii) require extraordinary public expense, (iv) create any nuisances, (v) cause fraud or victimization of the public, and (vi) conflict with local laws or ordinances. Special exceptions shall be granted only after the board of zoning appeals has determined that a special exception would be the minimum required to provide relief from any hardship to the applicant.

D. The board of zoning appeals shall notify, in writing, the applicant for a special exception request that the issuance of a special exception to construct a structure below the 100-year flood elevation (i) increases the risks to life and property and (ii) may result in increased premium rates for flood insurance.

E. A record shall be maintained of the above notification as well as all special exception actions, including justification for the issuance of the special exceptions. The annual or biennial report submitted to the FEMA shall note any special exceptions, which are issued during the period covered by the report.

F. A special exception shall meet the elevation and construction standards established in §4.15.10.

§4.15.14. Variances

A. Applications for a variance, pursuant to the requirements of §6.18, will be subject to the same considerations as a special exception, as set forth in §4.15.13.

B. The board of zoning appeals shall notify, in writing, the applicant for a variance request that the issuance of a variance to construct a structure below the 100-year flood elevation (i) increases the risks to life and property and (ii) may result in increased premium rates for flood insurance.

§4.15.15. Definitions

For the purposes of 4.15, the following words and phrases shall have the meanings respectively ascribed to them by 4.15 unless the context clearly indicates otherwise:

100-YEAR FLOODPLAIN: The Federal Emergency Management Agency designated one percent annual chance water surface elevation. For the purposes of this ordinance, the 100-year flood is the base flood.

A, A1-30, AND AE ZONES: Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base flood elevations are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

AH ZONE: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between one and three feet. Base flood elevations derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.

AO ZONE: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply. Some AO Zones have been designated in areas with high flood velocities such as alluvial fans and washes. Communities are encouraged to adopt more restrictive requirements for these areas.

APPROXIMATED FLOODPLAIN DISTRICT: The floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated.

BASE FLOOD: The flood having a one percent chance of being equaled or exceeded in any given year.

BASE FLOOD ELEVATION (BFE): The FEMA designated one percent annual chance water surface elevation and the elevation determined per §4.15.10. The water surface elevation of the base flood in relation to the datum specified on the city's FIRM. For the purposes of these regulations, the base flood is the 100-year flood or 1 percent annual chance flood.

BASEMENT: Any area of the building having its floor sub-grade (below ground level) on all sides.

CONDITIONAL LETTER OF MAP REVISION (CLOMR): A formal review and comment as to whether a proposed flood protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not revise the effective Flood Insurance Rate Map or Flood Insurance Study.

DCR: Virginia Department of Conservation and Recreation.

DEVELOPMENT: Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

ELEVATION CERTIFICATE: An administrative tool of the National Flood Insurance Program which is to be used to provide elevation information necessary to ensure compliance with to community floodplain management ordinances, to determine the proper insurance premium rate, or support a request for a Letter of Map Amendment.

ENCROACHMENT: The advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA): The federal agency under which the NFIP is administered. In March 2003, FEMA became part of the newly created U.S. Department of Homeland Security.

FLOOD OR FLOODING: A general or temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters; the unusual and rapid accumulation or runoff of surface waters from any source. Mudflows which are proximately caused by such accumulation or runoff of surface waters and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in the overflow of inland or tidal waters. .

FLOOD INSURANCE RATE MAP (FIRM): an official map of a community, on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

FLOOD INSURANCE STUDY (FIS): A report by FEMA that examines, evaluates and determines flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards.

FLOODPLAIN AREA: Any land area susceptible to being inundated by water from any source.

FLOODPLAIN DISTRICT: District designated as a special flood hazard area.

FLOODPLAIN ADMINISTRATOR: the individual appointed to administer and implement these regulations. The zoning administrator has been appointed as the floodplain administrator.

FLOODPROOFING: any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

FLOODWAY: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

FLOODWAY DISTRICT: The area within an AE Zone that is delineated, for purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one percent annual chance flood without increasing the water surface elevation of that flood more than one foot at any point. See §4.15.6.A.

HIGHEST ADJACENT GRADE: the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

HISTORIC STRUCTURE: Any structure that is: (a) listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or, (c) individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either; (d) by an approved state program as determined by the Secretary of the Interior; or (e) directly by the Secretary of the Interior in states without approved programs.

LETTER OF FINAL DETERMINATION (LFD): A letter FEMA sends to the chief executive officer of a community stating that a new or updated FIRM or DFIRM will become effective in six months.

LETTER OF MAP CHANGE (LOMC): A letter of map change is an official FEMA determination, by letter, that amends or revises an effective Flood Insurance Rate Map or Flood Insurance Study. Letters of map change include:

LETTER OF MAP AMENDMENT (LOMA): An amendment based on technical data showing that a property was incorrectly included in a designated special flood hazard area. A LOMA amends the current effective Flood Insurance Rate Map and establishes that land as defined by meets and bounds or structure is not located in a special flood hazard area.

LETTER OF MAP REVISION (LOMR): A revision based on technical data that may show changes to flood zones, flood elevations, floodplain and floodway delineations, and planimetric features. A letter of map revision based on fill (LOMR-F), is a determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer exposed to flooding associated with the base flood. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community's floodplain management regulations.

LOCAL FLOOD HAZARD MAP – A map created by the city of Fairfax to identify and regulate local flood hazard or ponding areas that are not delineated on the Flood Insurance Rate Map.

LOWEST ADJACENT GRADE: the lowest natural elevation of the ground surface next to the walls of it structure.

LOWEST FLOOR: The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of 44 CFR 60.3.

MANUFACTURED HOME: A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than 180 consecutive days, but does not include a recreational vehicle.

NEW CONSTRUCTION: For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after December 23, 1971, or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, new construction means structures for which the start of construction commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

POST-FIRM STRUCTURES: A structure for which construction or substantial improvement occurred after December 31, 1974 or on or after December 23, 1971, whichever is later.

PRE-FIRM STRUCTURES: A structure for which construction or substantial improvement occurred on or before December 31, 1974 or before December 23, 1971.

RECREATIONAL VEHICLE: A vehicle which is: (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projection; (c) designed to be self-propelled or permanently towable by a light duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

REGULATORY FLOOD PROTECTION ELEVATION: See "base flood elevation".

SHALLOW FLOODING AREA: A special flood hazard area with base flood depths from one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

SPECIAL FLOOD HAZARD AREA: The land in the floodplain subject to a one percent or greater chance of being flooded in any given year as determined in §4.15.6.

START OF CONSTRUCTION: The date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

STRUCTURE: A walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home.

SUBSTANTIAL DAMAGE: Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. This term includes structures that have incurred substantial damage regardless of the actual repair work performed. The term does not, however, include either: (a) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or (b) any alteration of a historic structure, provided that the alteration will not preclude the structure’s continued designation as a historic structure. Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined above, must comply with all ordinance requirements that do not preclude the structure’s continued designation as a historic structure. Documentation that a specific ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic places must be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.

USACE: United States Army Corps of Engineers.

USBC: Virginia Uniform Statewide Building Code.

VADEQ: Virginia Department of Environmental Quality.

VIOLATION: the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in these regulations is presumed to be in violation until such time as that documentation is provided.

WATERCOURSE: A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

§4.16. STORM DRAINAGE FACILITIES

§4.16.1. Purpose

A. The purpose of §4.16 to define those storm drainage facilities which must be provided by landowners to control rainfall runoff from and across their property in a manner not detrimental to other inhabitants of the city and to preserve, where possible, presently existing natural creek channels. It is the further purpose of §4.16 to minimize the adverse effects of stormwater runoff on downstream drainageways within the city.

B. Article 2.3 (§62.1-44.15:27) of Chapter 3.1 of Title 62.1 of the Code of Virginia establishes the requirement for localities to establish a stormwater management program. §4.16 is adopted pursuant to Chapter 3.1 of Title 62.1 of the Code of Virginia (§62.1-44.15:25 and §62.1-44.15:28 et seq.).

§4.16.2. Performance standards for facilities

Stormwater BMPs, on-site detention facilities, and on-site drainage facilities shall be designed and maintained in such a manner as to minimize economic and environmental costs to the city and its inhabitants in accordance with §4.16.7.

§4.16.3. Performance requirements

Performance requirements for stormwater BMPs, on-site detention facilities, and on-site drainage facilities shall be as specified in §4.16.8.

§4.16.4. Design, construction, inspection and maintenance requirements

Design, construction, inspection and maintenance requirements shall be as defined in the city storm drainage facility specifications as they may be hereafter promulgated by the city engineer and approved by the city council from time to time.

§4.16.5. Usage, improvement and preservation of creeks and channels

A. Natural creeks and drainage channels may be used where available to route stormwater runoff from the city.

B. Natural drainage systems will be improved where necessary in accordance with 9VAC25-870-66 of the Regulations. To the maximum degree possible, these improvements shall be made in such a manner as to preserve, enhance or restore the vegetation, including trees, along the creek line so that the aesthetic, environmental and ecological values of the vegetation are not lost to the community.

C. Land disturbances within resource protection areas or resource management areas may require a water quality impact assessment in accordance with §4.18.8.

Attachment 3.4

City of Fairfax – 2035 Comprehensive Plan

1805

City of Fairfax 2035 Comprehensive Plan

Adopted February 12, 2019

Last Amended June 23, 2020

City of Fairfax, Virginia
10455 Armstrong Street · Fairfax, VA 22030-3630
www.fairfaxva.gov

This is an exciting time for the City's Comprehensive Plan to be significantly revised — not only because it has been 15 years since such an extensive effort has been taken, but also because of the many opportunities happening right now that will impact our future.

Our region is undergoing a major economic shift. Federal spending as a portion of the overall regional economy continues to diminish. This greatly impacts the demand for federal workforce and contractors. Meanwhile, technology-based businesses are flourishing and have made numerous high-profile investments in the region.

The City and George Mason University, at our southern border, have the opportunity to work together to take advantage of this shift and be critical players in the new regional economy. In addition, there are many other opportunities in this plan to leverage the regional economy to benefit the community.

Commercial Redevelopment: Many of the City's commercial properties date to the 1950s and are no longer competitive to attract top-tier tenants. The land use plan provides new flexibility and clarity to encourage property owners to revitalize their properties to meet modern demands and remain competitive in the commercial market.

Housing and Neighborhoods: The City's older housing stock is increasingly being renovated and expanded to keep up with current trends in design and amenities to attract employees in the new economy. The Comprehensive Plan encourages new housing types to attract a wider array of residents and to create and maintain a supply of units that is more affordable.

Historic Resources: The long history of the City provides a unique identity that separates the City from the bulk of Northern Virginia, making it an ideal place to invest. This history will continue to be communicated through preservation of the numerous historic structures and landscapes and celebrated through events and festivals.

Multimodal Transportation: This Comprehensive Plan is supported by the City's recently completed Multimodal Transportation Plan. It envisions a more accessible City for cars, bikes, pedestrians and public transit alike, and accommodates anticipated innovative technologies in transportation. A number of new funding sources also make implementing these initiatives much more feasible than in the past.

Environment: The City will embrace new technologies and promote policies and regulations for a more sustainable future, both locally and globally. New measures will improve the quality of our streams through better stormwater management. The City will vigorously pursue best practices to reduce the volume of waste generated from commercial and residential properties.

Community Services: The City has always prided itself on providing the highest quality public services. Maintaining this stature requires continued investment and monitoring public service facilities for needed improvements, particularly as new technologies and innovations emerge.

The City Council, the Planning Commission, and all of the stakeholders who participated in the development of this plan look forward to seizing the opportunities that will influence the City during the next 15 to 20 years — from an advancing regional economy to new technologies and innovations to support services and environmental sustainability. Together, these opportunities will support a strong, sustainable economy for our vibrant 21st-century community.

Sincerely,

Mayor David L. Meyer

Councilmember Michael Demarco

Councilmember Jennifer Passey

Councilmember So Lim

Councilmember Jonathan Stehle

Councilmember Janice Miller

Councilmember Sang Yi

Contents

The City of Fairfax is committed to the letter and spirit of the Americans with Disabilities Act. If you are in need of assistance in interpreting the Fairfax 2035 Comprehensive Plan or to request a reasonable accommodation for any type of disability, please call 703-385-7930, (TTY 711).

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Chapter 6: Community Services

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Acknowledgments

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David Meyer

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Special thanks to City residents, business owners, and stakeholders who have reviewed and provided comments to City Staff on the 2035 Comprehensive Plan drafts.

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* Term or service ended prior to Planning Commission recommendation or City Council adoption of plan.

1 Introduction

The City of Fairfax ("the City") is unique in boasting the benefits of a closely knit community that is hard to find in the Metropolitan Washington region and the access and proximity to large-city amenities and activities. Residents enjoy neighborhoods with distinct character, an active arts scene, high-quality educational institutions for all ages, easy access to natural amenities, and exceptional City services and facilities. Employees and business owners appreciate its central location within Northern Virginia; ease of access and adjacency to major thoroughfares, and its proximity to major regional employers in the health, education, government, and legal sectors.

Nonetheless, the City is not immune to the internal and external elements that place considerable pressure on its identity and future. Its commercial and retail properties are aging and growing less competitive with nearby jurisdictions, raising questions about future development and tax burdens on City residents. Nearby localities feature newer, more in-demand housing stock to attract and retain residents. Region-wide issues of affordable housing, aging and stressed utility infrastructure, traffic congestion, and environmental concerns similarly impact the City and those who live and work here.

As the City's official policy guide for future development-related decisions, the 2035 Comprehensive Plan ("the Comprehensive Plan") provides direction to enhance the City's function, appearance, and livability based on its current conditions. It also seeks to provide the opportunity to examine the various forces affecting the City – such as redevelopment opportunities, economic competitiveness, and an increasingly strained transportation network – and propose innovative solutions that benefit City residents, workers, and visitors alike. As changes occur in and around the City, the Comprehensive Plan provides a framework for responding to and thriving as a result of these changes. Those who contributed to the Comprehensive Plan hope that readers find it a thoughtfully-crafted document that lends itself to enhancing quality of life and making the City a great place for everyone.

Background

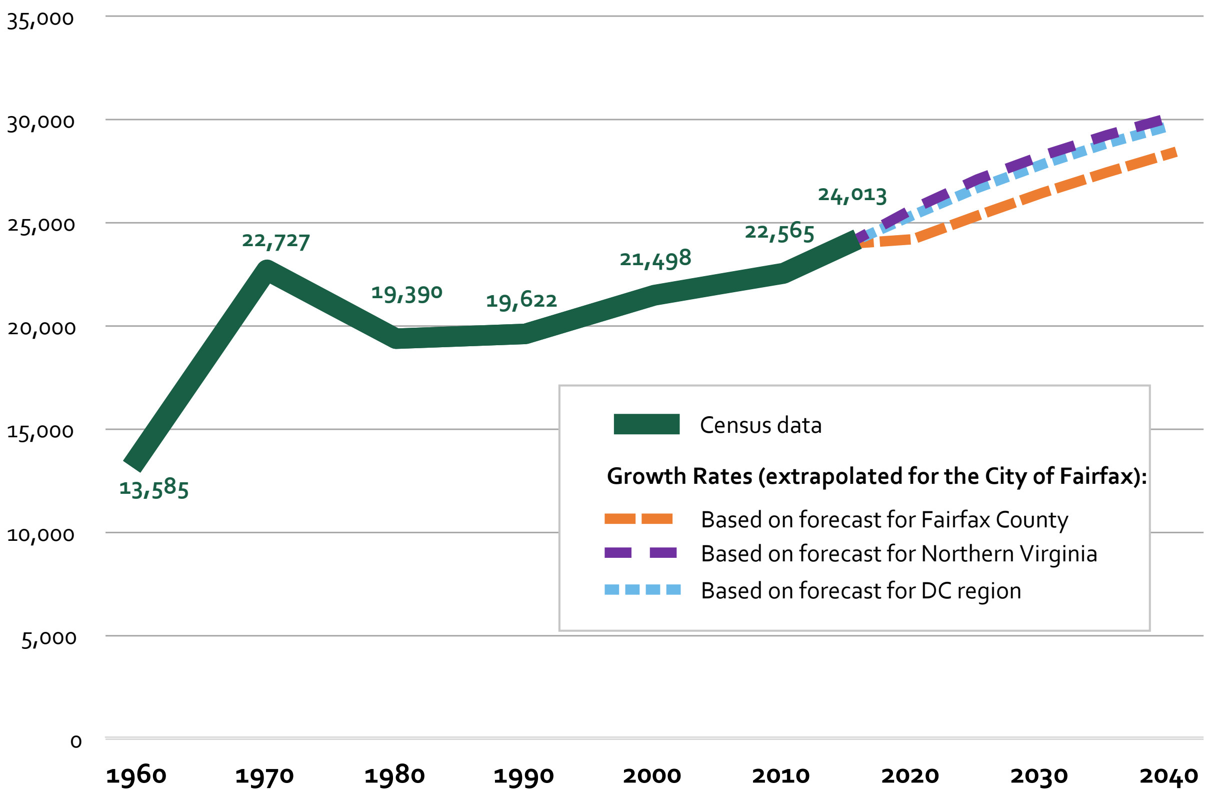
The City was established as the Town of Providence in 1805 following the construction of the Fairfax County Courthouse at the rural crossroads of Little River Turnpike and Ox Road. The Town became a hub of commerce within a predominantly agricultural area removed from the growing City of Washington. In 1874, the Town adopted the name Fairfax.

The Town emerged as a more significant regional crossroads when US 50 and US 29 were created in 1926 as part of the original U.S. Highway System. These roadways supported the City's economic growth as businesses expended around the needs of travelers, and the industries serving the surrounding dairy farms. Federal housing programs following World War II catalyzed suburban development in the City, attracting veterans and their families and spurring rapid population growth. The Town was incorporated as the City of Fairfax in 1961. Further economic growth was fueled by the establishment of George Mason University along the City's southern border in 1964, the opening of Interstate 66 along the northern border in 1982, the extension of the Metrorail Orange Line from Washington to the nearby Vienna/Fairfax-GMU station in 1986, and continued overall growth of the region.

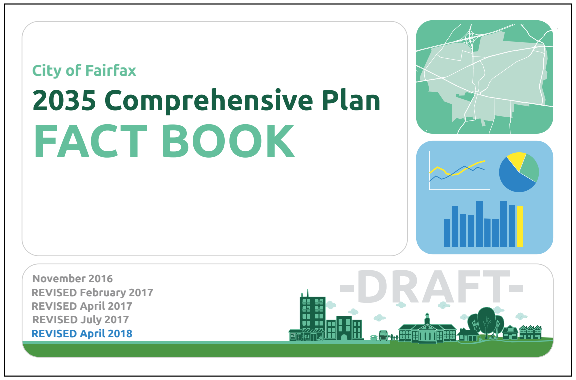
Today, the City is an independent jurisdiction of just over six square miles and a current population of around 24,000, located in the heart of Northern Virginia. The Metropolitan Washington Council of Governments (MWCOG) forecasts an increase of 3,400 households in the City by 2035, as shown in Figure 1. The City strives to strike a balance between maintaining the charm that residents currently enjoy and that makes it unique from surrounding communities while also guiding the growth and development projected for this metropolitan area.

Main Street Fairfax, 1905 *- Winter view of Main Street with the Ratcliffe-Allison House on the right next to Town Hall, built only five years earlier, at the intersection with Mechanic Street (now University Drive).*

FIGURE 1 POPULATION HISTORY AND FORECASTS



Source: US Census and MWCOG Round 8.4 Cooperative Forecasting: Population and Household Forecasts



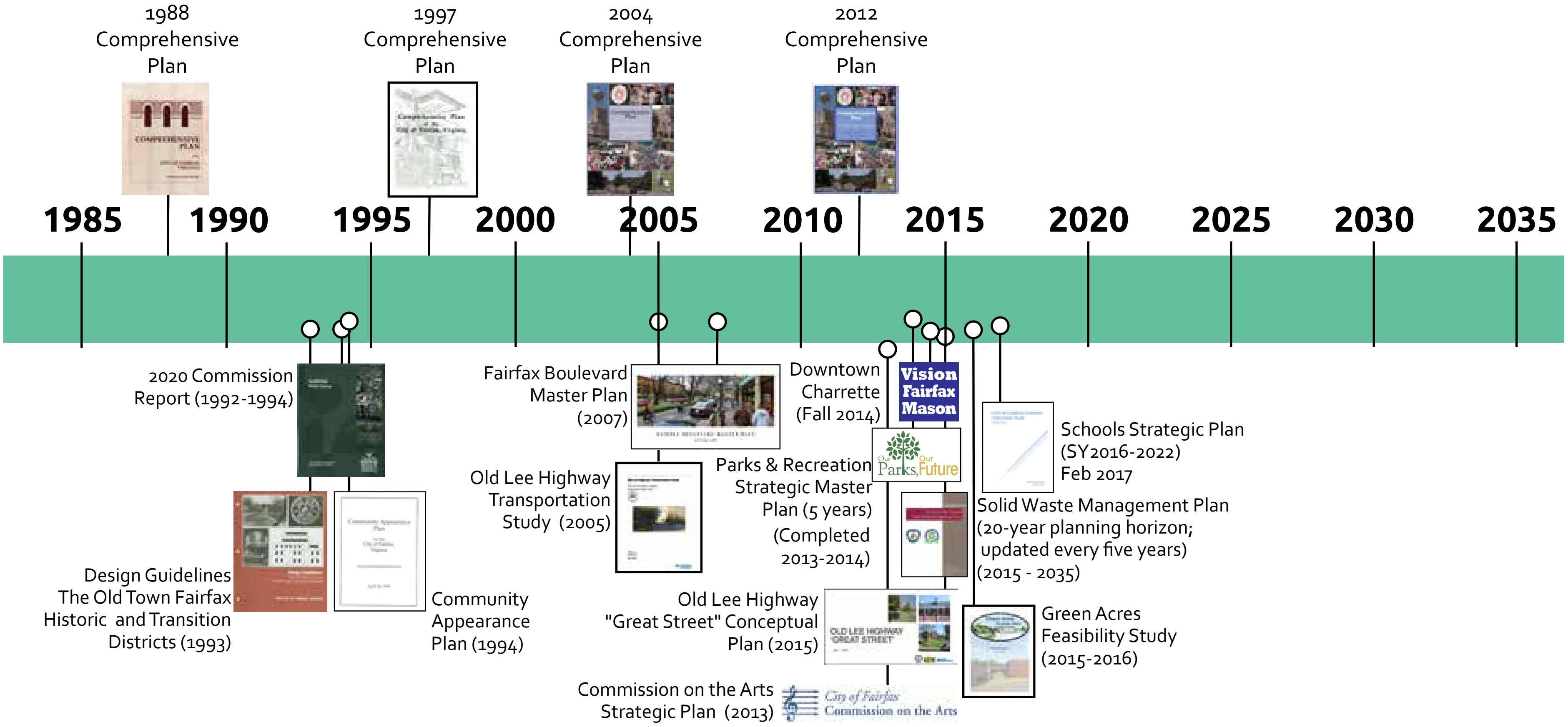
City of Fairfax
2035 Comprehensive Plan
FACT BOOK

November 2016
REVISED February 2017
REVISED April 2017
REVISED July 2017
REVISED April 2018

-DRAFT-

For more information about the City's population, check out the City of Fairfax Fact Book.

The first comprehensive development plan for the City was adopted in June 1968, with amendments in 1971 and 1973. New plans were adopted in 1975, 1982, and 1988, with amendments in 1983, 1991, 1993, and 1997. City Council adopted the Comprehensive Plan's last major rewrite in July 2004. During the Comprehensive Plan's 2008-2011 review, the Planning Commission amended the existing plan, which was adopted in 2012. In addition to the Comprehensive Plan updates, many individual studies and plans have been completed over the years as shown in the diagram below. This Comprehensive Plan incorporates and builds on many of the goals and strategies found in those studies as well as other plans and City policies not identified below.



Structure of the Comprehensive Plan

The Comprehensive Plan is a guide for the future growth of the City, focusing on community needs through 2035. Guidance and policy recommendations are provided through a vision, guiding principles, goals, outcomes, and actions, as described below.

- The **Vision** is the aspirational statement for the City in 2035;
- **Guiding Principles** are content-specific statements;
- **Goals** are general statements of the ideals toward which the City strives;
- **Outcomes** define what success looks like for each Goal; and
- **Actions** are the specific steps necessary to realize each Goal and Outcome.

The 14 Guiding Principles, as provided on pages 6-8, are categorized into five chapters: **Land Use, Multimodal Transportation, Environment and Sustainability, Economic Vitality, and Community Services**. Each topic is presented in a chapter of the Comprehensive Plan. Each chapter includes an introduction that provides background on the topic and a description of existing conditions, as well as opportunities and challenges facing the City that inform some of the policies suggested through the Comprehensive Plan. Additional background information, Goals, Outcomes, and Actions are then provided for each Guiding Principle. Goals, Outcomes, and Actions, can also be found in the stand-alone Implementation Guide, which will be revised on a regular basis to track the City's progress on meeting its Goals.

This Comprehensive Plan is supported by two appendices:

- **Appendix A – Chesapeake Bay Preservation Plan** identifies and characterizes the City's water resources and addresses the effects of land use planning and development on water quality in accordance with the Chesapeake Bay Preservation Act.
- **Appendix B - Transportation Practices and Policy** provides additional information on some of the more innovative practices discussed in the Multimodal Transportation Chapter.

Supporting maps, graphs and figures are provided throughout this document.

What is a Comprehensive Plan?

- Document describing a community's vision for how it wants to physically grow and develop in the near future (10 to 20 years)
- Provides guidance on land use, transportation, housing, economic development, environment, public facilities, parks, arts, and historic preservation
- Policy document for decision-making that informs zoning and budget decisions, i.e., the Capital Improvement Program (the five-year plan for physical improvements in the City – facilities, infrastructure, etc.)

VISION

In 2035, the City of Fairfax
has a strong, sustainable economy
that supports a vibrant 21st century community.

GUIDING PRINCIPLES

In 2035, Fairfax is a city with...

Land Use

...a close-knit community and a population that is diverse in its culture, demographics, and lifestyles, that capitalizes on its location in the center of the growing region and with easy access to the nation's capital.

...inviting neighborhoods, each with its own unique character.

Neighborhoods

Housing

...a choice of housing types that meet the needs of our community.

Economic Vitality

...an economy that cultivates and promotes business success and entrepreneurial opportunities for large, small, and independent businesses and capitalizes on national, regional and intellectual partnerships.

Commercial Corridors and Activity Centers

Photo Credit: Hord Coplan Macht

...flourishing centers of commercial and mixed-use activity that include an assortment of grocery stores, restaurants, cafes, entertainment venues, retail stores, offices, and housing.

Cultural Arts

...a thriving cultural arts program that supports a variety of special events, art spaces and performance venues.

Multimodal Transportation

...options for residents to easily, safely, and efficiently move within and between neighborhoods either by walking, bicycling, taking public transportation or driving.

Community Design and Historic Preservation

...architecture that contributes to a vibrant, creative place and complements our historic character.

Parks and Recreation

...inviting, well-maintained parks, trails, open spaces and multi-generational community centers.

Education

...world-class community schools and a best-in-class education from preschool to post-high school that prepares students to be productive, responsible members of society, capable of competing in the global economy and motivated to pursue life-long learning.

Sustainability Initiatives

...sustainable practices that preserve, conserve, reuse and recycle resources.

...a healthy ecosystem of naturally flowing streams, native plants, wildlife, contiguous natural habitat areas, and a healthy tree population.

Natural Environment

Government and Public Safety

...exceptional governmental, police and fire safety services.

Infrastructure and Utilities

...safe, well-maintained infrastructure and use of advanced technology.

Planning Process

Development of the Comprehensive Plan was based on a three-phase process beginning with information collection, followed by analysis and recommendations. Information collection included references to previous plans and studies that helped inform the Comprehensive Plan and input provided by members of the community, including residents, business owners, City Council, City boards and commissions, other stakeholders (George Mason University, Fairfax County, etc.), and City staff. During the information collection period, staff also developed the Fact Book, a summary of data on the City, from physical conditions to demographics and service analysis.

Based on the previous plans and studies referenced, input collected from the community, and data from the Fact Book, a series of goals and outcomes were developed for each of the content areas. These goals and outcomes were reviewed with the Planning Commission and City boards and commissions. The same process was followed to develop actions and metrics for the content areas. Goals, outcomes, actions and metrics for each content area encompass the recommendations of the Comprehensive Plan and provide the foundation for the overall document.

More specific data analysis was provided for the Land Use Strategies Guiding Principle, including a scenario analysis using Envision Tomorrow software. This provided a way to illustrate – with graphics and numbers – what the future could look like, given different development contexts, culminating in a public survey on potential development scenarios based on the results of the analysis. Along with the Scenario Analysis, survey results helped guide development of the Future Land Use Map.

Final revisions to the Comprehensive Plan were based on review by members of the community through public open houses, online forums, and Planning Commission and City Council meetings. The Comprehensive Plan was adopted by City Council on February 12, 2019 (R-19-03) after recommendation by the Planning Commission (PC-19-02).

The Multimodal Transportation Plan was prepared through a separate planning process parallel to this one, but with the intention of incorporating it into the Comprehensive Plan, with connections to land use, open space, housing, and economic development.

Community Outreach

Community outreach played a vital role in the development of the Comprehensive Plan. Early public involvement guided all aspects of the Comprehensive Plan including issue and opportunity identification, as well as development of the vision, goals, and objectives. Providing the opportunity for public input encourages citizens to be invested in the future of their community and helps ensure that recommendations developed as part of the Comprehensive Plan are implemented and sustained over time.

Staff employed a diverse set of traditional and non-traditional outreach tools and strategies to ensure all stakeholders had an opportunity to contribute throughout the process.

Community Surveys

The Center for Social Science Research (CSSR) at George Mason University worked with City staff to develop and administer a Community Survey to ask members of the community for feedback on issues of interest to formulate a vision, goals, and objectives for the Comprehensive Plan.

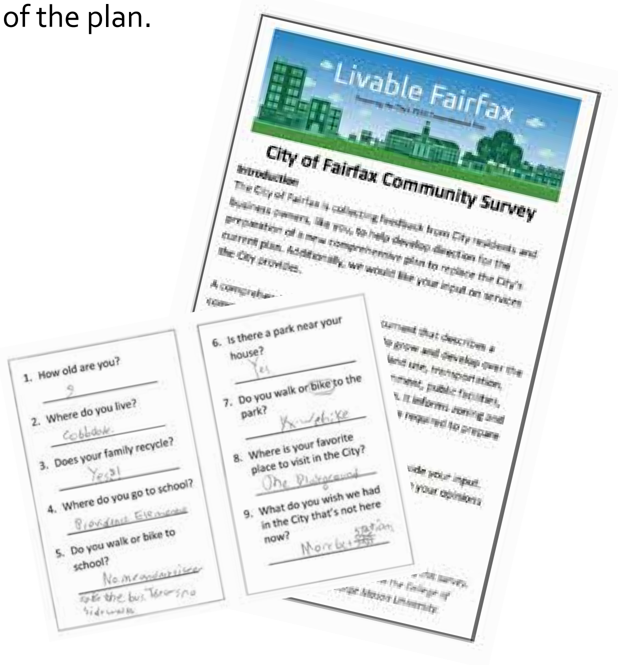
City residents and business owners were notified of the survey via postcards sent out in March 2016, which provided directions on how to take an online survey. Paper copies were also made available to those that requested them.

An overview of the results was presented at a public meeting on June 6 at the Sherwood Community Center, as well as at meetings of the City Council on June 14 and the Planning Commission on June 27, which were televised on Cityscreen-12. The full document detailing the process and analyzing the results was released on June 30, 2016.

CSSR sent out 9,943 postcards to City residences and businesses, and followed up with reminder calls. A total of 863 surveys were completed.

City staff also prepared a ten-question Kids' Survey that was distributed at Parks and Recreation events and to students at Daniels Run Elementary School, Providence Elementary School, Lanier Middle School, and Saint Leo the Great Catholic School. A total of 620 Kids' Surveys were completed. The ages of the students that completed the survey ranged from seven to thirteen.

Online Google surveys were also used to collect feedback on proposed future development scenarios, the future land use map, and drafts of the plan.



Livable Fairfax

City of Fairfax Community Survey

Introduction

The City of Fairfax is collecting feedback from City residents and business owners, like you, to help develop direction for the preparation of a new comprehensive plan to replace the City's current plan. Additionally, we would like your input on services the City provides.

1. How old are you? 9
2. Where do you live? Cobbdok
3. Does your family recycle? Yes!
4. Where do you go to school? Providence Elementary
5. Do you walk or bike to school? No me and my sister take the bus. There's no sidewalk
6. Is there a park near your house? Yes
7. Do you walk or bike to the park? Kind of bike
8. Where is your favorite place to visit in the City? The Playground
9. What do you wish we had in the City that's not here now? More bus station

Website and Social Media

Information about the Comprehensive Plan process, meetings, technical information, and opportunities to provide feedback were made available on the City's website. City staff created a page within the website devoted to the Comprehensive Plan, www.fairfaxva.gov/livablefairfax.

In addition to the website, City staff promoted meetings and information about the Comprehensive Plan through Facebook and Twitter. One of the many benefits of using social media for outreach is that it allowed staff to track how many people viewed what was shared and which posts performed the best.

Several of the presentations were shared live on Facebook and posted on the City's YouTube channel. Staff also created YouTube videos to advertise the community survey, which were shown on the City's government access television station, Cityscreen-12. Staff also created a welcome video for an open house to explain the comprehensive plan process.

Printed Media

To ensure all members of the community were aware of the comprehensive plan process and opportunities to participate, articles were regularly included in the CityScene, the City's newsletter published monthly and mailed to all City businesses and residents. Seventeen articles related to the Comprehensive Plan have been posted in the CityScene since April 2016.

To reach an even broader audience for targeted events, ads were purchased in regional newspapers, The Fairfax Times and Fairfax Connection.

Other printed communications include postcards mailed to all residents and businesses and informational fliers handed out at City events and displayed at City facilities.

CityScene Article

City Seeks Input on Vision for 2035 *Comprehensive Plan*

The City of Fairfax seeks community feedback on the draft vision statement for the 2035 *Comprehensive Plan*, culminating with a public comment period during the September 26 Planning Commission meeting. The *Comprehensive Plan* vision statement will provide guidance on how the city should grow and develop during the next 20 years. Information: 703-385-7930.

The draft vision statement is a series of statements related to each of the proposed content areas in the 2035 *Comprehensive Plan*: Land Use; Neighborhoods; Commercial Centers and Redevelopment Areas; Housing; Community Design and Historic Preservation; Transportation, Mobility and Connectivity; Natural Environment; Sustainability Initiatives; Business Attraction, Retention and Promotion; Education; Parks, Recreation and Cultural Arts; Public Safety; Infrastructure and Utilities; and Implementation Strategy and Performance Metrics.

The vision statement is intended to describe Fairfax's values, aspirations and shared image of what the community as a whole

continued on page [illegible]

Public Meetings

The Planning Commission began discussions on preparing the Comprehensive Plan on Monday, October 26, 2015. Members of the public were encouraged to attend any of the regularly scheduled Planning Commission meetings to share thoughts or concerns about the Comprehensive Plan, even if it was not explicitly being discussed as part of the agenda.

In addition to presentations to the Planning Commission, staff presented briefings and solicited feedback at the regular meetings of other boards and commissions including the City of Fairfax School Board, Board of Architectural Review, Community Appearance Committee, Commission on the Arts, Fairfax Renaissance Housing Corporation, Parks and Recreation Advisory Board, Historic Fairfax City Inc., Economic Development Authority, Commission for Women, and the Environmental Sustainability Committee. The Planning Commission also hosted joint work sessions at The Civil War Interpretive Center at Historic Blenheim with the various boards and commissions to discuss specific topics of interest, and joint work sessions with the City Council.

Community Events

Open Houses

In addition to regularly scheduled public meetings, staff hosted many open houses at locations throughout the City, including the Stacy C. Sherwood Community Center, Old Town Hall, Lanier Middle School, and City Hall.

Panel Discussion: Emerging Trends Shaping our Community

The City gathered a panel of experts and a moderator to talk about trends in housing, economic vitality, and community development as part of the effort to prepare the Comprehensive Plan. The discussion took place on Saturday, September 16, 2017 at the Sherwood Community Center.

The expert panel included Thomas Maskey, Jr., Principal of Potomac Development Group, who has dedicated 35 years to the development of retail shopping centers and is responsible for over 8 million square feet of development in the Washington, D.C. region, including landmark projects at Downtown Silver Spring, Washingtonian Center, Milestone Center, Fair Lakes Center, Fairfax Corner, Virginia Gateway, and National Harbor; Donald W. Knutson, President of the Knutson Companies, whose development projects include Downtown Brambleton and Crescent Place in Leesburg; and Michelle Krocker, Executive Director of the Northern Virginia Affordable Housing Alliance. The discussion was moderated by Lisa Nisenson, an affiliated researcher with George Mason University's Center for Real Estate Entrepreneurship who leads Alta Planning + Design's New Mobility Group.

City Events

City staff attended other events to engage and inform the public about the comprehensive planning process. Those events included:

- Chocolate Lovers Festival
- Scavenger Hunt on July 4
- Fall Festival
- Easter Egg Hunt
- Community Farmers Market
- Rock the Block
- Bike to Work Day

Schools

Staff worked with the City of Fairfax School Board, Superintendent, and School principals to involve the City's students in the comprehensive planning process early and often. In addition to the Kids' Survey that was covered previously, staff made several presentations and had discussions with the students at Daniels Run Elementary School, Providence Elementary School, Lanier Middle School, Fairfax High School, and George Mason University. At the end of the 2017-2018 school year, representatives from the City's schools and from George Mason University presented their thoughts on the draft goals to the Planning Commission at public meetings. All City school students grades K through 12 were also encouraged to share their vision of Fairfax in 2035 through an art contest.

Statutory Requirements

The comprehensive plan serves as a locality's primary decision-making document for land use and development. It establishes the intent and goals of the community to influence development in both the private and public sectors and should be relied upon as an initial source that directs users to appropriate reports or strategic plans where necessary.

State law governing the development of a comprehensive plan (Section 15.2-2223 of the Code of Virginia) requires every county, city, and town to adopt a plan for the physical development of the territory within its jurisdiction. The Code further requires that comprehensive plans be reviewed every five years to ensure that the plan is responsive to current circumstances and that its goals continue to be supported by the citizenry; however, the City should consistently be prepared to make interim changes to the plan because necessary changes can result from the completion of strategic plans or changes to other City policies. The Planning Commission is tasked with preparing the plan and recommending it to the City Council for adoption.

The Code of Virginia includes both required and optional content for comprehensive plans. Required provisions relate to issues that are fundamental to the plan itself, such as long-range recommendations for development and methods of implementation. In order to address what are perceived as critical issues statewide, the Code of Virginia specifically requires that all comprehensive plans address both affordable housing and transportation infrastructure.

Authority

While the Comprehensive Plan communicates a vision for future land use and development in the City, the zoning ordinance provides the regulatory mechanism to ensure that new development and changes in land uses are consistent with this vision. Section 15.2-2232 of the Virginia Code states that a comprehensive plan "shall control the general or approximate location, character and extent of each feature shown on the plan." Consistency with the Comprehensive Plan is one of the approval considerations for zoning text amendments, zoning map amendments, special use permits, and special exceptions to the zoning ordinance.

Where any new development is proposed that requires a land use action not consistent with the Comprehensive Plan, the applicant should request a modification to the Comprehensive Plan as well, in order to keep the two documents consistent. Such modifications must be reviewed by the Planning Commission and approved by City Council. This provides flexibility for the Comprehensive Plan to adjust to market conditions and design trends, but ensures that any such changes are reviewed and considered within the greater context of the City's vision.

In addition to guiding decisions on land use and development, the Comprehensive Plan includes guidance on investment for transportation and infrastructure. Section 15.2-2232 of the Code of Virginia requires that no public facilities – such as streets, parks, utilities, or public buildings – shall be approved or constructed unless deemed to be in accordance with the Comprehensive Plan by the Planning Commission. The Comprehensive Plan should be used as a reference for all land use and budget decisions. Any budget item in the Capital Improvement Plan should support at least one of the goals of the Comprehensive Plan.

Implementation

In addition to providing guidance on land use and budget decisions, the Comprehensive Plan includes numerous actions to be taken by the City or its affiliates in order to achieve the vision of the plan. A separate Implementation Guide has been developed in support of the Comprehensive Plan to track progress on implementation of these actions. This is accomplished through an implementation matrix that provides the lead responsibility, timeframe for initiation and timeframe for completion of each action. Where appropriate, performance metrics are listed for goals to provide a mechanism for determining whether the implemented actions are achieving the desired result.

The Implementation Guide is a separate document from the Comprehensive Plan because it is expected to be updated regularly as progress is made toward achieving each action. The lead responsibilities, timeframes and performance metrics are also subject to change as more information is obtained in support of specific actions.

City of Fairfax

2035 Comprehensive Plan

IMPLEMENTATION GUIDE

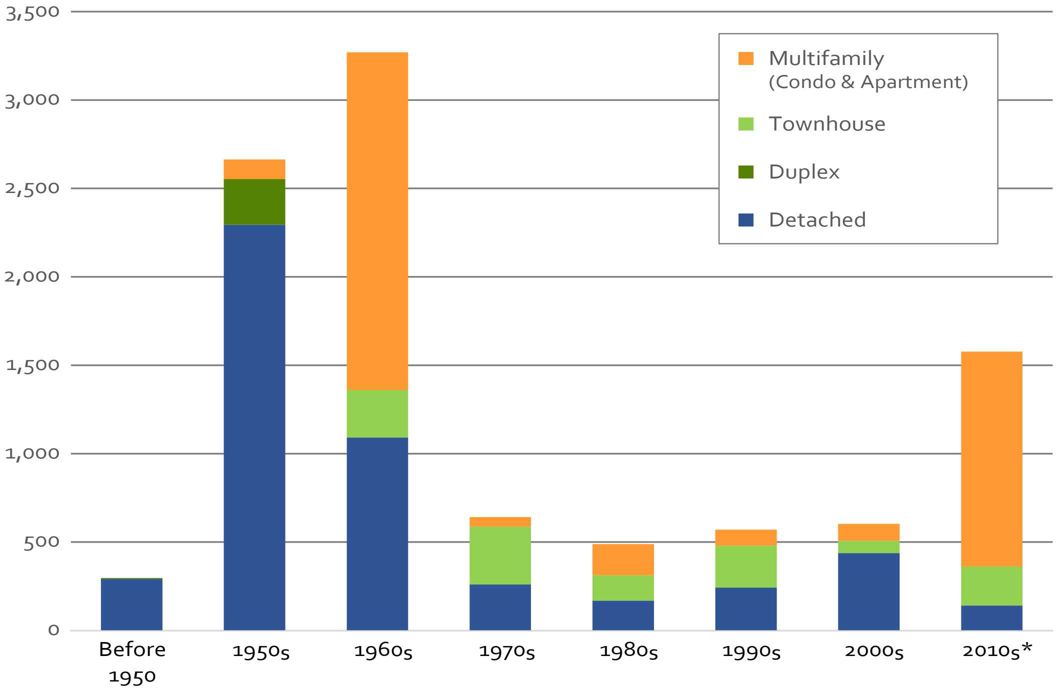
November 2018

2 Land Use

The City's residential neighborhoods are distinct in housing types, age, and character. While much of the land area of the City is encompassed by single-family neighborhoods initially developed in the 1950s and 1960s, there is also a significant amount of multifamily neighborhoods built primarily during the 1960s. Since then, the City has continued to accommodate residential development on smaller sites, including single-family homes, townhomes, and multifamily residences.

As developable land has become scarcer, new residential development has been more dependent on infill and redevelopment sites. Developers are offering higher-end products and seeking greater densities to offset the higher land values and development costs associated with redevelopment sites. In addition, some homes in existing single-family neighborhoods are being significantly renovated, expanded, or redeveloped.

FIGURE 2 HOUSING UNITS BY TYPE AND DECADE BUILT



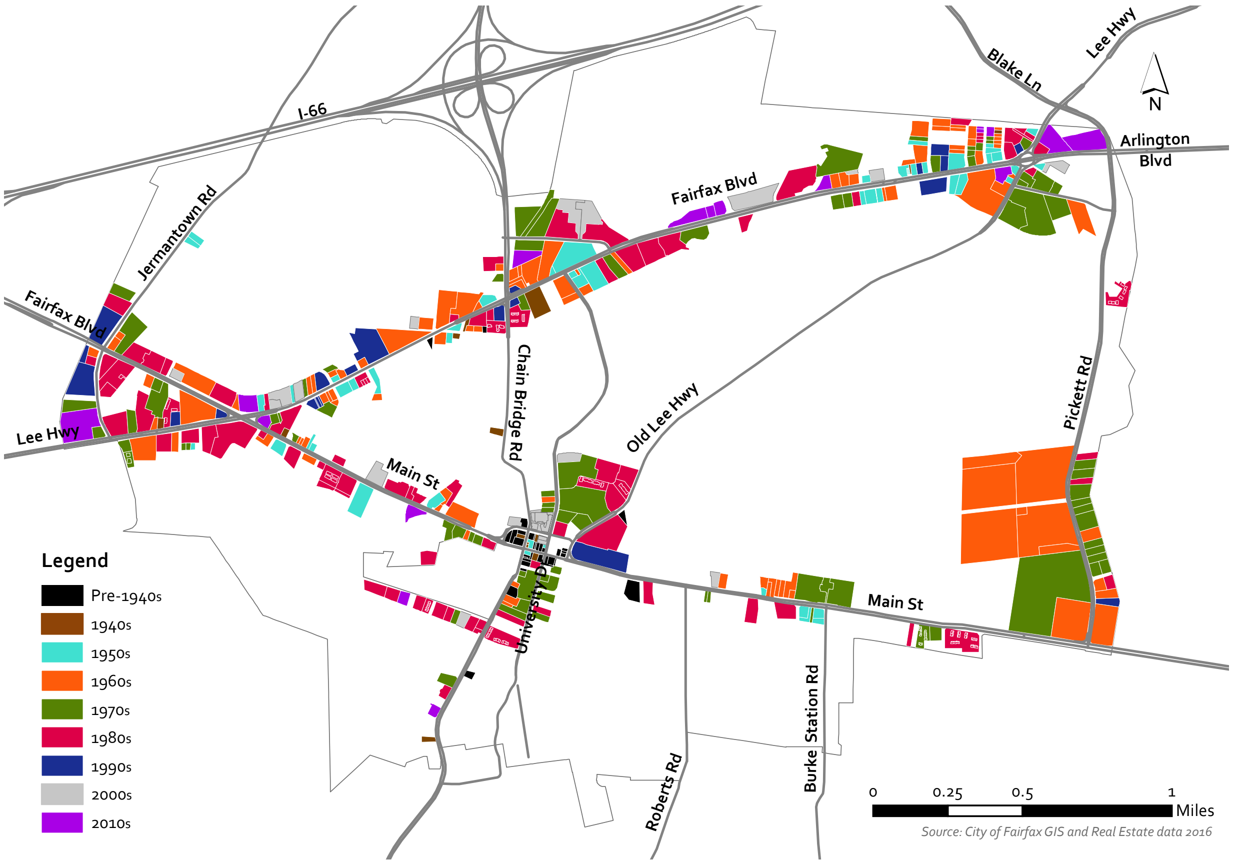
Note: Includes housing units existing and approved as of January, 2018. "2010s" includes housing units under construction, as well as projects that have been approved by City Council, but for which construction has not begun.

Source: Fairfax City Real Estate Assessments

Commercial uses in the City have historically benefited from its location at a crossroads of several regional transportation routes. While most neighborhoods in the City were established in the 1950s and 1960s, heavy commercial growth continued through the 1980s. This was fueled by continuing regional population growth and by general market trends that supported extensive office and retail growth. There has been less commercial growth in recent years as the commercial real estate market has changed and new development in surrounding areas of Fairfax County has added competition to the local market. Despite this, the City has experienced some redevelopment of older commercial properties, and recently approved mixed-use projects indicate that unsubsidized redevelopment remains feasible.

The Land Use Chapter encompasses the following Guiding Principles: Land Use Strategies, Neighborhoods, Commercial Corridors and Activity Centers, Housing, and Community Design and Historic Preservation.

FIGURE 3 COMMERCIAL AND INDUSTRIAL BUILDING AGE BY DECADE BUILT



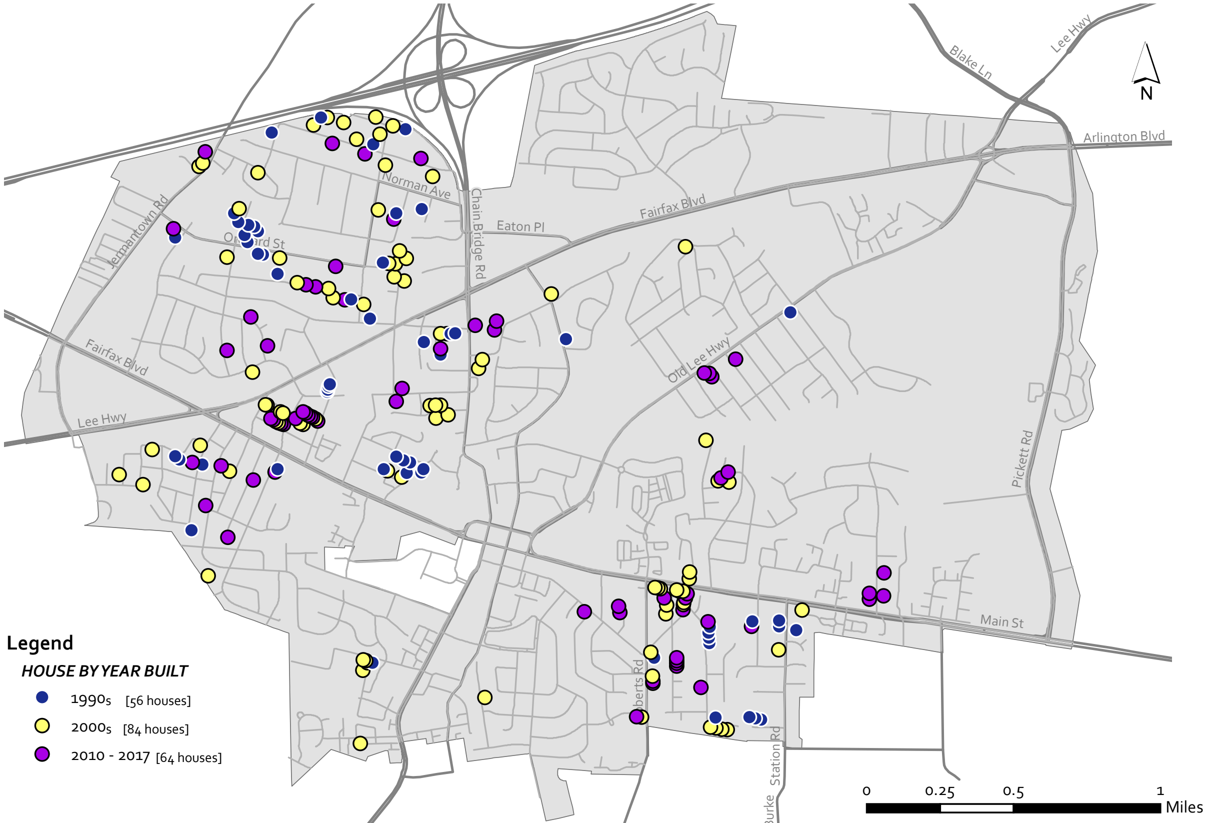
Source: City of Fairfax GIS and Real Estate data 2016

Opportunities and Challenges

Residential improvements

With an aging housing stock, there is consistent pressure for upgrading or replacing existing homes. While this can help keep neighborhoods current with consumer desires and housing preferences, it can also impact the character of existing neighborhoods.

FIGURE 4 INFILL HOUSING BY DECADE BUILT



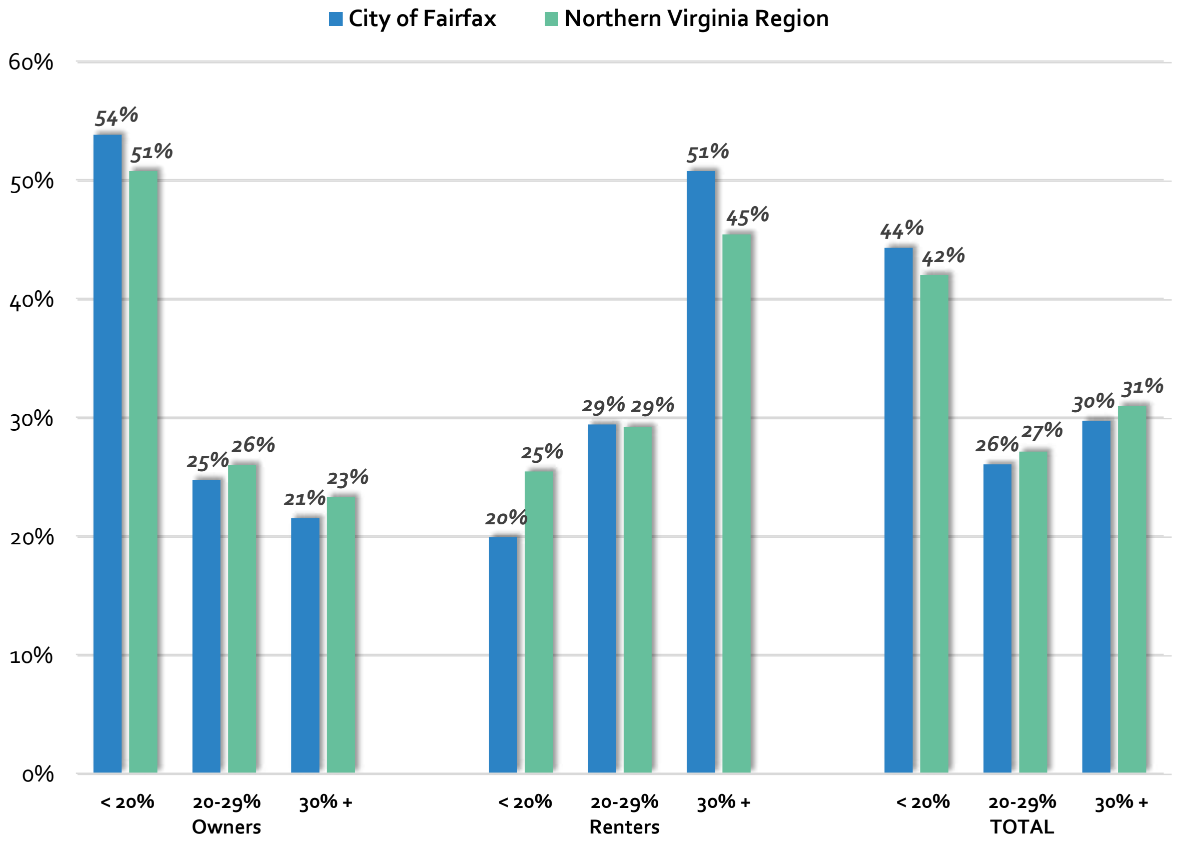
Source: City of Fairfax GIS and Real Estate data 2017

Housing affordability

As the regional economy has grown, increases in housing values have outpaced increases in income. As a result, there are few residential units in the City that are affordable to lower income households. About one-third of City households spend more than 30% of their income on housing costs, as shown in Figure 5 , which also highlights that almost half of renters reside in units that are potentially cost-burdensome.

While many of the apartments that were built in the 1960s are more affordable than newer apartments in the surrounding areas of Fairfax County, their asking rents are not achievable to a full range of incomes. There is also no guarantee that these apartment complexes will remain as "naturally occurring affordable housing." Redevelopments of two complexes have been approved since 2013, and there has been communicated interest in redevelopment of additional complexes.

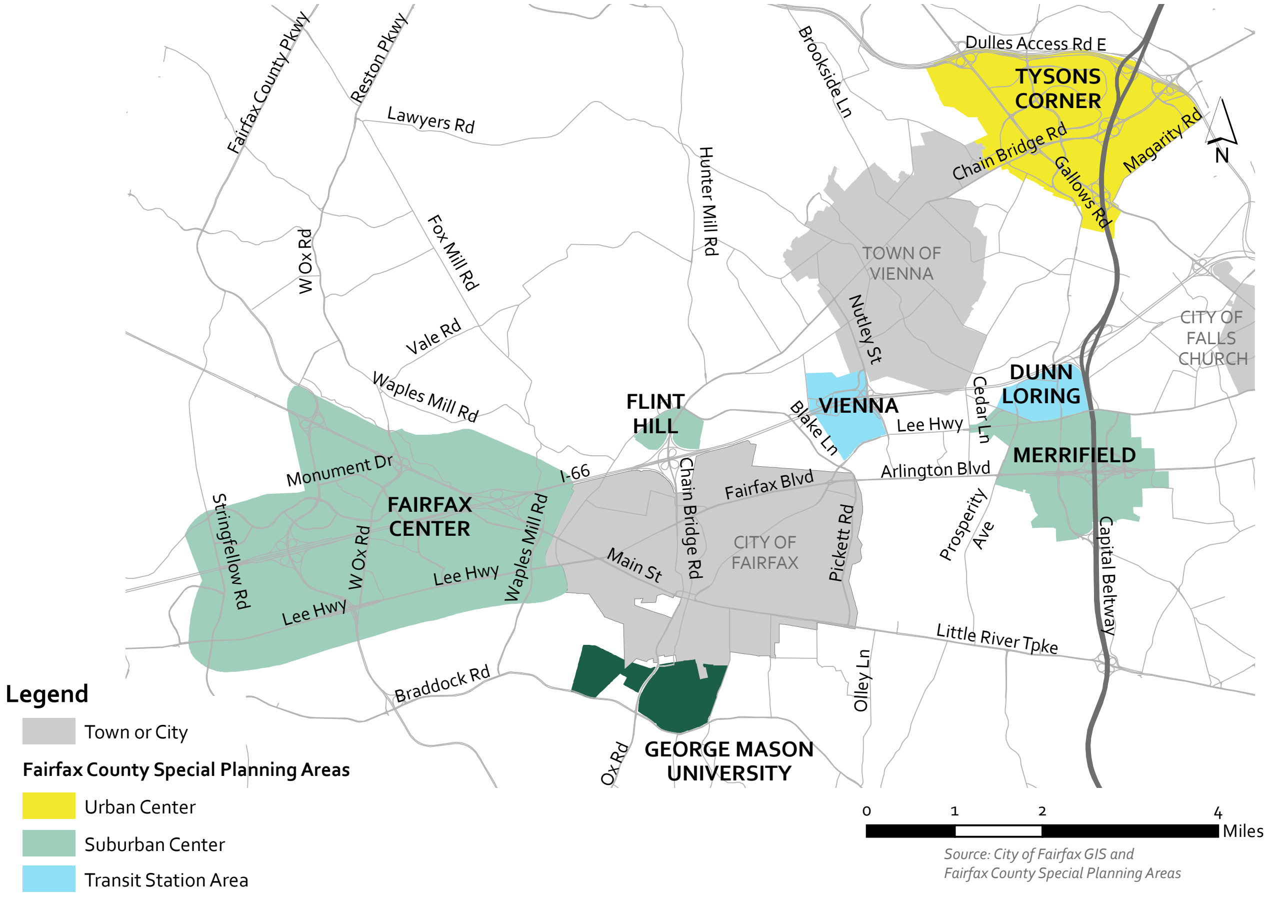
FIGURE 5 HOUSING COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME BY TENURE AND IN TOTAL



Source: US Census ACS, 2012-16

Note: The Department of Housing and Urban Development defines cost-burdened families as those who pay more than 30% of their income for housing and may have difficulty affording necessities such as food, clothing, transportation, and medical care.

FIGURE 6 NEARBY MAJOR MIXED-USE CENTERS

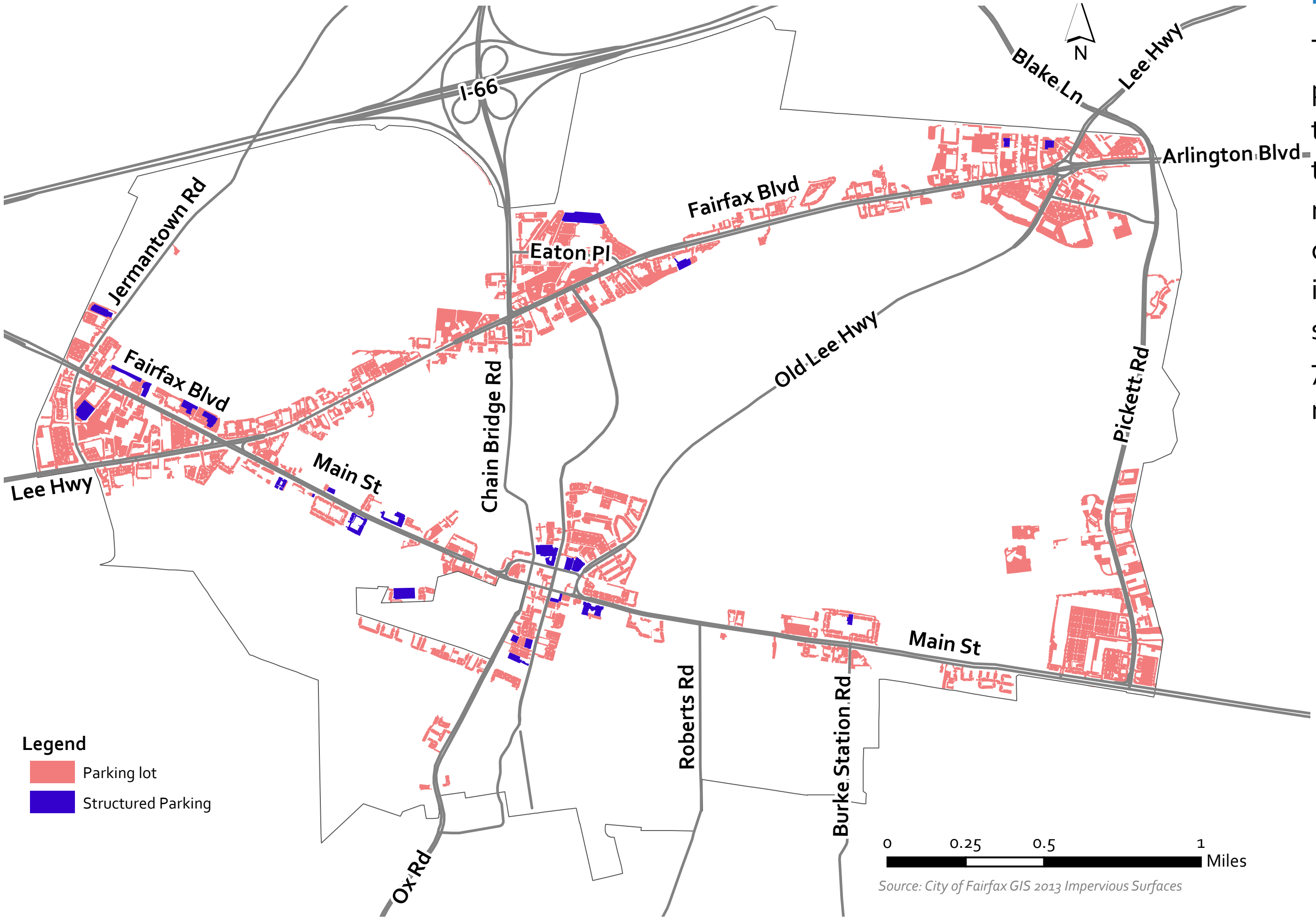


Source: City of Fairfax GIS and Fairfax County Special Planning Areas

Commercial market changes

Long-term shifts in retail and office markets have added uncertainty to the continued marketability of some commercial properties in the City. In addition, new development to the east and west of the City absorbs potential demand for destination commercial offerings, and the City's Commercial Corridors and Activity Centers currently lack many popular types of retail and entertainment establishments. This trend could continue with the Fairfax County Comprehensive Plan encouraging new commercial and mixed-use development in designated Special Planning Areas proximate to the City, as shown in Figure 6.

FIGURE 7 COMMERCIAL AND INDUSTRIAL SURFACE AND STRUCTURED PARKING



Source: City of Fairfax GIS 2013 Impervious Surfaces

Commercial redevelopment potential

There are numerous commercial properties throughout the City with the potential for redevelopment or to reposition themselves for current market demands. Characteristics of potential redevelopment sites include significant amounts of surface parking, as shown in Figure 7, and low building-to-land value ratios.

Land Use Strategies

More than 200 years of growth and development have formed Fairfax into a unique small city with development patterns and building styles that span multiple eras. A variety of land uses are distributed throughout the City to complement and support each other. Existing land uses and a summary of land use coverage areas in the City are shown in Figure 8. The City, however, continues to evolve to accommodate changing needs of residents and businesses. The Land Use Strategies Guiding Principle supports measures to manage growth in such a way to allow the City to evolve while maintaining the unique character that has taken decades to build.

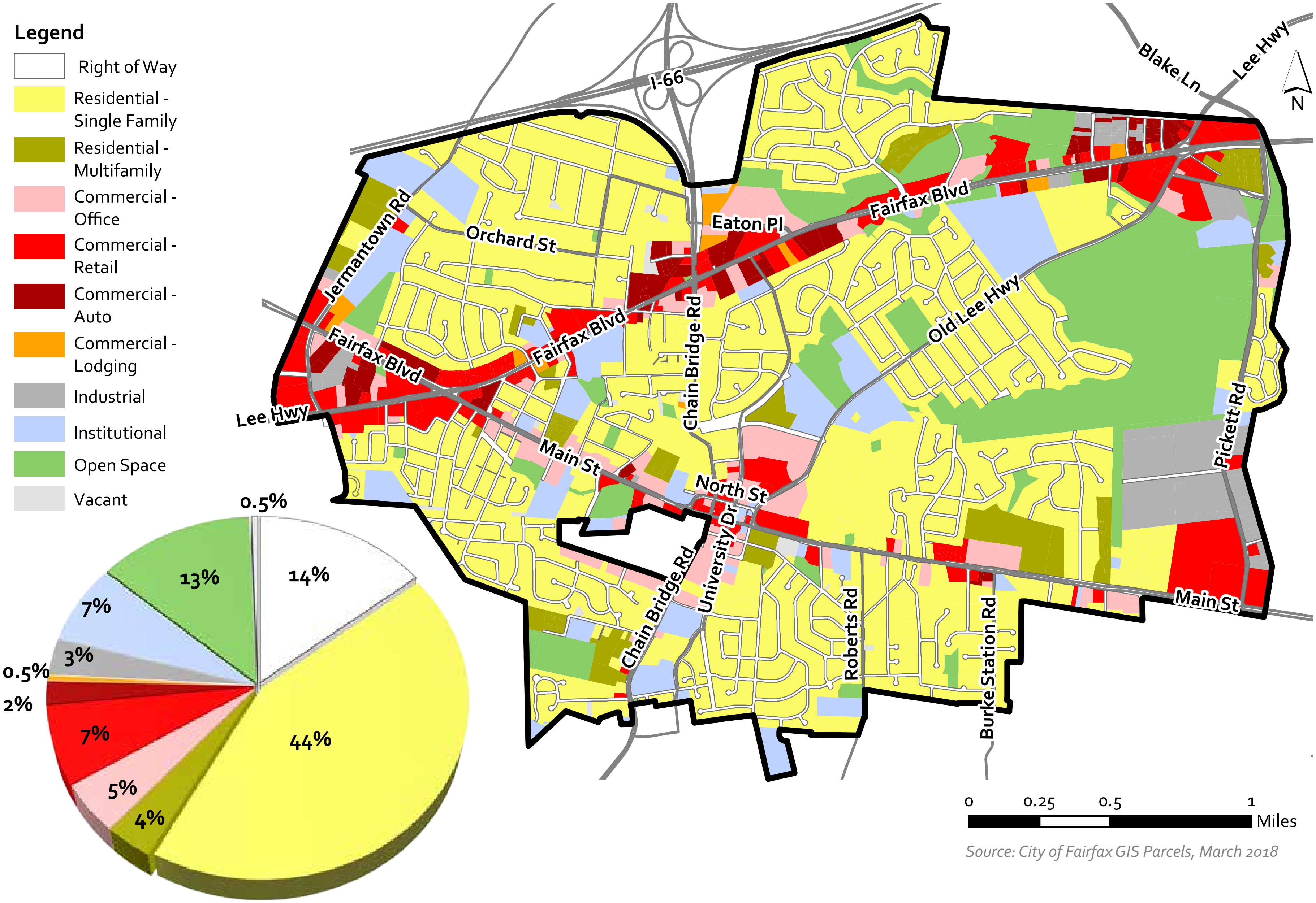
Managing development depends heavily on the Comprehensive Plan Future Land Use Map (shown on p. 27). This map, which is supported by Goal 1 of this Guiding Principle, illustrates the desired land uses in the City organized by Place Types, which are locations within the City that are intended to share similar physical characteristics and have both zoning and "Link + Place" street types (as defined under Multimodal Transportation Goal 2) that are consistent with these characteristics.

Guiding Principle:

In 2035, Fairfax is a city with...
a close-knit community and a
population that is diverse in its
culture, demographics, and lifestyles,
that capitalizes on its location in the
center of the growing region and with
easy access to the nation's capital.

Rather than show land uses as they exist today, the Future Land Use Map shows how the Comprehensive Plan foresees appropriate development over the next 15 to 20 years. The Place Types shown on the map communicate the types of uses and character of development envisioned throughout the City.

FIGURE 8 EXISTING LAND USE MAP



Source: City of Fairfax GIS Parcels, March 2018

Land Use Strategies

Goal 1

Ensure development is complementary.

OUTCOME LU1.1:	The Future Land Use Map is used in conjunction with other recommendations from the Comprehensive Plan to guide development throughout the City.
ACTION LU1.1.1	Maintain and update, as necessary, a Future Land Use Map that provides for a balanced mix of development types and addresses current and future needs of the City.
ACTION LU1.1.2	Use the Future Land Use Map (Figure 9), Place Types, and general text from the Comprehensive Plan as a guide when considering new development throughout the City.
ACTION LU1.1.3	Refer to Parcel Specific Recommendation, as detailed on pages 39-44 for potential alternative uses. Amend the Comprehensive Plan to provide additional Parcel Specific Recommendations as appropriate.
OUTCOME LU1.2:	Zoning regulations that accommodate high-quality design and development practices.
ACTION LU1.2.1	Consistently review the Zoning and Subdivision Ordinances and the Zoning Map to ensure they are able to support the Future Land Use Map and other guidance of the Comprehensive Plan.

While the 6.3 square mile City is primarily built out, leaving few opportunities for large new development, there is consistent pressure for the City's variety of land use types to adapt to environmental, economic and cultural demands. This means that some flexibility must be provided with a balanced mix of development types that accommodate adaptations without negatively impacting the existing community. New development and redevelopment should be complementary to surrounding areas and contribute to an attractive, accessible, and economically viable place.

This can be managed by using the Future Land Use Map in conjunction with recommendations of this Comprehensive Plan and the requirements of the Zoning and Subdivision Ordinances to guide development within the City. While the Future Land Use Map communicates the most appropriate types of uses and character of development, the Zoning and Subdivision Ordinances provide the regulatory measures to accommodate such development. The Ordinances may occasionally be amended to furnish necessary changes for various land uses.

Future Land Use Map

The Future Land Use Map is provided in Figure 9, with specific guidance on development for each of the Place Types identified on the map provided on the following pages. Additional guidance is provided for certain specific sites beginning on page 38. When using the Future Land Use Map, consideration should also be given to the other Guiding Principles of this chapter, depending on site location and types of uses.

The following information is provided for each of the Place Types:

1. Definition: A brief description of the types of uses and structures the Place Type applies to.
2. Zoning Districts: A list of Zoning Districts that are most likely to accommodate the uses and structures provided in the definition for the Place Types.
3. Link + Place Street Types: A list of the types of streets (as provided in the Multimodal Transportation Chapter) where the Place Type is most appropriate.
4. Physical Characteristics: A description of general preferences for site design and building placement.
5. Concept diagrams and photos: Provided to show typical development patterns for each Place Type.

Most new development is anticipated to occur in areas designated as an Activity Center Place Type. There are five areas of the City that have this Place Type designation: Old Town Fairfax, Northfax, Kamp Washington, Fairfax Circle, and Pickett & Main. The following additional guidance is provided for the Activity Center Place Type:

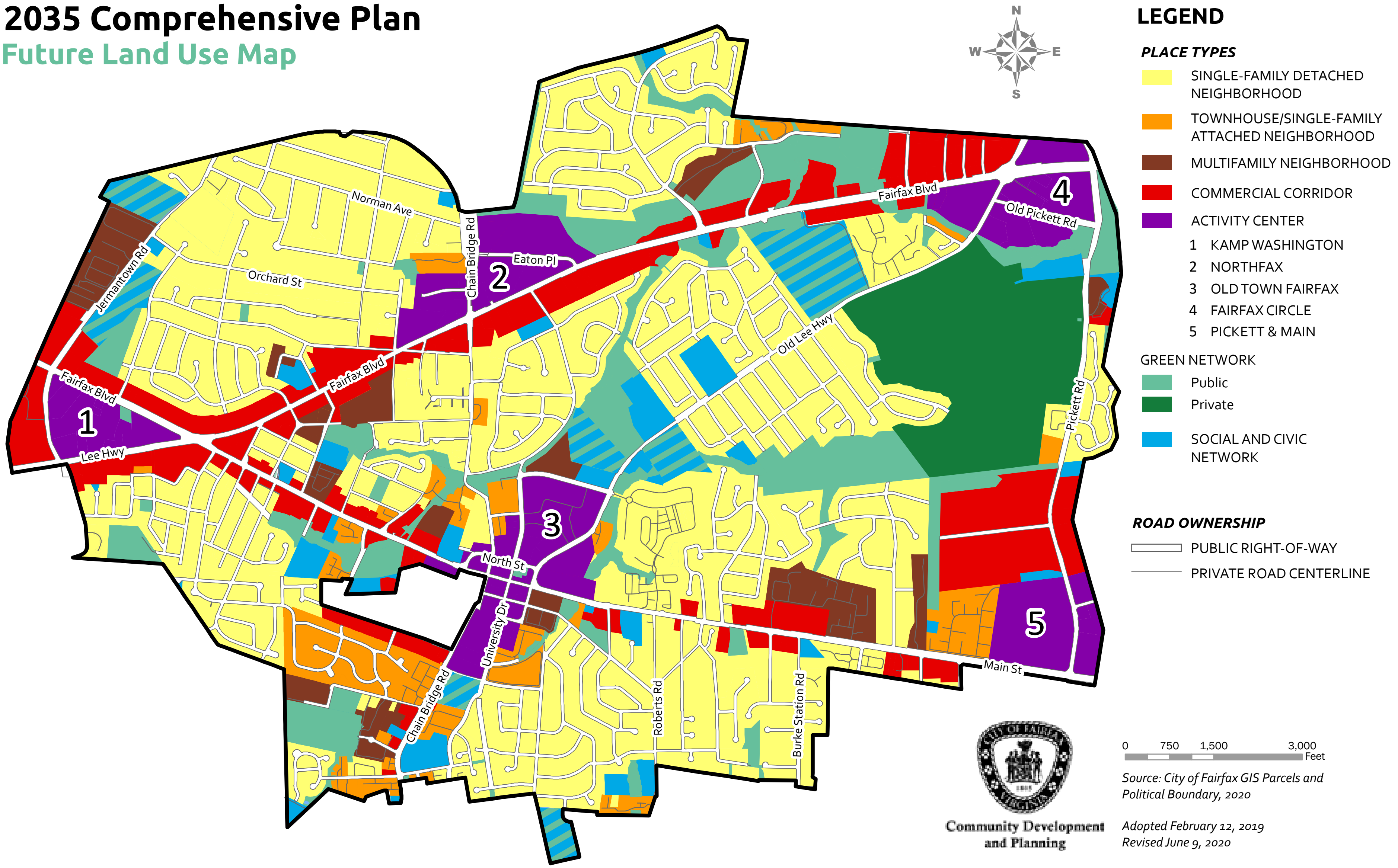
6. Use Characteristics: Since multiple uses can be accommodated in the Activity Center Place Type, separate physical characteristics are provided for various uses to ensure that new development provides a consistent character in spite of varying uses.
7. Residential Limitations: As a more detailed analysis of specific development scenarios is not included in this plan, limitations on the number of residential units that can be absorbed in each Activity Center are provided. This is intended to communicate to developers and the general public that unrestrained increases in residential development will not be considered in these areas of the City.

Small Area Plans

Small Area Plans are an opportunity to conduct detailed analyses of concentrated geographic areas of the City and provide more specific recommendations on issues such as land use and transportation than that provided in the Comprehensive Plan. Once approved, Small Area Plans serve as the primary source for guidance on development in the respective Activity Centers. As supported by Land Use Action CCAC2.3.5, Small Area Plans are proposed for each of the five Activity Centers. As each of the Small Area Plans is completed and adopted, the recommendations from that plan will supersede the Activity Center Place Type recommendations from the Future Land Use Map. This may include the guidance provided for Physical Characteristics, appropriate Street Types, Use Characteristics, and Residential Limitations.

In June 2020, Small Area Plans were adopted for the Old Town Fairfax and Northfax Activity Centers. While a brief description of these two Activity Centers is provided in the Activity Center Place Type description, please refer to the respective Small Area Plans for specific guidance in those two areas. The general guidance in the Activity Center Place Type description applies to Kamp Washington, Fairfax Circle, and Pickett & Main until Small Area Plans are adopted for those Activity Centers.

FIGURE 9   FUTURE LAND USE MAP



Source: City of Fairfax GIS Parcels and Political Boundary, 2020

Adopted February 12, 2019
Revised June 9, 2020

SINGLE-FAMILY DETACHED NEIGHBORHOOD

Definition

The Single-Family Detached Neighborhood Place Type, identified in yellow on the Future Land Use Map, applies to neighborhoods that are primarily developed with single-family detached homes. Accessory uses associated with these residences are permitted, such as home-based businesses and accessory dwelling units.

Physical Characteristics

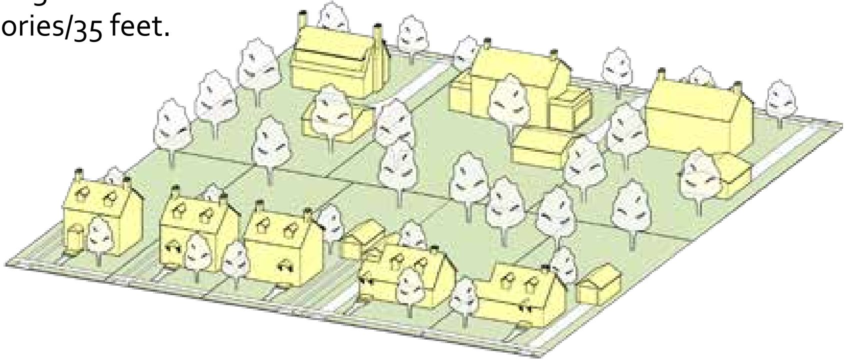
New development of single-family detached homes in an existing residential neighborhood should reflect the character of that neighborhood by providing similar lot widths and building setbacks as surrounding properties. In order to support shared stormwater management facilities and usable open space, narrower lot widths and building setbacks may be considered where a new development provides a similar overall density to the surrounding neighborhood. New development is considered to be within an existing neighborhood where any vehicular access is taken from an existing Limited Connection Residential street or a Neighborhood Circulator. New residential units on all lots that are adjacent to those streets should be oriented with the front of the structure facing that street, even where vehicular access is taken from a new public or private street. Predicated on the underlying zoning district, the Single-Family Detached Neighborhood Place Type supports up to 7 dwelling units per acre and a maximum height of 3 stories/35 feet.

Zoning Districts

- RL, Residential Low
- RM, Residential Medium
- RH, Residential High
- PD-R, Planned Development Residential

Link + Place Street Types

- Limited Connection Residential
- Neighborhood Circulators
- Some existing Single-Family Detached Neighborhoods are present along Avenues and Boulevards, such as portions of Chain Bridge Road, Old Lee Highway, and Main Street.



TOWNHOUSE/SINGLE-FAMILY ATTACHED NEIGHBORHOOD

Definition

The Townhouse/Single-Family Attached Neighborhood Place Type, identified in orange on the Future Land Use Map, applies to neighborhoods that are primarily developed with townhouses and single-family attached or duplex housing. Single-family detached uses may be considered in the Townhouse/Single-Family Attached Neighborhood Place Type when developed in conjunction with Townhouse/Single-Family Attached Neighborhood uses.

Physical Characteristics

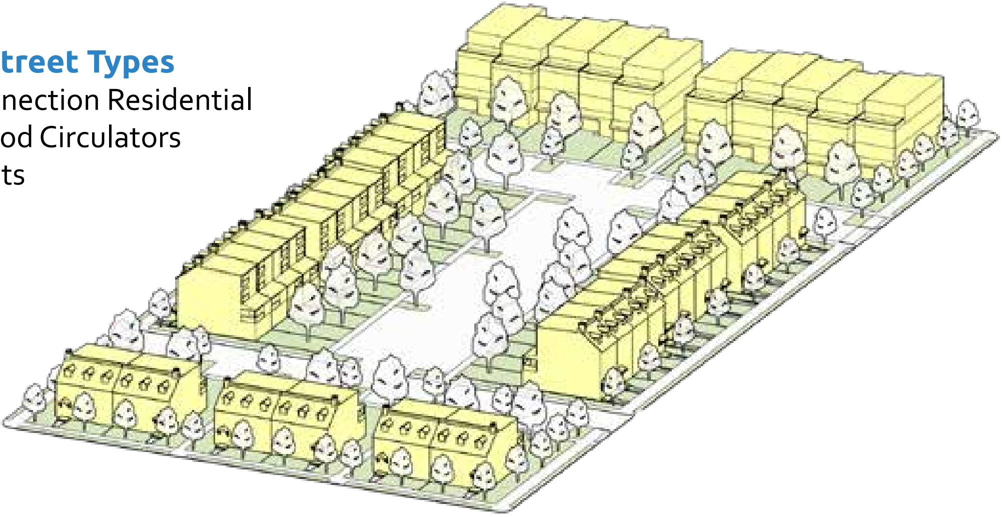
The design and layout of new Townhouse and Single-Family Attached Neighborhood developments should reflect the location of the development within the City. In particular, development that is adjacent to Single-Family Detached Neighborhoods within City limits, or to neighborhoods zoned primarily for single-family detached residences within adjacent jurisdictions, should have a maximum of three floors and provide landscaped setbacks for that portion of the site that is adjacent to any such neighborhood. Otherwise, a building height of up to four stories or 45 feet may be considered. Predicated on the underlying zoning district, the Townhouse/Single-Family Attached Neighborhood Place Type supports up to 12 dwelling units per acre.

Zoning Districts

- RT, Residential Townhouse
- RT-6, Residential Townhouse
- PD-R, Planned Development Residential

Link + Place Street Types

- Limited Connection Residential
- Neighborhood Circulators
- Active Streets
- Avenues
- Boulevards



MULTIFAMILY NEIGHBORHOOD

Definition

The Multifamily Neighborhood Place Type, identified in brown in the Future Land Use Map, applies to neighborhoods that are primarily developed with multifamily apartment or multifamily condominium housing. Townhouse/Single-Family Attached Neighborhood uses and Single-Family Detached Neighborhood uses may be considered in the Multifamily Neighborhood Place Type when developed in conjunction with Multifamily Neighborhood uses.

Physical Characteristics

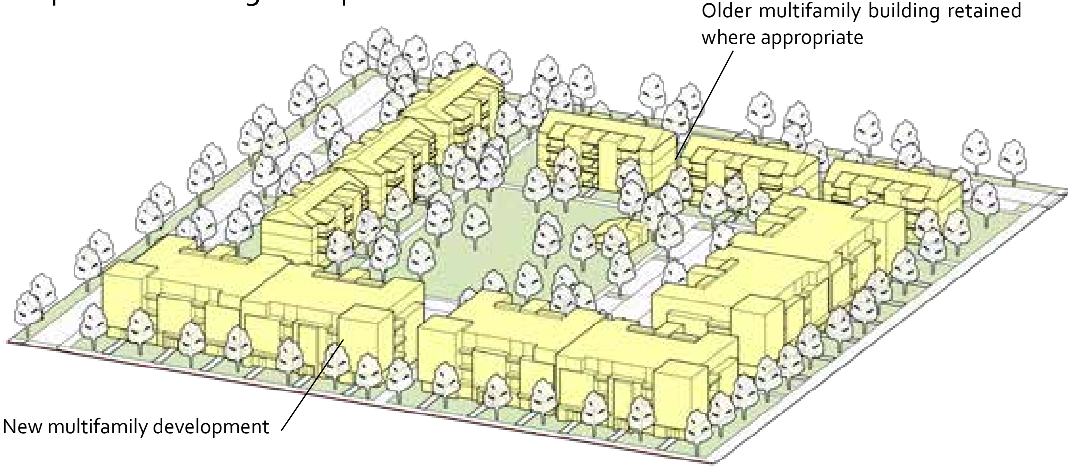
The design and layout of new Multifamily Neighborhood developments should reflect the location of the development within the City. Development that is adjacent to Single-Family Detached or Townhouse/Single-Family Attached neighborhoods within City limits, or to neighborhoods zoned primarily for single-family detached or single-family attached residences within adjacent jurisdictions, should have a maximum of three floors and provide landscaped setbacks for portions of the site that are adjacent to any such uses. Otherwise, a building height of up to four stories or 45 feet may be considered. In order to retain the relative affordability available in many existing multifamily structures, redevelopment of existing multifamily sites within Multifamily Neighborhood land use areas, where additional density is permitted by the Zoning Ordinance, should consider accommodating existing multifamily structures. Predicated on the underlying zoning district, the Multifamily Neighborhood Place Type supports up to 20 dwelling units per acre and a maximum height of 4 stories/45 feet.

Zoning Districts

- RMF, Multifamily
- PD-R, Planned Development Residential

Link + Place Street Types

- Limited Connection Residential
- Neighborhood Circulators
- Active Streets
- Avenues
- Boulevards



COMMERCIAL CORRIDOR

Definition

The Commercial Corridor Place Type, identified in red on the Future Land Use Map, includes a mix of retail, restaurant, service, medical, office, and other commercial uses. Limited manufacturing and other light industrial uses may also be considered. Heavy industrial uses should not be added or expanded beyond areas where they currently exist (such as the tank farm on Pickett Road). Residential uses are not recommended in Commercial Corridors. Commercial areas should accommodate access via a variety of transportation modes and be accessible to adjacent neighborhoods via pedestrian and bicycling facilities.

Physical Characteristics

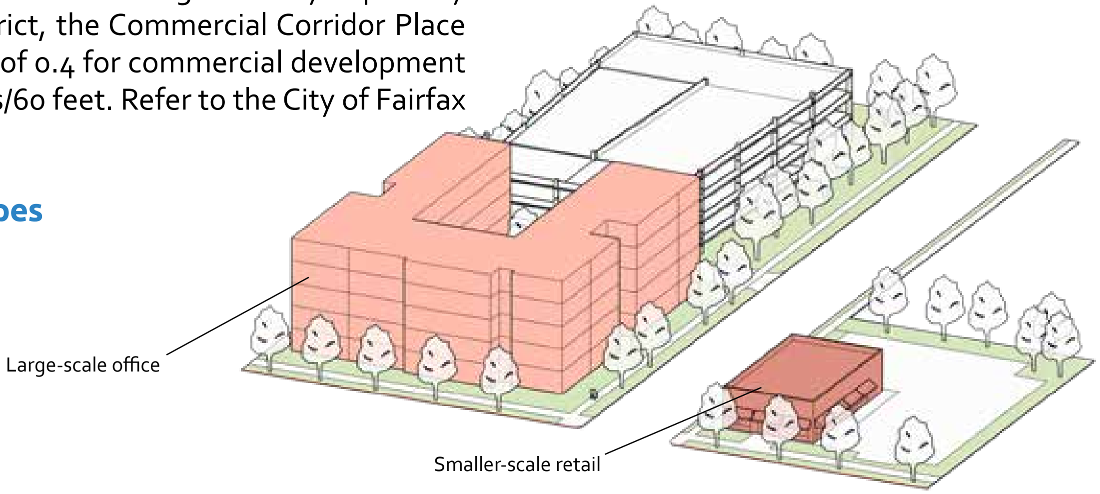
Commercial Corridor Place Types can accommodate a variety of buildings from small footprint retail buildings to multi-story office buildings. The desired orientation and placement of buildings on a Commercial Corridor site is primarily dependent on the adjacent Street Type. For sites located along Commercial Mains, buildings should have similar setbacks and building orientation as recommended for the nearby Activity Centers. Parking is encouraged in above-ground structures or underground, should be provided to the side or rear of buildings, and should be screened from view from the right-of-way by building mass or landscaping. For sites located along Boulevards or other street types, buildings should be located near front property lines with parking provided to the side or rear. Direct pedestrian access should be provided from the sidewalk in the right-of-way to primary building entrances. Predicated on the underlying zoning district, the Commercial Corridor Place Type supports a density of a minimum Floor Area Ratio (FAR) of 0.4 for commercial development and a maximum building height of 3 stories/35 feet to 5 stories/60 feet. Refer to the City of Fairfax Design Guidelines for more specific guidance on site design.

Zoning Districts

- CL, Commercial Limited
- CO, Commercial Office
- CR, Commercial Retail
- CG, Commercial General
- IL, Industrial Light
- IH, Industrial Heavy
- PD-C, Planned Development Commercial
- PD-I, Planned Development Industrial

Link + Place Street Types

- Boulevards
- Commercial Mains



ACTIVITY CENTER

Definition

The Activity Center Place Type, identified in purple on the Future Land Use Map, applies to locations in the City where pedestrian-oriented, mixed-use development is strongly encouraged. (Mixed-use development is pedestrian-oriented development that allows multiple activities to take place by layering compatible land uses, public amenities, and active streets accommodating multimodal transportation, and community-serving commercial.) Uses should be integrated as a mix of commercial uses, multifamily housing, and townhouses, either in the same building (i.e., vertical mixed-use) or as a combination of single-use buildings featuring a range of complementary uses within the Activity Center (i.e., horizontal mixed-use).

Physical Characteristics

Activity Centers can accommodate a variety of building types based on the different uses permitted and varying characteristics among individual Activity Centers. Recommended physical characteristics for specific uses are provided under Use Characteristics (p. 33) and more specific recommendations are provided for the Old Town Fairfax and Northfax Activity Centers on the following pages. The Comprehensive Plan also recommends Small Area Plans be developed for each of the City's five Activity Centers. As each of these plans is completed and adopted, the recommendations will supersede the pre-existing guidance of this Comprehensive Plan.

In general, new development in Activity Centers should support a connected street network as recommended in the Multimodal Transportation Chapter of the Comprehensive Plan; provide an improved streetscape and pedestrian connections to surrounding uses, including links to the existing pedestrian network; and include inviting public and/or private open spaces. Parking should be provided in structured or below-grade facilities where reasonable.

Development in Activity Centers must meet the Code of Virginia definition for an Urban Development Area (Virginia Code § 15.2-2223.1) and follow the recommendations for Private Site Design and Elements in the applicable district of the City of Fairfax Design Guidelines. Predicated on the underlying zoning district, the Activity Center Place Type supports a density of a minimum FAR of 0.4; at least six townhouses or at least 12 multifamily dwelling units per acre; or any proportional combination of residential and commercial densities with building heights predominantly five stories or less, unless otherwise specified in an adopted Small Area Plan.

Photo Credit: Hord Coplan Macht

ACTIVITY CENTER (con't)

Use Characteristics

Office: Office uses are acceptable as components of mixed-use buildings or as stand-alone buildings.

Retail: Retail uses may be provided on the ground floor of mixed-use buildings, as stand-alone buildings, or on upper floors of buildings where larger tenant floor area requirements would detract from an active presence on the first floor. Retail uses are preferred along Commercial Mains, except where indicated otherwise in adopted Small Area Plans, but may be provided at other locations within an Activity Center.

Hotel: Hotels are acceptable as components of mixed-use buildings or as stand-alone buildings. Hotels are particularly encouraged in high visibility locations along Commercial Mains and at key intersections, or as may otherwise be identified in adopted Small Area Plans.

Public, Civic, and Institutional: Public, civic and institutional uses that are allowed by special use permit in commercial districts in the Zoning Ordinance may be provided as components of mixed-use buildings or as stand-alone buildings.

Residential Multifamily: Residential multifamily uses are acceptable as components of mixed-use buildings or as stand-alone buildings. Ground floor residential uses in multifamily or residential mixed-use buildings, including accessory spaces and amenities but not including residential lobby areas, should not be provided along Commercial Mains, unless such uses are identified in adopted Small Area Plans. Where ground-floor residential units are located adjacent to Active Streets or Commercial Mains, direct exterior access should be provided to individual units.

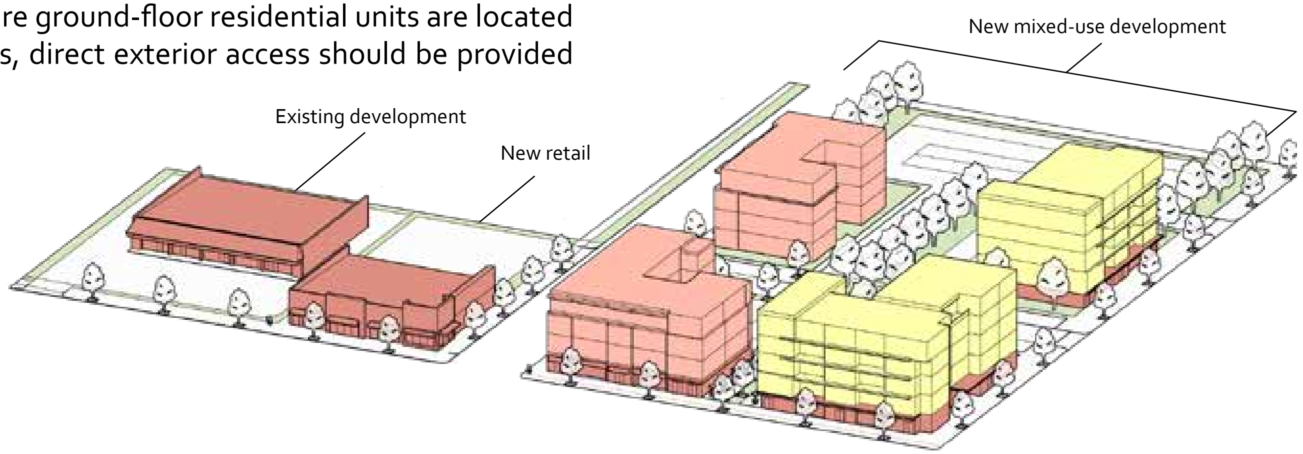
Townhouse: Residential townhouses should only be considered to serve as a transitional use to existing development outside of the Activity Center.

Zoning Districts

- CU, Commercial Urban
- PD-R, Planned Development Residential
- PD-C, Planned Development Commercial
- PD-M, Planned Development Mixed Use

Link + Place Street Types

- Active Streets
- Commercial Mains



ACTIVITY CENTER (con't)

Residential Limitations

The majority of future residential growth is anticipated to occur within the five Activity Centers identified in the Future Land Use Map. Refer to adopted Small Area Plans for specific recommendations on growth in each Activity Center. For Activity Centers for which a Small Area Plan has not yet been adopted, any unified development application within an Activity Center that contains a residential component should have a density of no more than 48 dwelling units per acre. Such developments must offer benefits that support the vision of the Comprehensive Plan for the Activity Center. Such benefits should include the following:

1. A mix of uses within the development site;

2. Contributions toward a connected street grid;

3. Usable open space, and;

4. High quality design.

Should a unified development application fail to offer these benefits, that development may contain no more than 20 dwelling units per acre.

Direct fiscal benefits to the City from residential developments are not typically as strong as those from commercial properties. In order to avoid significant displacement of commercial uses in Activity Centers, new residential development should first focus on lower value commercial or industrial sites unless a significant commercial component is included. Conversion of commercial space in existing buildings into residential space is not generally supported.

ACTIVITY CENTER - OLD TOWN FAIRFAX

The Old Town Fairfax Activity Center ("Old Town Fairfax") encompasses a cultural hub for the City, with a concentration of historic buildings, public services, active open space, and commercial buildings. Old Town Fairfax can also capitalize on its proximity to George Mason University to attract university supported businesses and arts and entertainment venues. The entirety of Old Town Fairfax is within the Old Town Fairfax Historic Overlay District (HOD) or the Old Town Fairfax Transition Overlay District (TOD) and is subject to those provisions of the Zoning Ordinance and the City of Fairfax Design Guidelines.

Refer to the Old Town Fairfax Small Area Plan, dated June 2020, for specific recommendations within Old Town Fairfax, including locations for future streets and open spaces, opportunities for pedestrian connections across Commercial Mains, building form (including appropriate locations for more or less restrictive building heights from the Activity Center standards), and general land use and development limitations. The overall concept plan for Old Town Fairfax, as provided in the Small Area Plan, is shown to the right.

ACTIVITY CENTER - NORTHFAX

The Northfax Activity Center ("Northfax") is considered the most appropriate location in the City to accommodate a regional mixed-use destination. Its location at the intersection of Fairfax Boulevard and Chain Bridge Road, with immediate access to Interstate 66 and a potential future Metro station, is more accessible than other Activity Centers. It is also equidistant from existing regional mixed-use destinations at Merrifield and Fairfax Corner. In order to leverage these characteristics, the City should strive to market Northfax to a wide range of commercial tenants and retail uses in order to take advantage of these benefits. New residential uses and amenities such as open spaces and a pedestrian-friendly multimodal transportation network, should also be leveraged to improve the commercial marketability of the Activity Center.

Refer to the Northfax Small Area Plan, dated June 2020, for specific recommendations within the Northfax Activity Center, including locations for future streets and open spaces, pedestrian connections, building height and form, general land use, and development limitations. The overall concept plan for Northfax, as provided in the Small Area Plan, is shown to the right.

SOCIAL AND CIVIC NETWORK

Definition

The Social and Civic Network Place Type, identified in blue on the Future Land Use Map, includes public and private schools, libraries, places of worship, post offices, and other public facilities There are no specific corresponding Link + Place Street Types for this category because the varying types of Social and Civic Network land uses are appropriate in a variety of conditions. There is no zoning district specifically related to this Place Type. More information on the zoning districts for which uses in this Place Type are permitted, or constitute a special use, is provided in the Principal Use Table in the Zoning Ordinance. In order to support the recommendations of the Housing Guiding Principle in this chapter, residential uses may be considered in conjunction with other uses in the Social and Civic Network Place Type, provided such residential uses are considered affordable.

Physical Characteristics

New development of, or modifications to existing, social and civic uses located in any Residential Neighborhood should complement the character of the surrounding properties and provide transitional screening where necessary. Any new, or modifications to, existing social and civic uses located in an Activity Center should reflect the typical context of the center. New buildings should be oriented towards the street network and provide additional pedestrian connections to surrounding uses as recommended in the Multimodal Transportation Chapter of the Comprehensive Plan.

GREEN NETWORK

Definition

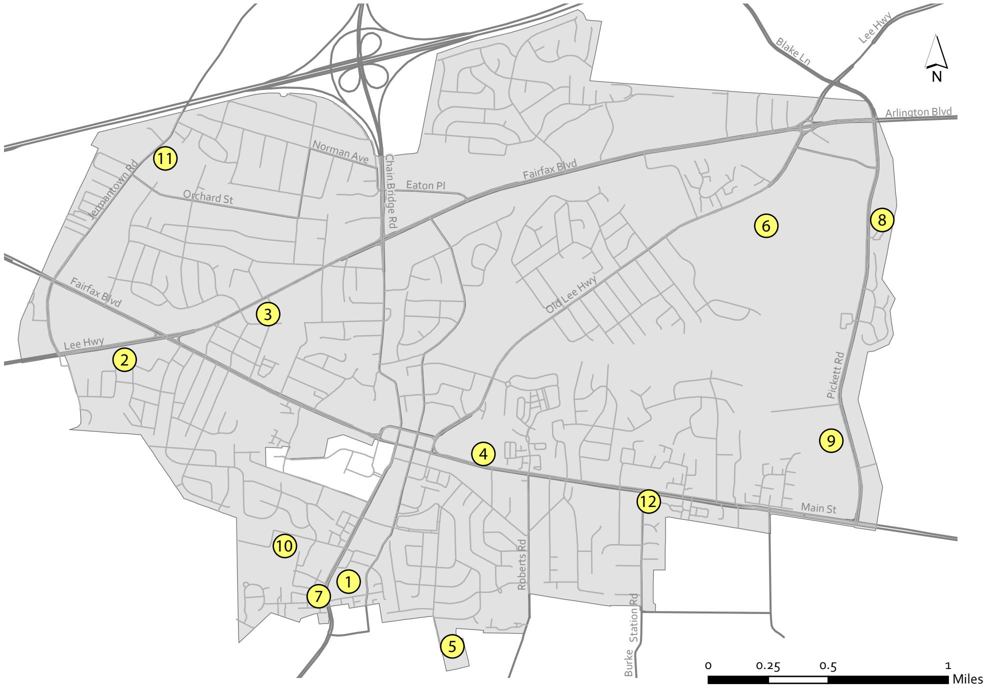
The Green Network Place Type includes public spaces, such as active and passive parks, trails, playing fields, public recreation facilities, cemeteries, open space, and private facilities such as golf courses and private open space. There are currently no zoning districts specifically related to this Place Type. Green Network uses are permitted in the CR, Commercial Retail; CU, Commercial Urban; and CG, Commercial General zoning districts and constitute a special use in all of the residential zoning districts. Outdoor recreational uses, such as tennis courts and golf courses, are permitted as a special use in all of the nonresidential zoning districts except for CL, Commercial Limited.

Physical Characteristics

New recreational facilities shall provide connections to the pedestrian and street network as recommended in the Multimodal Transportation Chapter of the Comprehensive Plan. Proposed connections to other green spaces to complete the network should be prioritized for recreation and transportation purposes as well as ecological benefits. Properties in the network also include natural areas for conservation and protection. Parking facilities for specific recreational uses shall be integrated into the site so as not to prioritize vehicular access over pedestrian connections.

Parcel Specific Considerations

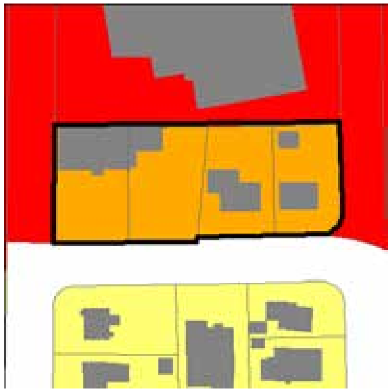
In some cases, the appropriate Place Type for a parcel or group of parcels can vary based on the specifics of design, changes in market demand and variations in surrounding conditions. Several sites in the City have been identified for further consideration of their Place Type designation based on these factors. These sites are identified on the map to the right and described below. While alternatives may be considered, the existing Place Type designation on the Future Land Use Map is the primary recommendation for each site. This list may be expanded in future modifications of this in plan. In particular, potential alternative Place Type designations should be considered for privately-owned sites with a Social and Civic Network designation.



1. Inova and Sunrise Assisted Living

The Inova Emergency Care site, located on Chain Bridge Road, School Street, and George Mason Boulevard, encompasses 9.6 acres and is currently occupied by the Inova Fairfax Emergency Care Center, Sunrise Assisted Living, and the PACE senior medical care center. This site is likely to become available for redevelopment within the next few years. Its unique location makes it suitable for different uses to include commercial, multifamily, and/or townhouse uses. Commercial uses are appropriate along Chain Bridge Road. Any multifamily development should provide substantial buffering to abutting residential uses to the north. Building heights should be no more than three floors along the north, east, and south property lines. Additionally, townhouse uses may be considered as a transition to adjacent, lower-density residential uses.

2. Park Road Properties



Four properties located along Park Road, totaling 0.89 acres, are located within the Westmore Neighborhood but are commercially zoned. Two of the parcels contain a commercial building. The other two parcels contain single-family residential buildings, though one is occupied by a commercial business. Given the location of these lots and their dependence on access from within the neighborhood, alternative uses may be more appropriate than a commercial zoning designation.

Single-family attached residential uses would provide a logical transition between the single-family detached neighborhood to the south and commercial uses to the north. Single-family detached residential uses may also be appropriate. Commercial uses may be appropriate if the properties are consolidated with commercial properties to the north so vehicular access is not dependent on Park Road.

3. Oak Street Properties

Five parcels (059 through 063 on the attached map) located along the west side of Oak Street between Fairfax Boulevard and Cedar Avenue are designated as Single-Family Attached and Single-Family Detached though they are surrounded by higher intensity uses, including the potential Fairfax Garden redevelopment to the west and commercial uses to the north and east. While the Place Type designation supports the current uses, these properties may be appropriate for a Multifamily Neighborhood Place Type designation if they are all included in a parcel consolidation. Alternatively, parcel 063 may be appropriate for a Commercial Corridor designation if it is consolidated with properties with that Place Type designation to the north.

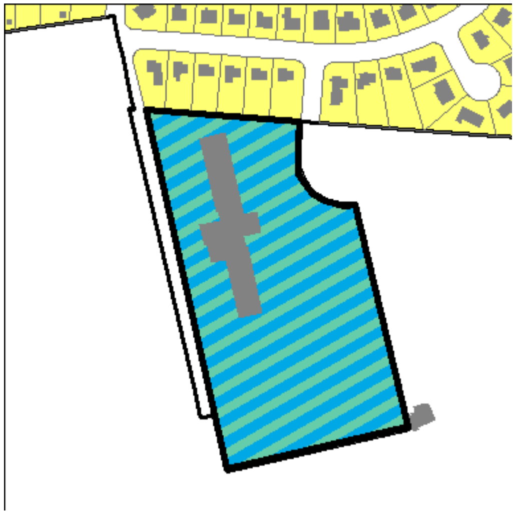
4. Farr Homeplace

This 9.4-acre property located along Main Street between Farrcroft and Main Street Marketplace is privately-owned and the location of the "Farr Homeplace," also known as "Five Chimneys." There is a Resource Protection Area in the rear of the property. Although no historic designation exists, it should be explored for inclusion within a Historic Overlay District. An alternate use may include Single-Family Attached Neighborhood. Any development should retain the existing house, minimize disturbance in the Resource Protection Area, and consider appropriate relationships with the Farrcroft neighborhood to the east.

5. Green Acres

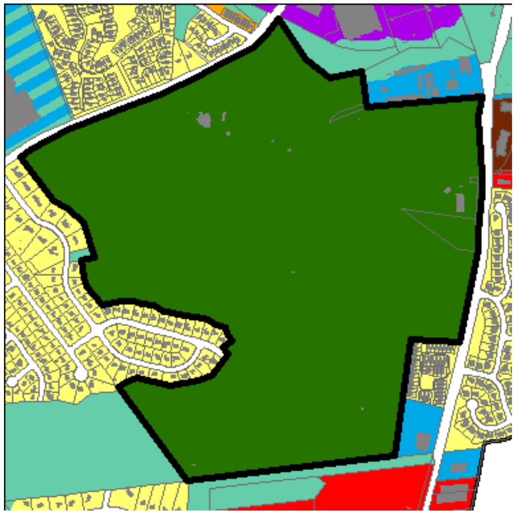
The Green Acres site encompasses 10 acres of land surrounded by George Mason University with one street leading to it through a residential neighborhood. The 2016 Green Acres Feasibility Study found that it is not best suited for the community center use it currently serves and recommended a new community center be constructed elsewhere in the City. The study proposed three alternatives for the future use of the Green Acres site; retaining the entire site for future community uses, selling the entire site, or retaining a portion of the site for community use and selling a portion of the site. The study does not recommend specific uses.

The City of Fairfax School Board reserves the right to retain the site for construction for a future school if necessitated by enrollment demands. This is governed through a covenant on the property. For this reason, the Social and Civic Network Place Type designation should remain. If this covenant is transferred to another property in the City, it would no longer be needed at Green Acres, and the site would become available for other uses.



6. Army Navy Country Club

Covering approximately 234 acres, the Army Navy Country Club is the largest individual property in the City and the largest area of open space. While there are no known plans for the Country Club to vacate or for the property to be developed, and this plan supports continued use of the property for open space, priorities for the future of the site should be considered. Given the wide array of potential implications development of this site could have on the various Guiding Principles for the City, an advisory committee should be formed to conduct a comprehensive analysis and provide recommendations on key priorities if development becomes likely.

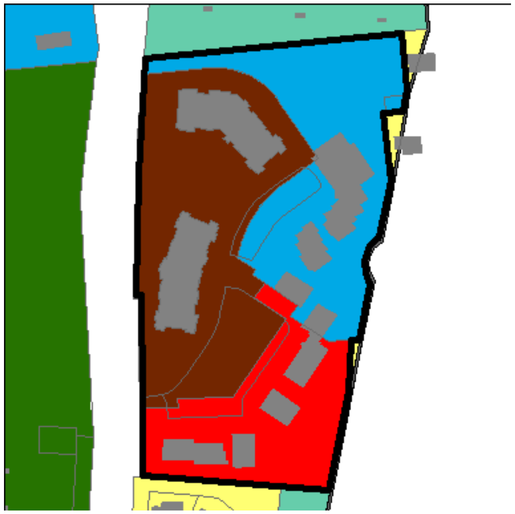


7. 4328 Chain Bridge Road

Encompassing just over half an acre, this site is located on the northwest corner of Chain Bridge Road and School Street. Adjacent properties to the north, west and south are occupied by fairly new townhomes and single-family homes that are not expected to be redeveloped within the timeframe of this plan. Redevelopment on this site should be limited to three stories to integrate with surrounding development. An alternative use for the site could include townhomes for which partial fourth stories could be considered for portions of the site that are not directly adjacent to shorter buildings.

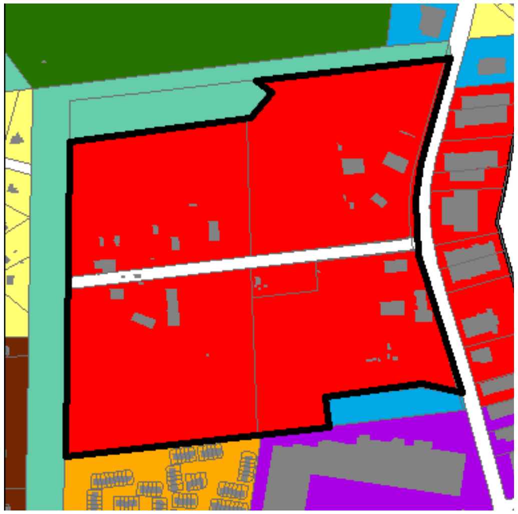
8. Mantua Professional Center

The Mantua Professional Center was originally approved as an office development in 1975, though only a portion of the approved development was ever constructed. Since that time, the original approved plan has been amended several times, including separate amendments that converted portions of the site to be used as a private school and multifamily condominiums. As a result, the current complex is now occupied by three distinct uses. Alternative uses could include multifamily residential or townhomes in the portions of the site currently designated as Commercial Corridor and Social/Civic Network. Any expansion of residential uses in the complex should be cognizant of existing neighborhoods to the south and east and should provide adequate transitions in these areas.



9. Tank Farm

The Pickett Road tank farm comprises above-ground storage for four commercial gasoline and fuel oil facilities and an underground pipeline station on approximately 71 acres. No expansion of the existing heavy industrial uses at this site would be appropriate, and the Commercial Corridor place type is recommended for future development. While there are no known plans for the tank farm to be redeveloped, guidance on development priorities and alternative uses that complement recommendations for the Pickett & Main Activity Center should be established for the site.

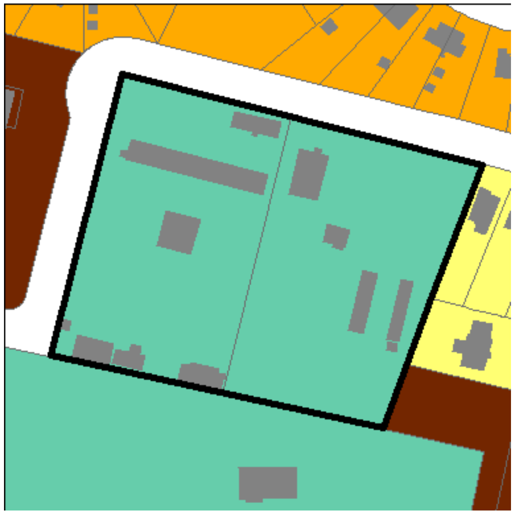


Fairfax County Property Yards

Fairfax County currently owns and manages three property yards within the City, located on West Drive, Jermantown Road, and Main Street. Fairfax County may consider some of these locations for closure in order to provide more efficient services from a consolidated, centralized location. Should Fairfax County choose to vacate any of these locations and dispose of the properties, the City should consider pursuing acquisition. These properties have been identified as potential locations for park uses, open space, affordable housing partnerships between the City and non-profit entities, school sites, property yard functions, or other uses.

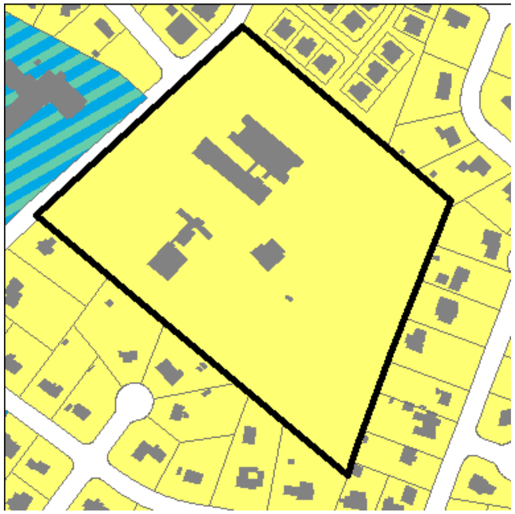
10. West Drive

The two properties that make up the West Drive property yard site encompass 4.2 acres and present a logical extension of the adjacent Providence Park. Their inclusion in the park area would also make Providence Park large enough to host a potential future elementary school in place of the Green Acres site, should that site be desired for other uses. If the City does not acquire this site, it is most suitable for residential development, including single-family detached, single-family attached, or multifamily units. Residential development should provide logical transitions to adjacent uses, particularly along the eastern property line where it abuts existing single-family uses.



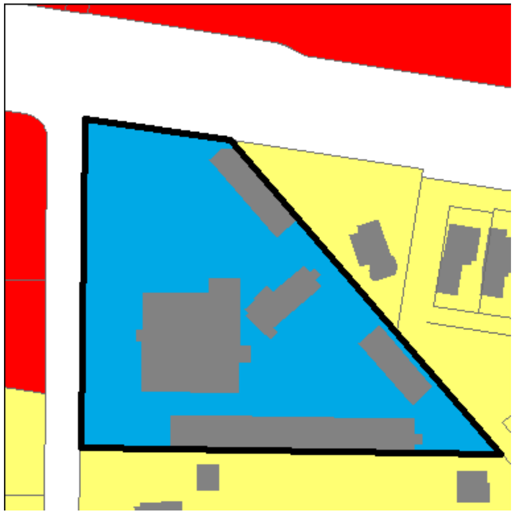
11. Jermantown Road

If this 15-acre property discontinues its function as a property yard and the City does not acquire it, single-family detached residential uses are an appropriate use, consistent with surrounding uses. The cemetery on this parcel should not be impacted by any redevelopment.



12. Main Street

This 2.45-acre parcel is bounded on two sides by roads, Main Street and Burke Station Road. If the City obtains this site, one potential reuse would be a relocation of some of the City's public works services, currently located at the Property Yard on Pickett Road. The existing property yard has flooding issues and diminishing space. The Parks and Recreation Strategic Plan also recommends identification of new potential park sites in the southeast portion of the City. While this site is relatively small, open space uses would provide an amenity in a portion of the City in which open space is not abundant. If the City does not purchase this property, appropriate uses include single-family detached, single-family attached, or commercial uses.



Neighborhoods

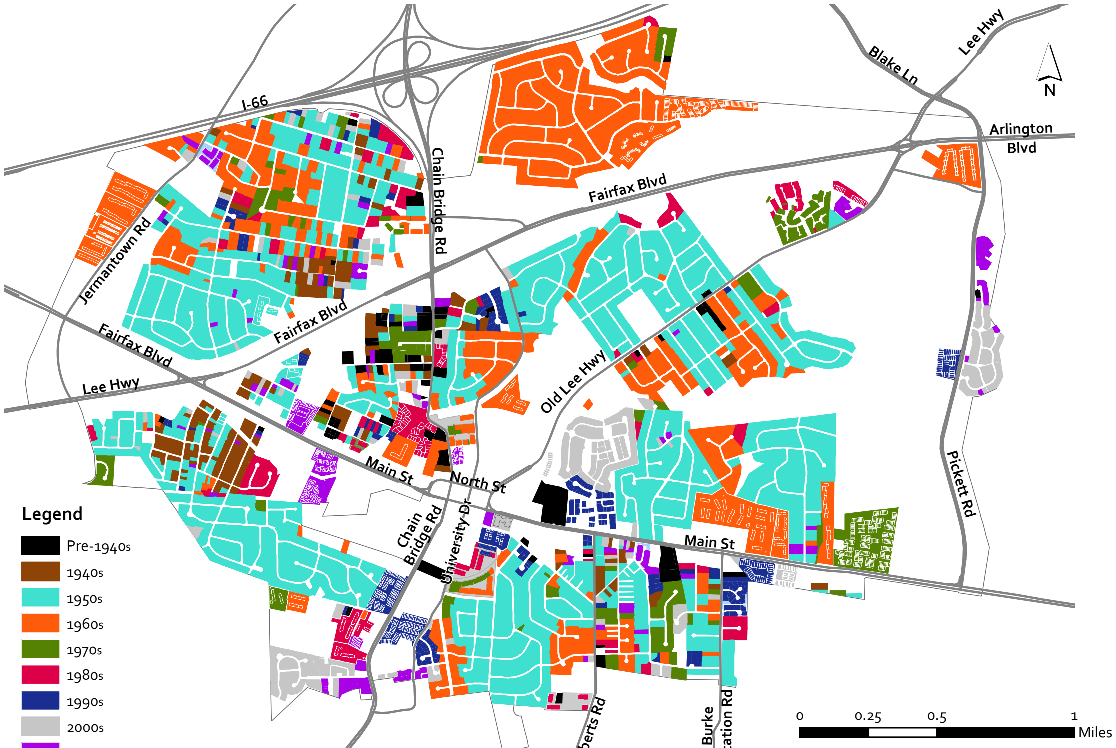
Neighborhoods – the places where we live, learn, play, and increasingly work – constitute the largest geographical use of land in the City, though physical boundaries are not the only defining character trait of a neighborhood. Numerous characteristics define neighborhoods, including the period of building and development (Figure 10), subdivision patterns, architectural style, location of public amenities and services, and presence of social or civic organizations. The City's neighborhoods each have their own unique character and offer a variety of housing and lifestyle opportunities.

Neighborhoods are supported by a separate Guiding Principle in this Plan due to their importance to residents. City growth and development policies must both preserve the quality of neighborhoods and protect neighborhoods from adverse consequences of growth. However, this should not imply that Fairfax's neighborhoods should remain static. Well-designed and properly scaled infill can be an appropriate strategy to foster walkability, better amenities, and housing affordability. This section's goals strive to balance these concerns and take advantage of opportunities through improved policies and regulations, and increased communication with and within the community.

Guiding Principle:

In 2035, Fairfax is a city with...
inviting neighborhoods, each
with its own unique character.

FIGURE 10 HOUSING AGE BY DECADE BUILT



Source: City of Fairfax GIS and Real Estate data 2016

Neighborhoods Goal 1

Enhance neighborhood character.

There is relatively little undeveloped land available in the City for new residential neighborhoods. As the City's housing stock ages, replacements for, or additions to, existing structures will be the prevalent methods of updating housing to meet current market demands. The City should use this as an opportunity to enhance the character and inclusiveness of the City's neighborhoods. Any modification or new construction on residential lots located in established neighborhoods should be compatible with the character of that neighborhood. In order to encourage reinvestment in neighborhoods, the City and civic associations should educate residents about programs available to them (such as Fairfax Renaissance Housing Corporation loans) and the processes involved in updating their homes.

OUTCOME N1.1:	Infill housing that complements the character of surrounding homes in existing neighborhoods.
ACTION N1.1.1	Maintain regulatory standards to ensure infill housing fits in with the surrounding neighborhood context.
OUTCOME N1.2:	Residents have regular communication and positive interactions with other members of their neighborhood as well as the larger City community.
ACTION N1.2.1	Encourage and support community engagement through homeowner, condominium, and civic associations.
ACTION N1.2.2	Establish regular communication with homeowner, condominium, and civic associations and residential property managers as a means to keep individual citizens informed about City business.

Neighborhoods
Goal 2

Provide neighborhood pedestrian connections.

Walkability was frequently cited as a desired attribute of the City during the Comprehensive Plan's public outreach process. Ensuring our neighborhoods are designed to both encourage pedestrian activity and to provide various transportation alternatives will enable people of all abilities to get around the City efficiently and reduce traffic congestion. Improving walkability is not just about adding more sidewalks and trails, but also looking at destinations residents can walk to – such as parks, schools, Commercial Corridors, Activity Centers, and other local destinations – and identifying the condition of the transportation network that can get them there. The strength of a network to get someone from point A to point B is only as good as its weakest link.

OUTCOME N2.1:	Residents of all abilities safely and easily move about the community.
ACTION N2.1.1	Identify opportunities for future open space and trails in neighborhoods that are currently deficient in offering these amenities.
ACTION N2.1.2	Expand existing pedestrian network to increase connectivity within neighborhoods and to other destinations.

Commercial Corridors and Activity Centers

Fairfax's success in achieving the community's vision for future development hinges upon effective growth strategies for the City's areas of highest redevelopment potential. These areas will accommodate the majority of new commercial activity, higher density residential neighborhoods, and transportation improvements. Success in achieving this vision will be measured not by the magnitude of new investment, but rather by the attributes that can transform a disjointed pattern of development into an attractive and welcoming neighborhood. If the City's Commercial Corridors and Activity Centers can be transformed into areas with attractive physical characteristics and a mix of uses, then the City will realize a major aspect of its goal to be a vibrant 21st century community.

While higher intensity mixed-use redevelopment of older commercial properties can provide economic and social benefits to the community, these benefits would be most realized if concentrated in key areas to allow new developments to complement each other, avoid oversaturating the market, and minimize impacts to existing neighborhoods. These types of uses are primarily envisioned in Activity Centers, as indicated on the Future Land Use Map. While a mix of uses and connected street grids are envisioned in all Activity Centers, such development is always encouraged in the Old Town Fairfax and Northfax Activity Centers. More specific guidance is provided for these two areas in the Activity Center Place Type (pages 35-36) and through the goals of this Guiding Principle.

Guiding Principle:

In 2035, Fairfax is a city with...
flourishing centers of commercial and mixed-use activity that include an assortment of grocery stores, restaurants, cafes, entertainment venues, retail stores, offices, and housing.

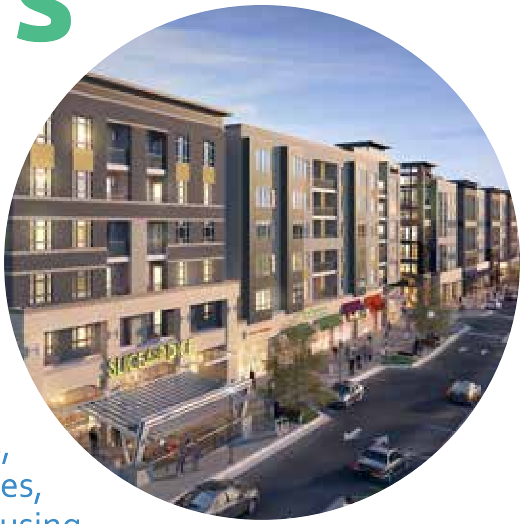
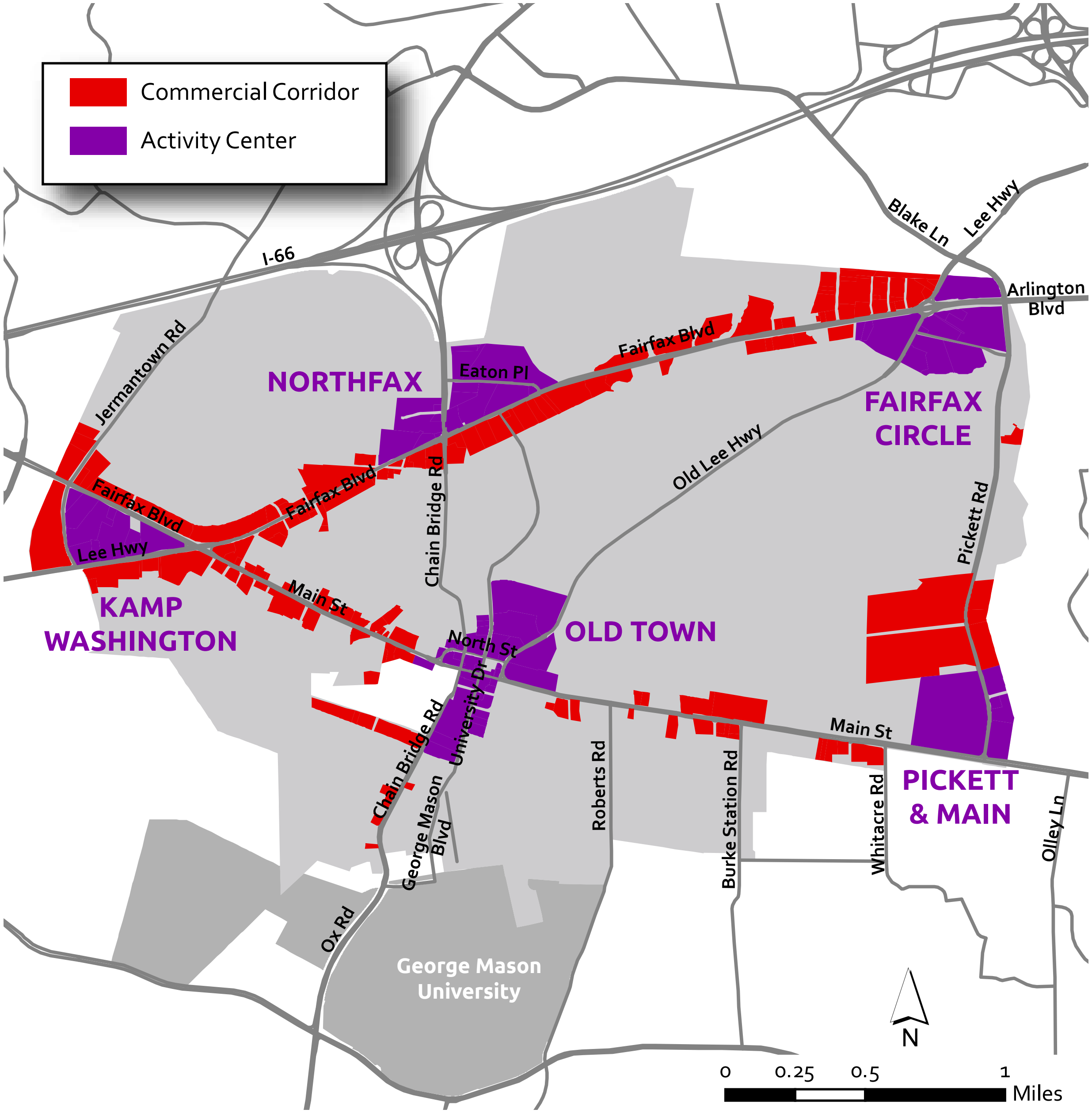


Photo Credit: Hord Coplan Macht

FIGURE 11 ACTIVITY CENTERS AND COMMERCIAL CORRIDORS



While reinvestment and redevelopment of properties in Commercial Corridors is encouraged, incorporation of residential mixed uses is not recommended. Stronger pedestrian orientation and improved aesthetics are encouraged in Commercial Corridors through the physical attributes of the Place Type and recommendations of the City of Fairfax Design Guidelines.

Commercial Corridors and Activity Centers

Goal 1

Enhance Commercial Corridors.

Many commercial properties in the City are underutilized with an overabundance of surface parking. These properties are often suitable for redevelopment, whether to achieve greater use of the land or to make the properties more market competitive. New development and redevelopment must enhance commercial activities along the City's major corridors with a mix of retail, office, and service offerings in an attractive and welcoming setting. Recently-approved projects indicate that there is demand for additional investment in many of these properties.

OUTCOME CCAC1.1:	Commercial Corridors with attractive physical characteristics that provide shopping, dining, services, and other businesses.
ACTION CCAC1.1.1	Encourage commercial redevelopment that offers amenities and atmosphere to attract top-tier commercial tenants.
ACTION CCAC1.1.2	Identify underutilized properties (i.e., buildings assessed at considerably less than the total property value) and, working with the City's Economic Development Authority, encourage redevelopment.
ACTION CCAC1.1.3	Encourage creativity and architectural excellence in new commercial developments.
ACTION CCAC1.1.4	Develop urban design concept diagrams for small block and multi-block areas along the City's Commercial Corridors outside the Activity Centers.
ACTION CCAC1.1.5	Encourage tree-lined and heavily-landscaped property edges, particularly where surface parking is adjacent to the public rights-of-way.
ACTION CCAC1.1.6	Provide pedestrian and bicycle connections to nearby neighborhoods.
OUTCOME CCAC1.2:	Tenants representing diverse business sectors that meet current and emerging trends in neighborhood-serving retail, service, and other business demands.
ACTION CCAC1.2.1	Strengthen existing retail businesses and expand choices to capture retail spending by residents.
ACTION CCAC1.2.2	Create a marketing plan to generate excitement about the current retail and service offerings.

Commercial Corridors and Activity Centers

Goal 2

Promote redevelopment in the City's Activity Centers.

While actions throughout the City will contribute to fulfill the community's vision for the City's future, those pertaining to land use planning in these specific areas carry an outsized importance. The City will promote redevelopment in Activity Centers to strengthen economic vitality; provide retail, office, and residential opportunities for sustained demand; and reinforce the City's regional appeal. Given the potential scope of redevelopment opportunities, new construction in these areas to accommodate various types of housing units and commercial tenants could accomplish many of the goals set forth elsewhere in this Plan's Land Use Chapter.

OUTCOME CCAC2.1:	Old Town Fairfax, including an expanded downtown area to its north and south, is a lively, economically viable, walkable cultural hub for the City.
ACTION CCAC2.1.1	Capitalize on the authenticity and appeal of Old Town Fairfax as an historic place and a shopping, dining, and tourist destination.
ACTION CCAC2.1.2	Attract and retain businesses along Main Street and market it as a primary retail street for Old Town Fairfax.
ACTION CCAC2.1.3	Maximize the use of publicly-owned properties to contribute to the economic and cultural vibrancy of Old Town Fairfax.
ACTION CCAC2.1.4	Encourage redevelopment of privately-owned, underutilized sites north and south of Old Town Fairfax, such as the Courthouse Plaza shopping center and the area west of University Drive between Sager Avenue and Armstrong Street, as mixed-use developments.
ACTION CCAC2.1.5	Market the connection to Old Town Fairfax from George Mason University and emphasize Old Town Fairfax as a desirable place for students and faculty to shop, dine, and live.
ACTION CCAC2.1.6	Support efforts by Fairfax County to develop a Master Plan for the County Courthouse Complex including encouraging improved connections between the complex and surrounding areas, as well as uses that contribute toward, rather than compete with the vibrancy of the Old Town Activity Center.
OUTCOME CCAC2.2:	A pedestrian-oriented, mixed-use destination at Northfax that capitalizes on its location to successfully compete with other regional centers.
ACTION CCAC2.2.1	Pursue feasibility of a public-private partnership to develop parking structures.
ACTION CCAC2.2.2	Consistently articulate expectations for unified developments and support measures that facilitate property consolidation.
ACTION CCAC2.2.3	Encourage the redevelopment of Northfax as a major commercial center and transit-oriented development that capitalizes on a potential future Metrorail station along I-66.

Commercial Corridors and Activity Centers

Goal 2

OUTCOME CCAC2.3:	Old Town Fairfax, Northfax, and the other Activity Centers are well-designed and desirable places to live, work, shop, and dine.
ACTION CCAC2.3.1	Encourage structured parking and minimize surface parking, particularly adjacent to public rights-of-way.
ACTION CCAC2.3.2	Promote the orientation of buildings facing toward streets with architecture that engages street-level activity.
ACTION CCAC2.3.3	Promote active streetscapes with minimal building setbacks, pedestrian amenities, street furniture, on-street parking, landscaping, and other features.
ACTION CCAC2.3.4	Support land planning that balances connectivity for pedestrians, bicyclists, and motorists.
ACTION CCAC2.3.5	Prepare individual Small Area Plans, as defined in Section 15.2-2303.4 of the Code of Virginia, for each of the Activity Centers that clearly demonstrate the desired mix of uses, residential density, building intensity, design aesthetic, specific street locations and multimodal connections, infrastructure improvements, parking, and open space.
ACTION CCAC2.3.6	Target and coordinate public infrastructure improvements with desired infill, reinvestment, and redevelopment areas to encourage and stimulate private development.

Housing

Guiding Principle:

In 2035, Fairfax is a city with... a choice of housing types that meet the needs of our community.

In order to function equitably and inclusively, the City must prioritize the availability of housing units for people of widely varying income levels, ages, and lifestyle choices. While there is great variety among the approximately 9,000 housing units in the City, several types or characteristics of housing may be underrepresented among the current housing mix, especially as other nearby communities undergo redevelopment and expand their offerings.

Although the City is primarily built out, a variety of new housing types can be accommodated through redevelopment on a relatively limited basis to broaden the current offerings and accommodate changing demands. Accordingly, housing that is affordable, housing that is designed for older adults and people with disabilities to accommodate the City's relatively high proportion of older adults, and housing for growing younger families seeking modern single-family housing without leaving the City should be prioritized.

Existing housing units can also accommodate changing demands through renovations and retrofits. Prioritizing additional housing units in underrepresented market segments, improving the functionality of existing housing units, and accommodating in-demand housing types would help to ensure that the City is as welcoming as possible to current and potential residents, regardless of socioeconomic status, age, or other circumstances.

In addition to expanding housing choices, proactive strategies should be taken to ensure that existing housing units that are affordable are preserved and that new units that are affordable are added to the City's overall housing unit mix.

Housing
Goal 1

Support a wide range of housing types.

It is vital that a variety of high-quality, attractive housing choices continue to be available in the City to support differing needs and demands of residents. Housing needs and demands are reflective of the existing housing stock and fluctuating market trends, making them subject to change over time. Specific housing types are identified in the Land Use Strategies Section of the Comprehensive Plan. Current shortages could include multifamily rentals and condominiums, of which the majority of the City's stock was built in the 1960s, and townhomes, of which the City currently has a lower ratio than many surrounding communities in Fairfax County. Although significant single-family development is not anticipated as the City is primarily built-out, potential redevelopment and infill housing that keep up with modern expectations and meet demand are encouraged, provided they comply with the Zoning Ordinance.

OUTCOME H1.1: Continued development of housing types that are underrepresented in the City's existing stock of housing units.

ACTION H1.1.1 Create a housing policy that can best provide for the types of housing units that are most in demand.

1.1.1.1 Conduct a housing assessment to examine the types of housing that are most in demand in the City for a full income range of households, or are most supportive of growing sectors of the local economy.

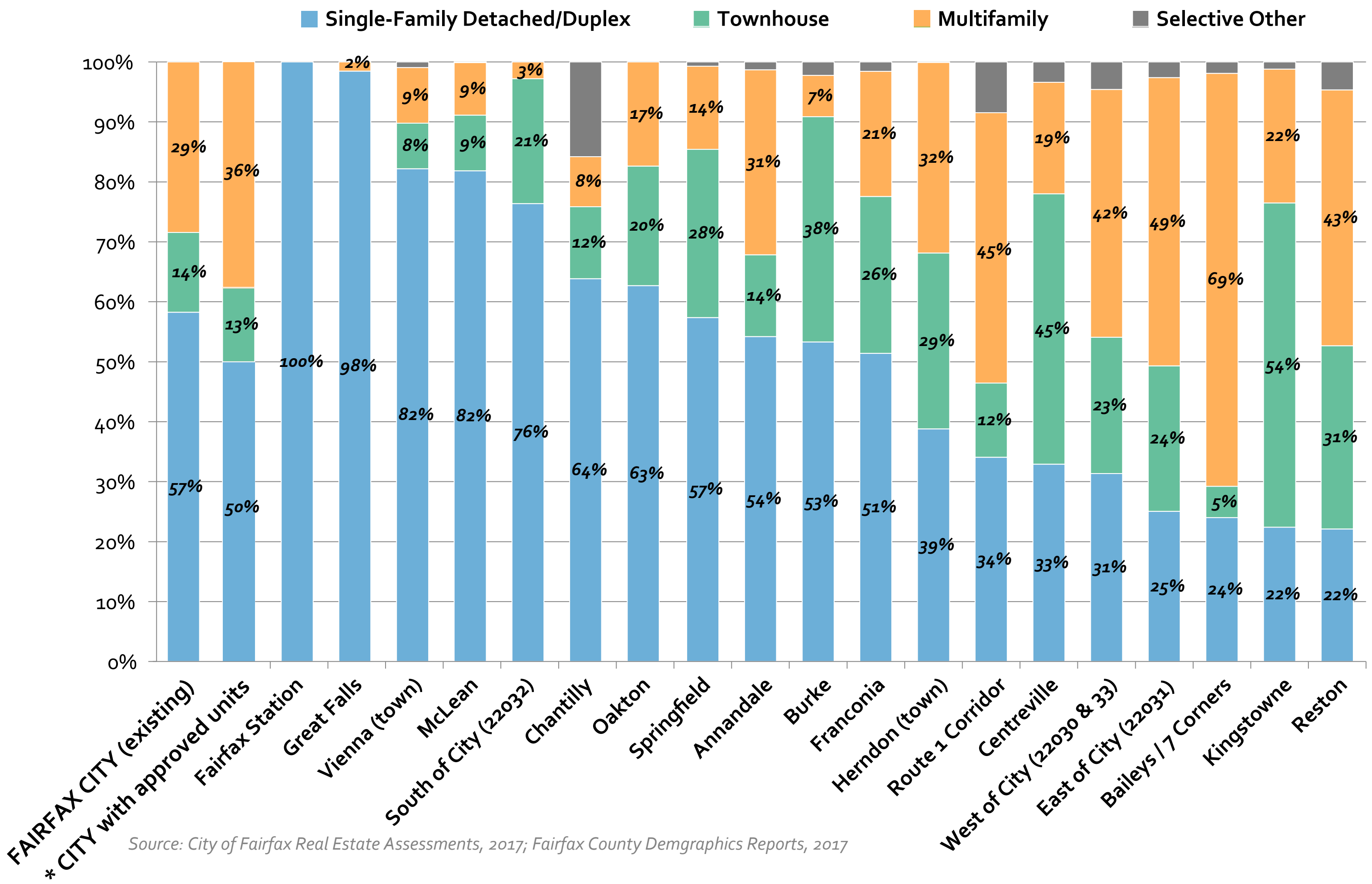
1.1.1.2 Support development of housing types that are not heavily represented in the City's housing stock, as identified in the housing assessment, where reasonable.

1.1.1.3 Consider efforts to market new and existing housing stock in the City to growing sectors of the regional economy.

ACTION H1.1.2 Research changes to the zoning regulations to expand opportunities for accessory dwelling units, while ensuring they do not negatively impact the surrounding neighborhood.

Figure 12 on the following page provides a comparison of housing type percentages between the City (both current and approved) and other parts of Fairfax County.

FIGURE 12 HOUSING UNITS BY TYPE



Source: City of Fairfax Real Estate Assessments, 2017; Fairfax County Demgraphics Reports, 2017

* City with approved units = Approved and unbuilt units as of the adoption of this Comprehensive Plan.

Housing

Goal 2

Ensure availability of housing that is affordable.

During the Comprehensive Plan outreach process, affordable housing was the primary issue that rose to the forefront of the housing discussion. (Code of Virginia Section 15.2-2201 defines affordable housing as housing that is affordable to households with incomes at or below the area median income, provided that the occupant pays no more than thirty percent of his gross income for gross housing costs, including utilities. However, the actions associated with this goal could target households with incomes below the median.) In addition, Code of Virginia Section 15.2-2223 states that the Comprehensive Plan "shall include the designation of areas and implementation of measures for the construction, rehabilitation and maintenance of affordable housing, which is sufficient to meet the current and future needs of residents of all levels of income in the locality." There are a number of tools available to encourage the establishment of new affordable residential units as well as to preserve existing "naturally occurring affordable housing" that is affordable to families earning below the region's median household income. Affordable housing should be encouraged in higher-density areas of the City, particularly in the Activity Centers.

OUTCOME H2.1:	Affordable housing units have been added to the City's housing stock through redevelopment and strategic investments.
ACTION H2.1.1	Maintain a robust housing affordability program and dedicated housing trust fund that could be used to rehabilitate and preserve existing housing that is affordable or to help leverage other funding streams for new construction.
ACTION H2.1.2	Provide regulatory and financial incentives to increase the supply of affordable housing, including amending the City's Zoning Ordinance to include an Affordable Dwelling Unit ordinance.
ACTION H2.1.3	Pursue a contractual partnership with the Fairfax County Department of Housing and Community Development to administer elements of a housing affordability program for the City.
ACTION H2.1.4	Provide alternative means of accommodating new dedicated affordable housing units, such as leveraging vacant or underutilized public land; supporting or partnering with private, non-profit, or faith-based organizations; and co-locating affordable housing with public construction.
OUTCOME H2.2:	Preservation of and reinvestment in the City's existing supply of affordable multifamily rental housing units.
ACTION H2.2.1	Facilitate partnerships between existing property owners and nonprofit organizations to preserve and ensure long-term affordability of existing multifamily complexes.
ACTION H2.2.2	Promote the use of the Low Income Housing Tax Credits, tax abatements, low-interest loans, the PACE (Property Assessed Clean Energy) Program, and other funding sources available to reinvest in and upgrade existing multifamily complexes.

Housing
Goal 3

Provide housing options for older adults and persons with disabilities.

Housing that is designed for older residents and persons with disabilities was another issue that rose to the forefront of the housing discussion during the Comprehensive Plan's public outreach sessions. Given the relatively high concentration of older adults in the City as compared to surrounding jurisdictions, demand for such units from existing City residents could be strong. Housing should be suitable for a range of choices, such as aging in place, accessory dwelling units, dedicated senior housing, and assisted living/nursing care. In addition, options should be available for people with a variety of disabilities and incorporate features of universal design - the design of buildings, products, or environments to make them accessible to all people, regardless of age, disability, or other factors.

OUTCOME H3.1:	A range of accessible housing types with appropriate levels of support and care is available for older adults and persons with disabilities that incorporate the concept of universal design.
ACTION H3.1.1	Express preferences regarding housing units that are appropriate and/or in demand for seniors and those with disabilities and incorporate features of universal design at a range of price points.
ACTION H3.1.2	Encourage development of congregate living facilities - a group of independent dwelling units that have common kitchen and dining areas - to support older adults and persons with disabilities.
ACTION H3.1.3	Review provisions within the City's Zoning Ordinance to identify and amend provisions that impede the ability to construct or modify housing containing minimal physical barriers for people of all ages and abilities, including but not limited to standards of universal design.

Housing
Goal 4

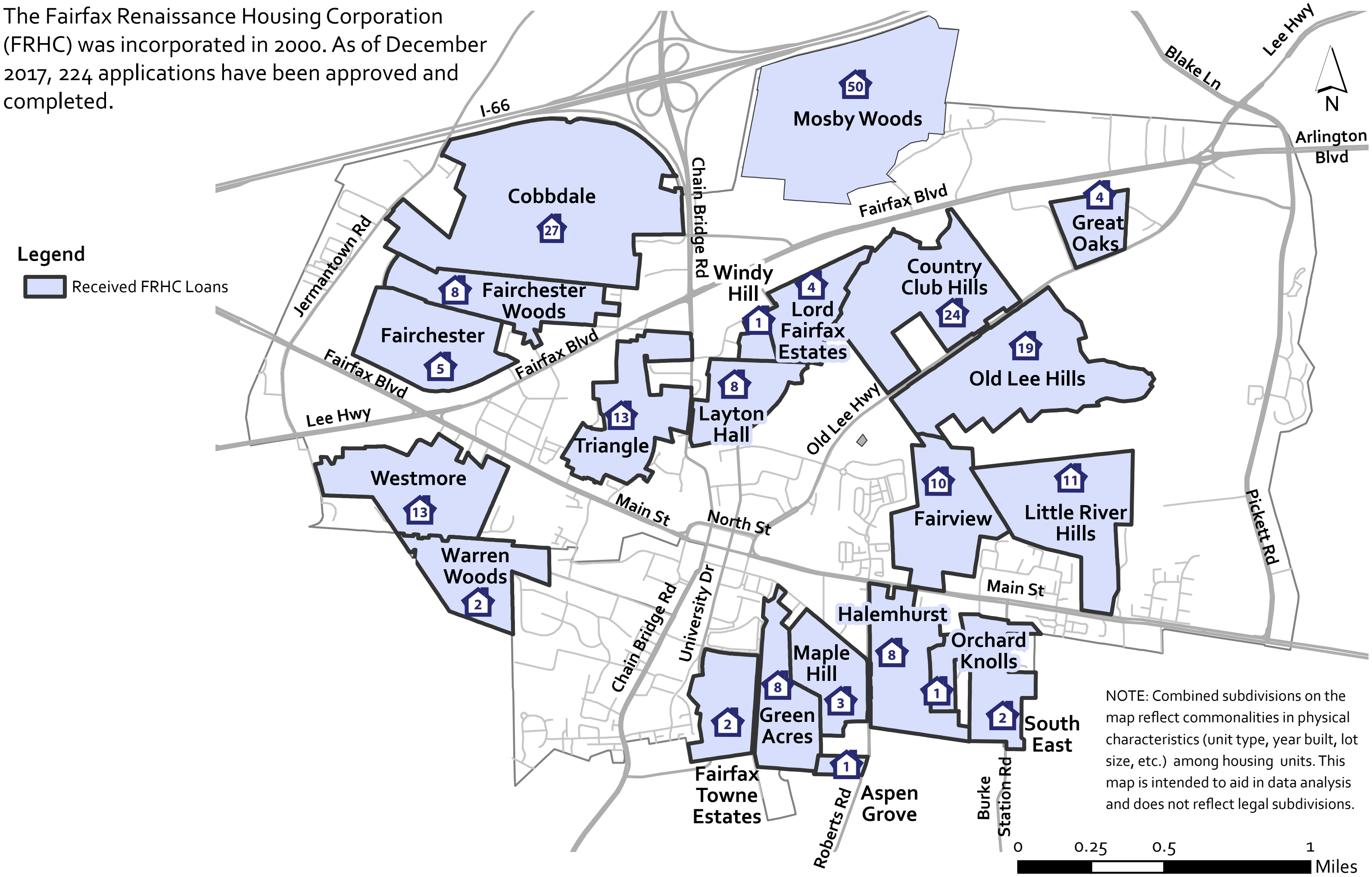
Support residential improvements of existing housing units.

Home renovations and expansions allow existing housing units in the City to keep up with modern expectations, including characteristics such as floor area, layout, style, technological amenities, and sustainable infrastructure. The Fairfax Renaissance Housing Corporation has assisted in such housing improvement projects throughout the City since 2000, as shown in Figure 13. In addition, the City has engaged in other programs, such as Solarize NOVA, to encourage residents to consider sustainable elements in home renovations.

OUTCOME H4.1:	A greater number of renovated housing units.
ACTION H4.1.1	Continue to encourage property owners to undertake residential reinvestment projects that can collectively modernize the City's housing stock.
ACTION H4.1.2	Encourage energy-efficient retrofits that reduce water use and heating and cooling costs.
ACTION H4.1.3	Continue to enforce compliance with building and property maintenance codes to prevent deteriorated, unsafe, and unhealthy housing conditions.
ACTION H4.1.4	Incentivize reinvestment in existing multifamily complexes.
OUTCOME H4.2:	Expanded City-sponsored residential improvement programs.
ACTION H4.2.1	Continue to explore modifications to the FRHC program to encourage greater participation.
ACTION H4.2.2	Encourage further engagement of programs to promote sustainable retrofits and incorporation of sustainable elements in residential renovations.

FIGURE 13 RESIDENTIAL IMPROVEMENT PROJECTS WITH FAIRFAX RENAISSANCE HOUSING CORPORATION (FRHC) LOANS

The Fairfax Renaissance Housing Corporation (FRHC) was incorporated in 2000. As of December 2017, 224 applications have been approved and completed.



NOTE: Combined subdivisions on the map reflect commonalities in physical characteristics (unit type, year built, lot size, etc.) among housing units. This map is intended to aid in data analysis and does not reflect legal subdivisions.

Source: Fairfax City GIS Parcels 2017 & FRHC Data January 2018

Community Design and Historic Preservation

Guiding Principle:

In 2035, Fairfax is a city with...
architecture that contributes
to a vibrant, creative place and
complements our historic character.

An attractive, well-designed City instills civic pride; improves the visual character of the community; creates a strong, positive image; and attracts quality developments. Community Design relates not just to what buildings look like, but to the spaces between buildings, as well as to the street and public realm. While accommodating new growth and change, consideration must be given to preserving significant elements of the community that contribute to the City's unique character.

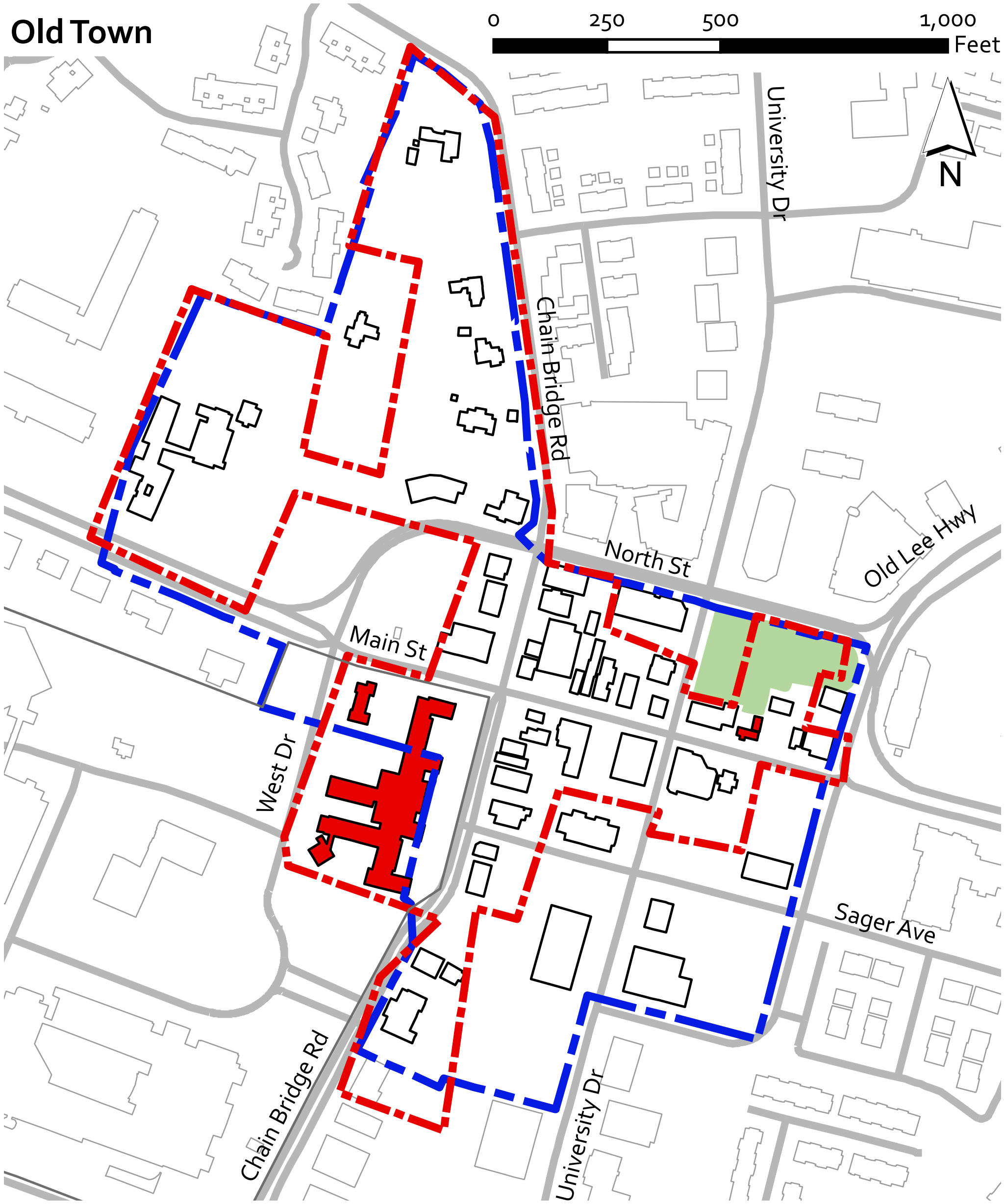
The intent of the Community Design and Historic Preservation Guiding Principle is to capitalize on unique features of the City in a manner reflecting the community's values and its connection to the history and traditions that distinguish it from other communities in the region. This can be accomplished through review and adjustment of planning, regulatory and incentive tools, and by improving coordination among stakeholders who impact the future development of the City, without unreasonably burdening the review process.

The primary resource on design elements for new construction, expansions and renovations is the City of Fairfax Design Guidelines. Separate design characteristics are described in the guidelines for the Old Town Fairfax Historic Overlay District, the Old Town Fairfax Transition Overlay District (both described on the following pages), and the Architectural Control Overlay District (which encompasses all properties within the City except for single-family residential properties and those properties located within one of the other overlay districts). The Board of Architectural Review, along with City staff, reviews development applications to determine if proposals meet the intent of the design guidelines.

Historic Overlay Districts

The majority of the City's historic architectural resources are concentrated in Old Town, the City's traditional core. Old Town is recognized and preserved both nationally as a National Register of Historic Places district as well as through a City preservation district zoning overlay (Figure 14). There are 52 buildings, 10 "other structures," and a monument within the National Register of Historic Places' "City of Fairfax Historic District," many of which are considered "contributing elements." Six of the buildings predate 1850 while others are from the turn of the 20th century to the early 1930s. The City's locally-designated Old Town Fairfax Historic Overlay District is larger in area than the National Register district.

FIGURE 14   HISTORIC DISTRICTS AND BUILDINGS



Source: City of Fairfax GIS 2016 Impervious Surfaces, Zoning Overlays, National Register Districts

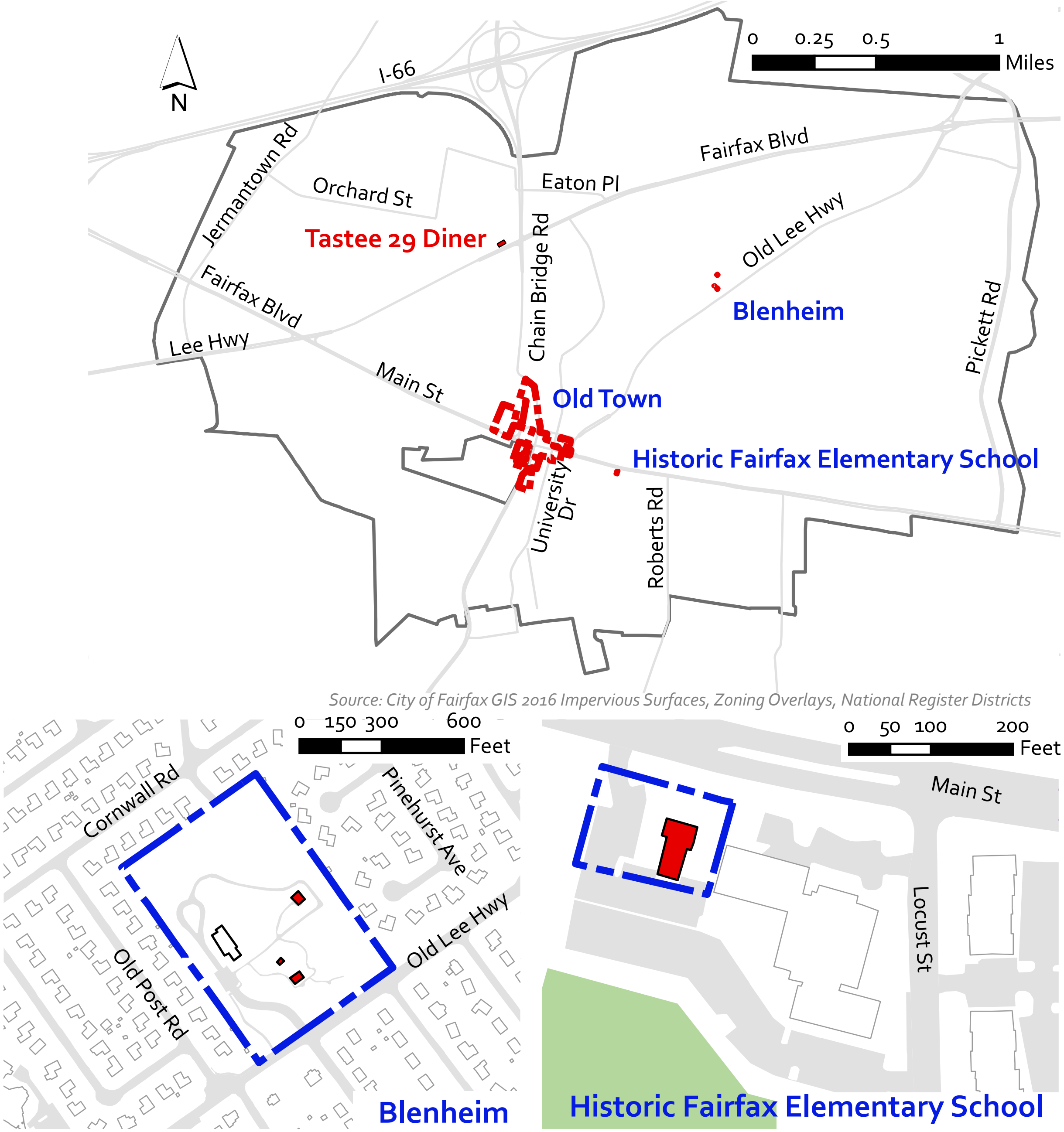
Legend

- 🟥 National Register Historic District
- 🟥 National Register Historic Building
- 🟦 City Historic District
- ☐ Building
- — Centerline of Road
- 🟩 Park

In addition to Old Town, the City has historic zoning overlay districts for two other properties, the Fairfax Public School and Blenheim (Figure 15).

Additionally, there are many properties and structures with historic characteristics that have not been designated at the local, state, or national levels. Over 4,800 structures in the City are 50 years of age or older, one of the criteria to determine eligibility of historic designation. The significance of a given property or structure to architectural history, landscape history, events or activities in the past, or to lives of important people are other criteria for preservation. Remaining large estates such as the Farr Homeplace and the Sisson House may also be considered for preservation, as well as landforms such the Manassas Gap Railroad Bed.

FIGURE 15 HISTORIC DISTRICTS AND BUILDINGS



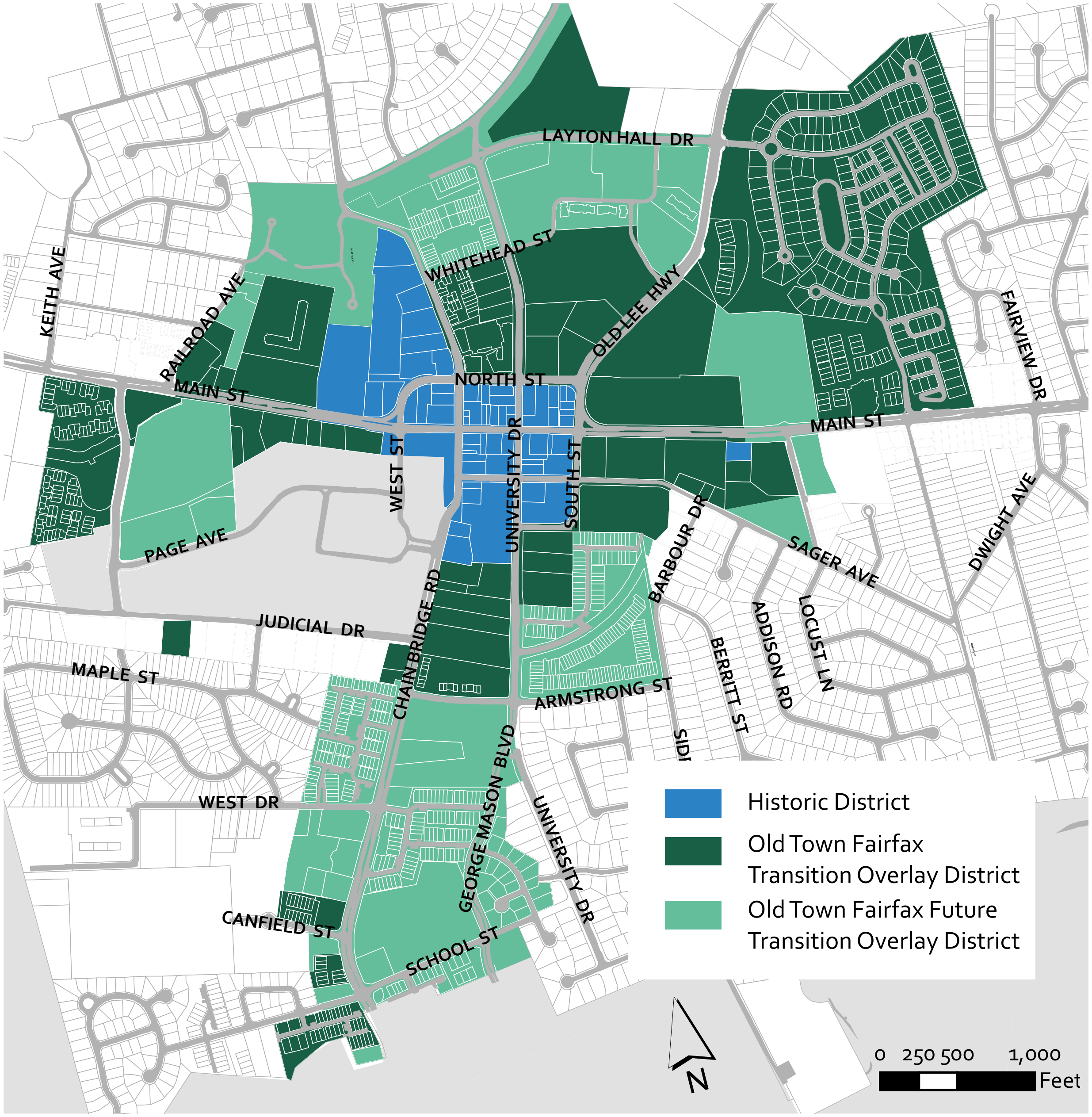
Source: City of Fairfax GIS 2016 Impervious Surfaces, Zoning Overlays, National Register Districts

Old Town Fairfax Transition Overlay District (Transition District)

The Transition District is established in areas surrounding Old Town Fairfax as a means to ensure the character of those areas complements that of the historic districts. This is accomplished through regulations in the Zoning Ordinance limiting the height of new construction, encouraging buildings to be oriented toward the street, and requiring more extensive streetscape improvements than the base standards. The current extent of the Transition District and potential Future Transition Overlay District are provided in Figure 16.

Properties located in the Future Transition Overlay District may be added to the Transition District either upon application from the property owner (typically in conjunction with an individual property rezoning) or as part of a larger City-initiated rezoning. The extent of the potential expansion area for the Transition District stretches farther away from the historic district in order to continue these characteristics along corridors leading into Old Town Fairfax.

FIGURE 16 HISTORIC DISTRICTS AND TRANSITION OVERLAY DISTRICTS



Community Design and Historic Preservation

Goal 1

Require high-quality, sustainable design.

Beyond residential neighborhoods, there is a wide variety of building uses in the City, from office and retail buildings to industrial and institutional buildings. These buildings were constructed over several decades and encompass an array of design styles and architectural influences. The City requires high-quality, sustainable design and construction of new buildings and public spaces along with similarly high-quality modifications and additions to existing buildings and open spaces. The intent of the design review process in areas of the City outside the historic districts is to continue to allow architectural variety while encouraging higher quality materials and design rather than designating specific design styles. The City can further support aesthetic quality through public investment in visible infrastructure, such as streetscapes and signage, and through public-private partnerships to promote desired types of development.

OUTCOME CDHP1.1:	Clear expectations for the required design elements and building materials for the City's historic districts and commercial centers.
ACTION CDHP1.1.1	Determine design aesthetic of Fairfax Boulevard and Main Street with input from City boards and commissions and convey through design documents such as the City of Fairfax Design Guidelines and other documents that may be prepared.
OUTCOME CDHP1.2:	Attractive buildings, inviting public spaces, and welcoming gateways that contribute to our economic vitality and unique character.
ACTION CDHP1.2.1	Identify commercial economic investment areas and provide financial support through the Economic Development Authority.
ACTION CDHP1.2.2	Continue to develop and refine design standards with a menu of options to encourage variety, visual interest, and durability in the design of new development.
ACTION CDHP1.2.3	Explore public-private partnerships to create neighborhood centers inclusive of gathering places.
ACTION CDHP1.2.4	Create attractive gateway features at key City entry points.

Community Design and Historic Preservation

Goal 2

Protect and enhance historic resources.

Inclusion of properties or structures in a local historic district should be based on the criteria described on p. 61. Local protections give the City the ability to designate specific characteristics of a property or district that are intended to be preserved, as well as provide regulatory measures that protect those properties. Local districts can be applied to individual properties or a group of properties, such as a neighborhood. Establishment of any new historic districts should be contingent upon support from owners of the affected properties.

OUTCOME CDHP2.1:	Protection of eligible structures, properties, and neighborhoods through local historic designation and strategic investments.
ACTION CDHP2.1.1	Develop an inventory of historic and archaeological resources readily available on the City's website that is reviewed and updated at least every 10 years.
ACTION CDHP2.1.2	Work with neighborhoods to gain support for new locally-designated historic districts and landmarks, where appropriate.
ACTION CDHP2.1.3	Encourage the preservation of existing buildings of historic or architectural significance whenever feasible.
OUTCOME CDHP2.2:	Redevelopment that respects nearby historic structures and the established architectural pattern.
ACTION CDHP2.2.1	Ensure all new development subject to the requirements of the City of Fairfax Design Guidelines is compliant, and continue to monitor the review process for Certificates of Appropriateness to ensure it is effective.
ACTION CDHP2.2.2	Rezone all properties in the Old Town Fairfax Future Transition Overlay District to the Old Town Fairfax Transition Overlay District, either proactively or as each property seeks land use amendments.
OUTCOME CDHP2.3:	The City's historic resources are utilized to provide educational programs to the community and promote preservation of historic properties.
ACTION CDHP2.3.1	Promote greater awareness of the City's historic resources and the history of the City and surrounding area, identifying educational, economic, and recreational benefits of historic structures, properties, and districts.
ACTION CDHP2.3.2	Evaluate the need to expand the Fairfax Museum and Visitor Center, currently located in the Historic Fairfax Elementary School building.

Preservation and appreciation of historic properties and other historic resources in the City can be supported through events and programs that highlight the history of the City and the importance of the historic properties in historic events. City historic resources, such as the Fairfax Museum and Visitor Center, Blenheim Civil War Interpretive Center, and the Ratcliffe-Allison-Pozer House can be utilized to engage the public through special programs, tours, events, exhibitions, and outreach efforts.

3 Multimodal Transportation

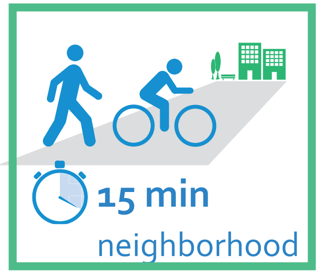
Transportation is about more than mere movement – transportation grants us access to the needs of everyday life. Sustainable, connected, and integrated transportation is fundamental to the success and livability of the City. The intent of the Multimodal Transportation Chapter is to recommend strategies that will improve the operation and safety of the City's transportation system in order to achieve the larger community objectives for a vital, vibrant, and livable City.

This Chapter is based on the Multimodal Transportation Plan, the first comprehensive, multimodal transportation plan completed by the City. ("Multimodal" refers to the multiple ways people use to get around – car, bus, train, bike, walking, etc. – and a multimodal plan incorporates these various transportation modes into an efficient and connected system.) The Multimodal Transportation Plan was developed as a separate effort, but in coordination with the Comprehensive Plan. The four key aspirations shown to the right helped ensure the multimodal aspect of the plan inform many of the recommendations.

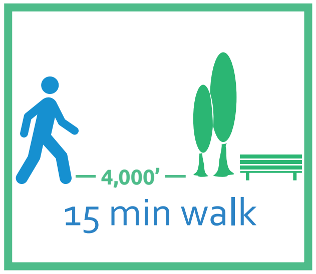
Guiding Principle:

In 2035, Fairfax is a city with...
options for residents to easily, safely, and efficiently move within and between neighborhoods either by walking, bicycling, taking public transportation or driving.

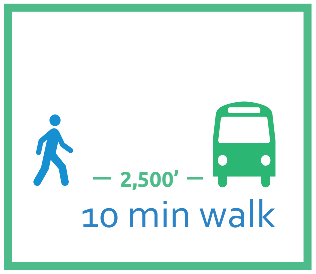
Create a city of **"15-minute neighborhoods"** – ensure that 100% of residents can access a local activity center via a safe 15-minute walk from home (currently 44%).



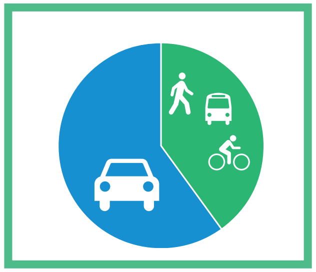
Ensure 100% of residents are connected to green space, trails, or open space via a safe 15-minute walk of home (currently 88%).



Ensure 100% of residents have access to transit by providing a transit stop within a safe 10-minute walk of each residence (currently 79%).



Increase choice, reliability, and efficiency in travel by achieving at least a 40% non-drive alone mode share for commute to work trips (currently 28%).



Fairfax Transportation Facts

The City of Fairfax is centrally located

A **20-minute** drive to Tysons, Falls Church, and Dulles International Airport

Taking transit to these same destinations can take **three times as long**

27% Of households have at least **one child at home**

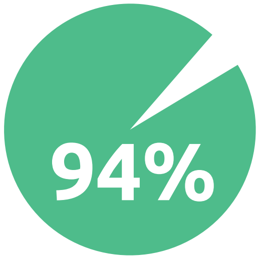
36% Of households include at least **one senior**

68,000 Daily trips are made through the city **without stopping**

In 2015, there were

837

Automobile crashes in the city



94% Of city residents have access to **one or more** cars

6% Of city residents must get by without an automobile

72% Of City of Fairfax commuters **drive alone to work**

66% Of residents surveyed would prefer to travel by a means **other than driving alone** to work or errands

CONGESTION + Safety

are the two most **frequently cited threats** to **livability in the City of Fairfax**

Most transit routes in the city operate from **early morning through evening**

However, most transit routes only operate **once or twice per hour**

1/3 of all household trips

are less than one mile in distance

1/2 Of these short distance trips **are driven**

SOURCE: City of Fairfax Multimodal Transportation Survey, 2015; US Census National Household Travel Survey, 2009; MWCOG; City of Fairfax

Opportunities and Challenges

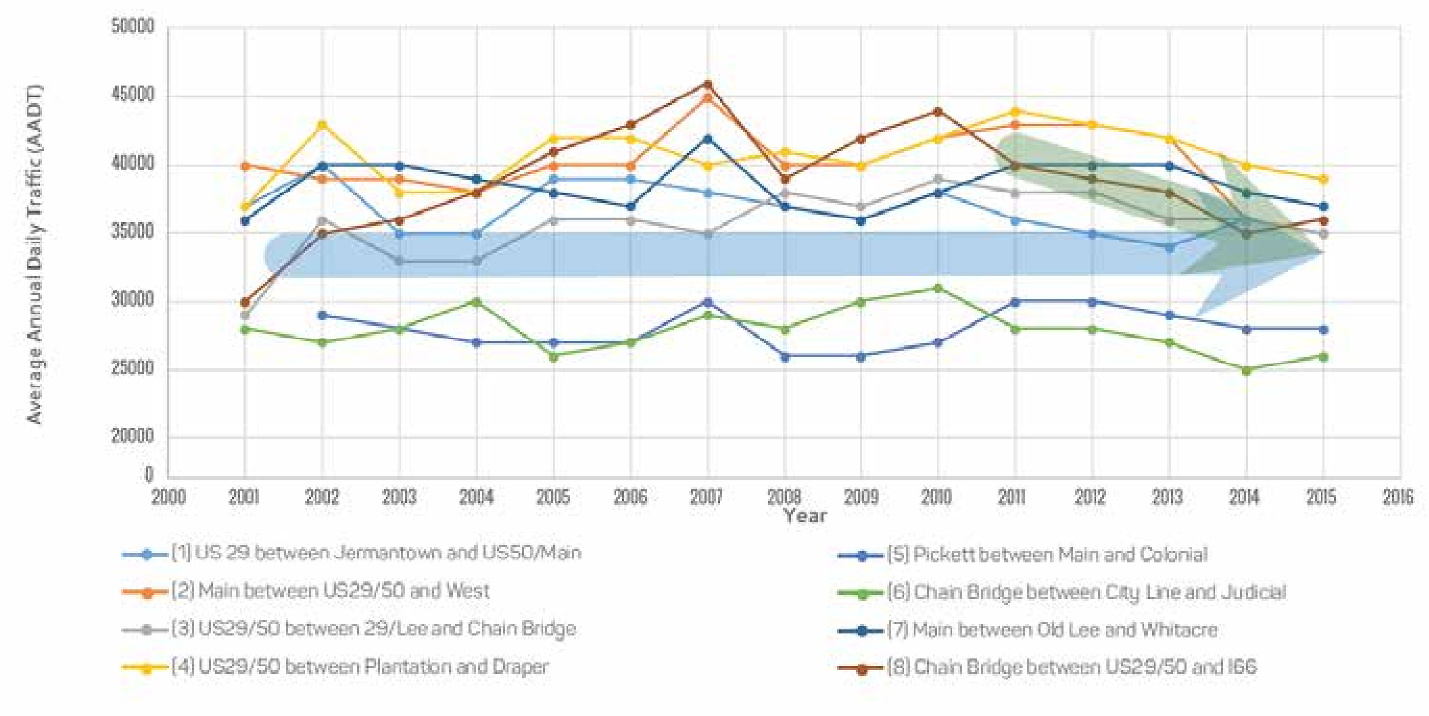
Traffic volumes and peak period congestion

Despite growth in population in the area, daily traffic volumes on the City's 16 miles of arterial roads have remained relatively stable over the past 15 years. However, while traffic volume on several segments has decreased since 2010-2011, vehicular congestion during peak hours continues to present challenges to residents and commuters.

Travel patterns

Currently, the vast majority (72%) of City residents who are employed drive alone to work while 8% carpool, 11% use transit (bus or rail), and 5% work from home. Most households (94%) have at least one automobile. However, 6% of City households make do without owning a personal vehicle. The average City resident who is employed travels 12.6 miles to work — a trip that takes 35 minutes on average. Within the Washington region, approximately one third of all trips are less than a mile, but more than 50% are driven. Many of the short trips in the City could be completed on foot, on transit, or by bike rather than driving.

FIGURE 17 AVERAGE ANNUAL DAILY TRAFFIC



SOURCE: Virginia Department of Transportation, 2001 - 2015

Transportation safety

Traffic congestion is significant along most of the major corridors in the City and concentrated where arterials intersect. These areas also experience high rates of vehicle crashes, with the highest rates concentrated at major intersections.

FIGURE 18 2015 VEHICLE CRASHES BY LOCATION

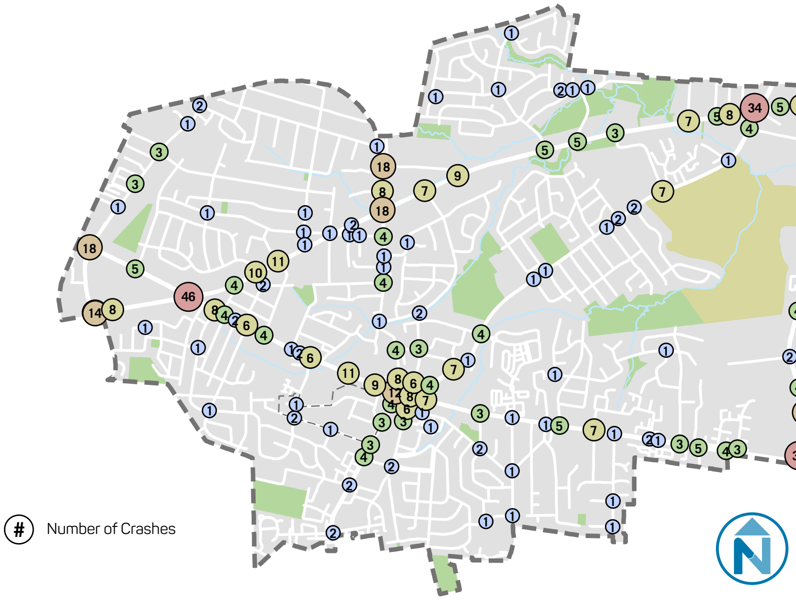
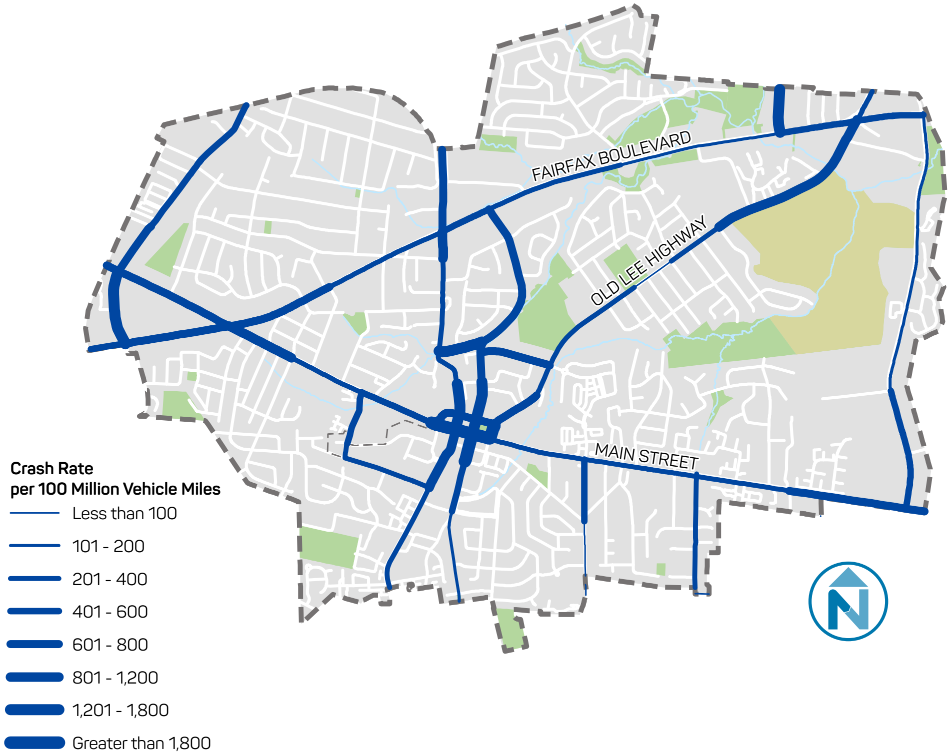


FIGURE 19 2015 VEHICLE CRASH RATES

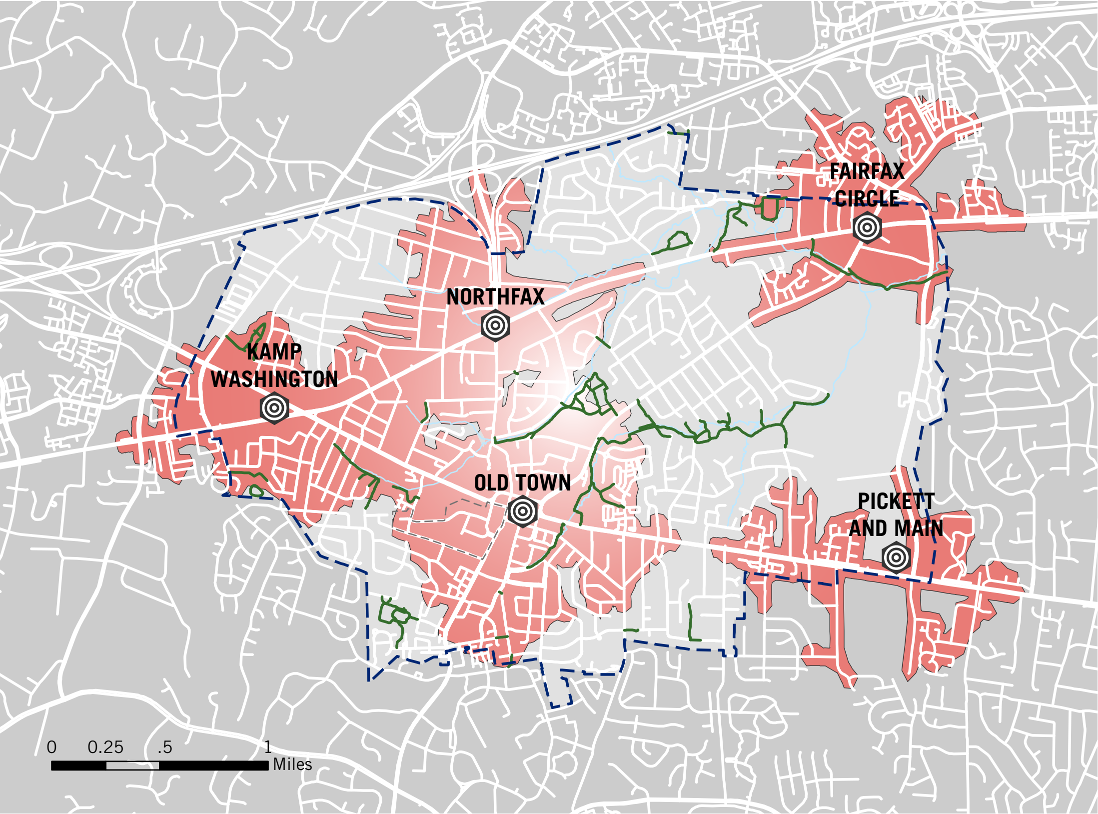


SOURCE: City of Fairfax, 2015

Pedestrian and bicycle access to amenities

Forty-four percent of City housing units are within a 20-minute walk of basic amenities such as shopping, dining, groceries, open space, schools, and other community facilities. Many of these amenities are concentrated within the City's five Activity Centers. Except for Old Town, these centers are generally separated from adjacent residential communities by larger block sizes, busy roadways, and missing or discontinuous pedestrian networks. High-volume roadways are often dangerous for pedestrians to navigate and complicate access to local amenities. While many neighborhoods have relatively complete sidewalk networks, and while the City has a number of bicycle and pedestrian trails, the bicycle and pedestrian network is not well-connected or accessible for all users.

FIGURE 20 ACTIVITY CENTER WALKSHEDS (15 MINUTES)

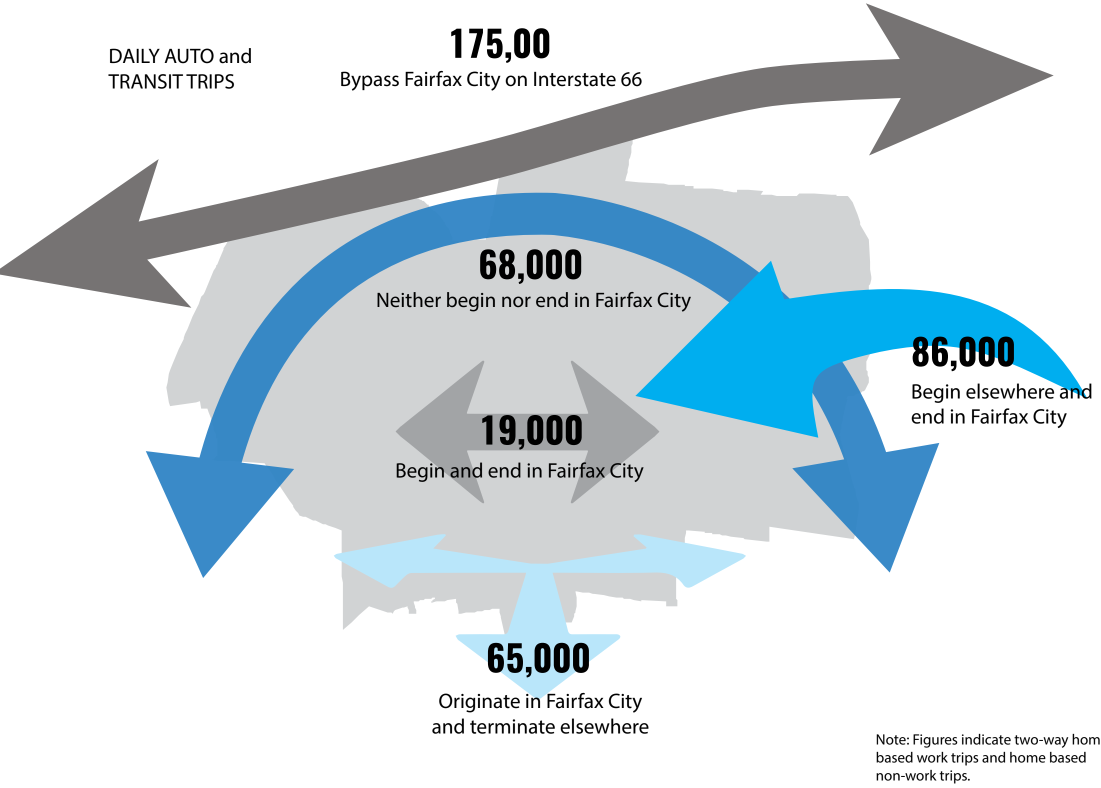


SOURCE: Census Data Set H1, 2010

Regional transportation demand

Every day, 68,000 regional travelers, primarily motorists, travel through the City without making a stop. As traffic congestion continues to increase on major regional corridors such as I-66 and Braddock Road, this regional traffic threatens to similarly increase congestion on City corridors.

FIGURE 21 DAILY TRIPS TO, FROM, AND THROUGH THE CITY

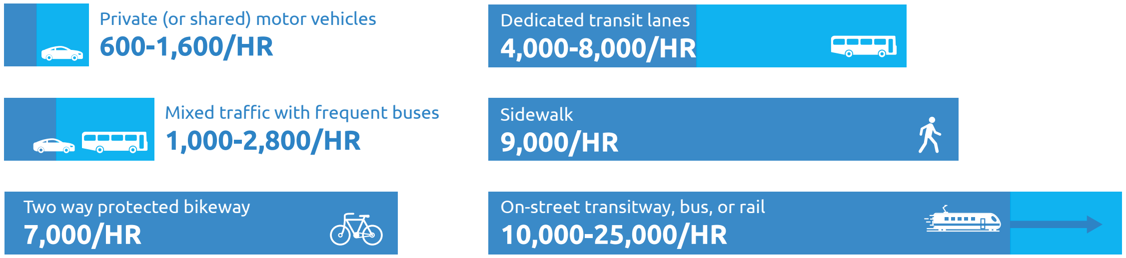


SOURCE: MWCOG 2.3 v57a Model, 2015

Roadway expansion limitations

While the City may continue to add local minor streets to enhance connectivity and access, few opportunities remain to add substantially more vehicle capacity on City streets. As such, the City will need to focus on ways to efficiently move more people within the existing street network. This can be done by encouraging higher occupancy in both private and mass transit vehicles, satisfying more short distance trips with walking and bicycle options, and encouraging people to shift their time of travel away from peak hours to less congested times of the day.

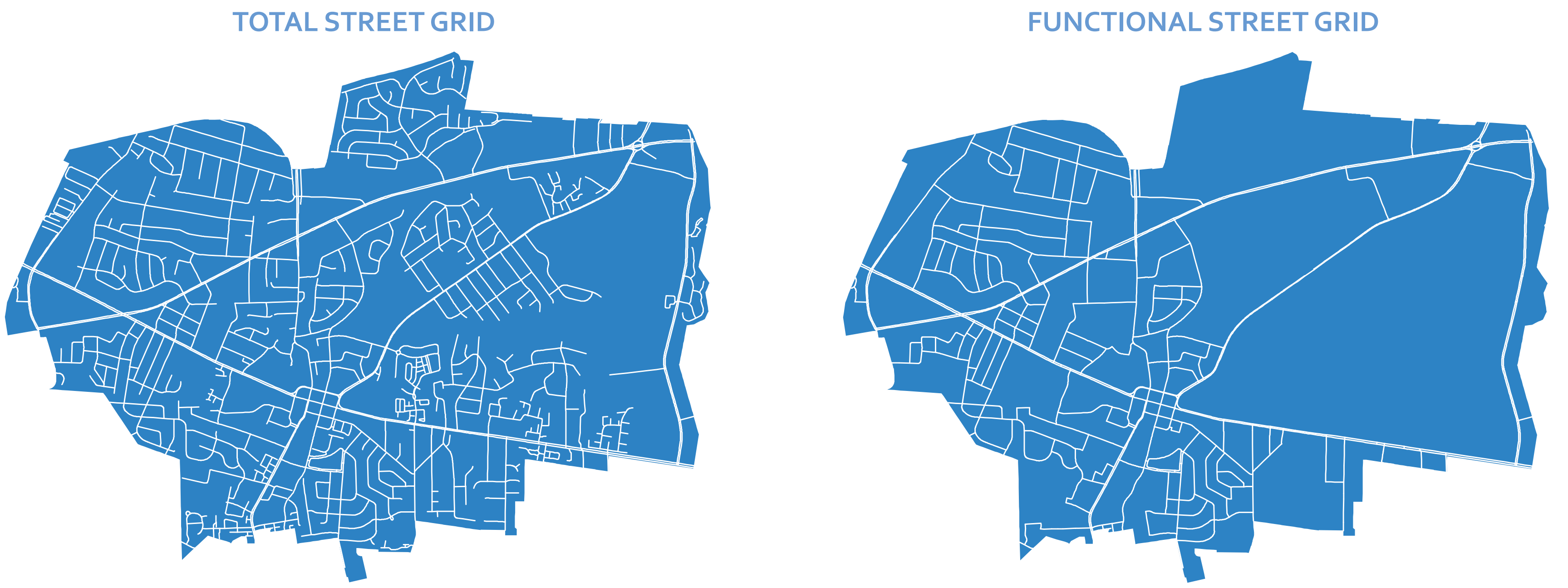
FIGURE 22   PEOPLE MOVING CAPABILITY OF VARIOUS TRANSPORTATION MODES



Street connectivity

The City has 104 centerline miles of streets. However, only 61% of them can connect users to other parts of the City without depending on major corridors. While limited connectivity discourages through traffic on local streets, it also constrains resident access in and out of their neighborhood. Oftentimes bicycle and pedestrian access is equally constrained, causing further conflict, congestion, and potential safety concerns among all road users.

FIGURE 23 TOTAL AND FUNCTIONAL VEHICULAR NETWORKS


TOTAL STREET GRID

FUNCTIONAL STREET GRID

A comparison of the entire City street grid to a functional grid paints a stark picture. The east side of the City consists almost entirely of neighborhoods isolated by physical barriers.

The functional grid is made up of roads that can be used to travel by vehicle to another neighborhood or part of the City. The west side of the City is far more integrated with Old Town and areas immediately northwest, southwest, and south of City boundaries.

Transportation infrastructure, services, and other assets

Among individuals responding to the 2015 City of Fairfax Multimodal Transportation Survey, about two-thirds of residents who currently drive alone to work expressed a desire to have the option to travel by some other means. Current constraints to non-auto travel include limited transit frequency, missing or discontinuous bicycle and pedestrian networks, and general concerns about safety when traveling by non-auto modes.

TRAILS

The City has a 28 mile trail network that provides safe, attractive, and convenient non-motorized access while concurrently promoting physical health and well-being.

CUE

The CUE bus system is well respected and generally well used, and buses generally operate over 16 hours a day on weekdays (with somewhat shorter hours on weekends). Frequency of service is limited, however. Real-time bus tracking and arrival information helps augment the system's usability. Combining transit applications with multimodal trip planning services provides riders with greater choice and convenience to weigh their travel decisions depending on time, cost, or other considerations.

DEVELOPMENT OPPORTUNITIES

The strong Northern Virginia economy continues to make the City an attractive place to live and invest. Following guidance in the Land Use Chapter of this plan, well-designed, concentrated development in Activity Centers can assist in reducing the growth of traffic and congestion. By locating many origins and destinations within a compact, accessible, and walkable area, more residents can fulfill daily needs without depending on driving. Those who drive may take just one vehicle trip and accomplish a number of other errands on foot within the same area. Urban-style development is better able to support more frequent transit service, benefiting travelers across the area.

Evolving shared mobility and technology options

Shared travel options such as carpooling, ride hailing services, or bicycle sharing systems offer opportunities to meet local travel needs conveniently and cost-effectively while reducing single-occupant vehicle travel. Real-time information, intelligent transportation, and other information and technology innovations can also make travel more efficient. Examples of best practices and future trends are shown in Appendix B. Some of these examples may be appropriate components of a sustainable mobility system in the City.

Multimodal Transportation

Goal 1

Connect with the region.

The City is a relatively small jurisdiction within a much larger region. Although regional traffic can congest City streets, City residents rely on the larger region for significant employment, entertainment, and cultural destinations; and City businesses rely on regional patrons and attract employees from the larger area. The City must enhance facilities that connect to the larger region, but do so in a way that supports safety, connection, and robust choices in travel options.

OUTCOME MM1.1:	Corridors for regional travel and better connections to regional networks and destinations are enhanced and improved.
ACTION MM1.1.1	Continue to participate in regional planning efforts to increase connectivity in the regional road, transit, and trail networks.
ACTION MM1.1.2	Collaborate with WMATA and regional partners to support a western extension of Metro's Orange Line, including a station location at I-66 and Route 123 (near Northfax) to benefit City of Fairfax stakeholders with improved access to the Metrorail system.
ACTION MM1.1.3	Increase connectivity to the existing Vienna/Fairfax-GMU Metrorail station including:
1.1.3.1	Improve pedestrian connections from the Fairfax Circle area to the Metro station area.
1.1.3.2	Improve bicycle facility connections and crossings across Fairfax Boulevard from the City to the Metro station.
1.1.3.3	Continue collaboration with George Mason University to enhance bicycle and transit connections between the University and the Metrorail system.
1.1.3.4	Implement the recommendations of the Old Lee Highway "Great Street" conceptual plan.
ACTION MM1.1.4	Expand trail and bicycle networks to connect to regional facilities and destinations, including:
1.1.4.1	Improve connections and logical links to the Cross-County Trail and beyond to the Washington & Old Dominion (W&OD) trail.
1.1.4.2	Improve trail connections south along Route 123 to connect to the Braddock Road Sidepath and on to Lorton.
1.1.4.3	Connect local trails to the planned I-66 trail facility.
1.1.4.4	Coordinate with Fairfax County on the construction of the Main Street/Little River Turnpike bicycle facility.

Multimodal Transportation

Goal 1

Photo Credit: Virginia Department of Transportation

Photo Credit: Ben Schumin

ACTION MM1.1.5	Improve the Blake Lane-Jermantown Road corridor.
1.1.5.1	Complete a transportation study to determine necessary facility improvements and operational plans.
1.1.5.2	Coordinate with Fairfax County and VDOT on improvements to the Jermantown Road bridge over I-66, including additional capacity for vehicles, bicycles, and pedestrians.
1.1.5.3	Pursue a connection from Jermantown Road to Waples Mill Road north of Fairfax Boulevard.
ACTION MM1.1.6	Support Fairfax County in pursuing improvements to Braddock Road to facilitate its operation as a critical regional corridor.
ACTION MM1.1.7	Complete the Government Center Parkway connection.
ACTION MM1.1.8	Improve safety and ensure continued efficiency of Pickett Road as a regional north-south corridor and important truck route.
OUTCOME MM1.2:	Safety and operations in the regional network are improved.
ACTION MM1.2.1	Conduct a detailed study of Fairfax Circle to improve safety and operations, potentially including geometric changes to the existing circle configuration.
ACTION MM1.2.2	Simplify multi-leg and offset intersections, such as the intersection of McLean Avenue, Warwick Avenue, and Fairfax Boulevard.
ACTION MM1.2.3	Address safety and operational deficiencies at major intersections, such as the intersection of Eaton Place and Chain Bridge Road.
ACTION MM1.2.4	Continue City participation on regional transportation boards.
ACTION MM1.2.5	Promote a regional approach to public transportation planning.
ACTION MM1.2.6	Participate in the regional process for evaluation and recommendation of projects to be applied for state and federal funding.

Multimodal Transportation

Goal 2

Provide viable and attractive mobility choices.

At present, the City is heavily dominated by vehicle traffic. Many surveyed residents expressed a desire to make the City more walkable and bikeable, but walking or bicycling on busy streets can be uncomfortable or even dangerous. The City's bus system is well-used and highly regarded, but is often caught in the same traffic as other vehicles. Improving mobility requires providing a balanced system where people can choose the best travel option for them depending on their needs.

OUTCOME MM2.1:	Pedestrian safety is improved.
ACTION MM2.1.1	Fill critical gaps in the pedestrian network. Develop and act on a prioritized list of sidewalk improvements in the commercial areas and provide sidewalks on at least one side of every residential street in neighborhoods that are in agreement.
ACTION MM2.1.2	Ensure the pedestrian network is accessible to all and meets the requirements of the Americans with Disabilities Act (ADA).
ACTION MM2.1.3	Enhance safe routes to school, safe routes to transit, and safe routes to community facilities, completing specific planning efforts as required.
ACTION MM2.1.4	Improve pedestrian crosswalks. Crosswalks should be provided across all legs of all intersections.
ACTION MM2.1.5	Expand the sidewalk network. Sidewalks should be provided with any significant street maintenance, rehabilitation, or reconstruction project and may be constructed independent of a street project.
ACTION MM2.1.6	Increase pedestrian connectivity to the existing Vienna/Fairfax-GMU Metro station, such as through the Fairfax Circle area.
ACTION MM2.1.7	Expand safety education efforts to educate all road users on pedestrian awareness and safety. Educate residents on proper procedures for traveling as a pedestrian, interacting with pedestrians as a driver, and locating and using pedestrian facilities to increase comfort and safety and encourage more walking.

OUTCOME MM2.2:	The City's existing trail system, including the "Green Ribbon" parks and trail network, is connected and expanded.
ACTION MM2.2.1	Identify and fill gaps in the trail network. Find opportunities for future trails, complete connections to existing segments, implement projects proposed by the Parks and Recreation Master Plan, and pursue new trail connections to create a more functional trail network.
ACTION MM2.2.2	Connect the George Snyder Trail to the planned I-66 trail facility.
ACTION MM2.2.3	Improve trail crossings across arterial streets, including Fairfax Boulevard at Pickett Road and Main Street at Main Street Square and Railroad Avenue.

Multimodal Transportation Goal 2

ACTION MM2.2.4	Provide wayfinding, trailblazing, traffic calming/safety, and non-motorized facility improvements to provide connections between parks and trails.
ACTION MM2.2.5	Increase resident awareness of trail networks and connections.
OUTCOME MM2.3	Bicycle network, facilities, and programs are improved.
ACTION MM2.3.1	Develop and adopt a bicycle network plan linking major destinations including George Mason University, Old Town, Metrorail, and the regional trail system.
ACTION MM2.3.2	Review bicycle facility design standards to ensure best practices in design and delivery of facilities.
ACTION MM2.3.3	Expand the provision of bicycle racks for short-term bicycle parking.
ACTION MM2.3.4	Adopt bicycle-supportive policies for development projects where applicable, including expanded provision of short- and long-term bicycle parking, showers, and changing facilities.
ACTION MM2.3.5	Complete a bikeshare feasibility study including definition of necessary station density, recommended "starter system," operating and management structure, and funding program, preferably in partnership with George Mason University.
ACTION MM2.3.6	Provide initial support to establish bikeshare in the City.
ACTION MM2.3.7	Expand safety education efforts to educate all road users on bicycle awareness and safety. Educate casual cyclists on proper procedures to encourage more cycling through an increased comfort level.
ACTION MM2.3.8	Increase connectivity to the existing Vienna/Fairfax-GMU Metrorail station by improving bicycle facility connections and crossings across Fairfax Boulevard north to the Metro station.

Multimodal Transportation

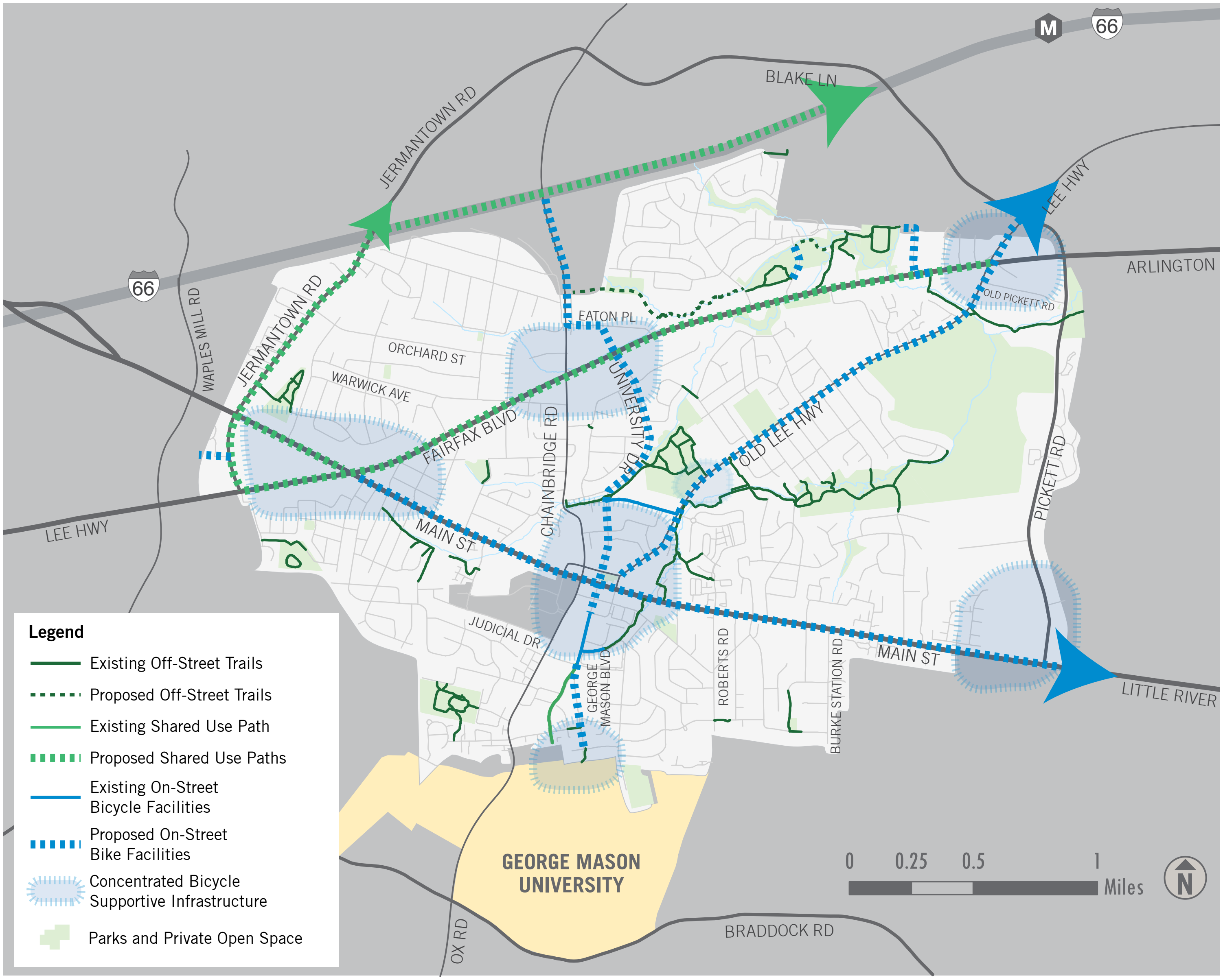
Goal 2

OUTCOME MM2.4	Transit continues to be an effective non-driving alternative.
ACTION MM2.4.1	Improve transit services and facilities.
2.4.1.1	Identify a priority transit network providing enhanced transit operations and more frequent services along key corridors including Main Street, Old Lee Highway, and Fairfax Boulevard.
2.4.1.2	Enhance passenger accommodations to improve comfort and convenience.
2.4.1.3	Improve major transfer locations with quality passenger amenities, expanded information, and improved pedestrian facilities. Significant transfer locations include the Kamp Washington area, Fairfax Circle, Old Town, and Pickett and Main.
2.4.1.4	Implement recommendations of the CUE Transit Development Plan to maintain the highly-valued service of the CUE system.
2.4.1.5	Achieve and maintain 90% on-time performance for the CUE system.
2.4.1.6	Improve connections to other transit routes and facilities through enhancements at significant transfer locations.
2.4.1.7	Promote transit-friendly design features in development projects.
2.4.1.8	Expand ADA-accessible sidewalks and crosswalks serving bus stops.
OUTCOME MM2.5:	Vehicular travel and facilities are effectively managed and maintained.
ACTION MM2.5.1	Design all new facilities and upgrade existing facilities to comply with all federal, state, and local safety standards.
ACTION MM2.5.2	Pursue new technologies that would improve safety on City streets.
ACTION MM2.5.3	Ensure the safety of City streets by incorporating traffic calming measures as needed.
ACTION MM2.5.4	Evaluate opportunities to increase street grid connectivity to distribute traffic and to improve network resiliency. Opportunities for additional connections may be identified at any time but particularly as redevelopment occurs.

FIGURE 24 PROPOSED GREEN RIBBON OF RECREATIONAL TRAILS AND ENVISIONED CONNECTIONS

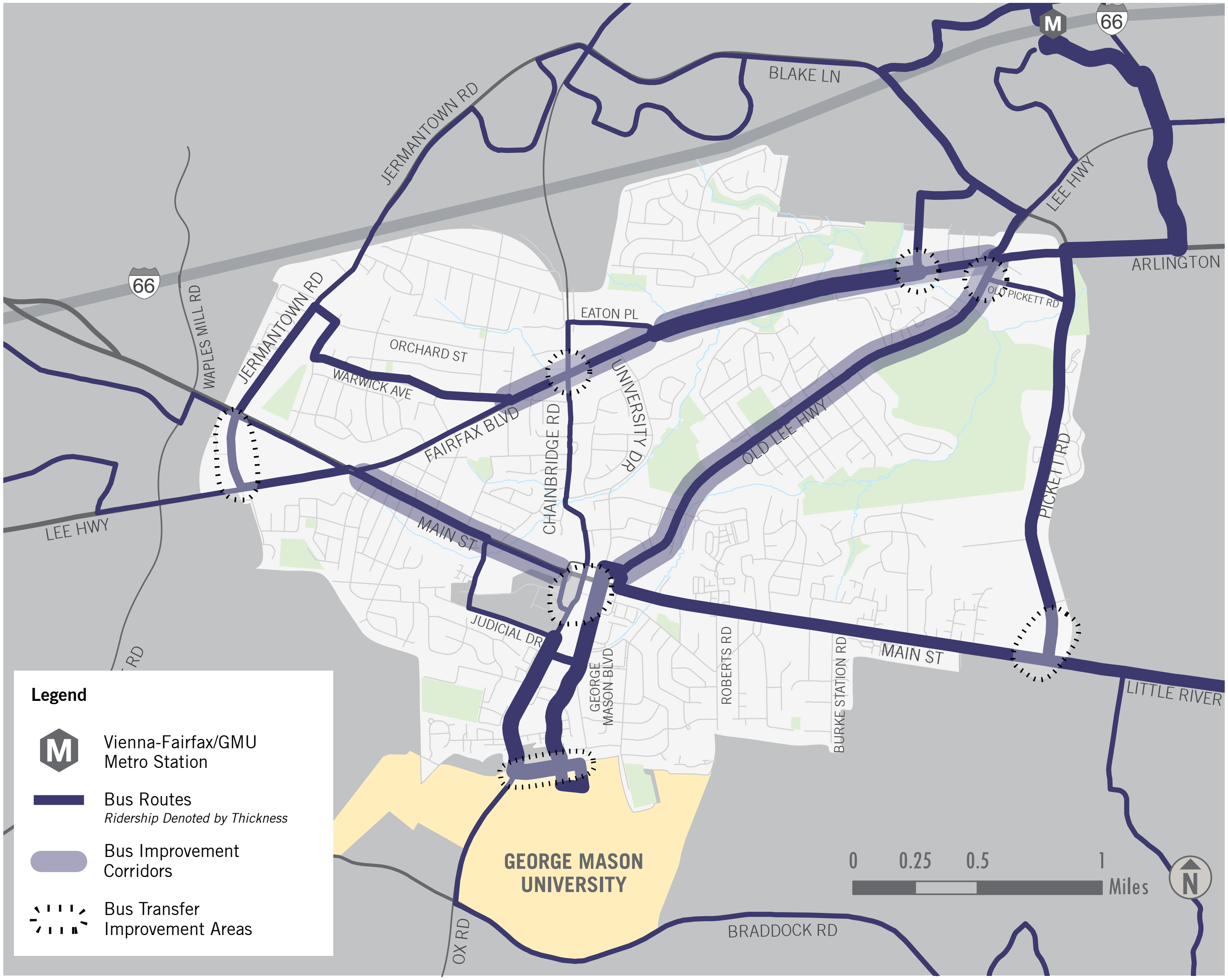
(See Outcome MM2.2)

FIGURE 25   PROPOSED NETWORK FOR BICYCLE TRAVEL



(See Outcome MM2.3)

FIGURE 26 PROPOSED TRANSIT NETWORK ENHANCEMENTS



(See Outcome MM2.4)

Multimodal Transportation Goal 3

Integrate transportation with land use.

Land use and transportation are inextricably linked and must be planned and designed concurrently – the purpose of transportation is to improve access to land use, and development patterns impact the feasibility and attractiveness of mobility choices. Mixing uses in a compact, walkable area – building housing, schools, parks, employment, shops and dining close together – can reduce the need for vehicle trips that contribute to increased congestion and other negative impacts such as eroded air quality and public health. Designing connected street networks increases the accessibility of these areas to surrounding areas. Managing parking and encouraging the use of non-driving modes can further reduce the growth of vehicle traffic while allowing for new development.

OUTCOME MM3.1:	On- and off-street parking and curbside uses are effectively managed.
ACTION MM3.1.1	Effectively locate, design, and manage parking facilities to provide context-appropriate parking availability and accessibility to the surrounding destinations.
ACTION MM3.1.2	Enhance wayfinding and information, with an initial focus on Old Town.
ACTION MM3.1.3	Explore parking pricing and other parking management strategies for public parking spaces and facilities throughout the City.
ACTION MM3.1.4	Explore the creation of parking management districts in Old Town and other Activity Centers to maximize parking resources while minimizing excess parking supply.
ACTION MM3.1.5	Consider policy measures to allow developers to fund public parking or other forms of access infrastructure in lieu of meeting parking requirements on site.
ACTION MM3.1.6	Develop travel marketing material to reduce the demand for long-term commuter/employee parking in the City.
ACTION MM3.1.7	Revise the Residential Parking Permit District Policy to consistently manage on-street public parking in residential neighborhoods.
OUTCOME MM3.2:	Walkability to and within Activity Centers and between neighborhoods is increased.
ACTION MM3.2.1	Whenever possible, increase connections – particularly non-motorized connections – between neighborhoods, community facilities, and Activity Centers.
ACTION MM3.2.2	With development projects, break up large blocks to a more walkable scale. Pursue additional secondary and tertiary street network opportunities. Streets should be well-designed as complete streets and align at regular intersections for a continuous street grid.

Multimodal Transportation Goal 3

The City will improve street design and better guide street management decisions through adoption of a "Link + Place" street typology appropriate to the City's streets and development patterns. The typology provides planners, engineers, and designers with an understanding of the typical and desired users of the street, features to consider for inclusion, and the transportation demands that require accommodation based on the street's size and uses. Link + Place street type designations for all streets in the City are provided in Figure 28, with each street type defined on the following pages.

ACTION MM3.2.3	Increase the number, safety, and frequency of pedestrian crossings, including across major streets. Provide crosswalks at all approaches of all signalized intersections at minimum intervals of 500 feet within Activity Centers. An exception exists in the case where the implementation of a crosswalk would result in operational failure of the corridor.
ACTION MM3.2.4	Improve the overall pedestrian environment, including pedestrian crossings, street trees, and furnishing zones; buffering sidewalk from vehicle travel lanes; improved pedestrian scale lighting; and active ground floor uses along primary street edges.
OUTCOME MM3.3:	Streets are designed to accommodate context and function.
ACTION MM3.3.1	Develop and adopt a "Link + Place" street typology to guide street design and management for public and private streets.
ACTION MM3.3.2	Through community consultation, develop specific design objectives, desired outcomes, and performance metrics for each street type. Link design objectives to the street design and project development process, guidelines, and reference documents.
ACTION MM3.3.3	Ensure quality street design in both the pedestrian zone and travel zone of the street.
ACTION MM3.3.4	Improve access, circulation, walkability, and transportation management in Activity Centers.

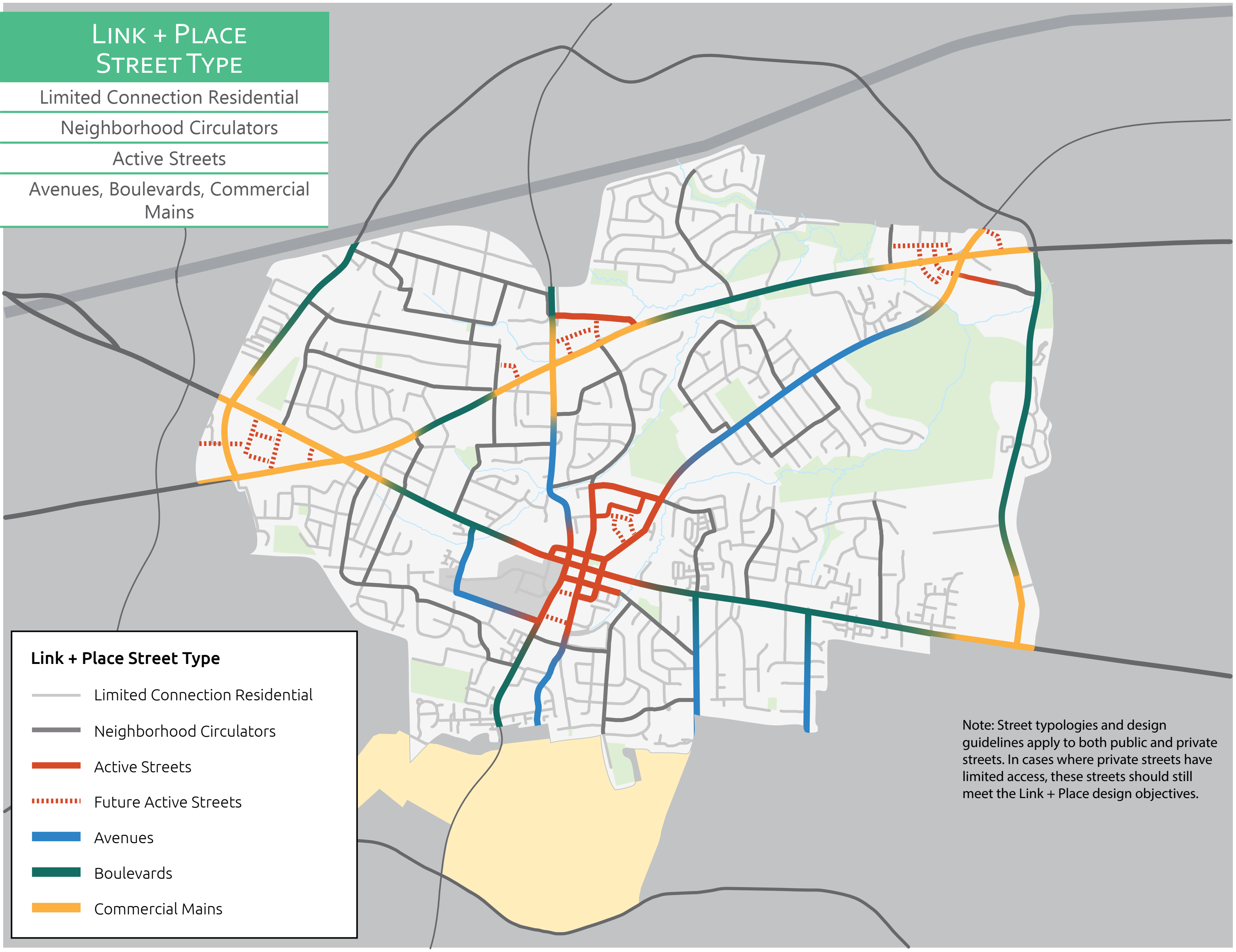
FIGURE 27   PROPOSED ACTIVITY CENTER ENHANCEMENTS

(See Outcome MM3.2)

Note: In June 2020, Small Area Plans were adopted for the Old Town Fairfax and Northfax Activity Centers. Refer to the respective Small Area Plan for specific guidance in each of these Activity Centers.

FIGURE 28 PROPOSED STREET TYPOLOGY DESIGNATIONS

VDOT CLASSIFICATION	LINK + PLACE STREET TYPE
Local	Limited Connection Residential
Minor Collector	Neighborhood Circulators
Major Collector	Active Streets
Minor + Major Arterial	Avenues, Boulevards, Commercial Mains



Note: Street typologies and design guidelines apply to both public and private streets. In cases where private streets have limited access, these streets should still meet the Link + Place design objectives.

(See Outcome MM3.23

Note: In June 2020, Small Area Plans were adopted for the Old Town Fairfax and Northfax Activity Centers. Refer to the respective Small Area Plan for specific guidance in each of these Activity Centers.

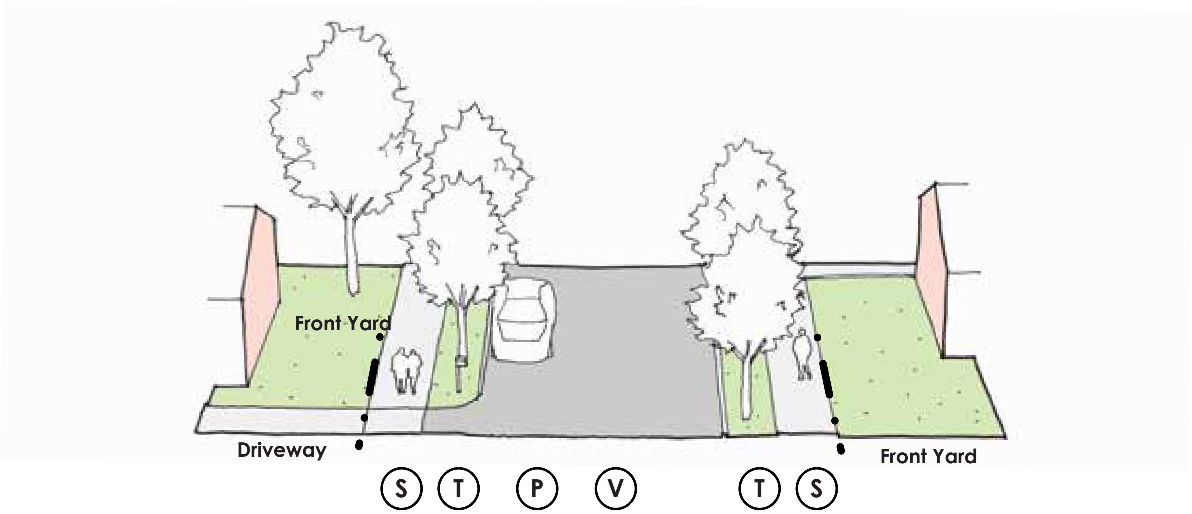
LIMITED CONNECTION RESIDENTIAL STREETS

These are interior neighborhood residential streets that generally do not connect to other streets in the network. These streets are lined with residential front yards and a robust tree canopy, and generally self-regulate both vehicle speeds and volumes.

Typical Transportation Uses

- Local traffic only – typically the home segment of the journey
- Non-motorized trips within the neighborhood
- Bicycles typically share the street with vehicles
- Very low traffic speeds

LIMITED CONNECTION RESIDENTIAL STREETS



TYPICAL ELEMENTS MAY INCLUDE:

- NARROW AND DESIGNED FOR SLOWER SPEEDS
- SINGLE-FAMILY RESIDENTIAL SET BACK WITH DRIVEWAYS
- ON-STREET PARKING (UNMARKED) - WHERE APPLICABLE
- SIDEWALKS

DIAGRAM KEY

Ⓥ	Travel Lanes -10' to 11' Each
Ⓟ	On-Street Parking
Ⓣ	Street Tree Zone - 5'
Ⓢ	Sidewalks - 5'
i	City Right-of-Way

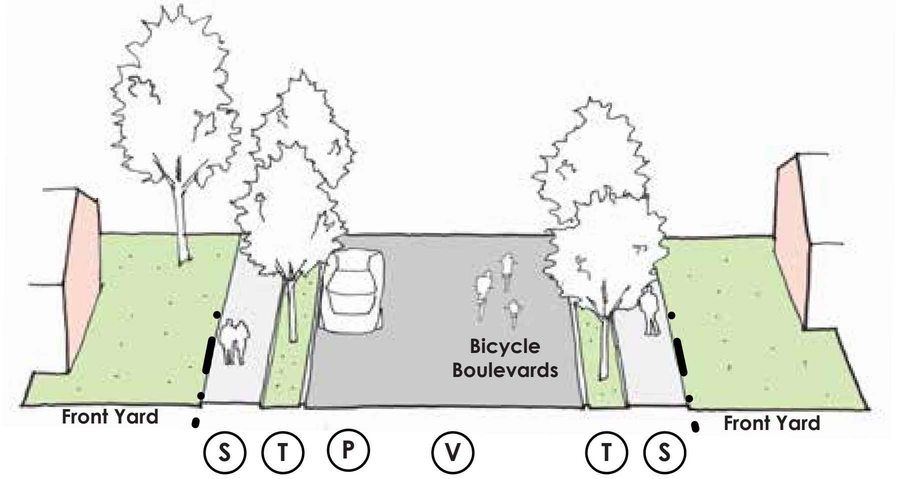
NEIGHBORHOOD CIRCULATORS

Neighborhood Circulators are residential streets that contribute to community connectivity and may include the presence of parks, community centers, schools, or places of worship. Neighborhood Circulators have abundant street trees and open space along them. These streets may need design techniques that reduce travel speeds and traffic volumes.

Typical Transportation Uses

- Mostly local traffic; vehicles from throughout the neighborhood may filter onto these streets
- Some may have transit service
- Non-motorized trips connecting to local destinations (e.g., schools, parks or retail)
- Bicycles typically share the street with vehicles; marked facilities recommended
- Vehicle speeds should be low; speed management may be required

NEIGHBORHOOD CIRCULATORS



Note: Similar to Limited Connection Residential, though provide more connectivity to City street network

TYPICAL ELEMENTS MAY INCLUDE:

- NARROW AND DESIGNED FOR SLOWER SPEEDS
- SINGLE-FAMILY RESIDENTIAL SET BACK WITH DRIVEWAYS
- ON-STREET PARKING (UNMARKED) - WHERE APPLICABLE
- SIDEWALKS
- BICYCLE BOULEVARDS (SEE DEFINITION BELOW)
- STREET LIGHTING

DIAGRAM KEY

Ⓥ	Travel Lanes -10' to 11' Each
Ⓟ	On-Street Parking - 8'
Ⓣ	Street Tree Zone - 5'
Ⓢ	Sidewalks - 5'
i	City Right-of-Way

Bicycle Boulevards are streets with low traffic volumes and speeds, designated and designed to give bicycle travel priority within the travel lane.

-National Association of City Transportation Officials

ACTIVE STREETS

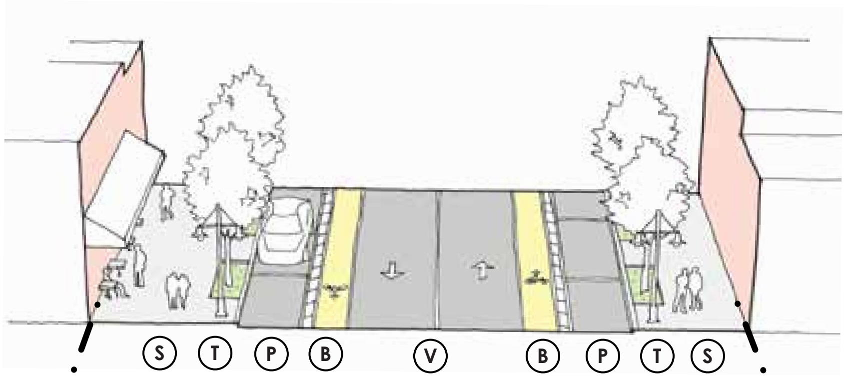
Active Streets connect multiple destinations and are more mixed-use or commercial in nature than residential streets. They are generally the street type for new streets within Activity Centers and are the primary location for commercial property access. Active Streets should be designed to create a comfortable environment for walking while at the same time accommodating circulation by bicyclists, cars, and trucks, and in some cases transit vehicles.

Typical Transportation Uses

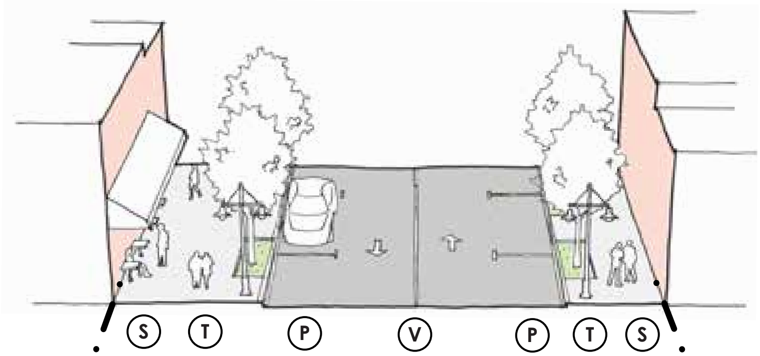
- Mostly local traffic accessing destinations, though some active streets may accommodate regional traffic
- Some may have transit service
- High concentrations of pedestrians
- Bicycles in-street only, preferably on dedicated facilities
- Loading and delivery vehicles need to be accommodated
- Traffic speeds should be low

ACTIVE STREETS

Option 1



Option 2



TYPICAL ELEMENTS MAY INCLUDE:

- NARROW STREETS (TYPICALLY TWO LANES)
- GROUND FLOOR USES ORIENTED TOWARD THE STREET
- ON-STREET PARKING
- SIDEWALKS
- BICYCLE BOULEVARDS
- STREET LIGHTING
- TREES IN PITS, PLANTERS, OR GRATES

DIAGRAM KEY

Ⓥ	Travel Lanes -10' to 11' Each
Ⓟ	On-Street Parking - 8'
Ⓣ	Street Tree Zone - Min. 5'
Ⓢ	Sidewalks - Varies 6' to 12'
Ⓑ	Bicycle Lanes - Min. 5'
i	City Right-of-Way

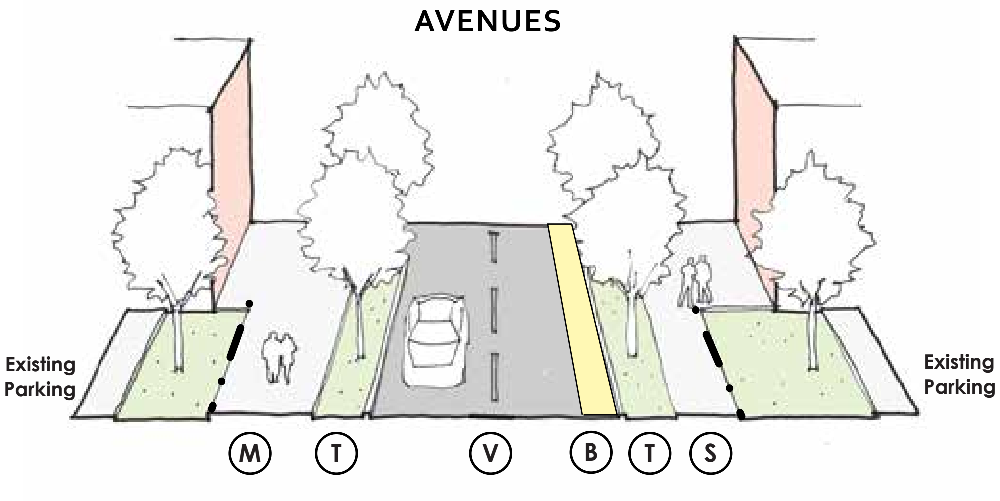
AVENUES

Avenues carry moderate traffic volumes using one travel lane in each direction. As a result, these corridors are more comfortable for transportation users. They include sections of arterial corridors between certain Activity Centers such as Old Lee Highway and Chain Bridge Road. Medians or planted median islands are less common while curb cuts and access drives are numerous. Vehicle throughput can be controlled through these areas due to high volume, naturally lowering traffic speeds to a level consistent with the non-commercial context.

Typical Transportation Uses

- Can be moderate volumes of traffic. Most vehicles are passing through to other local or area destinations
- Transit service is likely
- Moderate concentrations of pedestrians
- Bicycles accommodated on protected or off-street facilities such as shared use paths
- Traffic speeds lower, limited by volume

Image Credit: Google



TYPICAL ELEMENTS MAY INCLUDE:

- LOWER CAPACITY THAN BOULEVARDS (TWO LANES)
- GROUND FLOOR USES ORIENTED TOWARD THE STREET
- LIMITED OR NO ON-STREET PARKING
- SIDEWALKS OR SHARED USE PATHS
- BICYCLE LANES AND/OR SHARED USE PATHS
- VEGETATED BUFFERS FOR TREE ZONE

DIAGRAM KEY

Ⓥ	Travel Lanes -11' to 12' Each
Ⓣ	Street Tree Zone - Min. 5'
Ⓢ	Sidewalks - Varies 6' to 12'
Ⓜ	Shared Use Paths - Min. 10'
Ⓑ	Bicycle Lanes - Min. 5'
¦	City Right-of-Way

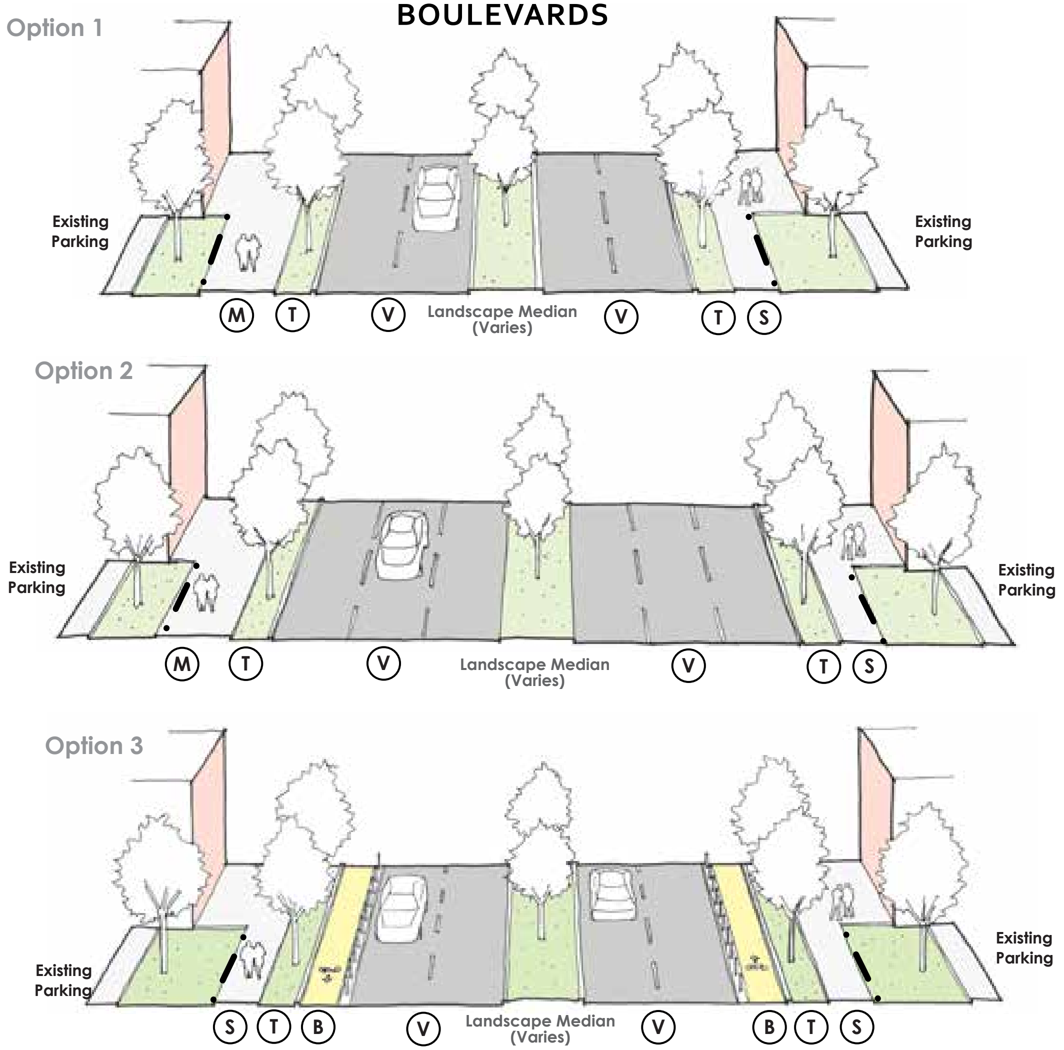
BOULEVARDS

Boulevards carry moderate to high volumes of traffic, but do so through a parkway like setting. They include sections of arterial corridors between the Activity Centers that may be designated as Boulevards, as well as minor arterials such as Pickett Road and Jermantown Road. Medians or planted median islands are common and curb cuts and access drives should be few and far between. While vehicle throughput is generally smooth through these areas, traffic speeds should remain consistent with the residential or park-like setting the streets travel through.

Typical Transportation Uses

- Can be high volumes of traffic. Most vehicles are passing through to other local or area destinations
- Transit service is likely
- Low concentrations of pedestrians
- Bicycles accommodated on protected or off-street facilities such as shared use paths
- Traffic speeds likely higher, but still managed

BOULEVARDS



TYPICAL ELEMENTS MAY INCLUDE:

- MULTI-LANE (TYPICALLY FOUR OR MORE LANES)
- GROUND FLOOR USES ORIENTED TOWARD THE STREET
- NO ON-STREET PARKING
- SIDEWALKS OR SHARED USE PATHS
- BICYCLE LANES OR SHARED USE PATHS
- VEGETATED BUFFERS FOR TREE ZONE

DIAGRAM KEY

Ⓥ Travel Lanes -11′ to 12′ Each
Ⓣ Street Tree Zone - Min. 5′
Ⓢ Sidewalks - Varies 6′ to 12′
Ⓜ Shared Use Paths - Min. 10′
Ⓑ Bicycle Lanes - Min. 5′
/ City Right-of-Way

COMMERCIAL MAINS

Commercial Mains are where commercial activity is concentrated, such as Fairfax Boulevard through Northfax or Main Street around Kamp Washington. Commercial Mains feature high volumes of vehicle traffic that mixes with bicycles, transit vehicles, and pedestrian crossings. Streets should be designed to slow traffic speeds while facilitating traffic flow. The pedestrian zone of the street should buffer pedestrians from the adjacent traffic. Access management on Commercial Mains improves vehicle flow while reducing conflicts with pedestrians or bicyclists.

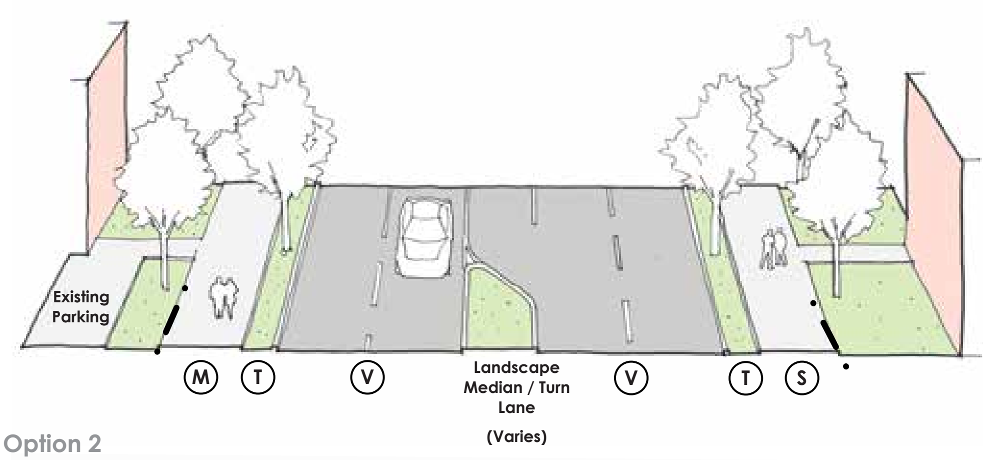
Typical Transportation Uses

- Can be high volumes of traffic. Many vehicles are passing through to other local or regional destinations
- Transit service is likely
- High concentrations of pedestrians
- Bicycles accommodated in dedicated facilities either in-street or in well-designed shared use paths
- Traffic speeds likely higher, but still managed

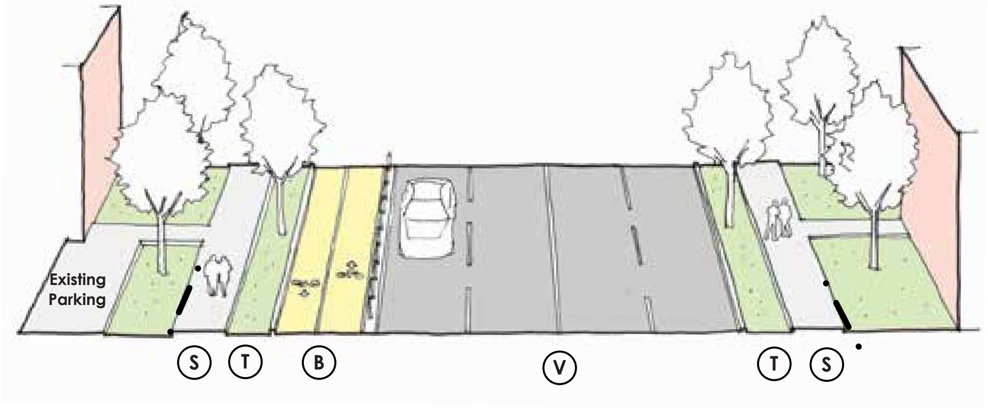
Image Credit: Google

COMMERCIAL MAINS

Option 1



Option 2



TYPICAL ELEMENTS MAY INCLUDE:

- LARGE MULTI-LANE STREETS (TYPICALLY FOUR TO SIX LANES)
- GROUND FLOOR USES ORIENTED TOWARD THE STREET
- NO ON-STREET PARKING
- SIDEWALKS OR SHARED USE PATHS
- BICYCLE LANES OR SHARED USE PATHS
- VEGETATED BUFFERS FOR TREE ZONE

DIAGRAM KEY

Ⓥ Travel Lanes -11′ to 12′ Each
Ⓣ Street Tree Zone - Min. 5′
Ⓢ Sidewalks - Varies 6′ to 12′
Ⓜ Shared Use Paths - Min. 10′
Ⓑ Bicycle Lanes - Min. 5′
¦ City Right-of-Way

Multimodal Transportation

Goal 4

Adopt policies and procedures for strategic transportation decision making.

The City will work with civic leaders, community members, and other stakeholders to develop and adopt clear and consistent policies and processes based on the community's fundamental values and advance the overall vision for sustainable transportation. These policies are aimed at ensuring the safety of all travelers, enhancing the person-trip efficiency of the system, and preserving the characteristics that make the City unique.

OUTCOME MM4.1:	The City's sidewalk policy is updated.
ACTION MM4.1.1	Adopt a formal sidewalk policy, beginning with the best practices and policy recommendations for Pedestrian Accessibility Policy in Appendix B (Section 4), requiring sidewalks on all new, reconstructed, or substantially rehabilitated streets that respond to local needs and community context.
OUTCOME MM4.2:	A Complete Streets policy is adopted and implemented.
ACTION MM4.2.1	Develop and adopt a Complete Streets policy, beginning with the best practices and policy recommendations for Complete Streets Policy in Appendix B (Section 5).
4.2.1.1	Develop an appropriate policy for the City and adopt as formal policy.
4.2.1.2	Examine existing design practices and processes and adjust to ensure implementation of the adopted policy.
4.2.1.3	Set and track evaluation measures for Complete Streets improvements.
ACTION MM4.2.2	Implement Complete Streets improvements on major corridors including Fairfax Boulevard, Chain Bridge Road, University Drive, Old Lee Highway and Main Street.
OUTCOME MM4.3:	A Transportation Demand Management (TDM) Program is adopted and implemented.
ACTION MM4.3.1	Based on best practices (as defined in Appendix B Section 3), establish a Citywide TDM policy and program framework that can be utilized by the City and adapted by businesses and developers.
ACTION MM4.3.2	Require TDM for all large development projects. Require bi-annual monitoring to assess resident/employee travel patterns.

Multimodal Transportation Goal 4

ACTION MM4.3.3	Create a City TDM brand and website to centralize all available travel option information including transit schedules, bicycle maps, ridesharing opportunities, and education tools.
ACTION MM4.3.4	Increase outreach and education to George Mason University, the Central Fairfax Chamber of Commerce, City of Fairfax Schools, and other markets that can provide strong partnerships with the TDM program.
ACTION MM4.3.5	Evaluate a linked TDM fund for in-lieu developer fees related to parking requirements to enhance the transit system and Citywide TDM programs.
ACTION MM4.3.6	Improve access to ridesourcing programs through enhanced coordination with Fairfax County RideSource, Commuter Connections, or initiate a City-based program.
ACTION MM4.3.7	Explore opportunities for carshare services within the City to address "last mile" connections.
ACTION MM4.3.8	Partner with employer-sponsored wellness programs to highlight and market travel options and associated costs.
OUTCOME MM4.4:	Mobility best practices and emerging technologies, including those described in Appendix B, are considered in transportation policies and projects.
ACTION MM4.4.1	Consider methods of implementing and evaluating new transportation concepts, including trial or pilot programs.
ACTION MM4.4.2	Provide real-time information through both apps and visual displays for transit arrivals, parking availability, and shared bicycles and vehicles.
ACTION MM4.4.3	Promote multimodal travel planning applications and services.
ACTION MM4.4.4	Pursue Intelligent Transportation Systems (ITS) such as transit or emergency vehicle priority, dynamic signal timing, and other strategies.

Multimodal Transportation
Goal 4

ACTION MM4.4.5	Participate with state and regional partners to ensure autonomous vehicle policies protect vulnerable street users and reduce overall vehicle miles traveled.
ACTION MM4.4.6	Consider curbside policies and street design to manage curbside carsharing/ridesourcing activities while preserving the safe and efficient flow of travel.
ACTION MM4.4.7	Consider policies to promote technologies and innovations that reduce environmental impacts from transportation.
OUTCOME MM4.5:	A short-term prioritized transportation project list is developed.
ACTION MM4.5.1	Develop a two-year project list that reflects City Council and community priorities.
ACTION MM4.5.2	Provide opportunities for public input on transportation improvements.
ACTION MM4.5.3	Use all available media to provide transportation information to the public.

Recommended Transportation Policies, And Projects And Cost Estimates

The plan's goals are achieved through accomplishing the policies and projects highlighted in Figure 30. Additionally, in accordance with Virginia Code Section 15.2-2223 relating to Comprehensive Plans, the map is accompanied by cost estimates for the specific projects, as shown below in Figure 29. The map and table include only key recommended projects; all projects under consideration to meet the long-term goals of the Multimodal Plan will be considered annually as part of the development of the City's Two-Year Transportation Program.

FIGURE 29 CITY OF FAIRFAX MULTIMODAL TRANSPORTATION PLAN – COST ESTIMATE

PROJECT #	NAME	PROJECT TOTAL COST ESTIMATE
1	Implement multimodal improvements at Warwick Ave and Fairfax Blvd	$ 7,900,000
2	Improve Jermantown Rd corridor	$ 21,000,000
3	Add sidewalk connection on Chain Bridge Rd between Old Town and Fairfax Blvd	$ 4,580,000
4	Implement Old Lee Hwy multimodal improvements	$ 15,000,000
5	Study Main St bicycle facility feasibility	$ 11,200,000
6	Extend trail along Pickett Rd from Fairfax Blvd to the Cross County Trail	$ 3,500,000
7	Complete the George Snyder Trail	$ 14,000,000
8	Support the study of a Metrorail extension	$ 15,260,000
9	Improve intersection at Eaton Place and Chain Bridge Rd	$ 26,000,000
10	Improve vehicular and pedestrian safety at Fairfax Circle	$ 5,760,000
11	Expand the roadway network in Northfax West	$ 5,000,000
12	Extend South St between University Dr and Chain Bridge Rd	$ 19,750,000
13	Complete the Judicial Drive Trail	$ 350,000
14	Implement University Drive traffic calming measures	$ 500,000
15	Complete the Government Center Parkway connection	$ 5,000,000
Citywide, not location specific	Implement pedestrian spot improvements Citywide	$ 400,000
	Conduct a bikeshare feasibility study	$ 60,000
	Improve Transit facilities	$ 965,000
	Implement roadbed improvements	$ 1,000,000
	Develop a Transportation Demand Management Program	$ 60,000
	Maintain pavement condition of primary extension roadways	$ 970,000
		$ 158,255,000

FIGURE 30 TRANSPORTATION POLICIES AND PROJECTS

Regional Corridors

Continue to participate in regional planning efforts to improve vehicle and freight operations and pedestrian, bicyclist and vehicle safety in regional corridors, such as Blake Lane-Jermantown Road, Braddock Road, Government Center Parkway, and Pickett Road.

City Major Corridors

Implement complete streets improvements to safely accommodate all roadway users in the City on all roads, and in particular on arterials including Fairfax Boulevard, Chain Bridge Road, Old Lee Highway and Main Street.

Local Activity Centers

Within Local Activity Centers:

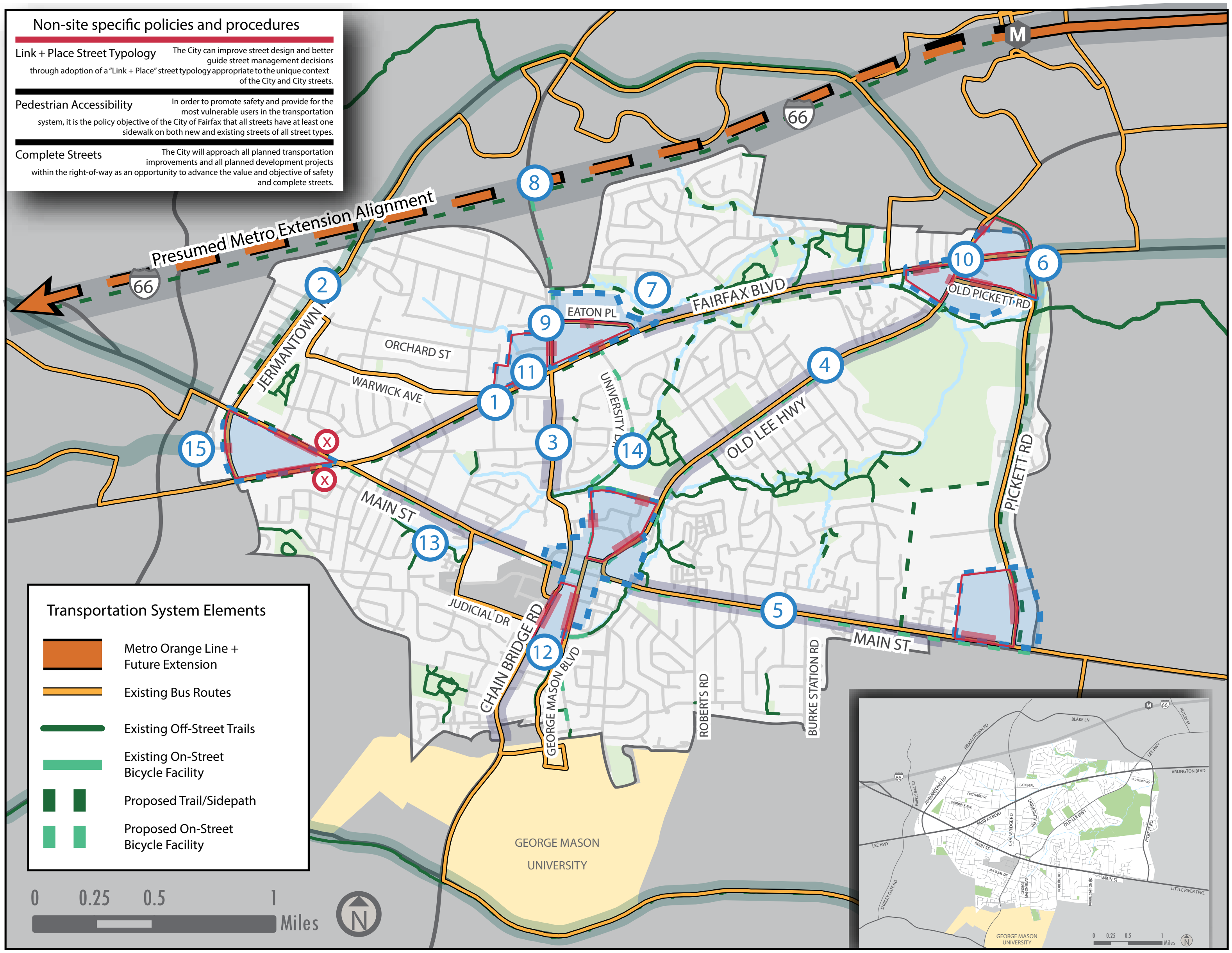
- Break up large blocks to a more walkable scale. Pursue expanded secondary, tertiary, and non-motorized network opportunities.
- Consolidate vehicular access points
- Provide new pedestrian-only connections

Specific Projects

1. Improve Warwick Ave and Fairfax Blvd
2. Improve Jermantown Rd corridor
3. Add sidewalk on Chain Bridge Rd
4. Add Old Lee Hwy multimodal improvements
5. Study Main St bicycle facility feasibility
6. Add Pickett Rd trail connection
7. Complete the George T. Snyder Trail
8. Support the study of a Metrorail extension
9. Improve intersection at Eaton Place and Chain Bridge Rd
10. Improve safety for all users at Fairfax Circle
11. Expand the roadway network in Northfax West
12. Expand the roadway network at South Street
13. Complete the Judicial Drive Trail
14. Implement University Drive traffic calming measures
15. Connect Government Center Parkway

Citywide Projects (Locations TBD)

- Implement pedestrian spot improvements
- Conduct a bikeshare feasibility study
- Improve transit facilities
- Implement roadbed improvements
- Develop a Transportation Demand Management Program
- Maintain pavement condition of primary extension roadways



Non-site specific policies and procedures

Link + Place Street Typology The City can improve street design and better guide street management decisions through adoption of a "Link + Place" street typology appropriate to the unique context of the City and City streets.

Pedestrian Accessibility In order to promote safety and provide for the most vulnerable users in the transportation system, it is the policy objective of the City of Fairfax that all streets have at least one sidewalk on both new and existing streets of all street types.

Complete Streets The City will approach all planned transportation improvements and all planned development projects within the right-of-way as an opportunity to advance the value and objective of safety and complete streets.

Transportation System Elements

- Metro Orange Line + Future Extension
- Existing Bus Routes
- Existing Off-Street Trails
- Existing On-Street Bicycle Facility
- Proposed Trail/Sidepath
- Proposed On-Street Bicycle Facility

Note: In June 2020, Small Area Plans were adopted for the Old Town Fairfax and Northfax Activity Centers. Refer to the respective Small Area Plan for specific guidance in each of these Activity Centers.

4 Environment and Sustainability

This Chapter is supported by two Guiding Principles: Natural Environment and Sustainability Initiatives. The Natural Environment Guiding Principle focuses on the physical and geographic context of the City and the impact on local and regional environmental resources. The City has several types of environmental resources that are easily impaired by urban land uses. Encompassing the headwaters of Accotink Creek, measures taken by the City to protect water quality, riparian and floodplain areas, open space, and the urban forest are critical to support regional efforts to improve environmental health. Located within the Chesapeake Bay Watershed, the City is committed to reducing stormwater runoff in order to protect the Bay through the adoption of the Chesapeake Bay Preservation Act (Appendix A) and enforcement of other federal, state, and local stormwater regulations.

The Sustainability Initiatives Guiding Principle focuses on City practices with a more global interest. This includes specific actions that support sustainable practices that can decrease greenhouse gas emissions from both building energy use and transportation; increase energy efficiency; increase utilization of renewable energy; increase waste reduction and recycling; conserve water; and support healthy lifestyles. It is important to recognize that sustainability practices address a broad range of social, economic, and environmental issues, and therefore are incorporated throughout the Comprehensive Plan.

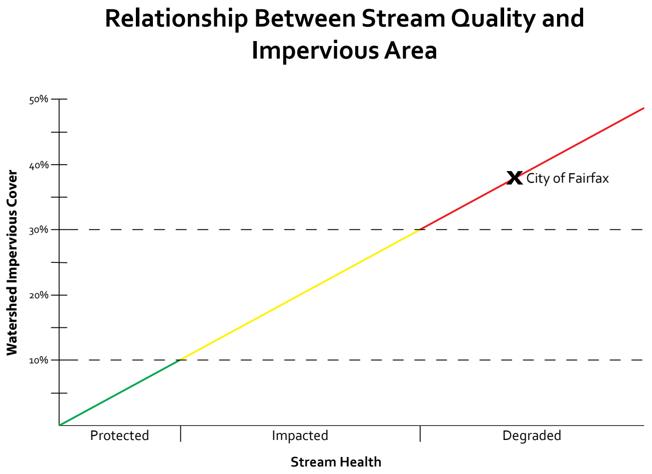
Opportunities and Challenges

Impervious surface

Previous land development has resulted in a large percentage of impervious areas, as shown in Figure 31. Impervious areas have structures such as pavement and buildings that do not allow rainwater to pass through into the ground, and increase the speed and amount of stormwater runoff resulting in negative impacts to streams. As shown in the chart "Relationship Between Stream Quality and Impervious Area," as the percentage of impervious cover in a watershed increases, stream quality declines. At 42.7% impervious cover, the City's streams are classified as "non-supporting streams." Streams in this category are usually so degraded they become a conduit for conveying stormwater and have poor stream quality. As is typical in urban areas, maintaining the health of streams in the City is a continual challenge. The City has an opportunity to increase the amount of pervious areas with redevelopment and to improve the stormwater management system in order to adequately manage stormwater runoff.

FIGURE 31 PERVIOUS AND IMPERVIOUS AREAS

Source: City of Fairfax GIS 2013 Impervious Surfaces

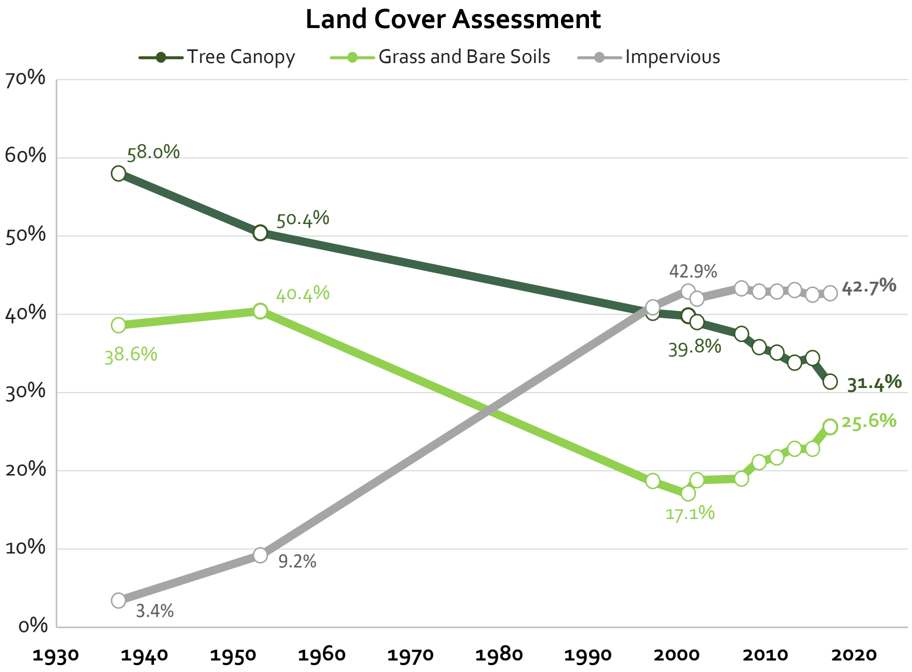

Relationship Between Stream Quality and Impervious Area

As impervious ground cover increases, stream health and quality declines. With 42.% of its ground area covered by impervious surfaces, the City's streams are considered degraded with poor quality.

Tree cover

Due to urbanization, much of which occurred during rapid post World War II development around Washington, D.C., the City's tree canopy decreased from 58% in 1937 to 31.4% in 2017, while impervious areas have increased from 3.4% to 42.7% as shown in Figure 32. Tree canopy coverage offers many benefits, such as conserving energy due to the reduction of temperatures from shading, improving air quality, reducing stormwater run-off, improving property values, and beautifying our community. Because the City is almost entirely developed, few significant forested areas remain. Those that still exist, whether public or private, deserve specific attention so that their aesthetic and ecological benefits to the City are not lost.

FIGURE 32 TREE CANOPY



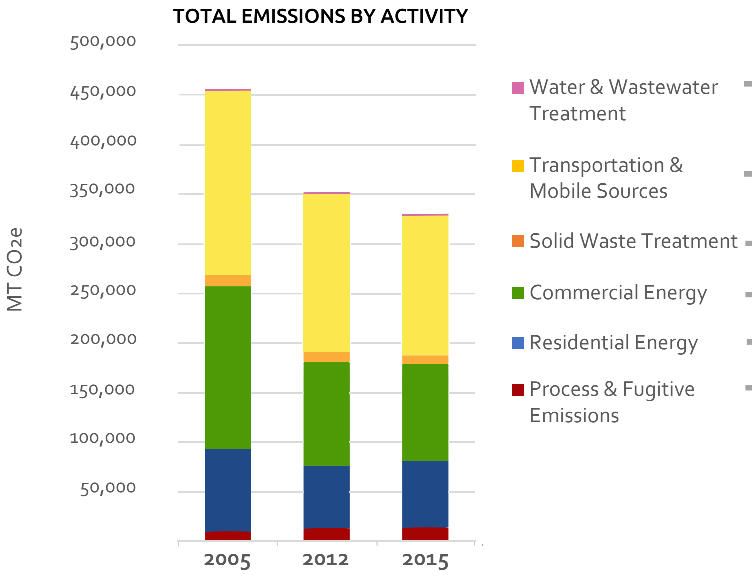
Source: City of Fairfax conducted a tree canopy assessment using the i-Tree Canopy software developed by the US Forest Service. The i-Tree land cover assessment results were estimated using random sampling statistics and have standard deviations ranging from ±.14 to ±1.53.

Source: Individual municipal websites

Greenhouse gas emissions

Scientific consensus accepts the reality of climate change and recognizes that human activity, especially the combustion of fossil fuels that creates greenhouse gases, is an important driver of climate change. The City, along with the entire Mid-Atlantic region, can anticipate changes in temperature, precipitation, water supply, and air quality as a result of the changing climate. Local governments are responding to new demands on infrastructure as well as impacts to natural resources related to weather instability and changing, uncertain climatic conditions. The City is committed to exploring the potential benefits and costs of adopting policies and participating in programs that promote the long-term goal of greenhouse gas emissions reduction while maximizing economic and social benefits. A summary of greenhouse gas emissions from community activities in the City is provided in Figure 33. The City will explore and prioritize strategies that could best aid in reducing greenhouse gas emissions.

FIGURE 33 GREENHOUSE GAS EMISSIONS



Source: Greenhouse Gas Emissions Inventory for the Metropolitan Washington Region (2005-2015): https://www.mwcog.org/documents/2016/04/22/metropolitan-washington-community-wide-greenhouse-gas-emissions-inventory-summary--greenhouse-gas/

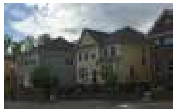
Pumping and treatment of water and wastewater used or produced by residents and activities.

On-road vehicular travel, air travel, and commuter rail travel undertaken by residents, business, and visitors in the city, and off -road activities such as use of construction and landscaping equipment.

Photo Credit: Virginia Department of Transportation

Collection and treatment of solid waste produced by residents and activities within city boundaries.

Emissions from electricity consumption, and combustion of natural gas and other fuels from the commercial sector.



Emissions from electricity consumption, and combustion of natural gas and other fuels from the residential sector.

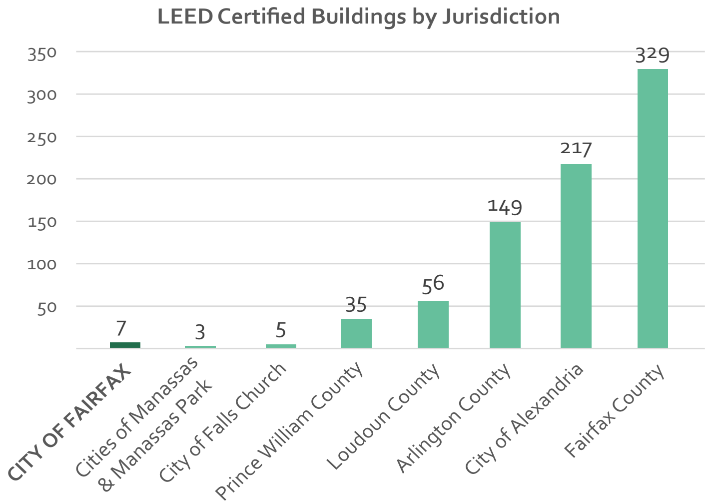
Fugitive emissions from ozone depleting chemicals and natural gas.

Photo Credit: PiccoloNamek

Green building practices

With new public and private development projects, the City has ample opportunity to encourage the use of green building practices (Figure 34). In addition to the environmental benefits of green buildings (e.g., reducing energy use, greenhouse gas emissions, construction waste, etc.), they can also enhance the economics of local development. Recent trends show that office space meeting green building standards generally experiences higher demand and can be a catalyst for bringing new businesses to a community.

FIGURE 34 GREEN BUILDINGS



Fairfax Marketplace

Fair City Mall

Residence Inn

PNC Bank Branch

PROJECT NAME	LOCATION	LEED SYSTEM	POINTS ACHIEVED	CERTIFICATION LEVEL	CERTIFICATION DATE
Fairfax County Health Dept Laboratory	10310 Layton Hall Dr	LEED-NC 2.2	41	Gold	6/8/2011
Barcelo Crestline	3950 University Drive	LEED-CI 2.0	23	Certified	11/5/2010
PNC Bank Branch-Main St & Judicial Ave	10649 Main Street	LEED-NC 2.2	27	Certified	6/28/2013
Fair City Mall	9652 Main St	LEED for Retail (New Construction) Pilot	22	Certified	1/31/2011
Residence Inn	3565 Chain Bridge Road	LEED-NC v2009	42	Certified	6/12/2012
Fairfax Marketplace	10944 Fairfax Boulevard	LEED-EB:OM v2009	40	Certified	4/30/2015
TD Bank - Fairfax Turnpike Shopping Center	Pickett Road and Main Street	LEED-NC Retail v2009	72	Gold	7/25/2012

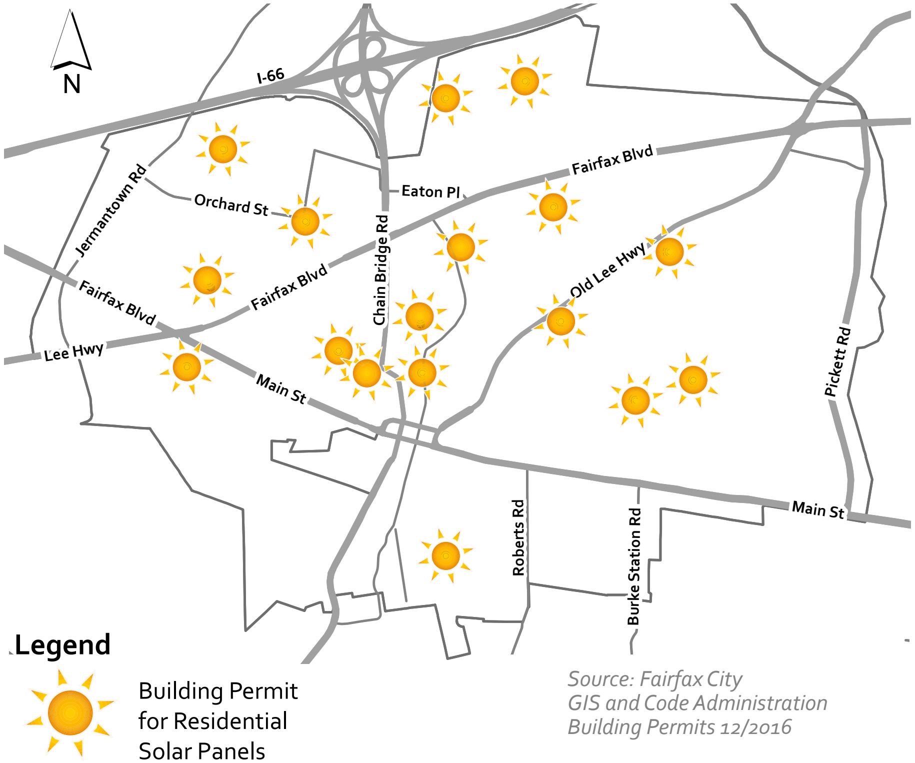
Data Source: The Green Building Information Gateway (GBIG) (http://www.gbig.org/). Data was provided to the City of Fairfax on 10/6/16.

**Data excludes confidential projects and LEED Neighborhood Development (ND) certifications*

Solar installations

In recent years, the City has seen an increase in the number of solar energy installations (Figure 35). Increasing the use of renewable energy sources will benefit the resilience and economic competitiveness of our community. Since 2014, the City has participated in the Solarize NOVA campaign, a yearly effort to encourage incorporation of solar power into individual homes and businesses in Fairfax and several peer jurisdictions. This is accomplished through incentives such as free solar assessments. In 2017, the City received a "Bronze" designation from the national program SolSmart for encouraging solar energy growth and removing obstacles to solar development.

FIGURE 35 BUILDING PERMITS FOR RESIDENTIAL SOLAR PANELS



Source: Fairfax City GIS and Code Administration Building Permits 12/2016

Natural Environment

One of the characteristics of the City that makes it a desirable and healthy place in which to live is the extent, diversity, and quality of its environmental resources. The City's main environmental resources include wetlands, ponds, streams, public parks, open space, and urban forests. As the City continues to grow and redevelop, these resources are at risk of being impaired. Growth and development often cause pollution to the water, air, and soil; degradation to ecosystems; and loss of natural areas that contribute to residents' quality of life. Continuing to preserve and restore our environmental resources ensures a healthy environment by providing access to clean air, clean water, healthy ecosystems, and high quality recreation areas. The City is also at risk from impacts caused by natural and man-made hazards. Reducing threats to the community and environment from these hazards will foster a safer and healthier community.

Guiding Principle:

In 2035, Fairfax is a city with... a healthy ecosystem of naturally flowing streams, native plants, wildlife, contiguous natural habitat areas, and a healthy tree population.

Natural Environment
Goal 1

Preserve, promote, and enhance a healthy environment.

The local environment will be preserved and protected through insightful policies and programs that improve the quality of the City's natural resources. Managing the stormwater that runs off land surfaces is a fundamental practice to mitigate the adverse effects of urban development by reducing flow velocities and enhancing water quality. Several federal, state, and local regulations and the City's adoption of the Chesapeake Bay Preservation Ordinance are enacted to protect the region's water resources.

The City has the opportunity to protect and increase the tree canopy by identifying the greatest challenges facing the urban forest (e.g. development, disease, etc.) and developing and implementing an urban forest management plan that includes detailed strategies for attaining a diverse, well-managed urban forest.

OUTCOME NE1.1:	Clean and protected water resources and watersheds in the City.
ACTION NE1.1.1	Reaffirm and implement the City's Chesapeake Bay Preservation Plan (Appendix A) and zoning regulations.
ACTION NE1.1.2	Enhance zoning regulations and support initiatives that encourage the use of green stormwater infrastructure on private and public property.
ACTION NE1.1.3	Retain and acquire riparian areas as open space or parkland.
OUTCOME NE1.2:	Clean, healthy air that supports plant, animal, aquatic, and human life.
ACTION NE1.2.1	Develop and implement a Climate and Energy Action Plan to achieve regional greenhouse gas emissions reduction goals (20% reduction from 2005 level by 2020, 80% reduction from 2005 level by 2050) as committed to in the Greater Washington 2050 Compact.
ACTION NE1.2.2	Identify and implement strategies to reduce airborne pollutants known to cause health problems.
OUTCOME NE1.3:	A diverse, well-managed urban forest dominated by native species.
ACTION NE1.3.1	Develop and implement an urban forest management plan to protect the City's urban forest and increase the quantity, density, and diversity of trees on public and private land.
ACTION NE1.3.2	Support incentives, provide education, and partner with public and private groups to encourage native tree planting and preservation by private property owners.

Natural Environment Goal 1

ACTION NE1.3.3	Update zoning regulations and public facilities manual for tree preservation, removal, and planting of preferred species of trees located along streets, parking lots, and riparian areas.
OUTCOME NE1.4:	A diverse population of native vegetation protected from invasive plants.
ACTION NE1.4.1	Develop a strategy to control invasive species including identifying and mapping areas impacted by invasive plants.
ACTION NE1.4.2	Support the development of community and habitat gardens on underutilized parcels and public lands.
ACTION NE1.4.3	Provide education and partner with public and private groups to promote the preservation and planting of native plants, sustainable landscaping techniques, and management of invasive plants.
OUTCOME NE1.5:	Restored and preserved natural open spaces and contiguous greenway corridors that provide natural habitats for plants and wildlife.
ACTION NE1.5.1	Restore disturbed areas along streams and in conservation easements with native species.
ACTION NE1.5.2	Pursue opportunities to purchase and preserve in perpetuity privately-owned open space.
ACTION NE1.5.3	Encourage new development that protects and preserves environmentally-sensitive areas and natural features, such as tree cover (especially significant stands of trees and healthy, mature trees), native vegetation, streams, wildlife habitat, and natural topography.

Natural Environment
Goal 2

Prepare for the impacts from natural and man-made hazards.

Extreme weather events such as prolonged heat, hurricanes, and flash flooding have contributed to negative health impacts, damaged homes and businesses, destroyed critical infrastructure, and to interruptions in the region's economic activity. These types of weather events are projected to increase in frequency and magnitude. There is also a risk that the community could be exposed to a variety of pollutants and hazardous chemicals, which may have negative effects on human health and the environment. The City should take steps to prepare for and mitigate these hazards.

OUTCOME NE2.1:	Reduced risk and improved preparedness to meet the challenges associated with natural and man-made hazards.
ACTION NE2.1.1	Participate in the National Flood Insurance Program's (NFIP) Community Rating System, a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.
ACTION NE2.1.2	Develop a resiliency plan to set priorities and allocate resources to manage risks associated with natural and man-made hazards.
ACTION NE2.1.3	Continue to work with the Northern Virginia Hazard Mitigation Advisory Committee to regularly update the Northern Virginia Hazard Mitigation Plan.
OUTCOME NE2.2:	Reduced exposure to pollutants and hazardous chemicals in the environment.
ACTION NE2.2.1	Enhance exterior lighting standards and pursue certification as an International Dark Sky Community to reduce light pollution and protect nighttime skies.
ACTION NE2.2.2	Continue to enforce noise standards.
ACTION NE2.2.3	Promote the proper disposal or recycling of household hazardous waste.
ACTION NE2.2.4	Educate on the identification, risks, and remediation of hazardous materials in buildings, including but not limited to radon, asbestos and volatile organic compounds.
ACTION NE2.2.5	Develop integrated pest management and nutrient management plans.
ACTION NE2.2.6	Promote the responsible use of pesticides and fertilizers.

Sustainability Initiatives

Guiding Principle:

In 2035, Fairfax is a city with... sustainable practices that preserve, conserve, reuse and recycle resources.

Sustainability can be defined in many ways. In relation to urban planning, sustainability is often defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). The City has a responsibility to future generations to develop sustainably. In 2013, the City executed an energy performance contract to implement energy retrofits at fourteen City-owned buildings. The City pays back the upfront costs of the retrofits using the annual energy cost savings over time.

Sustainability issues extend well beyond City boundaries, so local decisions can impact the region and beyond. The City collaborates with regional partners, such as MWCOG and the Northern Virginia Regional Commission (NVRC) in formulating solutions to sustainability challenges and taking actions to achieve regional goals. In 2010, the Mayor and City Council adopted a resolution endorsing the voluntary Greater Washington 2050 Compact in which the City committed to following the principles and goals set within The Region Forward report, a vision for a more accessible, sustainable, prosperous, and livable metropolitan Washington.

Sustainability Initiatives

Goal 1

Increase the use of sustainable practices, technology, design, and materials.

This City should seize the opportunity to promote energy efficient and sustainable redevelopments and retrofits of aging buildings while also encouraging designs that fit within the context of the existing community. This can involve incentives for privately-owned buildings as well as City investment in public facilities. Education about financing options (such as the Fairfax Renaissance Housing Corporation loans) should be provided to property owners. By improving energy efficiency and sustainable design of civic operations and in the greater community, the City will harmonize resources, investments and technology, help reduce utility costs, support "green collar" jobs, and institutionalize change.

OUTCOME SI1.1:	Minimized energy demand with the application of energy efficient design features, technologies, and best practices.
ACTION SI1.1.1	Promote the efficient use of energy by residents, business owners and government facilities and operations to achieve a 30% reduction in energy use from 2018 baseline levels by 2035; a 40% reduction from 2018 baseline levels by 2040; and a 55% reduction from 2018 baseline levels by 2050.
SI1.1.1.1	Use a data-driven assessment process to deploy energy efficiency technologies throughout all government facilities and operations, and promote energy efficiency best practices among government employees.
SI1.1.1.2	Support incentives, provide education, and partner with public and private groups to promote energy efficiency and sustainability improvements by private property owners.
SI1.1.1.3	Promote voluntary benchmarking for commercial buildings.
SI1.1.1.4	Implement programs that offer clean energy financing solutions for residential and commercial sectors, such as the Solarize NOVA campaign, Property Assessed Clean Energy (PACE) program, and Fairfax Renaissance Housing Corporation (FRHC) Loans.
ACTION SI1.1.2	Develop a green building policy that establishes green building standards and incentives for both private and public sector construction and major renovations.
OUTCOME SI1.2:	Increased use of renewable energy sources and advanced sustainable technologies.
ACTION SI1.2.1	Conduct feasibility studies and subsequent plans for government operations to achieve 100% renewable electricity by 2035 and community-wide 100% renewable electricity by 2050.
ACTION SI1.2.2	Revise applicable codes, zoning regulations, policies, and design guidelines to help facilitate local renewable energy deployment and adoption of sustainable technologies.
ACTION SI1.2.3	Provide education and incentives for residents and businesses to install renewable energy systems and sustainable technologies.
ACTION SI1.2.4	Partner with other local governments, organizations, and individuals on renewable energy planning and implementation.

Sustainability Initiatives Goal 1

OUTCOME SI1.3:	Reduced waste and increased reuse and recycling of materials.
ACTION SI1.3.1	Implement the Solid Waste Management Plan, which establishes waste reduction goals and outlines how the City manages solid waste and recycling.
OUTCOME SI1.4:	Minimized potable water demand in the community.
ACTION SI1.4.1	Develop and provide water conservation education and incentive programs for residents and businesses to promote the use of water efficient practices and products.
ACTION SI1.4.2	Support incentives and revise applicable codes, policies, and design guidelines to encourage water efficiency in new construction and landscaping.

Sustainability Initiatives Goal 2

Support physical activity and healthy lifestyles.

Since the City is mostly built out and infrastructure is already in place, it is an ideal location to provide access to healthy food, community facilities, and recreational opportunities. Smart growth concepts should be incorporated in new development and redevelopment to further enhance the ability of residents to take advantage of public transportation, parks, open space, and trails. The City also strives to improve access to healthy, affordable, and regionally-grown foods to promote public health, reduce environmental impacts, and support economic development (Figure 36).

OUTCOME SI2.1: Access to healthy, regionally-grown foods.

ACTION SI2.1.1 Evaluate regulations that permit urban agriculture on publicly-owned property and/or space for community gardens in new multifamily and mixed-use developments.

ACTION SI2.1.2 Work with Fairfax County to develop a healthy food access plan.

OUTCOME SI2.2: Access to parks, recreation, community facilities, trails, and open space.

ACTION SI2.2.1 Promote walking and trail use as part of a healthy community initiative.

ACTION SI2.2.2 Partner with Fairfax County and NOVA Parks to improve and expand the local and regional park system.

FIGURE 36 FULL SERVICE GROCERY STORES, FARMERS MARKETS AND COMMUNITY GARDENS

*Approved but not yet constructed at the time of adoption of this plan

Source: Fairfax City GIS Parcels 2018

5 Economic Vitality

Guiding Principle:

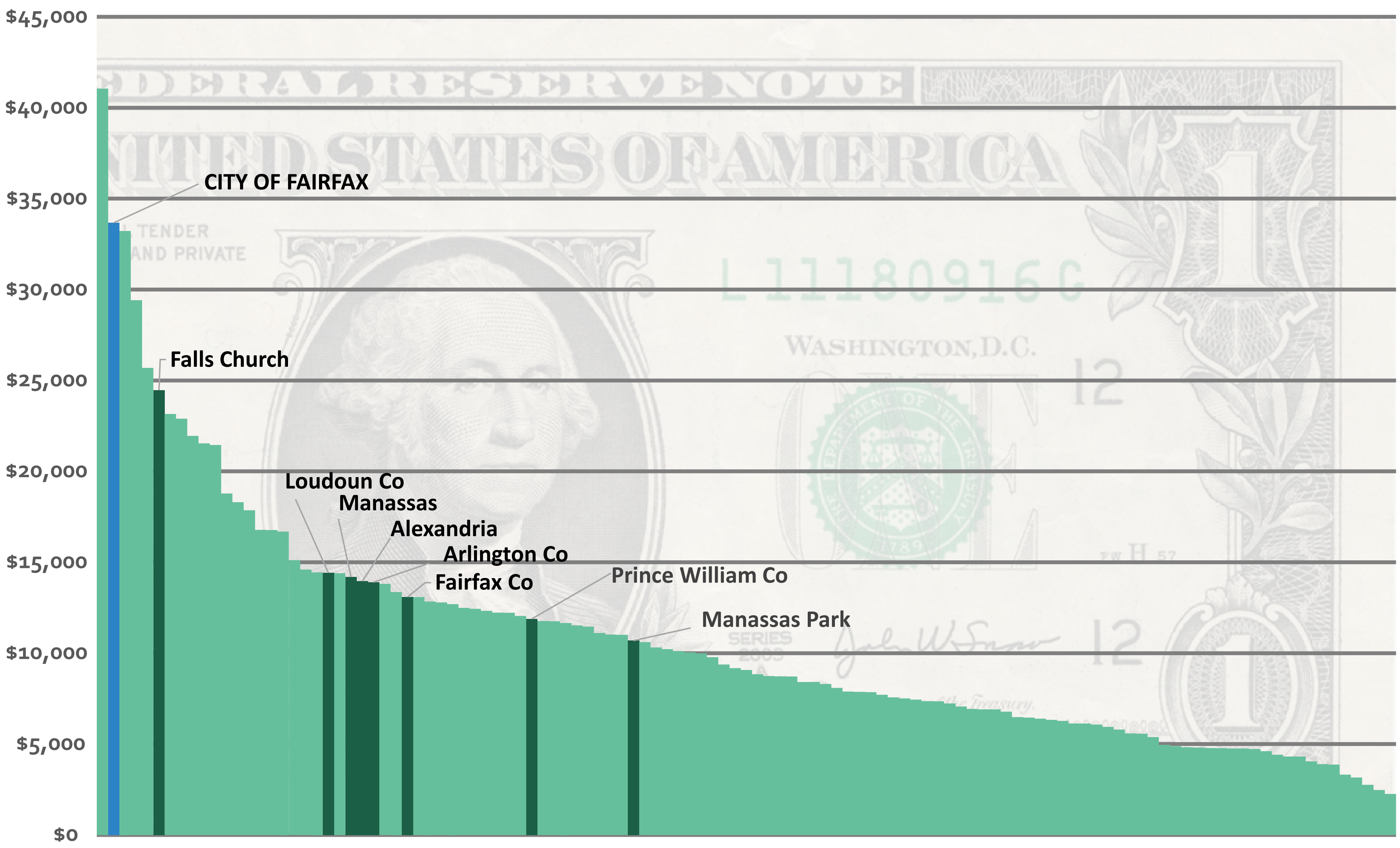
In 2035, Fairfax is a city with... an economy that cultivates and promotes business success and entrepreneurial opportunities for large, small, and independent businesses and capitalizes on national, regional and intellectual partnerships.

The City has long been a hub for economic activity within Northern Virginia. Due to its central location; proximity to regional destinations such as George Mason University, the Fairfax Courts Complex and Inova Fairfax Hospital; and its setting among transportation crossroads, the City has traditionally boasted a larger proportional share of the region's office and retail activity than its relatively small size and population would suggest. This longstanding concentration of economic activity still holds true, with the City achieving the second-highest amount of retail sales per capita of any Virginia jurisdiction (as shown in Figure 37), and a regional share of office space nearly five times the City's share of Northern Virginia's land area.

This cluster of economic vitality provides Fairfax with many benefits, such as a diversified revenue stream that enables the City to rely less on residential tax revenue than do most nearby jurisdictions. Furthermore, a high concentration of office and retail activity enables City residents to have varied employment and shopping opportunities relatively close to home.

Throughout the Comprehensive Planning process, sustaining this historical advantage has emerged as a priority. However, ensuring that the City remains as an economic hub for the region requires both a commitment to maintaining existing commercial infrastructure and positioning the City to be at the forefront of emerging marketplace trends.

FIGURE 37 2016 TAXABLE SALES PER CAPITA FOR VIRGINIA JURISDICTIONS WITH POPULATION OVER 10,000



Source: Virginia Department of Taxation

Opportunities and Challenges

Shifts in the office market

While the City has seen significant increases in office vacancies over the past decade, this trend is present in Fairfax County and Northern Virginia as well. In fact, the City has generally kept a lower office vacancy rate than the region as a whole. With previous regional overbuilding, increases in teleworking and more efficient office space utilization, however, an overall downward trend in office demand is expected to continue for the foreseeable future. The 2013 Fairfax Boulevard Market Analysis only forecasted a net absorption of 50,000 square feet of office space along the corridor over the ten-year study period.

The City office market, while large in size, is overwhelmingly comprised of Class B structures that offer few modern amenities. Given the increasing interdependence and fluidity of Northern Virginia's office market, this can make office space in the City less competitive and less desirable to prospective tenants than Class A office space in surrounding areas, particularly in more rapidly expanding sectors of the economy.

FIGURE 38 OFFICE VACANCY RATE

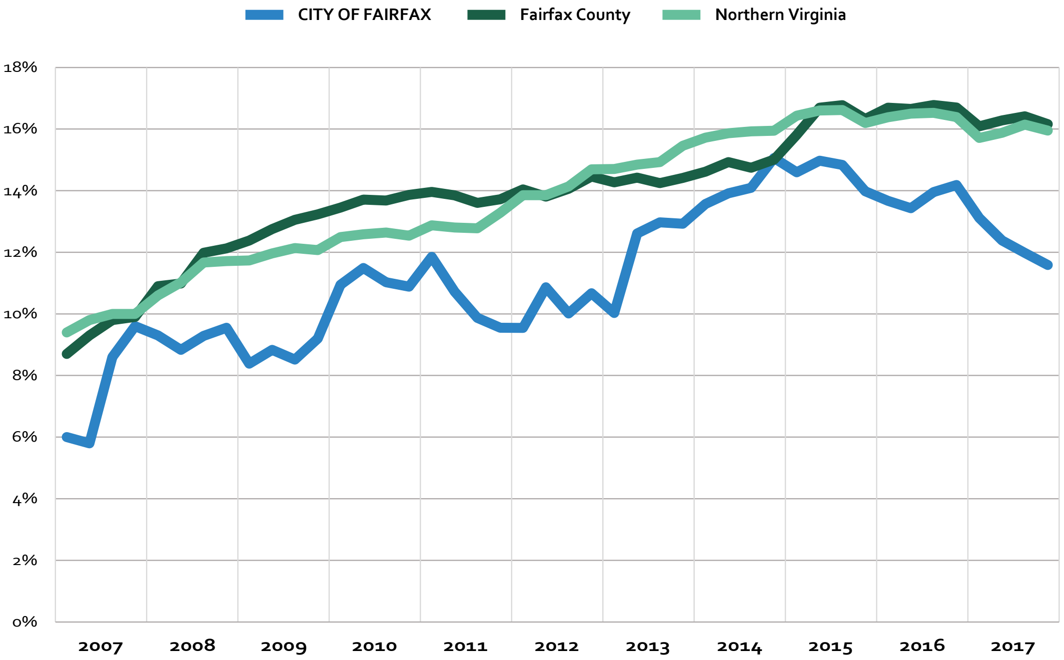


FIGURE 39 OFFICE MARKET BY CLASS, 2017

Source: CoStar, Dec 2017

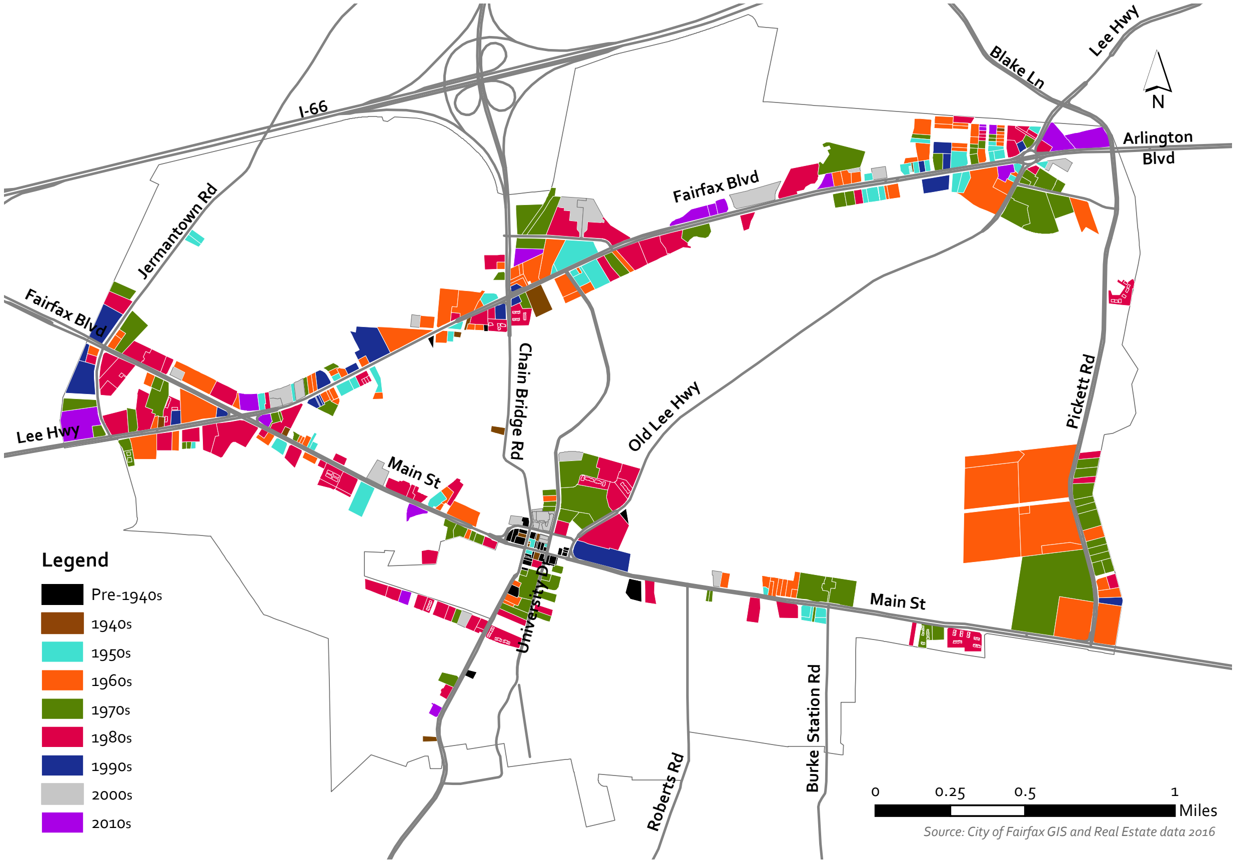
Shifts in the retail market

With consumers gravitating to online purchases and larger format retailers, demand for retail space has been decreasing region-wide in recent years. This has been especially true for older retail spaces that lack modern design requirements. The reduction in demand for traditional retail has been partially offset by increases in demands for food and drink and service type establishments.

These trends have combined to create vigorous regional competition for high-value retailers. As shown in Figure 6 (p. 21), numerous mixed-use centers have been built, or are being planned, within 10 miles of the City. All of these centers use retail as a linchpin to their fiscal success. In order to thrive in this competitive and interdependent retail market, the City must both be mindful of the pragmatic limits of regional retail demand, and must also offer high-quality retail spaces for prospective tenants.

With the vast majority of the City's existing commercial space constructed in the 1960s and 1970s, ensuring that both area consumers and retailers have updated commercial space will greatly enhance the City's retail sector's appeal in this increasingly competitive retail marketplace.

FIGURE 40 COMMERCIAL AND INDUSTRIAL BUILDING AGE BY DECADE BUILT



Source: City of Fairfax GIS and Real Estate data 2016

Economic Vitality

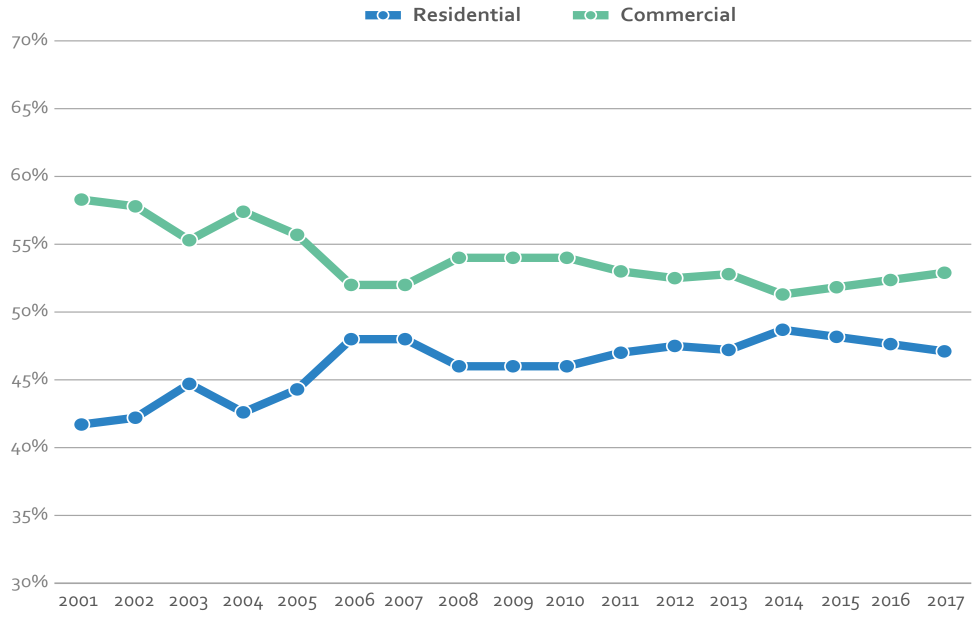
Goal 1

Increase the City's ratio of commercial to residential real estate.

Commercial properties tend to contribute more to the tax base than they consume in public expenditures because of relatively high real estate values and lower dependence on public services. The City has historically benefited from having a high ratio of commercial to residential development, resulting in a lesser tax burden on residences. As commercial properties have aged and new commercial development has slowed, this ratio has begun to shift. The City can offset this shift by supporting measures to increase values of existing commercial properties and encouraging new commercial development so that the value of nonresidential properties continues to comprise a greater proportion of the City's taxable properties.

OUTCOME EV1.1:	New development and redevelopment that maximize revenue generation from nonresidential buildings and uses.
ACTION EV1.1.1	Attract new commercial businesses while supporting and retaining existing businesses.
ACTION EV1.1.2	Leverage proximity to George Mason University to attract university spin-outs and startups.
ACTION EV1.1.3	Capitalize on proximity to Inova Fairfax Hospital to attract health- and wellness-related businesses.
ACTION EV1.1.4	Capitalize on regional growth in the technology-based, creative, and innovative sectors and encourage related businesses to establish in the City.
ACTION EV1.1.5	Pursue corporate headquarters to locate in the City.

FIGURE 41 ESTIMATED REVENUES GENERATED BY COMMERCIAL AND RESIDENTIAL SECTORS



NOTE: 2001-2014 data from City budgets. 2015-2017 data estimated based on revenue allocation assumptions from the City of Fairfax Finance and Accounting Department.

Source: City of Fairfax Budget.

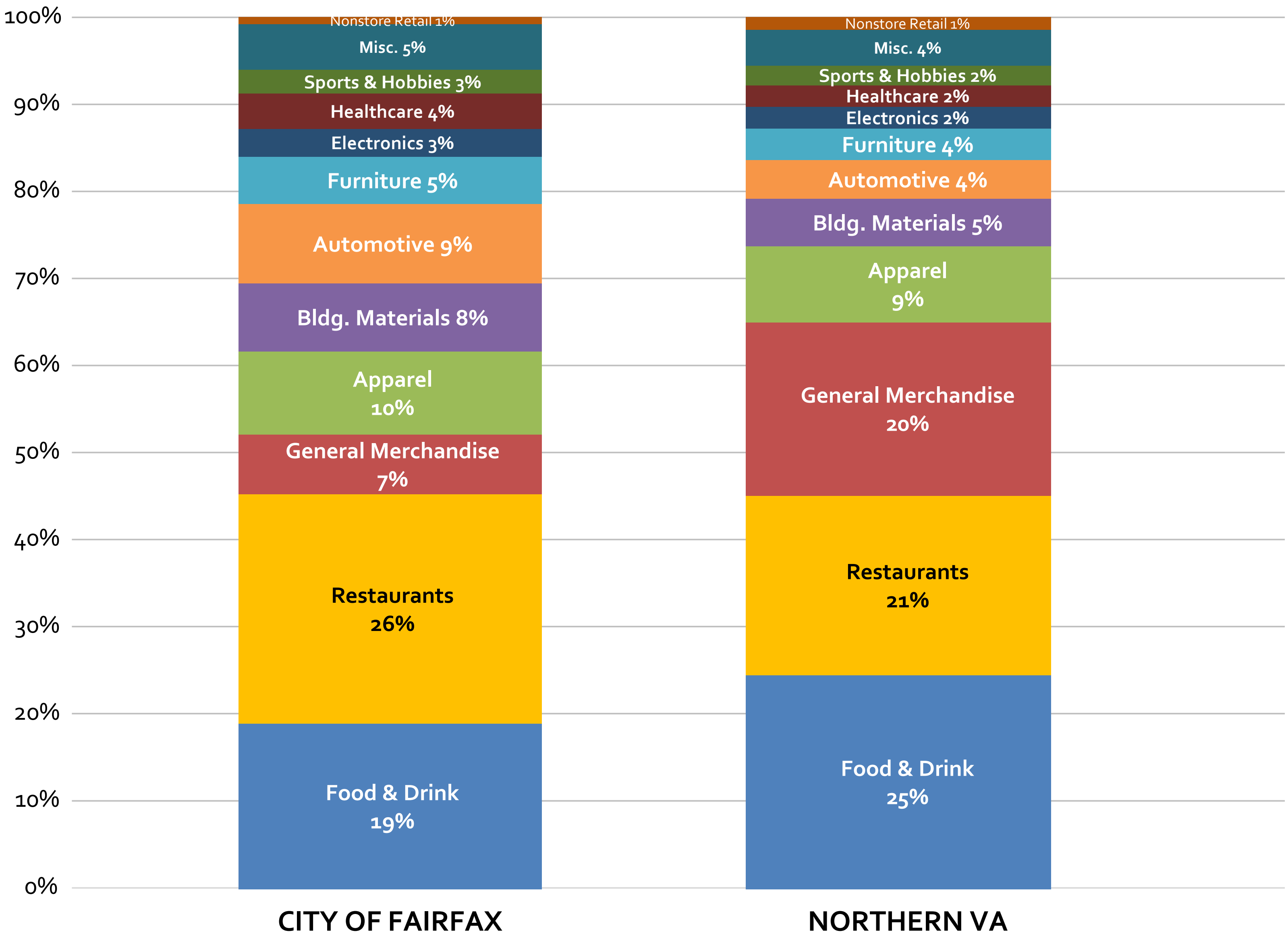
Economic Vitality
Goal 2

Support diversification of the retail, service, and office sectors.

While the City has strong current levels of retail and restaurant sales, some critical sectors are underrepresented in Fairfax's current retail inventory, as shown in Figure 42. This lack of retail diversity – coupled with an inventory of buildings heavily composed of 1960s-70s structures – points to a potential loss of market share to nearby retail areas that are more reflective of current tastes and consumer demand. With a high percentage of Class B office space, the office market in the City may also be less competitive than surrounding office development in Fairfax County. The City will strive to support existing and attract new businesses that fill market or growth opportunities and support an improved office space inventory.

OUTCOME EV2.1:	The retail and service sectors more effectively compete with other regional commercial sectors, resulting in increased desirability as a destination.
ACTION EV2.1.1	Attract new retail and service businesses representing sectors that have the ability to become regional destinations.
ACTION EV2.1.2	Create new commercial areas that contain the amenities and atmosphere necessary to attract top-tier commercial tenants.
OUTCOME EV2.2:	An improved office space inventory attracts high-value tenants.
ACTION EV2.2.1	Work with owners and operators of existing office buildings to encourage property renovations and upgrades needed to bring properties to Class A status.
ACTION EV2.2.2	Encourage the provision of Class A office space in new commercial development projects and renovations.
OUTCOME EV2.3:	A strong relationship with George Mason University is leveraged to support new development and investment that capitalizes on the needs of the University and supports the Comprehensive Plan Vision for the City.
ACTION EV2.3.1	Use the newly-created position of MEC Business Incubator Director to graduate a consistent pipeline of at least one tenant per year to a permanent location within the City.
ACTION EV2.3.2	Explore the establishment of a local development corporation or other formal partnership between the City and George Mason University.

FIGURE 42 PERCENTAGE OF TAXABLE RETAIL SALES BY STORE CLASSIFICATION



Source: Virginia Department of Taxation

Economic Vitality

Goal 3

Transform the Commercial Corridors and Activity Centers.

Being within the economically robust Northern Virginia region presents great opportunity for the City to leverage its many advantages to create and strengthen further economic vitality. The City's varied Commercial Corridors and downtown area provide excellent opportunities to capitalize on the region's growing economy, and to continue being an economic hub for future generations. The City will strive to transform these areas into distinctive regional destinations that can compete effectively with other development and mixed-use centers in Northern Virginia.

OUTCOME EV3.1:	Redevelopment projects in the Commercial Corridors and Activity Centers create destinations that attract tenants, customers, and residents.
ACTION EV3.1.1	Develop a branding and marking strategy for individual Activity Centers.
ACTION EV3.1.2	Create a commercial targeting strategy to focus the City's efforts on attracting businesses that would have the greatest impact in competing with other regional commercial sectors.
ACTION EV3.1.3	Prepare conceptual designs for the Activity Centers and present in dynamic marketing materials that clearly demonstrate the desired mix of uses, residential density, building intensity, design aesthetic, multimodal connections, and parking.

Economic Vitality

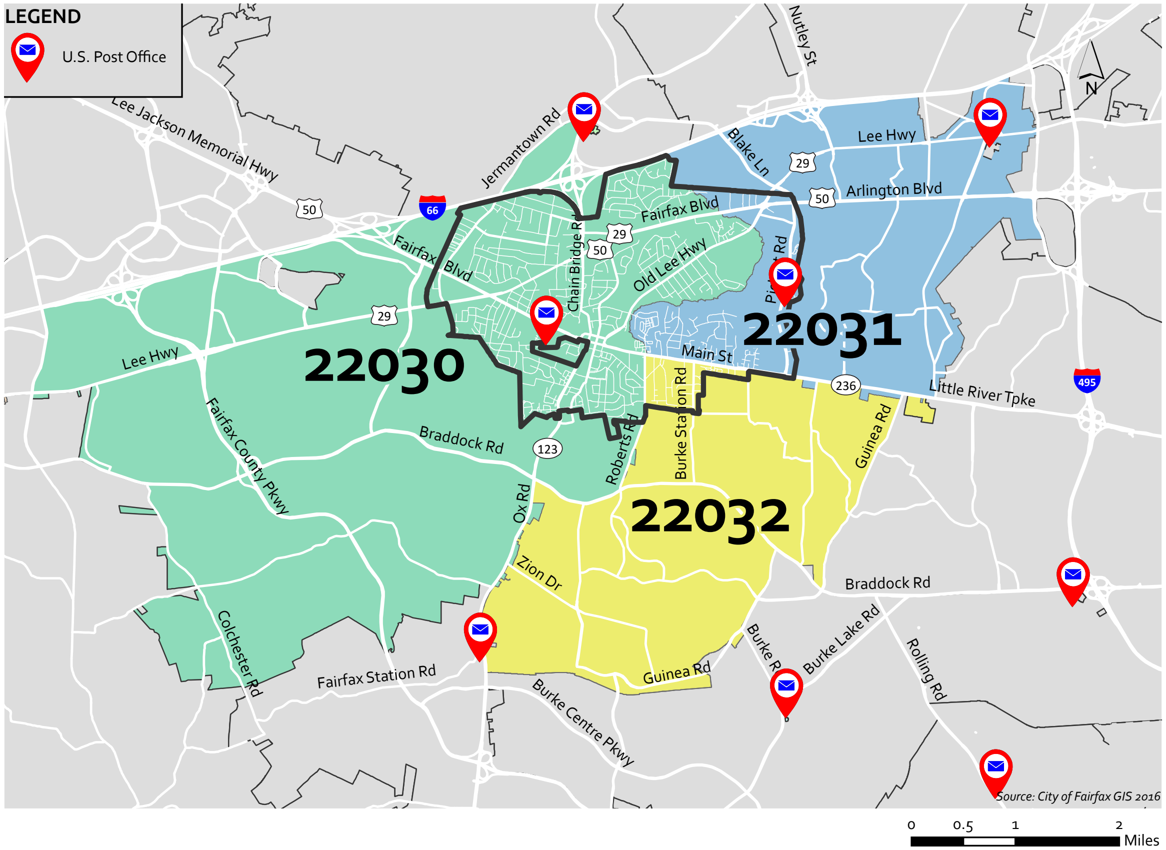
Goal 4

Create a single ZIP Code for the City.

The City currently contains portions of three ZIP Codes, all of which contain large portions of Fairfax County in addition to City addresses. This creates a complicated web of addresses, which leads to confusion among residents and businesses regarding which areas are located within the City or Fairfax County. Significantly, this has also led to difficulties in revenue collection, since some businesses have reported their addresses in the incorrect jurisdiction – and with e-commerce based revenue becoming more common, this may become a more noteworthy problem in the future. Creating a common ZIP Code for City addresses mitigates these revenue-related problems with an exclusive way of identifying City addresses and allowing business revenue to be more accurately collected. This would also serve a unifying function to easily distinguish the City from the surrounding portions of Fairfax County in terms of economic competitiveness.

OUTCOME EV4.1:	The U.S. Postal Service designates a ZIP Code that is unique to addresses within City limits.
ACTION EV4.1.1	Conduct a cost-benefit analysis.
ACTION EV4.1.2	If supported by the cost-benefit analysis, request a ZIP Code Boundary Review from the U.S. Postal Service.

FIGURE 43 CITY OF FAIRFAX ZIP CODES



Source: City of Fairfax GIS 2016

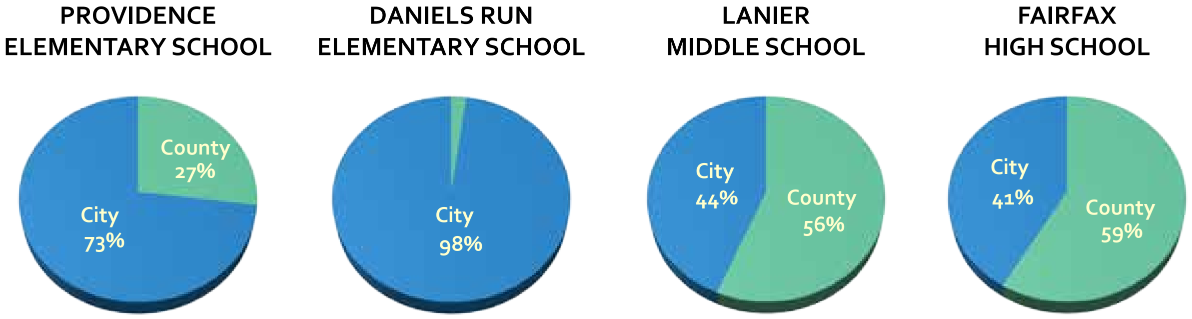
6 Community Services

One of the most crucial elements in the long term desirability of the City is maintaining and improving the high-quality services that residents and businesses have come to expect. This Chapter examines health, safety and welfare issues for which the City provides or facilitates services to its citizens, businesses and visitors. As an independent jurisdiction, Fairfax emphasizes providing quality public facilities and services. Public facilities are the institutions and land intended for the community's general use and benefit. Some of the primary services provided by the City addressed in this Chapter are Education, Parks and Recreation, Cultural Arts, Public Safety, and Utilities and Infrastructure as described below.

Education

Over 3,100 children who are City residents are enrolled in Fairfax County Public Schools (FCPS), with the vast majority of those students attending one of Fairfax's four schools. Through a School Services Agreement with FCPS, the City of Fairfax School Board manages the school buildings, while FCPS hires staff and develops curricula. The agreement also accommodates students from Fairfax County in the City school facilities where capacity allows. The percentage of City and Fairfax County students who attend each of the City's four public schools is provided below.

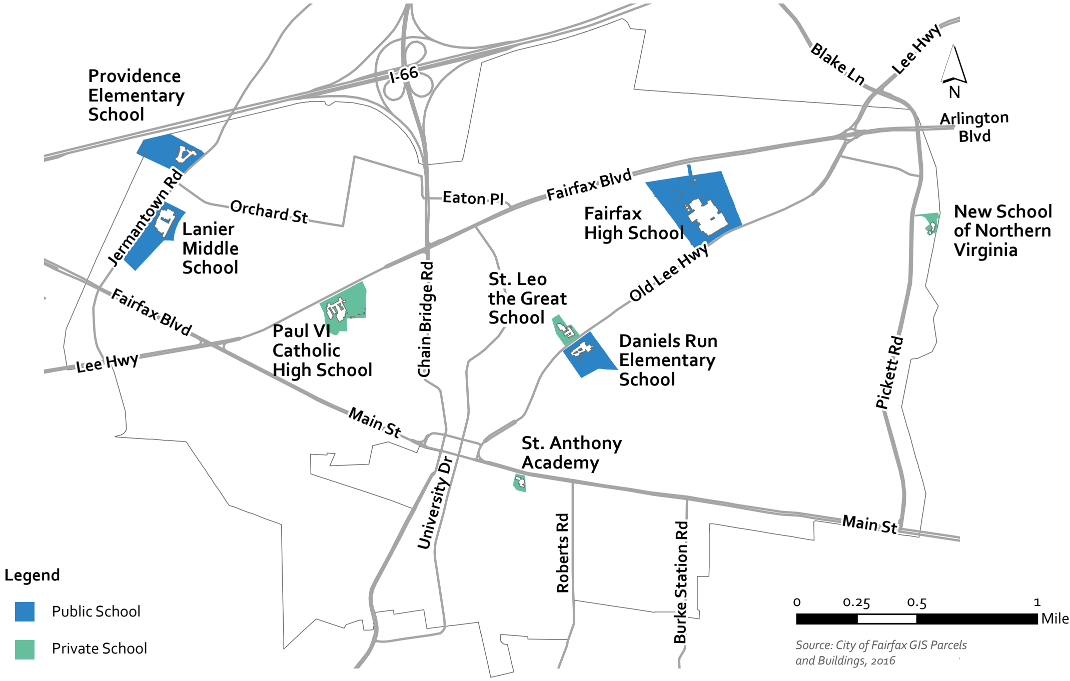
FIGURE 44 SCHOOL ENROLLMENT BY STUDENTS' PLACE OF RESIDENCE



There are also four private schools currently located in the City. Paul VI Catholic High School serves grades 9-12 with just over 1,000 students currently enrolled. A new location for this school is under construction outside the City, and the current location is anticipated to close once the new location is operable. Saint Leo the Great Catholic School serves grades Pre-K-8 with a current enrollment of 410 students. The New School of Northern Virginia is a private liberal arts and science school serving grades 6-12 with a current enrollment of approximately 150 students. Saint Anthony Academy serves grades K-12 with a current enrollment of over 30 students. All public and private schools currently located in the City are shown in Figure 45.

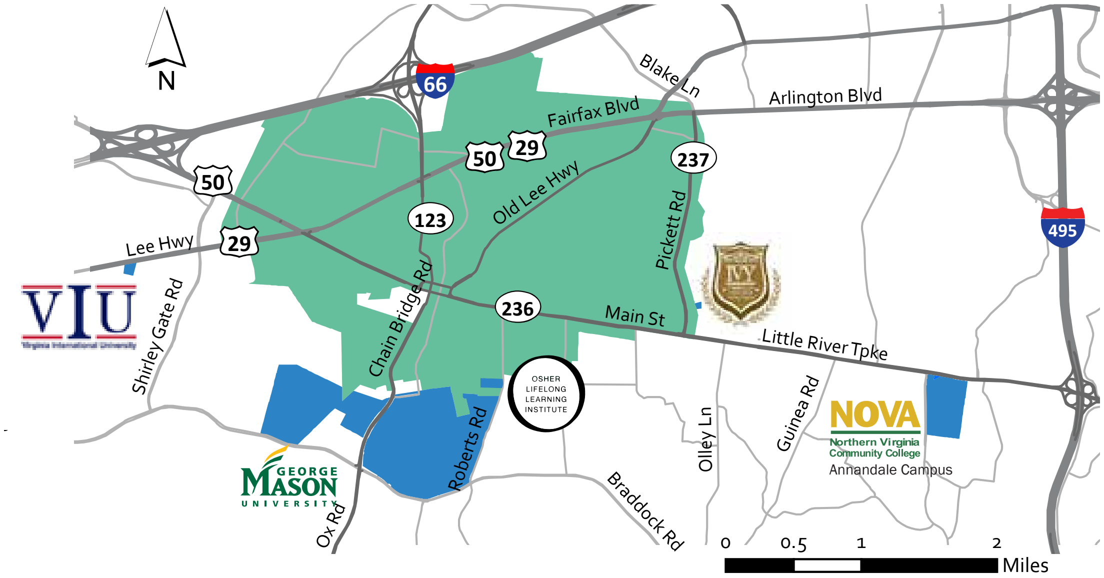
The City is also surrounded by several higher education facilities. George Mason University's Fairfax Campus began with 356 students in 1964, after the completion of construction of the first four buildings. Today, 21,442 full-time equivalent students come to the Fairfax Campus, which includes 80% of the enrollment of all Mason's campuses. The Annandale campus of Northern Virginia Community College opened in 1967 and is now the largest of all NOVA campuses. The 2014-2015 enrollment for all campuses was 34,586 full-time equivalent students. Virginia International University was founded in 1988 and had 1,876 students enrolled as of the July 2015 - June 2016 semester. Ivy Christian College was founded in March 2006 and received accreditation in May 2014. The reported enrollment for 2013 was 319 students. Osher Lifelong Learning Institute (OLLI) offers classes to Northern Virginia residents in their retirement years.

FIGURE 45 PUBLIC AND PRIVATE SCHOOLS, K-12



Source: City of Fairfax GIS Parcels and Buildings, 2016

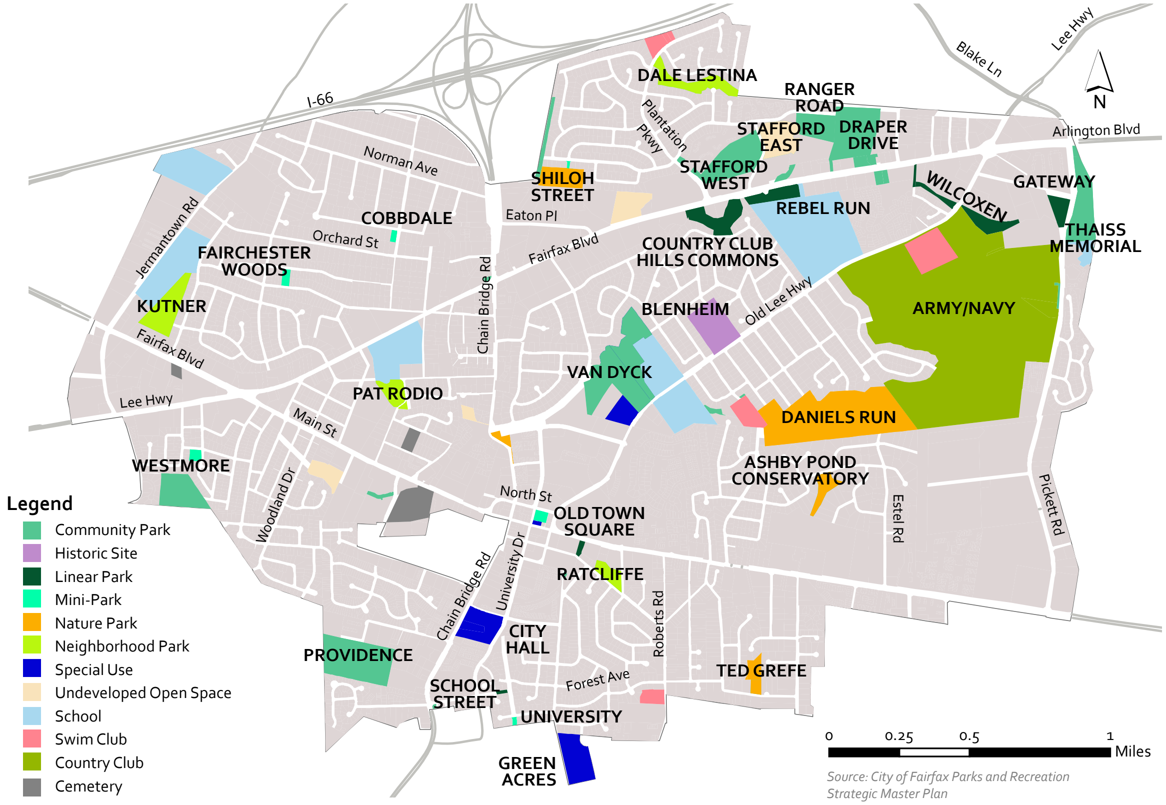
FIGURE 46 LOCAL HIGHER EDUCATION AND LIFELONG LEARNING



Parks and Recreation

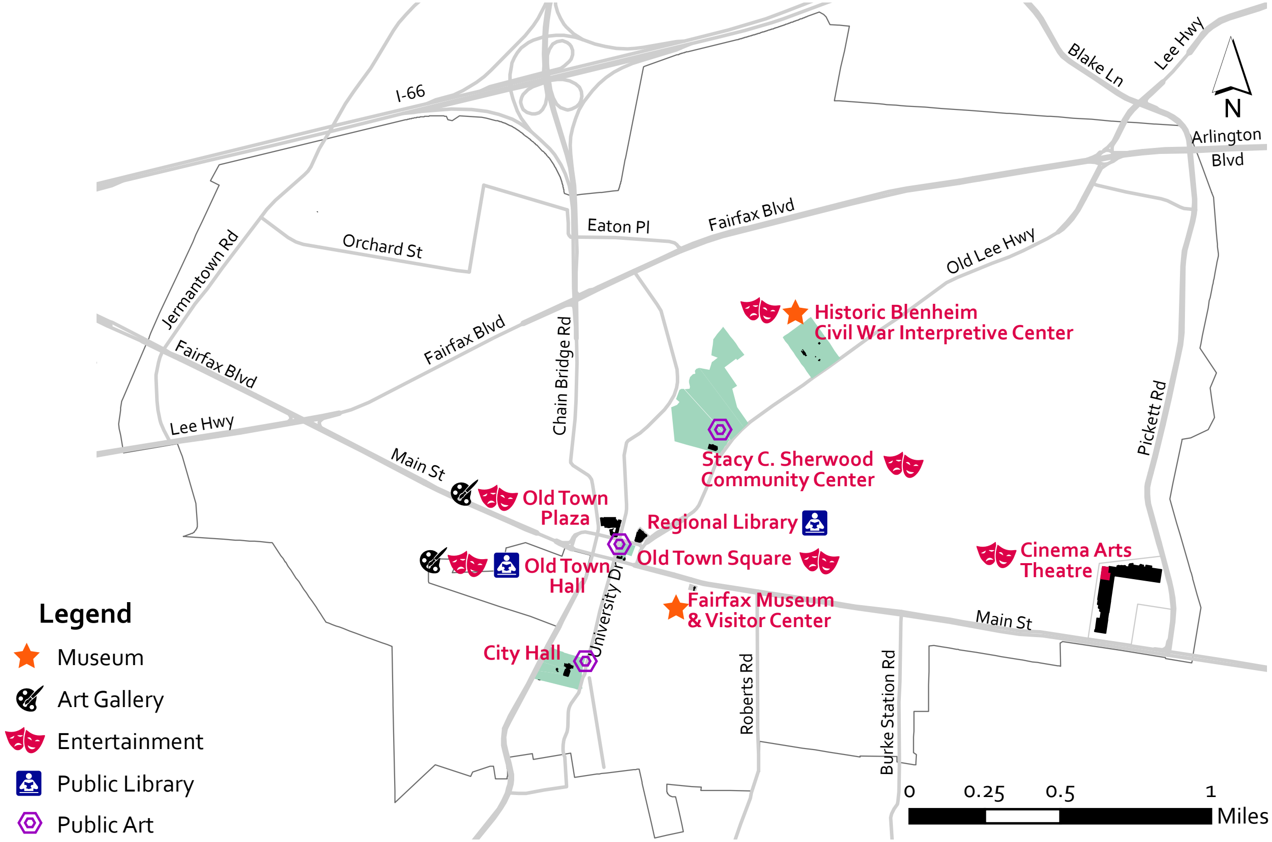
A diverse network of public parks and open space areas, including recreation fields, natural areas, informal open spaces, and a trail system is provided throughout the City. Containing approximately 200 acres of land, the City's parks fall into four categories: regional parks, community parks, neighborhood parks, and vest pocket parks as shown in Figure 47. Most trails in the City are multipurpose recreational trails serving the needs of pedestrians, joggers, and bicyclists.

FIGURE 47 OPEN SPACE AND PARKS BY TYPE



Source: City of Fairfax Parks and Recreation Strategic Master Plan

FIGURE 48   CULTURAL FACILITIES AND PUBLIC ART



Source: City of Fairfax GIS and Cultural Arts information

Cultural Arts

The City's cultural arts activities and special events draw people to the City and contribute to the unique sense of place and close-knit community, offering distinctive venues to unite members of the community. Currently, public art and cultural facilities are focused mainly in and around Old Town, as shown in Figure 48. The City has a museum, art galleries, and other performance venues; however, there is a lack of performing arts venues for theater and other performance groups.

Police

The Police Department, the City's primary law enforcement agency, is responsible for protecting life and property, preventing crime, detecting and apprehending criminal suspects, and maintaining order. The ability to anticipate, prevent, and manage crime; minimize threats to property; and minimize damage from environmental hazards all contribute to public safety.

Fire

The Fire Department furnishes fire suppression, rescue, emergency medical services, and emergency medical transportation both within the City and in an approximately 14-square mile area of Fairfax County. In return, Fairfax County provides a computer-aided dispatch (CAD) service for all fire and rescue vehicles as well as "first due" engines and rescue response in the areas along Pickett Road near the tank farm and along Jermantown Road near the schools, as well as backup response in the remainder of the City.

Emergency Management

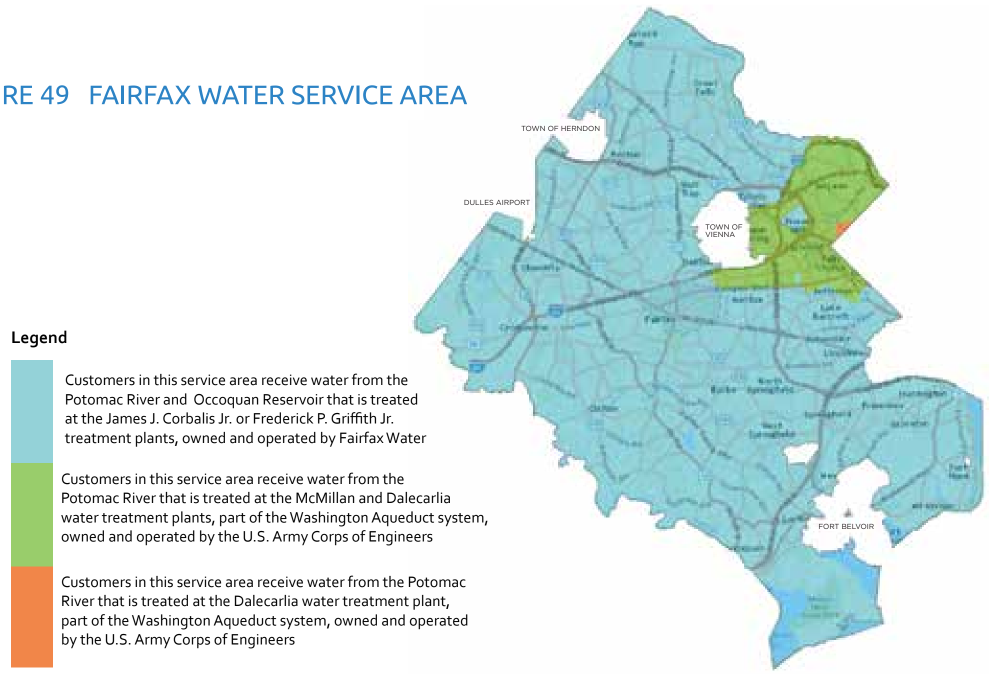
The Office of Emergency Management (OEM) acts as liaison to all emergency response agencies, monitors for and alerts of any impending natural or man-made safety issues, and develops training schedules for emergency personnel. OEM also ensures that safety documents are kept current, such as the state-mandated Comprehensive Emergency Management Plan and the Northern Virginia Hazard Mitigation Plan.

Utilities

The City sold its water system to Fairfax Water on January 2, 2014. Since that sale, Fairfax Water has been providing water services to the City as shown in Figure 49. The City operates its own wastewater collection system as shown in Figure 50. Wastewater originating in the City's wastewater system is treated by Fairfax County at its Noman M. Cole, Jr., Pollution Control Plant by a contractual agreement that provides a guaranteed treatment capacity for the City. The City manages, maintains, and repairs its stormwater system, which consists of approximately 60 miles of storm drain pipe and 3,650 storm sewer structures throughout the City.

The City does not own or operate any electric, telephone or cable utilities. It does, however, own the rights-of-way where transmission lines are located. Approximately 67 miles of City streets contain utility poles supporting overhead electric, telephone, and cable television wires.

FIGURE 49 FAIRFAX WATER SERVICE AREA

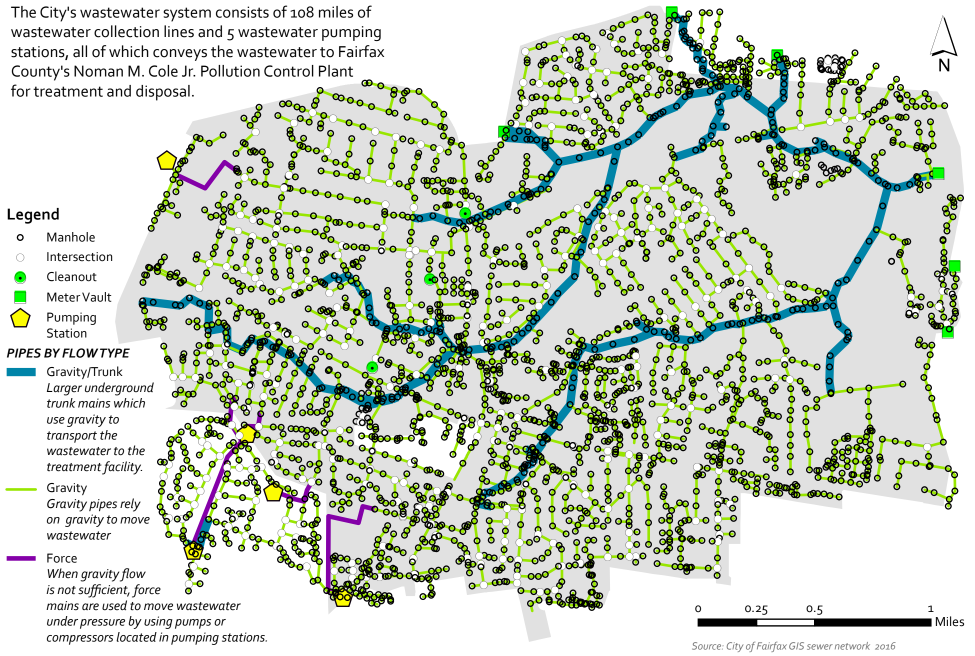


Legend

- Customers in this service area receive water from the Potomac River and Occoquan Reservoir that is treated at the James J. Corbalis Jr. or Frederick P. Griffith Jr. treatment plants, owned and operated by Fairfax Water
- Customers in this service area receive water from the Potomac River that is treated at the McMillan and Dalecarlia water treatment plants, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers
- Customers in this service area receive water from the Potomac River that is treated at the Dalecarlia water treatment plant, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers

Source: Fairfax Water 2016 Annual Water Quality Report

FIGURE 50 WASTEWATER COLLECTION SYSTEM

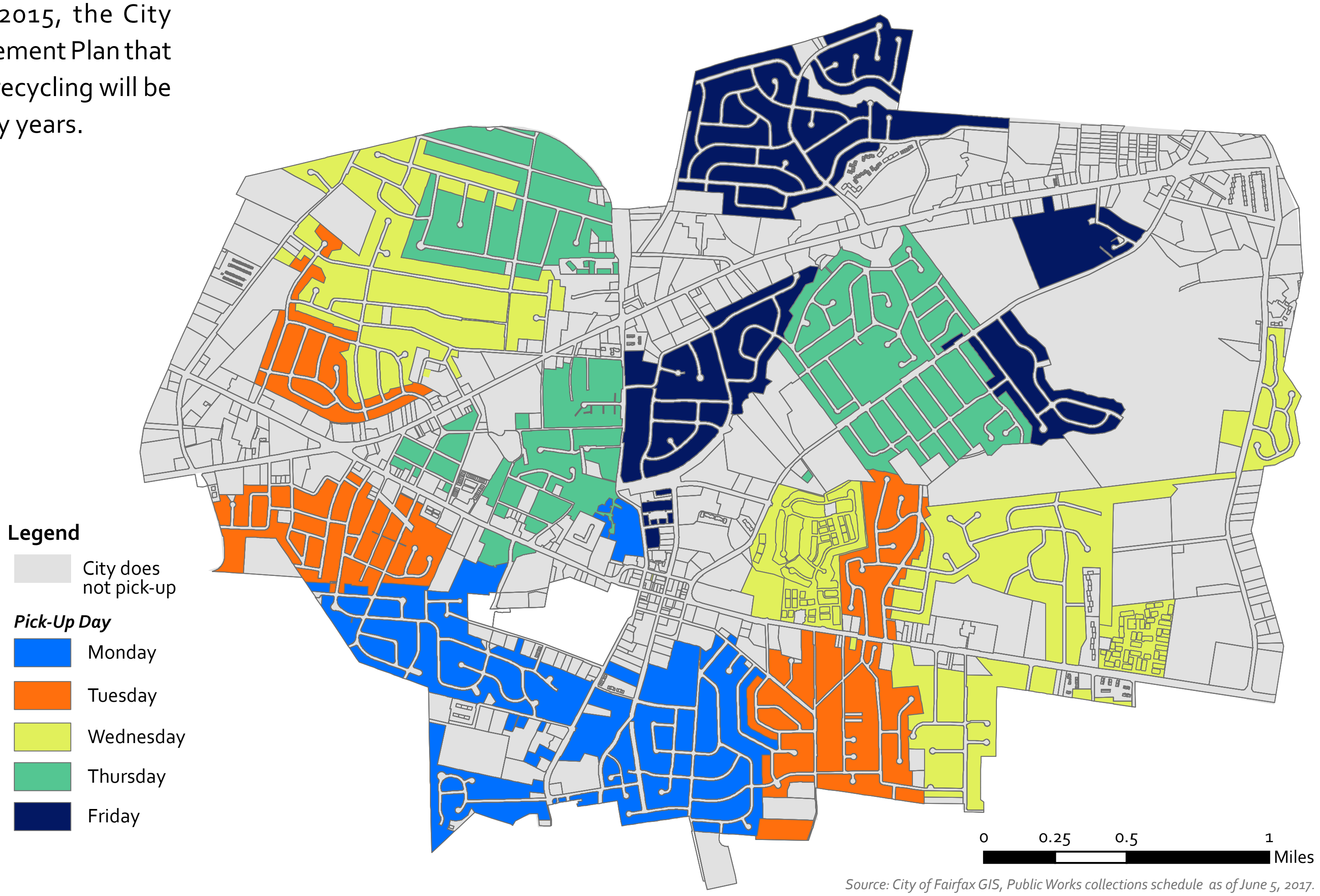


The City's wastewater system consists of 108 miles of wastewater collection lines and 5 wastewater pumping stations, all of which conveys the wastewater to Fairfax County's Noman M. Cole Jr. Pollution Control Plant for treatment and disposal.

Source: City of Fairfax GIS sewer network 2016

The City provides weekly refuse and recycling collection for residents in detached homes, duplexes, and townhouses. Curbside collection service is shown in Figure 51. City businesses and multifamily complexes use private refuse and recycling services. In 2015, the City adopted a Solid Waste Management Plan that outlines how solid waste and recycling will be managed over the next twenty years.

FIGURE 51 RESIDENTIAL REFUSE AND RECYCLING CURBSIDE COLLECTION



Source: City of Fairfax GIS, Public Works collections schedule as of June 5, 2017.

Opportunities and Challenges

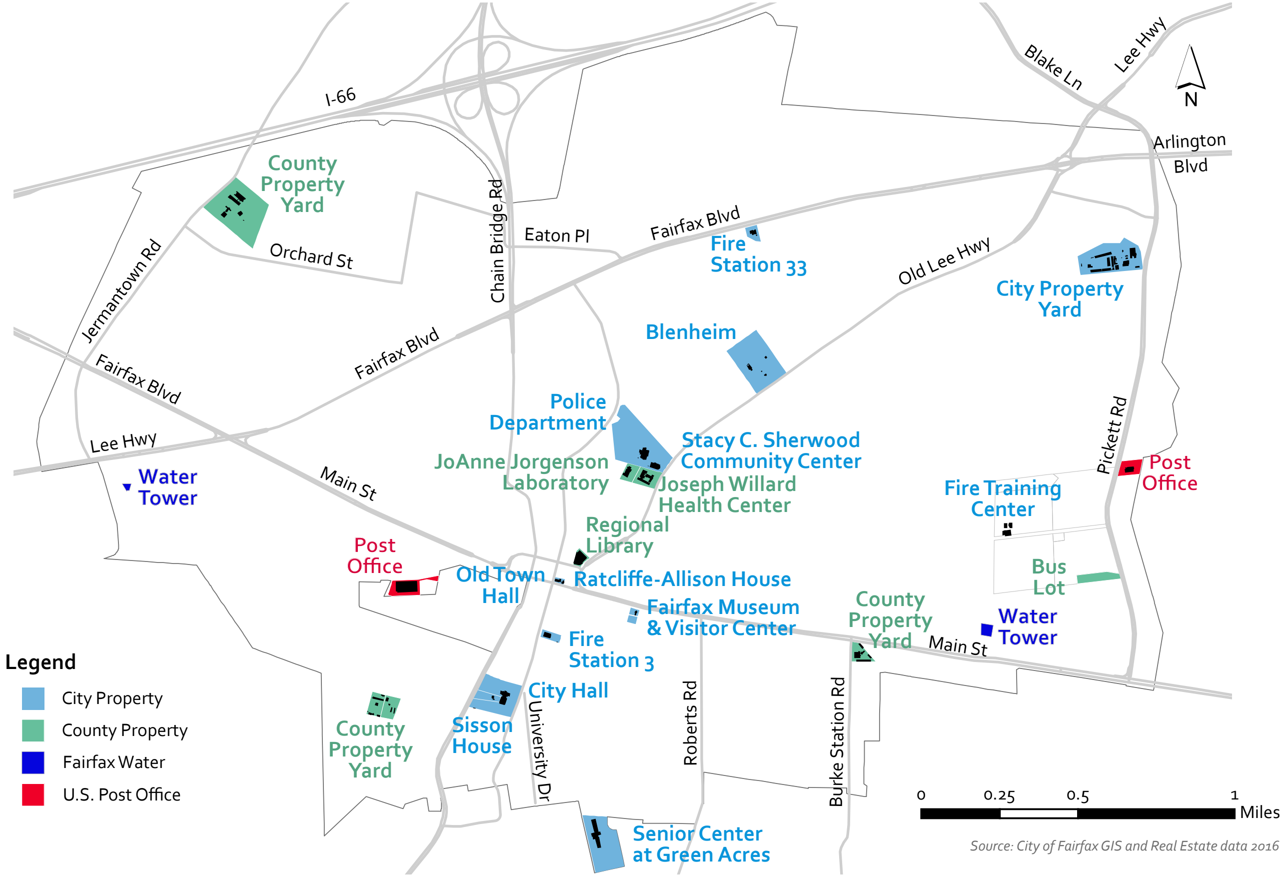
Ongoing maintenance of public facilities

Public facility locations are shown in Figure 52. Several of these facilities in the City are historic structures that have withstood years of service. Ensuring that community services and facilities are phased with changing demand is a major component of facility management, since the quality of public facilities contributes to the City's quality of life.

Service agreements

The relatively small size of the City makes provisions for some public services inefficient. The City provides many services to its citizens through contractual agreements with Fairfax County and regional agencies. This provides for more efficient service delivery while allowing the City to retain some control. Aside from the School Services Agreement with FCPS, City residents may use any of eight regional and fourteen community libraries that compose the Fairfax County library system. Fairfax County also provides health and human services assistance, including environmental health, communicable disease programs, and public health services.

FIGURE 52 PUBLIC FACILITIES



Source: City of Fairfax GIS and Real Estate data 2016

Growth and development

Population growth and new development can impact demands on public facilities and services. Demands, however, can be monitored to ensure that the resulting impacts are realized in advance and factored into the decision-making process for accommodating new development.

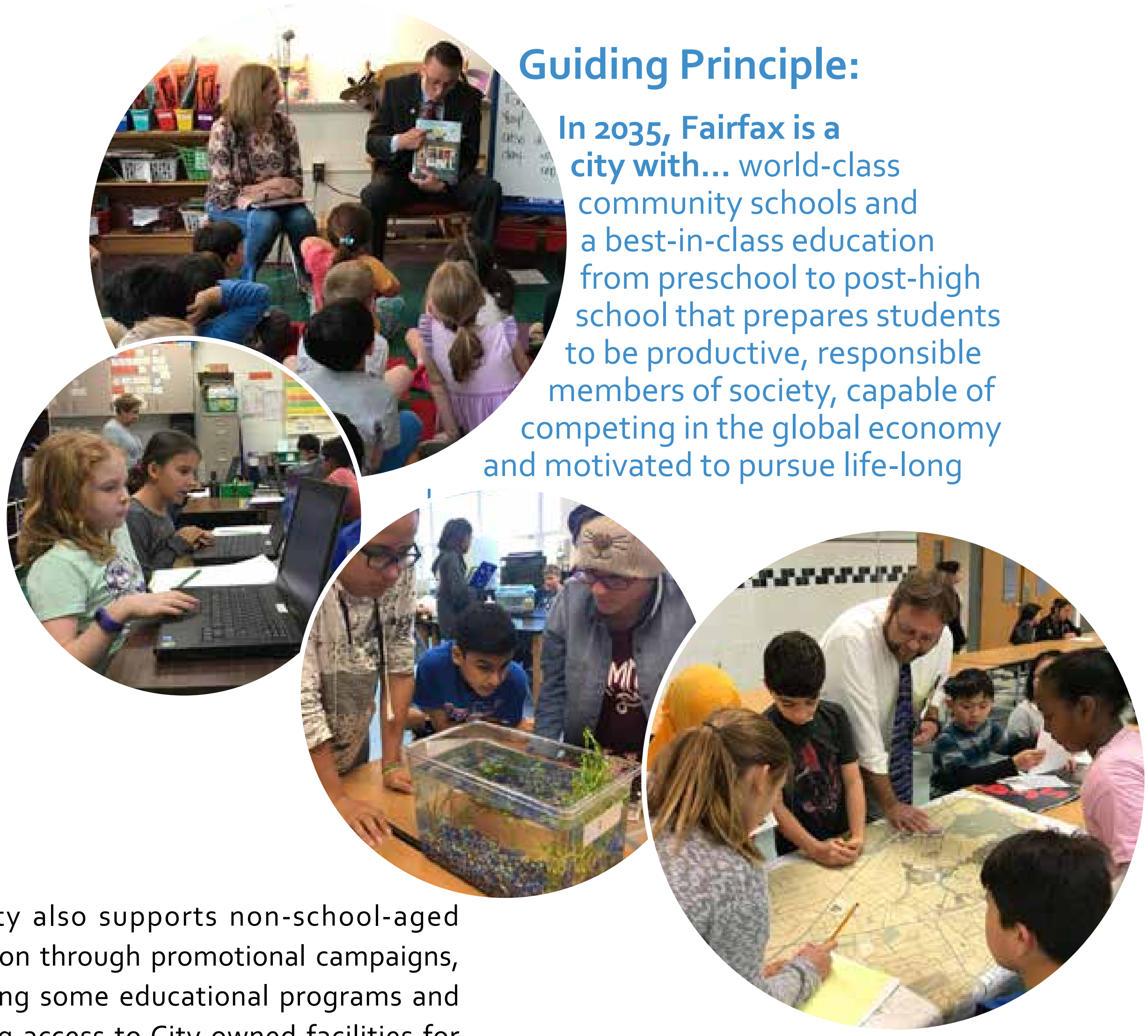
Education

Between the City's public schools, its proximity to higher education institutions, and its accessibility to lifelong learning offerings, education factors heavily into the City's quality of life. Excellent public education is not just a priority for current residents, but is also an investment in the City's future, and City policies should continue to ensure that educational opportunities are prioritized for future generations. The City will strive to provide excellent instructional services and superior facilities, geared to the needs of our evolving and diverse population. The City of Fairfax School Board maintains its own Strategic Plan and is responsible for the School Services Agreement with FCPS, through which the City is able to ensure outstanding facilities and instructional accommodations for the 3,100 public school students who reside within City limits. As the City grows and student needs evolve, both the City government and the City of Fairfax School Board should continue to prioritize educational services in order to provide the highest possible levels of service for the future needs of the City's school-aged population.

The City also supports non-school-aged education through promotional campaigns, operating some educational programs and allowing access to City owned facilities for educational programs provided by other entities.

Guiding Principle:

In 2035, Fairfax is a city with... world-class community schools and a best-in-class education from preschool to post-high school that prepares students to be productive, responsible members of society, capable of competing in the global economy and motivated to pursue life-long



Education
Goal 1

Ensure the City's public education needs are met.

The school services agreement with FCPS has provided outstanding instructional programs for City students, combined with an impressive amount of local control. While all four of the City's public schools have been renovated since 2000, changes in student needs, technology and enrollment must continually be monitored to ensure facilities remain exceptional.

The City School board possesses a deed of covenant on the existing Green Acres site at the south end of the City to accommodate a third elementary school should enrollment increase to a point where Daniels Run and Providence Elementary Schools could not reasonably be expanded to accommodate the growth. The School Board has selected Providence Park as an alternative site for a future school, which would be particularly more appropriate if it is consolidated with the adjacent West Drive Property Yard. Further discussion on this site is provided in the Parcel Specific Recommendations in the Land Use Chapter of this plan.

OUTCOME E1.1:	The School Services Agreement with FCPS, guided by the City of Fairfax School Board, continues to provide City students with the highest quality education.
ACTION E1.1.1	Continue to follow the established guidelines of the School Services Agreement and to monitor its implementation.
ACTION E1.1.2	Maintain a close working relationship with the Mayor, City Council and City staff regarding school needs and continue to provide information to the elected officials and staff.
OUTCOME E1.2:	Public school facilities and grounds meet the current and future needs of the school-aged population.
ACTION E1.2.1	Continue cooperation between City government and the City of Fairfax School Board to assess and plan for impacts from future residential development.
ACTION E1.2.2	Monitor potential Fairfax County school boundary adjustments to anticipate impacts on City school enrollment.
ACTION E1.2.3	Continue to examine potential need for additional school facilities and the best use for the City of Fairfax School Board's Deed of Covenant on Green Acres.
ACTION E1.2.4	Continue to ensure a safe learning environment, proper program capacities, and the availability of the latest technology and functional accommodations.
ACTION E1.2.5	Promote environmentally friendly practices for school facilities and grounds.

Education

Goal 2

Ensure access to educational and training opportunities for all generations.

City residents place a high priority on education at all stages of life – from early childhood education up to continuing education and adult lifelong learning. Prioritizing the continued growth and development of the City's educational offerings and linkages by collaborating with local education providers and institutions will help enhance the City's livability for future generations.

OUTCOME E2.1:	All children will be well-prepared to begin elementary school.
ACTION E2.1.1	Continue to promote Pre-K instructional opportunities for all City Pre-K children.
ACTION E2.1.2	Increase access to early childhood literacy and after school care at the City's community facilities, City of Fairfax Regional Library, and other institutions.
OUTCOME E2.2:	The City's residents will have access to facilities and programs that foster an informed community.
ACTION E2.2.1	Maintain access to the City's community facilities, City of Fairfax Regional Library, and other institutions for ongoing dialogue in educational events and discussions.
ACTION E2.2.2	Continue to provide residents and businesses with access to timely information on City government programs and initiatives via the monthly CityScene newsletter, Cityscreen-12 television station, City website, and email alerts.
OUTCOME E2.3:	Partnerships and community resources provide opportunities for training and continuing education.
ACTION E2.3.1	Continue to foster good relations with nearby education providers such as George Mason University and Osher Lifelong Learning Institute (OLLI).

Parks and Recreation

Recreation and open space make an essential contribution to a healthier population and a greener city. They are integral to the City's quality of life and provide beauty, respite, and opportunity to enjoy the outdoors. In addition, City staff takes pride in providing quality experiences for the community through services and programs that enrich people's lives and contribute to total development of the individual, family, and the community.

In June 2014, the Parks and Recreation Advisory Board (PRAB) presented the City of Fairfax Strategic Master Plan for Parks, Recreation, Trails, Open Space, Events and Cultural Arts to the City Council. Referred to as the Strategic Master Plan, it contains measurable goals, objectives and policies that the City Council, PRAB and the Commission on the Arts use as guidance when determining program and facility needs. The Strategic Master Plan should be referenced for specific contributions toward the actions listed for this Guiding Principle.

Guiding Principle:

In 2035, Fairfax is a city with...
inviting, well-maintained parks, trails, open spaces and multi-generational community centers.

Parks and Recreation

Goal 1

Develop high-quality park infrastructure.

A high-quality park system should serve the community's needs with a range of services and facilities for all age groups and abilities provided in a safe environment. As the City's population grows, new interests and demand for a variety of activities will require periodic evaluation of the facilities the City offers. It is also important to look at the locations of facilities to ensure all neighborhoods are provided with equitable access to parks and recreation amenities and programs. High-quality, accessible parks, facilities, recreation, and open space should be acquired, preserved, developed, and redeveloped throughout the City for public health, enjoyment and environmental purposes. (Actions specifically relating to the City's trail network may be found under Multimodal Transportation Outcomes MM2.2 and MM2.3.)

OUTCOME PR1.1:	A well-connected system of parks that provides citizens with healthy choices for recreation.
ACTION PR1.1.1	Identify and address gaps in the connections between the City's parks and open space.
ACTION PR1.1.2	Identify opportunities for future open space in neighborhoods that are undersupplied in public recreation and open space opportunities.
ACTION PR1.1.3	Enhance public access to parks and recreational facilities by making necessary infrastructure improvements.
ACTION PR1.1.4	Partner with the Department of Public Works on efforts to improve pedestrian and bicycle networks throughout the City.
OUTCOME PR1.2:	A greater awareness of the City's natural resources and commitment to protect and enhance them.
ACTION PR1.2.1	Implement measures to preserve privately-owned land adjacent to parks and trails in perpetuity, e.g., utilizing conservation easements, deed restrictions, etc.
ACTION PR1.2.2	Adopt tree preservation guidelines for parks, open space, and trails.

Parks and Recreation

Goal 2

Provide programs and services that meet the needs of the community.

High-quality programs, facilities, and services – including large-scale community events that draw significant attendance – can improve the tax base, increase property values, attract businesses, produce revenue to offset operating costs, and provide indirect benefits to our economy, contributing to the City's continued growth and development.

OUTCOME PR2.1:	Robust programming of the City's parks and public facilities that provides opportunities for individuals of all ages and abilities to participate.
ACTION PR2.1.1	Conduct a study to determine how the City's long-term needs for a community center and senior center can be best met, and implement the recommendations of this study, including construction of recommended facilities.
ACTION PR2.1.2	Update Parks and Recreation facilities to ensure they are accessible to individuals of all abilities.
ACTION PR2.1.3	Expand and enhance facility, program, and service offerings through innovative funding, management best practices, and cost recovery efforts.
ACTION PR2.1.4	Enhance Old Town Square as a destination and community gathering place by providing a venue for arts, recreation, and green space.
OUTCOME PR2.2:	Expanded and enhanced partnerships with City businesses and other organizations such as City of Fairfax Schools, Fairfax County Park Authority, NOVA Parks, FCPS, George Mason University, Fairfax County Neighborhood and Community Services, and others to complement the services provided by the City.
ACTION PR2.2.1	Identify opportunities to expand partnerships with institutional and business communities.
ACTION PR2.2.2	Establish relationships and partnerships with various underrepresented, underserved, or diverse demographic groups in the City to assist with developing programs and services to meet the needs of these communities.
OUTCOME PR2.3:	Rehabilitation or construction of public facilities to meet the programmatic and recreational needs of the community.
ACTION PR2.3.1	Enhance safety, accessibility, quality of service, and cost effectiveness through comprehensive operations and maintenance programs and services.
ACTION PR2.3.2	Inventory the condition of existing public facilities and identify any necessary updates and repairs.

Parks and Recreation Goal 3

Market programs, special events, facilities, and services.

A broad range of marketing and public relations techniques are necessary to develop public awareness, strengthen community relations, bring a larger audience from outside of the City to our events, and further invigorate the local economy. The City will use innovative promotional and marketing initiatives to increase awareness, participation and support of programs, special events, facilities and services.

OUTCOME PR3.1:	A well-informed community that utilizes the City's quality programs and attends events.
ACTION PR3.1.1	Conduct public opinion surveys of Parks and Recreation customers to identify desired changes in facilities and programming.
ACTION PR3.1.2	Utilize a variety of communications platforms to publicize facilities, programs and events to the community.
OUTCOME PR3.2:	City facilities and events are a regional draw, resulting in increased economic vitality for local businesses.
ACTION PR3.2.1	Increase awareness, participation, and support of programs, facilities, and services using innovative promotional and marketing initiatives.

Cultural Arts

Guiding Principle:

In 2035, Fairfax is a city with...
a thriving cultural arts program that supports a variety of special events, art spaces and performance venues.

The City takes pride in the wide variety of cultural events, programs, and facilities it provides to enhance the quality of life for its residents. The City is committed to preserving and protecting its heritage, recognizing evolving socioeconomic and cultural patterns, and promoting the arts as an integral part of our spirit and vitality with wide ranging economic benefits.

In January 2013, the Commission on the Arts (COA) prepared a Strategic Plan with near-term (one to three years) and long-range objectives for cultural arts in the City. The plan "envisions an economically and culturally booming City with a vibrant arts community serving as a leading arts destination," supporting the Comprehensive Plan Vision. The goals of this Guiding Principle seek to support and build upon the COA Strategic Plan, exploring opportunities for inclusion of the arts as the City develops.

Historically, the arts organizations in our community have been the City of Fairfax Band and the Fairfax Art League. Over the past two decades, four theater companies have emerged, as well as several smaller performance groups. The range of performances is constrained by the lack of theater spaces.

Public art has also sprouted in the last decade with art at the Library, in front of City Hall, and in front of the Sherwood Center. More is planned for Old Town Square.

Cultural Arts

Goal 1

Integrate cultural facilities into the City.

The City currently lacks adequate facilities for performing arts, including a community theater that could provide space for the larger audiences that regional and national artists could bring to the City. Although Fairfax High School and Lanier Middle School have auditorium/theater spaces, theater groups are severely challenged to obtain time in these facilities and are concerned about rental fees. The City must continue to evaluate and expand its cultural venues and to cater to the increasing entertainment expectations of its residents and promote the character and economic vitality of the City, making it a regional arts destination. This should be supported through expanded public art facilities.

OUTCOME CA1.1:	Cultural facilities that provide opportunities for local, regional and national artists to perform for audiences of all sizes.
ACTION CA1.1.1	Create a broad-based special commission charged with the mission of identifying short- and long-term needs for performance spaces and other facilities to support a robust City arts program.
ACTION CA1.1.2	Based on conclusion of CA1.1.1, create a capital program for arts facilities, including a priority for a performing arts facility. This may include upgrading of school arts-related facilities.
ACTION CA1.1.3	Support the creation of Arts and Entertainment Districts with priority to Old Town Fairfax.
ACTION CA1.1.4	Identify underutilized or vacant private facilities that can function as temporary performance spaces.
OUTCOME CA1.2:	Public art such as murals and sculptures displayed to identify, enhance, and promote the cultural nature of the City.
ACTION CA1.2.1	Promote the City's cultural arts identity through public art.
ACTION CA1.2.2	Implement the City of Fairfax Public Art Policy and consider additional policies and practices that promote cultural vitality.
ACTION CA1.2.3	Create a cultural arts bike and pedestrian trail (e.g. Indianapolis Cultural Trail).

Cultural Arts
Goal 2

Encourage a broad representation of arts.

There are a wide variety of interests in arts programs and events resulting from the ever-changing demographics of the City. Strategic partnerships with local institutions, such as George Mason University's Center for the Arts and Northern Virginia Community College's Fine Arts Program should be constantly sought and promoted to expand opportunities for City residents of all ages, ethnicities and abilities. Alternative means of providing and promoting programs must continually be explored as well.

OUTCOME CA2.1:	Collaboration and partnership with local schools, colleges, and universities to provide performance, rehearsal and educational opportunities for artists.
ACTION CA2.1.1	Collaboration and partnerships support establishment of performance, rehearsal and educational opportunities for artists.
ACTION CA2.1.2	Establish a mechanism for continuous collaboration with local schools, colleges, universities and arts organizations on education for artists, and for arts programming.
ACTION CA2.1.3	Explore public-private partnerships to develop performance and rehearsal spaces.
OUTCOME CA2.2:	Cultural programming in the City increases opportunities for a wide range of cultural experiences.
ACTION CA2.2.1	Consider creating a Cultural Affairs office with a full-time director.
ACTION CA2.2.2	Identify and create plan to optimize use of existing and future public facilities for cultural arts programs.
ACTION CA2.2.3	Enhance awareness of current and future programs and facilities.
ACTION CA2.2.4	Develop and execute strategies to increase funds by charging admission to selected events and to increase sponsorships, contributions, and grants.
OUTCOME CA2.3:	Expanded and enhanced partnerships with city businesses and other organizations such as City of Fairfax Schools, Northern Virginia Community College, George Mason University, Virginia Commission for the Arts and other local arts agencies.
ACTION CA2.3.1	Expand partnerships with institutional and business communities for funding and facilities usage.

Government and Public Safety

Guiding Principle:

In 2035, Fairfax is a city with… exceptional governmental, police and fire safety services.

Municipal government services directly affect daily life for residents and businesses including trash pick-up, dog licensing, sign permits, facility rentals, or emergency services. These services not only allow a community to function, but also impact its overall quality of life.

Public safety services include law enforcement, fire protection, emergency medical services and emergency management. The continuity of governmental services offers reassurance that essential services are in place to respond to basic community concerns and needs.

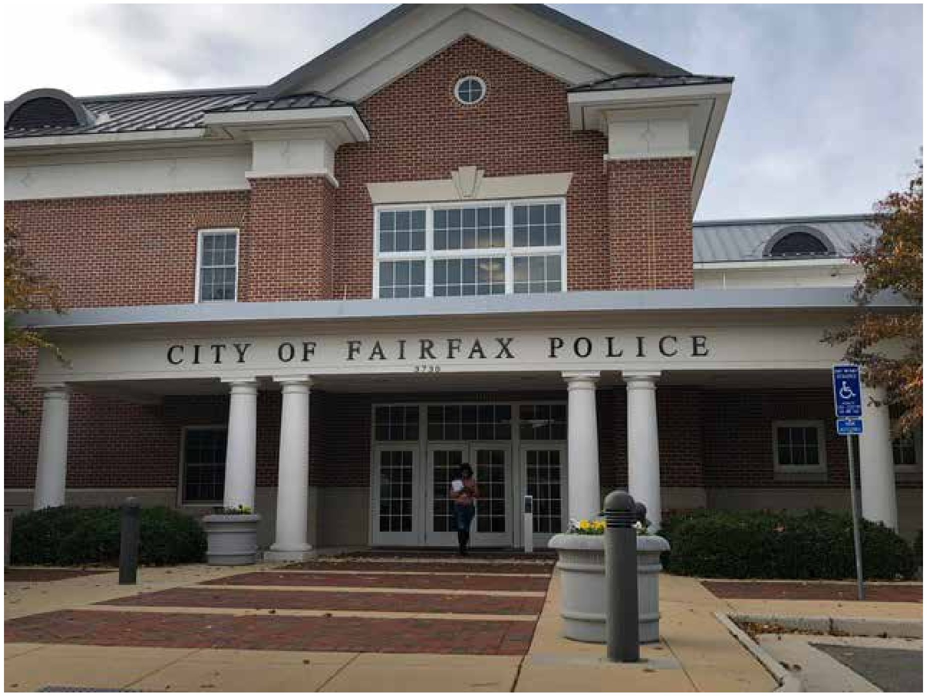
Government and Public Safety

Goal 1

Provide state-of-the-art-facilities for local government and public safety operations.

Anticipating future growth patterns and planning for infrastructure and services to meet the needs of such growth are critical elements in determining the future of the City and its development framework. The City's location in the metropolitan Washington, D.C. area promises to provide the stimulus for continued growth. This growth will affect the resources required to provide the desired level of public services, safety response, and protection. The City must continually monitor demands on government and public safety resources in order to determine needs for facility and service enhancements.

OUTCOME GPS1.1:	Public facilities and equipment that properly support the efficient functioning of City staff to provide valued services to City residents and businesses.
ACTION GPS1.1.1	Maintain and update City facilities to ensure all are safe, accessible to individuals of all abilities, energy efficient, and modernized to meet the changing needs of the community and operations.
ACTION GPS1.1.2	Construct new buildings, when warranted, that are accessible, sustainable, and properly located, including co-locating multiple uses to meet the needs of the community and operations.
ACTION GPS1.1.3	Pursue right of first refusal agreement with Fairfax County on County-owned property located within the City.



Government and Public Safety

Goal 2

Provide high-quality community services.

The City must balance fiscal challenges with the need to maintain public facilities and equipment. Improper maintenance and inadequate facilities can result in disruptive needs for repair and costly replacements. The City will provide high-quality, efficient and cost-effective community services with optimal levels of service to meet public needs on a daily basis, as well as during times of stress.

OUTCOME GPS2.1:	User-friendly and convenient customer service tools using the latest technology available.
ACTION GPS2.1.1	Monitor trends and advancements in technology as they become available to determine if they would benefit City staff's ability to deliver services.
OUTCOME GPS2.2:	Police protection and service that maintain a safe environment for residents, workers and visitors.
ACTION GPS2.2.1	Prevent crime through safe environmental design.
ACTION GPS2.2.2	Support the implementation of the Police Department's long-range plans.
OUTCOME GPS2.3:	Responsive fire and rescue services that protect lives and property.
ACTION GPS2.3.1	Support the implementation of the Fire Department's long-range plans.
ACTION GPS2.3.2	Maintain and update City fire facilities and equipment to ensure all are safe, accessible to individuals of all abilities, energy efficient, and modernized to meet the changing needs of the community and staff.
OUTCOME GPS2.4:	Continued coordination and collaboration with appropriate jurisdictions, agencies and groups for emergency preparedness and response.
ACTION GPS2.4.1	Survey assets and expand upon them to best capitalize on investment in preparedness.
ACTION GPS2.4.2	Continue education programs focused on establishing survivable spaces and promoting emergency preparedness.
OUTCOME GPS2.5:	Essential health and human services are readily available for all community members.
ACTION GPS2.5.1	Improve access and availability to health and human services, amenities, and products.
ACTION GPS2.5.2	Increase transit service options available to destinations where healthy food is sold or distributed such as food banks, farmers markets and grocery stores.
ACTION GPS2.5.3	Recognizing many human services are provided by outside agencies and are not directly marketed for the City, develop a marketing strategy targeting individuals in the City who could benefit from those services.

Infrastructure and Utilities

Guiding Principle:

In 2035, Fairfax is a city with... safe, well-maintained infrastructure and use of advanced technology.

Well-maintained infrastructure and utility systems are critical to the City's continued growth and development. The services covered under this Guiding Principle include water, wastewater, stormwater, energy, telecommunications, and solid waste and recycling. These services support existing and future development and contribute to the health, safety and welfare of the community's residents, businesses and visitors. As technology advances, the City will have greater opportunity to expand the use of information and communications technologies to enhance livability, economic growth, public safety and sustainability.

The proper functioning of infrastructure systems can have major environmental implications. Water, wastewater, and stormwater systems are embedded in the region's hydrology, and the quality of our watersheds is heavily influenced by the operation of these systems. Overhead utility wires are a distracting visual element within the streetscape and present a maintenance concern. Trees must be trimmed away from the overhead lines on a regular basis, resulting in odd-shaped and unnatural-looking trees unable to grow to their fullest potential. Undergrounding utilities can enhance safety, improve aesthetics, reduce maintenance, and improve street tree health.

Infrastructure and Utilities

Goal 1

Provide quality utility services and infrastructure systems.

Utilities and infrastructure will be compliant with applicable federal and state standards and requirements to meet anticipated growth and development needs. The City should continue to ensure its infrastructure and utility systems meet the demand of projected growth and the community's needs. Significant investments in infrastructure (such as stormwater management facilities) will be needed to keep pace with maintenance, regulatory requirements and advancing technology.

OUTCOME IU1.1:	Access to a clean, safe and reliable potable water supply.
ACTION IU1.1.1	Continue to work with Fairfax Water to ensure the City has access to safe and reliable drinking water.
ACTION IU1.1.2	Encourage residents and businesses to conserve water in an effort to protect and preserve the water supply.
OUTCOME IU1.2:	A reliable and efficient wastewater system that collects, conveys and treats wastewater.
ACTION IU1.2.1	Maintain the ability to collect and transmit wastewater.
ACTION IU1.2.2	Continue to perform regular testing, maintenance and improvements to the City's wastewater collection system to ensure compliance with federal and state environmental regulations.
OUTCOME IU1.3:	A sustainable and efficient stormwater system.
ACTION IU1.3.1	Continue to implement the Virginia Stormwater Management Program (VSMP) and the City's stormwater management program to ensure compliance with federal and state regulations.
ACTION IU1.3.2	Continue to maintain and improve the City's stormwater system, utilizing green stormwater infrastructure where practical.
OUTCOME IU1.4:	Access to reliable energy and telecommunications infrastructure.
ACTION IU1.4.1	Partner with utility providers, local municipalities, and regional groups to improve access to utility data and service outage data.
ACTION IU1.4.2	Coordinate upgrades and replacement of non-City provided utilities, including electricity, water, natural gas and communications networks.
ACTION IU1.4.3	Work with utilities, developers, and state agencies to relocate above-ground utility lines underground, where feasible, with an emphasis on major corridors.

Infrastructure and Utilities

Goal 1

ACTION IU1.4.4	Encourage the placement and appearance of utility infrastructure (e.g. substations, transmission towers and lines, and switching boxes) to minimize visual disruption and negative effects on quality of life, and to enhance streetscapes.
ACTION IU1.4.5	Work with utility companies to ensure the reliability and availability of electricity, water, natural gas, and communications services during both normal times and times of stress (e.g. storm events, flooding, extreme heat, etc.).
OUTCOME IU1.5:	A safe and well-connected right-of-way system that provides a functional surface transportation system and utility infrastructure services throughout the City.
ACTION IU1.5.1	Evaluate and ensure that there is adequate lighting along all major streets.
ACTION IU1.5.2	Convert light fixtures and street lights to light emitting diodes (LEDs) and down-cast lighting.
ACTION IU1.5.3	Develop an inventory of existing public right-of-way infrastructure assets (e.g., street lights), current infrastructure conditions, and priorities for maintenance or rehabilitation.
ACTION IU1.5.4	Provide rights-of-way that will permit the expansion of tree planting strips and tree wells to provide more suitable growing conditions for street trees.
OUTCOME IU1.6:	Access to reliable and efficient solid waste and recycling services and infrastructure.
ACTION IU1.6.1	Maintain and enhance solid waste and recycling infrastructure in City parks, trails, sidewalks, and public facilities, and at events.

Infrastructure and Utilities

Goal 2

Expand the use of advanced technology.

Advanced technology infrastructure helps support economic growth and public safety, improve access to information, and ensure a broad range of communications services. Technology is rapidly progressing while the price of these advanced technologies is decreasing. The City will monitor, evaluate, and utilize advances in technology to improve efficiency, connectivity and quality of life.

OUTCOME IU2.1:	All City residences, businesses and institutions have access to reliable and affordable advanced technology and telecommunications infrastructure and services.
ACTION IU2.1.1	Periodically update policies and regulations for the design and siting of telecommunications facilities to ensure they remain applicable with fast-changing technologies.
ACTION IU2.1.2	Explore public-private partnerships as a way to enhance the City's telecommunications infrastructure.
ACTION IU2.1.3	Consider implementing innovative pilot initiatives that advance new technologies (e.g., regenerative power, solar-powered charging stations, etc.).

Appendices

Appendix A: Chesapeake Bay Preservation Plan

Appendix B: Transportation Practices and Policy

A

Chesapeake Bay Preservation Plan

The City recognizes the importance of preserving its valuable water resources for future generations and the need to protect them from the adverse effects of pollution generated by urban land uses. The City also recognizes that land use activities adversely affecting City streams also impact the health and viability of downstream resources, the most important of which is the Chesapeake Bay. The Chesapeake Bay is an economic, social, and ecological resource whose continued health is of benefit to all citizens of the Commonwealth.

The City of Fairfax has a vested interest and a responsibility to maintain and promote a healthy environment, including the protection of local waterways from further degradation as a result of development. In addition, steps must be taken to improve currently degraded resources to ensure the long-term health of both the City's resources and the Chesapeake Bay. The City has risen to the challenge of natural resources and water quality protection and is committed to implementing the Chesapeake Bay Preservation Area Designation and Management Regulations as manifest by the Chesapeake Bay Preservation Act of 1988. These regulations apply to all localities within Tidewater Virginia; however, the individual jurisdictions are responsible for identifying and implementing Chesapeake Bay preservation strategies.

The City has made progress towards maintaining and promoting a healthy environment; nonetheless, significant environmental issues still need to be addressed. This Chesapeake Bay Preservation component to the City's Comprehensive Plan serves as a planning tool for the City Council, the Planning Commission, City agencies, and citizens to help guide the City in its protection of the Chesapeake Bay and the City's natural resources.

Contents

Section 1. Introduction, Purpose, and Legal Authority

Recognizing the economic and social importance of long-term viability of State waters, and in particular the Chesapeake Bay and its tributaries, the Virginia General Assembly enacted the Chesapeake Bay Preservation Act of 1988. The Chesapeake Bay Preservation Area Designation and Management Regulations as adopted in 1989 and amended in 1991, 2001, and in 2012, state that local programs shall contain "a comprehensive plan or revision that incorporates the protection of Chesapeake Bay Preservation Areas and of the quality of state waters, in accordance with criteria set forth in Part V (9VAC25-830-160 et seq.)."

The waters of the Chesapeake Bay have been degraded significantly by many sources of pollution, including nonpoint source pollution from land uses and development. Existing high-quality waters are worthy of protection from degradation to guard against further pollution. Certain lands that are proximate to shorelines have intrinsic water quality value due to the ecological and biological processes that they perform. Other lands have severe development constraints as a result of flooding, erosion, and soil limitations. With proper management, they offer significant ecological benefits by providing water quality maintenance and pollution control, as well as flood and shoreline erosion control.

To achieve these ends, the City Council and the Planning Commission have, in accordance with the Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC25-830), developed a Chesapeake Bay preservation program which is centered around the City's Chesapeake Bay Preservation regulation of the Zoning Ordinance. This Chesapeake Bay Preservation component to the City's Comprehensive Plan builds upon the City's regulation and is designed to protect those qualities of life held important by the citizens of the Commonwealth and the City and to encourage future development that enhances and compliments the growth of the City as well as protects it natural resources.

Section 2. Water Resources Protection Programs and Regulations

The City has made substantial progress towards ensuring the protection and balanced management of its natural resources through the implementation of various City regulations and water quality protection and pollution prevention programs. While the Chesapeake Bay Preservation regulation is the City's primary tool for protecting water resources within the City, water quality and natural resources protection requires an integrated approach.

This involves not only regulation but also citizen participation through the use of public education and volunteer programs. Enforcement of the City's Chesapeake Bay Preservation regulation must be coupled with a comprehensive examination of how the City's various land use regulations, including its Zoning and Subdivision ordinances, may be better utilized to protect the natural environment.

The following is an overview of the City's existing regulations and programs related to water quality and natural resources protection. These regulations and programs are then reexamined and options are presented for their improvement in light of an analysis of the City's water resources (Section 3), existing and potential sources of pollution (Section 4), and constraints to development (Section 5).

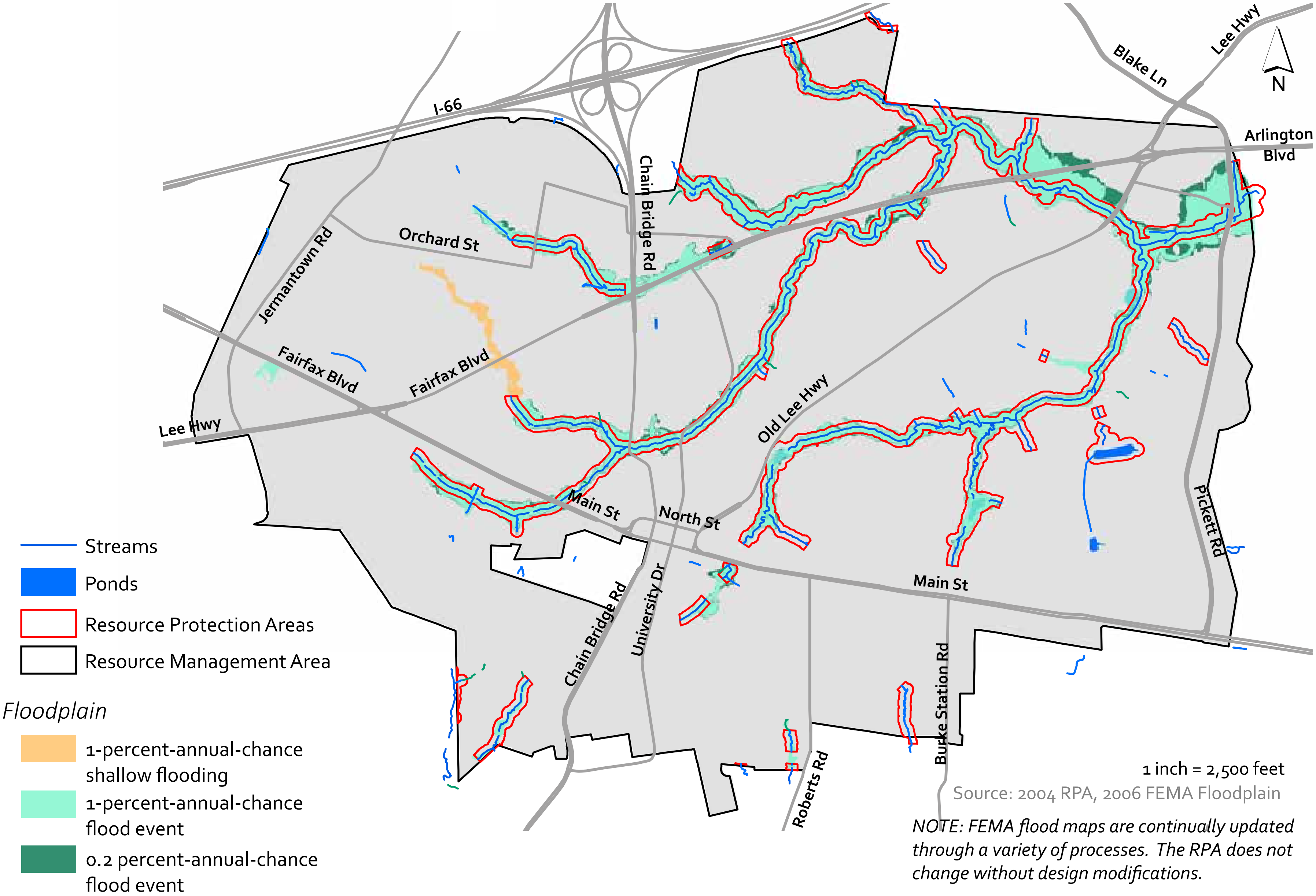
2.1. Chesapeake Bay Preservation Regulation

The Chesapeake Bay Preservation Act (Chapter 3.1 of Title 62.1 of the Code of Virginia) establishes a program to protect environmentally sensitive features which, when disturbed or developed incorrectly, lead to reductions in water quality in the Chesapeake Bay. The Act provides a framework for local government to identify these sensitive areas and to enact regulations to better plan land use activities on and around them. Under the regulations, the City of Fairfax is called to promote the following:

- Protection of existing high quality State waters and restoration of all other State waters to a condition or quality that will permit all reasonable public uses, and will support the propagation and growth of all aquatic life which might reasonably be expected to inhabit them;
- Safeguarding the clean waters of the Commonwealth from pollution;
- Prevention of any increase in pollution;
- Reduction of existing pollution; and,
- Promotion of water resource conservation in order to provide for the health, safety, and welfare of the present and future citizens of the Commonwealth.

In accordance with State guidelines, Chesapeake Bay Preservation Areas (CBPAs) were mapped for the City and the City adopted a Chesapeake Bay preservation area map as part of the City's Zoning Ordinance in October, 1990 and was most recently amended in March, 2015 (§4.18. et seq.). The Chesapeake Bay Preservation Areas were delineated for the city according to criteria established by the State Department of Conservation and Recreation. Figure A1 presents the City's Floodplain and Chesapeake Bay Preservation Area Map.

FIGURE A1 FLOODPLAIN AND CHESAPEAKE BAY PRESERVATION AREA MAP



Source: 2004 RPA, 2006 FEMA Floodplain

NOTE: FEMA flood maps are continually updated through a variety of processes. The RPA does not change without design modifications.

The resource protection area (RPA) includes (1) tidal wetlands; (2) nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow; (3) tidal shores; (4) intermittent streams that remain largely in a natural condition and that have not been significantly impacted by adjacent development; (5) water bodies with perennial flow; and (6) a 100-foot vegetated buffer area located adjacent to and landward of the components listed above, and expanded to include noncontiguous wetlands within the floodplain that are partially located within the buffer, along both sides of any water body with perennial flow.

In general, development within the RPA is limited to water dependent uses, passive recreational uses, utilities and public facilities, and certain types of redevelopment so long as the proposed land use is carried out in accordance with the provisions of the City's Zoning Ordinance.

The resource management area (RMA) includes all lands in the city that are not designated as an RPA. All development or redevelopment within a Chesapeake Bay preservation area exceeding 2,500 square feet of disturbed land area shall be subject to the general performance standards in §4.18.7 of the Zoning Ordinance as well as the development review procedures of §6.13 of the Zoning Ordinance.

The performance standards establish the means to minimize erosion and sedimentation potential, reduce land application of nutrients and toxics, and maximize rainwater infiltration. Natural ground cover, especially woody vegetation, is most effective in holding soil in place and preventing site erosion. Indigenous vegetation, with its adaptability to local conditions without the use of harmful fertilizers or pesticides, filters stormwater runoff. Minimizing impervious cover enhances rainwater infiltration and effectively reduces stormwater runoff potential.

The performance standards are intended to prevent a net increase in nonpoint source pollution from new development and to achieve a 10 percent reduction in nonpoint source pollution from redevelopment.

2.2. Erosion and Sediment Control Regulation

The purpose of the City's Erosion and Sediment Control Regulation is to prevent the degradation of properties, stream channels, waters, and other natural resources by providing that adequate soil erosion and sediment control measures are taken before, during, and after the period of site clearance, development, and construction. The Erosion and Sediment Control Ordinance implements the Virginia Erosion and Sediment Control Law (§ 62.1-44.15:51 et seq of the Code of Virginia (2013)) as well as the Chesapeake Bay Preservation Act.

Under this ordinance, land owners proposing a nonexempt regulated land disturbing activity of greater than 2,500 square feet must first submit an erosion and sediment control plan to the City Department of Public Works. The City's erosion and sediment control requirements are detailed in Erosion and Sediment Control section of the Zoning Ordinance (§4.17).

2.3. Landscaping Regulation

The City's landscaping regulations are intended to encourage the planting and proper care of vegetation and trees throughout the City, to enhance tree canopy, and to provide for appropriate screening. These actions are intended to contribute to the health, safety, and welfare of the city by enhancing pedestrian facilities, decreasing flooding, soil erosion, air pollution and noise, and improving aesthetics.

The regulation controls the removal of trees from public and private property and establishes standards limiting tree removal and ensuring the replacement of trees sufficient to safeguard the ecological and aesthetic integrity of the community's environment. In addition, the regulation was enacted: to prevent the unnecessary clearing and disturbing of land so as to preserve, insofar as is practicable, the natural and existing growth of vegetation; to replace the removed trees with new trees or large shrubs on the same property and in the same general location; to provide protective regulations against hazardous trees and diseased trees or shrubs; to control activities related to trees and plantings upon the streets or public properties of the City; and to establish a permit procedure for tree contractors. The City's landscaping requirements are detailed in the landscape section of the Zoning Ordinance (§4.5).

Tree cover has long been recognized as serving to protect water quality. Tree canopy provides a buffer between precipitation and the soil by slowing the rate and velocity of rainfall.

Tree roots serve to keep soil particles in place and from washing away due to rainfall. Vegetation of all types also extract nutrients from water for use in plant tissues. In addition, tree cover in riparian areas serves to protect aquatic habitat by lowering and stabilizing stream temperature.

2.4. Floodplain Regulation

In 1981, the Federal Emergency Management Agency (FEMA) investigated the existence and severity of flood hazards in the City of Fairfax to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The study was also meant to be used by local and regional planners in their efforts to promote sound floodplain management. To these ends, the City established a floodplain district as part of the City's Zoning Ordinance in 1982, which has been continually updated. The current Floodplain regulation was adopted by the City in March 2015.

The purpose of the City's floodplain regulation is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services and the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

- Regulating uses, activities, and development which, alone or in combination with their existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies.
- Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding.
- Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or flood proofed against flooding and flood damage.
- Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

In addition to protecting life and property, the floodplain regulation serves to protect water quality by decreasing the potential for stream bank erosion and by providing, in many instances, vegetated stream buffer areas which filter runoff from surrounding impervious areas. Figure A1 on page 3 depicts areas of Fairfax that have been designated as flood prone (the one-hundred year floodplain) for which the City's regulation applies. The City's floodplain regulations are detailed in §4.15 of the Zoning Ordinance.

2.5. Zoning and Subdivision Ordinances

The City's Zoning and Subdivision ordinances provide the City with valuable tools for natural resources protection through better development and redevelopment practices. Many of the City's water quality protection regulations, including the City's Chesapeake Bay Preservation regulation and Floodplain regulation are contained within the City's Zoning Ordinance as overlay districts. Protection of water resources may be accomplished through the application of Zoning Ordinance provisions which relate to impervious coverage requirements, land use densities, etc. For instance, creative parking requirements to minimize impervious areas, including cooperative parking arrangements between businesses, may be used to minimize impervious cover.

2.6. City Source Control Programs

The control of pollutants before they enter stormwater or groundwater is recognized as the most cost effective and environmentally sound method of environmental protection. While the effectiveness of source control programs are difficult to ascertain due to their heavy reliance on human behavior modification, they are nevertheless integral components of the Commonwealth's Chesapeake Bay preservation effort. The City has addressed source control on a number of fronts, many of which are specifically geared at water quality protection and some of which have water quality protection as direct benefit. Among the City's source control programs which benefit water quality are its street sweeping program, curbside leaf and brush pickup service, and recycling program.

Street sweeping is effective in removing harmful pollutants, particularly litter and sand from deicing and snow removal activities. Under the City's street sweeping program, main streets are swept once a week from mid-March through mid-November and subdivision streets are swept three times a year. In order for the City's program to have a more substantial effect on water quality, more frequent and concentrated street sweeping would need to be implemented. Specifically, more intense street sweeping efforts in downtown areas, where nutrients and other pollutants tend to accumulate at higher rates, may be of direct benefit to water quality.

In addition to street sweeping, the City conducts a curbside leaf and brush pickup service which discourages those whose properties lie within a RPA from dumping yard waste near streams where it can kill vegetation. This practice can result in erosion and the leaching of excess nutrients into the local stream. In conducting its program, the City should take care to make sure that leaves are not placed directly in the gutter where they can be washed into the local stream course.

The City has an extensive recycling program which has collections for most recycling materials including plastics, glass, metals, etc. The City also collects potentially hazardous substances such as used oil, oil filters, rechargeable batteries, and car batteries at the Property Yard Recycling Center. The City advertises its recycling program in the Public Works Department's insert to the City's monthly newsletter several times a year. New homeowners are provided with a packet of information on recycling requirements and facilities within the City.

In addition to City source control efforts, the Department of Environmental Quality (DEQ), Water Division, works directly with owners of underground storage tanks (USTs) to ensure that these tanks do not impact on groundwater quality. The DEQ, Water Division, has an extensive monitoring program to detect and mitigate any leaking USTs before substantial groundwater quality degradation can occur.

2.7. Local and Regional Watershed Management Efforts

For many years, the City's stormwater drainage system has been under considerable stress as the result of a rapid increase in the City's jurisdiction-wide imperviousness. Several types of stormwater system problems have been identified within the Accotink Creek watershed including streambank and streambed erosion, sedimentation, localized flooding, deteriorated drainage facilities, limited capacity of the drainage system as originally designed, and finally, pollutants affecting water quality.

In the last few decades, several water quality related regulations, as summarized below, have been enacted that has made it necessary for the City to investigate and address these problems on a watershed-wide basis.

- **National Pollution Discharge Elimination System:** Established by the United States Environmental Protection Agency (EPA) in 1987 as an amendment to the Clean Water Act, the National Pollution Discharge Elimination System requires permits for discharges from municipal separate storm sewer systems to limit pollutant discharges into streams, rivers, and bays. The DEQ administers the program as the Virginia Pollutant Discharge Elimination System.

- **Chesapeake Bay Preservation Act:** Established by the DEQ in 1988 to improve water quality in the Chesapeake Bay. Localities are required to adopt programs to protect water quality in the Chesapeake Bay from excessive nutrients caused by stormwater runoff from impervious surfaces.

- **Virginia Stormwater Management Program:** These regulations were established by the DEQ and include requirements for erosion and sediment control during the construction process and for the installation of BMPs to address stormwater runoff post-construction.

- **MS4 Permits:** Issued by the DEQ and EPA, these regulatory permits require local governments to implement a variety of programs (ranging from detection and correction of illicit discharges to public outreach and education) to lessen the volume of pollutants carried by their municipal stormwater conveyance systems. These permits require consistency with the pollution budgets of applicable total maximum daily loads (TMDLs); and have been issued over time.

- **Local TMDL:** Established by the DEQ and EPA, these TMDLs set target reductions for pollutants (nutrients, sediment, bacteria, trash, and PCBs) in a number of waters in the region that have been designated as 'impaired'.

- **Chesapeake Bay TMDL:** Established by the EPA in December 2010, this historic and comprehensive "pollution diet" requires reductions in nutrient (nitrogen and phosphorus) and sediment pollution throughout the Chesapeake Bay watershed and for major tributaries such as the Potomac River.

To determine how the City will face its watershed challenges, the City completed a Watershed Management Plan in July 2005. The plan evaluated watershed conditions and included recommendations on how to improve watershed health. The City also completed an Accotink Creek Stream Stability Assessment and Prioritization Plan in October 2007 and a supplement report for Daniels Run in October 2008. These reports captured the scale and extent of stream bank erosion in the Accotink Creek watershed and included a prioritization plan for future restoration activities based upon observed conditions.

The City has been continually implementing the recommendations identified in these reports. For example, the City has made significant efforts to stabilize the stream banks to handle the urban stormwater runoff and flows by implementing stream restoration and stabilization improvements at numerous locations on Accotink Creek.

The City also participates in regional efforts by being a member of the Chesapeake Bay Policy Committee, which was established by the MWCOG Board of Directors. Elected officials and staff from MWCOG's member governments, and water and wastewater utilities comprise the committee's membership. The Committee tracks developments under the federal-state Chesapeake Bay Program for implications to local governments and recommends Bay-related policies to the Board.

On June 16, 2014, the Chesapeake Bay Watershed Agreement was signed. Signatories include representatives from the entire watershed, including the Commonwealth of Virginia, committing for the first time the Chesapeake Bay's headwater states to full partnership in the Chesapeake Bay Program. This plan for collaboration across the Bay's political boundaries establishes goals and outcomes for the restoration of the Bay, its tributaries and the lands that surround them.

Section 3. Inventory of Existing Water Resources

The City contains a wealth of natural resources which benefit both residents and businesses within the City. Of its natural resources, the City's water resources are among the most important from an economic, social, and ecological point of view, as well as the most sensitive. Land uses and development, air pollution, and human carelessness all contribute to the degradation of water resources.

The City has been able to protect many stream corridors through the expansion of its public park system and the preservation of vegetative buffers. However, as the population grew from only 1,946 in 1950 to 24,097 in 2017, development pressures resulted in a dramatic increase in the City's impervious acreage and a loss of natural vegetation. While past responses to the pressures of development have resulted in the implementation of erosion and sediment control measures, stormwater quantity measures to control flooding, and floodplain protection, only recently have the post-development effects of urbanization on water quality been fully appreciated and addressed.

With the adoption of the City's Chesapeake Bay Preservation regulation in 1990, the City committed itself to a comprehensive and integrated approach to water quality protection. In order to better plan for future development and redevelopment within the City and to identify ways to enhance the quality of life through the preservation and restoration of the City's water resources, it is important to understand the resources which exist within the City. The following section presents an inventory of the water resources within the City including watersheds and streams, water supplies, water supply protection, and groundwater.

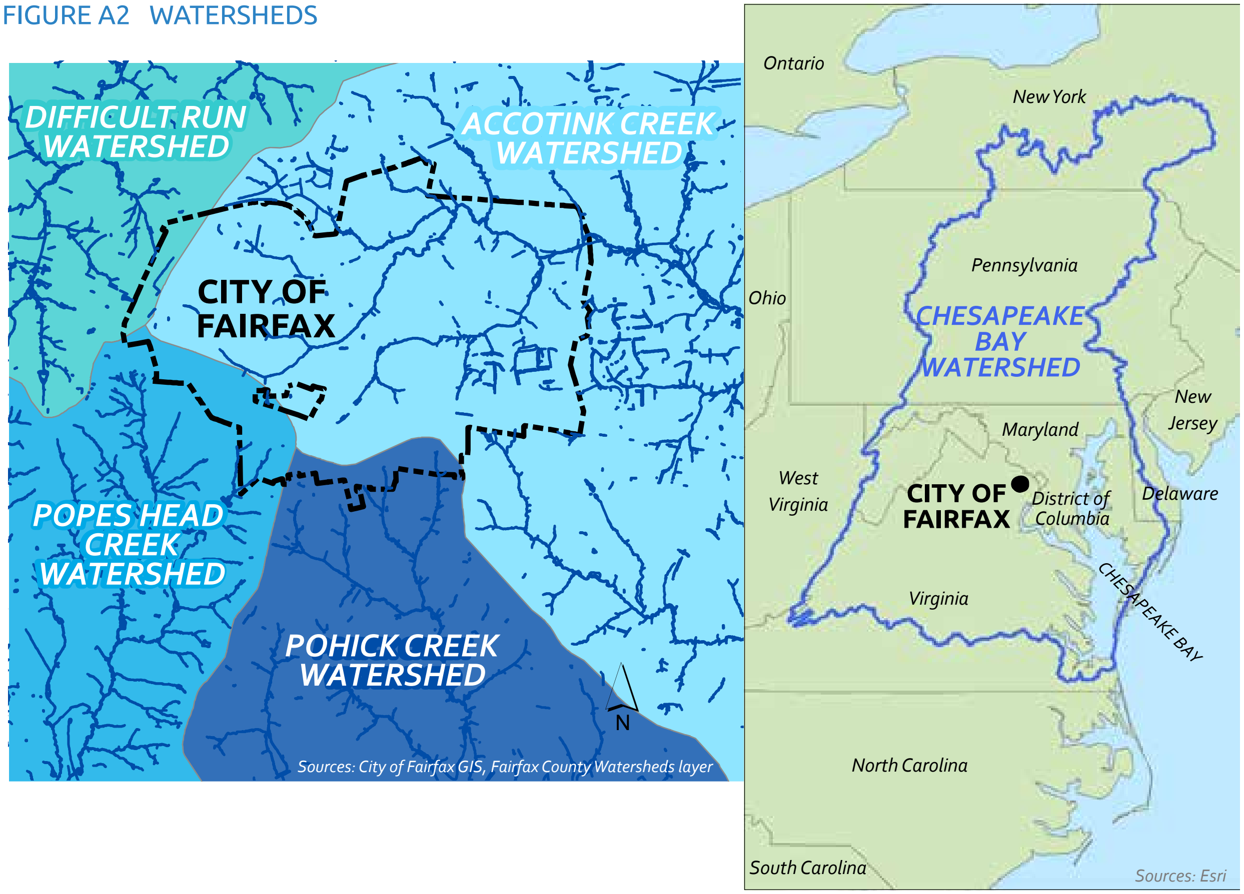
3.1. Streams and Watersheds

The City is located at the confluence of four major drainage divides and includes portions of the Accotink Creek, Pohick Creek, Popes Head Creek, and Difficult Run watersheds. As a unique consequence, practically all watercourses within the City (with the exception of a few tributaries to Accotink Creek in the northeastern portion of the City) originate within its boundaries and are not directly affected by activities from neighboring jurisdictions. This provides a considerable level of control to the City over the water quality of its streams. Major perennial streams which flow through the City include Accotink Creek (north and central forks) and Daniels Run (also known as the south fork of Accotink Creek), which drains to Accotink Creek within the City. Many smaller tributaries drain to Accotink Creek and Daniels Run in a roughly dendritic (branched) pattern which has been substantially modified by development and channelization.

The City contains the headwaters of Accotink Creek, which flows through southern Fairfax County and empties into Accotink Bay and Gunston Cove and then into the Potomac River. Within the City, Accotink Creek is primarily a gravelly bottomed fast flowing stream. However, in some wide, shallow, or slower moving areas, particularly in areas upstream of culverts, thick layers of sediments have been deposited over the gravel as a result of excessive erosion and both natural and man-made stream course blockage. Throughout much of the City, Accotink Creek is only five to ten feet wide and relatively shallow. However, the creek widens to ten to twenty-five feet and is several feet deep where it exits the northeastern edge of the City near the intersection of Pickett Road and Old Pickett Road in Thaiss Park.

According to the Division of Soil and Water Conservation's Hydrologic Units Map of Northern Virginia, the City lies primarily within the Accotink Creek watershed (HUC Code: 020700100402) which drains approximately 90% of the City. The Pohick Creek watershed (HUC Code: 020700100401), which drains the southeastern portion of the City covers approximately 3% of the City. The Difficult Run watershed (HUC Code: 02070081004), which drains the area west of Jermantown Road, covers approximately 3% of the City while the Popes Head Creek watershed (HUC Code: 020700100705), which drains the southwestern portion of the City, covers approximately 4% of the City. Popes Head Creek flows through south-central Fairfax County, bisecting the Town of Clifton, and eventually empties into the Occoquan Reservoir. This is significant due to the fact that the Occoquan serves as a primary drinking water supply for a large percentage Northern Virginians. Figure A2 presents a schematic of the City's major watersheds. Figure A3 presents a schematic of the major streams within the City.

FIGURE A2 WATERSHEDS



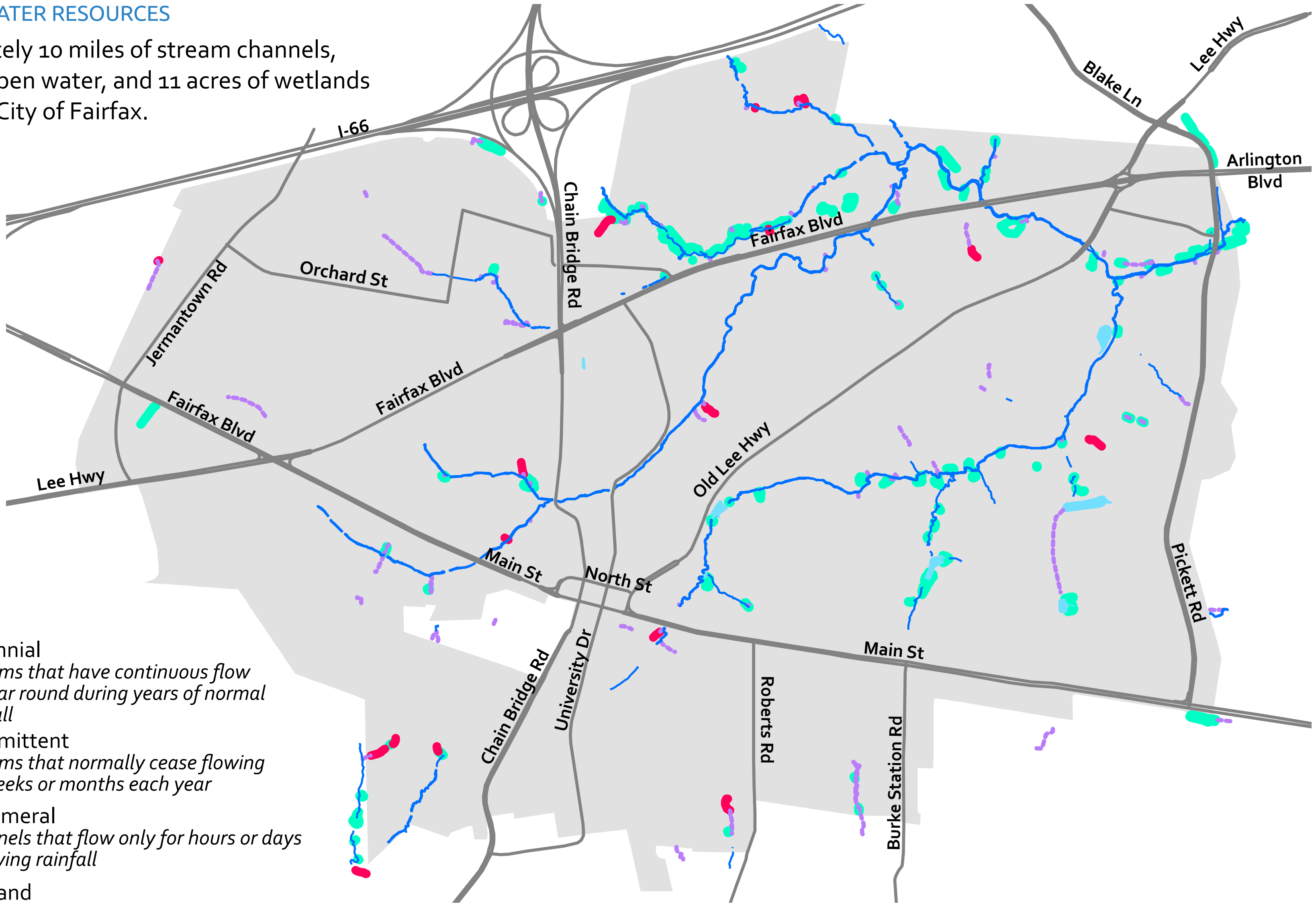
Sources: City of Fairfax GIS, Fairfax County Watersheds layer

Sources: Esri

Tributary streams within the City are subject to runoff from shopping centers, garages, parking lots, and other potentially high pollution areas. Storm drains feed the majority of the streams passing through the City and have been implicated as sources of pollution from improperly disposed petroleum products. Although many tributaries have been cleared to their banks, or have been modified to enhance drainage capacity, only a relatively small proportion of the City's perennial streams have actually been piped or channelized with concrete. The implications that the City's land uses, impervious cover, and human activities have on water quality are further detailed in Section 4.

FIGURE A3 WATER RESOURCES

Approximately 10 miles of stream channels, 9 acres of open water, and 11 acres of wetlands exist in the City of Fairfax.



— **Perennial**
Streams that have continuous flow all year round during years of normal rainfall

┈ **Intermittent**
Streams that normally cease flowing for weeks or months each year

▬ **Ephemeral**
Channels that flow only for hours or days following rainfall

▬ **Wetland**
Land area that is saturated with water, either permanently or seasonally

🟦 **Pond**
A body of standing water (either natural or artificial)

1 inch = 2,500 feet

Source: City of Fairfax GIS , Watershed Management Plan, July 2005 and the Accotink Creek Stream Stability Assessment and Prioritization Plan, 2008; Stream Assessment/Mapping and Chesapeake Bay Preservation Area Mapping Project, 2003

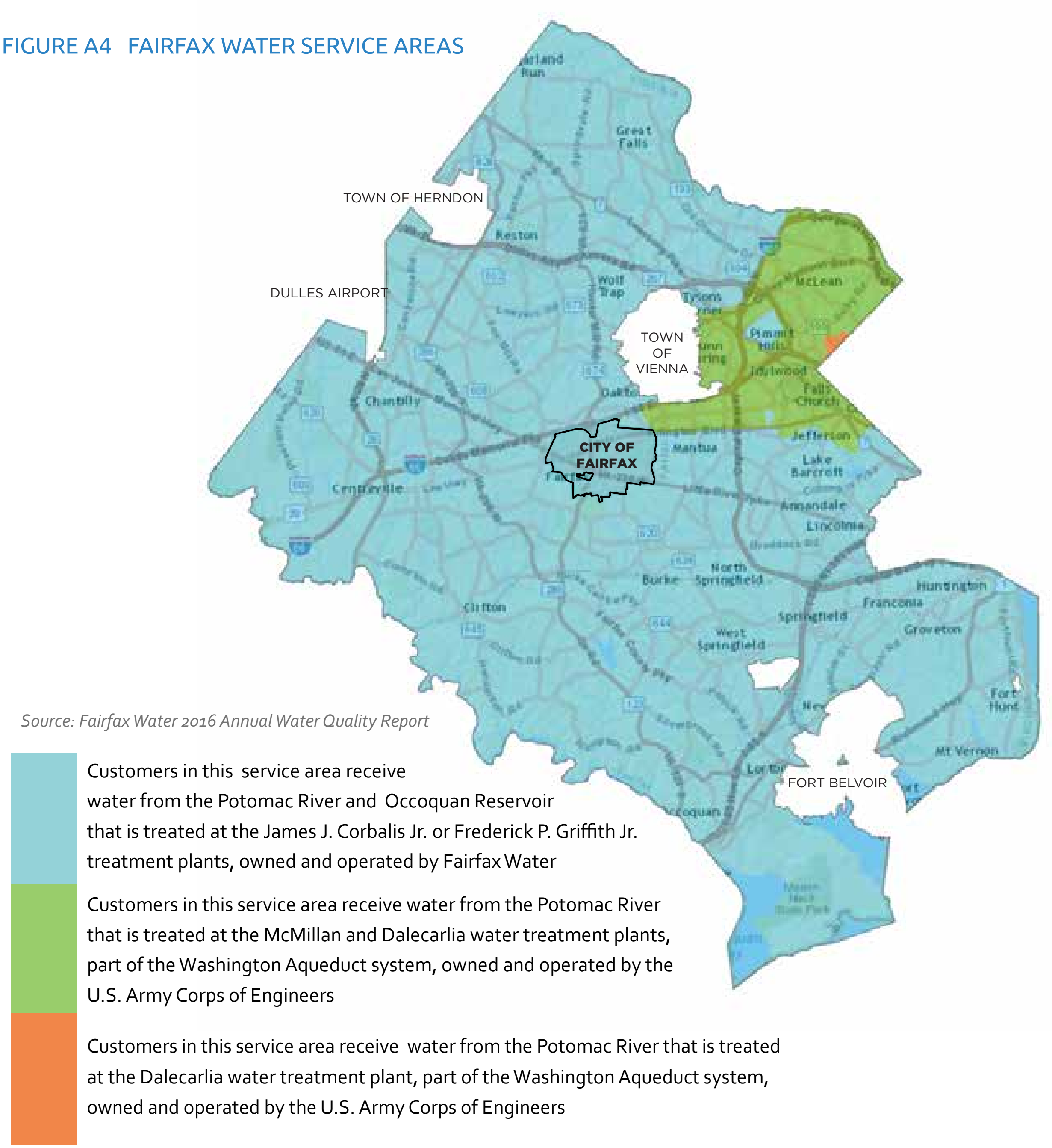
3.2. Water Supply

The City sold its water system to Fairfax Water on January 2, 2014. Since that sale, Fairfax Water has been providing water services to the City as presented on Figure A4.

Per the Fairfax Water Strategic Plan 2020, "Fairfax Water owns and operates the two largest water treatment facilities in Virginia with an average daily water production of 163 million gallons and combined maximum capacity of 376 million gallons per day. The James J. Corbalis Jr. treatment plant is at the northern tip of Fairfax County and the Frederick P. Griffith Jr. treatment plant is on the southern border of Fairfax County. Fairfax Water also purchases water from the McMillan and Dalecarlia treatment plants in Washington DC. They are part of the Washington Aqueduct, owned and operated by the U.S. Army Corps of Engineers. Fairfax Water draws raw water from two primary sources: the Potomac River and the Occoquan Reservoir, which is fed by the Occoquan River."

The principal source of potable water for the City is the Potomac River and Occoquan Reservoir that is treated at the James J. Corbalis Jr. or Frederick P. Griffith Jr. treatment plants. Fairfax Water continually works to reliably meet the needs of present and future

FIGURE A4 FAIRFAX WATER SERVICE AREAS



Source: *Fairfax Water 2016 Annual Water Quality Report*

🟦 Customers in this service area receive water from the Potomac River and Occoquan Reservoir that is treated at the James J. Corbalis Jr. or Frederick P. Griffith Jr. treatment plants, owned and operated by Fairfax Water

🟩 Customers in this service area receive water from the Potomac River that is treated at the McMillan and Dalecarlia water treatment plants, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers

🟧 Customers in this service area receive water from the Potomac River that is treated at the Dalecarlia water treatment plant, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers customers. The City will continue to work with Fairfax Water to ensure the City has access to safe and reliable drinking water.

In compliance with federal Safe Drinking Water Act, the Virginia Department of Health (VDH) conducts source-water assessments, which consist of figures of the evaluated watershed area, an inventory of known land-use activities, and documentation of known source-water contamination. The Potomac River and the Occoquan Reservoir were determined to be of high susceptibility to contamination.

In addition to protecting the City's water supply from pollution, water conservation practices help conserve and protect it from depletion. Conservation also reduces the amount of potable water that reaches the City's sanitary sewer system and reduces the potential that landscape irrigation and car washing will result in water pollution. The City should develop a program to encourage City residents on a more regular basis to practice water conservation, including the voluntary replacement of water-intensive (or leaky) fixtures in the home with new low consumption fixtures. Incorporation of water conservation into the school curriculum is also an effective approach and has been used elsewhere in Northern Virginia, including Arlington County.

3.3. Water Quality Monitoring

Protecting the quality of surface water resources is a concern for many urban jurisdictions. The removal of tree canopy cover, which serves to stabilize and cool stream temperatures, as well as increased imperviousness of surrounding areas, which increases the volume and velocity of stormwater runoff into local streams, have a generally negative effect on stream water quality. Water quality may be decreased as a result of pesticide and fertilizer-laden runoff from adjacent lawns or by runoff from parking lots which may contain nutrients, heavy metals, and hydrocarbons. Eroding stream banks contribute to urban water quality problems by choking local streams with sediment. Illegal dumping into storm sewers, trash and litter, animal and pet wastes, and leaking above ground and underground storage tanks also take their toll on urban water quality.

The City's established Water Quality Monitoring Program (WQMP) helps the City meet the requirements contained in Section I.B.2.e of the City's Municipal Separate Storm Sewer System (MS4) permit, and Item 9 in the City of Fairfax's DEQ approved TMDL Action Plans. It was designed to assist in assessing the effectiveness of all the City's Local TMDL Action Plans. Under the program, the City collects water quality samples which are analyzed for water quality parameters including Total Suspended Solids (TSS), Bacteria (E. coli), temperature, specific conductance, Dissolved Oxygen (DO), pH, turbidity, nitrate + nitrite, total phosphorus, and volatile suspended solids. Samples are collected twice a year from six representative MS4 outfalls located within the drainage sheds of the impaired reaches of Difficult Run, Accotink Creek, and Popes Head Creek.

The City utilizes the water quality sampling data to address multiple objectives including: screening for potential sources of the pollutants of concern discharging into the City's MS4; targeting locations within the MS4 permit area for implementation of BMPs; educating the public on the potential water quality impacts of their actions and behavior within the MS4 drainage area; and ultimately to aid in assessing the overall effectiveness of the Action Plan in reducing the discharge of the pollutants of concern from the City's MS4.

At the end of each MS4 permit reporting period, the City prepares annual Water Quality Monitoring Reports, which are included with the City's MS4 Annual Report. Once appropriate amounts of sampling data have been collected under the WQMP, the City will analyze the results to determine the next steps to take with the MS4 Permit Program and local TMDL Action Plans.

3.4. Groundwater Resources

While the City no longer relies on groundwater resources for its potable water supply, groundwater is nonetheless an important water resource. An investigation of the groundwater resources of the City is important because groundwater is intimately connected with the ecosystem as it provides the base flow to many rivers, streams, ponds, lakes, and wetlands. Groundwater is also an issue of regional importance due to its dynamic nature, as was shown when a leaking oil storage tank at the Fairfax Tank Farm formed a plume which spread from the eastern edge of the City into the Mantua neighborhood of Fairfax County. Because the City no longer relies on groundwater for its potable water supply, recent data on City-wide groundwater dynamics and quality is not available.

Section 4. Existing and Potential Sources of Water Pollution

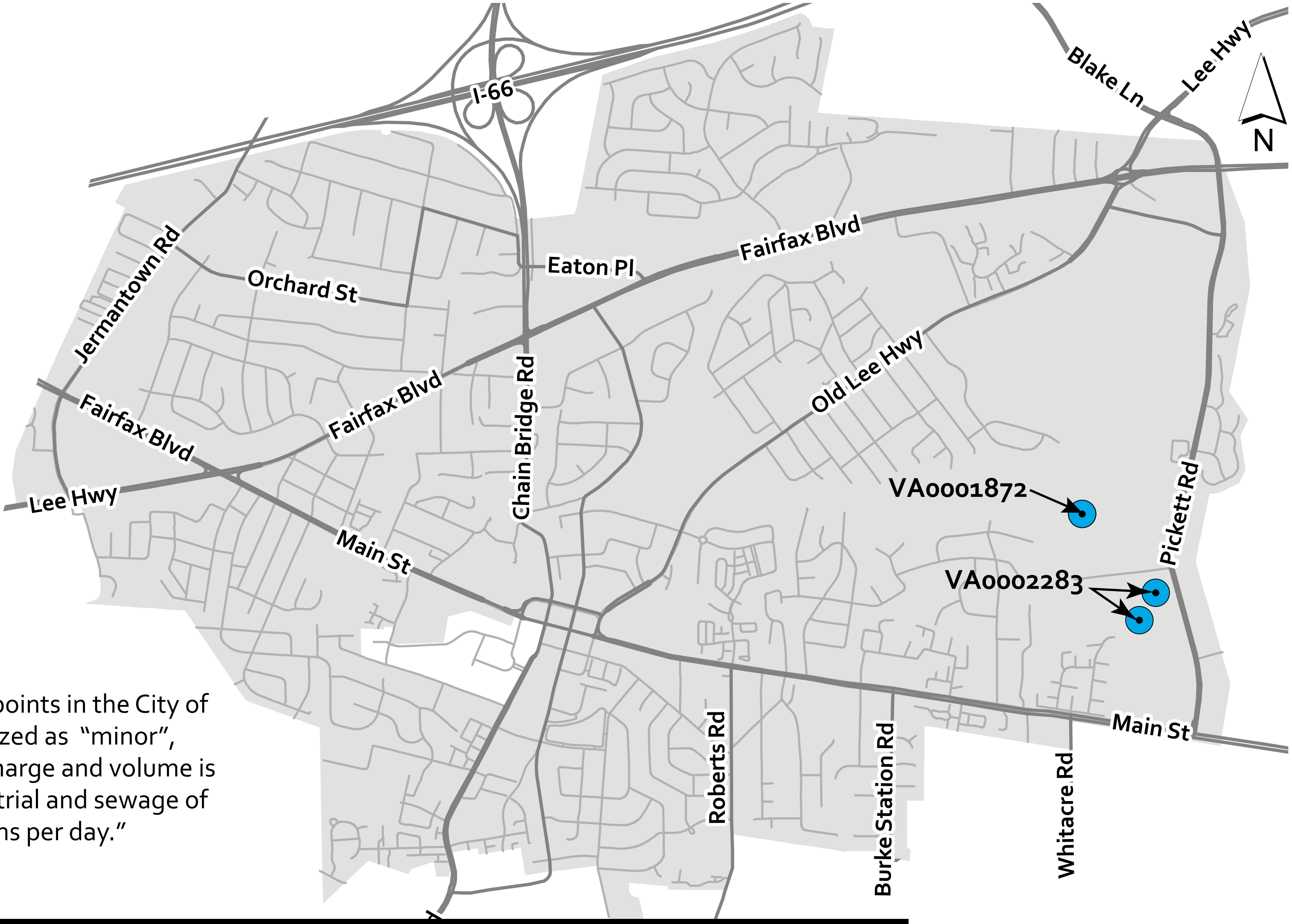
While some level of environmental pollution resulting from human activity may be inevitable, the cost of pollution and its effects on quality of life should not be ignored. Unmanaged pollution can result in surface and groundwater contamination, poor air quality, aesthetic degradation of the landscape, and the destruction of important ecological habitats, all of which detract from the City's basic character. The most cost-effective approach to the problem of pollution is to prevent it at its source. A number of tools are available to the City to aid in pollution prevention, including public education and awareness programs, water conservation, lawn care programs, and recycling efforts, to name only a few. The cost to the City once environmental damage is done includes not only short term clean-up costs, but long-term costs including decreased property values and loss of tax base. The following section describes the City's existing sources of pollution as well as potential sources of pollution which the City may face as it grows and develops.

4.1. Point Source Pollution

Point source pollution is pollution which can be attributed to a specific outfall and is therefore often the most easily recognizable and regulatable form of pollution. Industries and municipalities, under the federal Clean Water Act, National Pollution Discharge Elimination System, are required to report pollution discharges to water courses above a certain threshold, and to the maximum extent practicable, mitigate the effects of the pollution on the environment. The DEQ, Water Division, maintains records on these sources of pollution and is charged with ensuring that environmental regulations are enforced.

There are two National Pollution Discharge Elimination System discharge points located within the City (VA0001872 and VA0002283), both of which drain to tributaries of Accotink Creek (see Figure A5). The discharge points are associated with ongoing activities at the Fairfax Tank Farm Terminal Complex located on Colonial Avenue. The City's water quality is not affected by any upstream point source discharges from surrounding Fairfax County or other jurisdictions. There are currently no municipal discharge points on property owned by the City which fall under the National Pollution Discharge Elimination System

FIGURE A5 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) DISCHARGE POINTS



● VPDES Outfall Individual Permit

There are two discharge points in the City of Fairfax. Both are categorized as "minor", meaning the type of discharge and volume is "commercial, small industrial and sewage of less than 1.0 million gallons per day."

Permit Number	Facility	Address	Permit Expiration
VA0001872	Joint Basin Corporation - Fairfax Terminal Complex	9601 Colonial Ave	11/30/2020
VA0002283	Motiva Enterprises LLC - Fairfax	3800 Pickett Rd	7/25/2018

1 inch = 2,500 feet

Source: Virginia Department of Environmental Quality (DEQ) Virginia Environmental Geographic Systems (VEGIS), Accessed March 12, 2018

regulations. Stormwater runoff, which is considered nonpoint source pollution, unless piped, is further discussed under Section 4.2.

4.2. Nonpoint Source Pollution

Nonpoint source pollution is pollution which cannot be attributed to a single source but is the result of many diffuse sources. Considered singularly, each small source would not constitute a problem, but together these nonpoint sources constitute a substantial threat to water quality. Most commonly, nonpoint source pollution is caused by rainfall running off roadways, parking lots, roof tops, and other urban land uses. Urbanization increases the imperviousness of a land area, thereby increasing the amount and velocity of stormwater runoff delivered to nearby streams. Pollutants which would normally settle out or infiltrate through the soil are carried directly to local waterways. On a per acre basis, urban land use including residential development generally produces higher annual nonpoint source pollutant loadings of nutrients, heavy metals, and oxygen-depleting substances than do rural agricultural uses. Oil contamination, sediments, pesticides, metals, and other toxic substances can kill fish and destroy bottom life. In addition to transporting pollution, increased runoff also increases instream flow during and immediately after periods of precipitation. This results in increased soil erosion and the destruction of wildlife habitat.

The effect on local waterways is a general degradation of water quality and a phenomenon known as eutrophication. Eutrophic conditions, caused by excessive nutrients in the water, are characterized by low dissolved oxygen levels and high algal growth. The primary detrimental effect on water resources, particularly on large bodies of water such as the Potomac River and the Chesapeake Bay, is algal blooms, which block sunlight from aquatic life and deplete the dissolved oxygen content during decay. Eutrophication also destroys the recreational use of water resources and results in strong odor and undesirable taste.

Because the City lies within the Tidewater area of Virginia, which has a significant impact on the health of the Chesapeake Bay, controlling nonpoint source pollution is an important aspect of the City's environmental protection efforts. The Virginia Division of Soil and Water Conservation has designated the control of nonpoint source pollution as a high priority for all watersheds within the City.

Nonpoint source pollution from urban areas can be controlled by minimizing impervious areas from new development, reducing impervious areas through redevelopment, utilizing open space and preserving indigenous vegetation, restoring denuded vegetative stream buffers, and by employing the use of structural or nonstructural best management practices (BMPs), which operate by trapping stormwater runoff and detaining it until unwanted nutrients, sediment, and other harmful pollutants are allowed to settle out or be filtered through the underlying soil. The City's Chesapeake Bay Preservation regulation requires the achievement of certain performance standards for any development which takes place in designated Chesapeake Bay Preservation Areas.

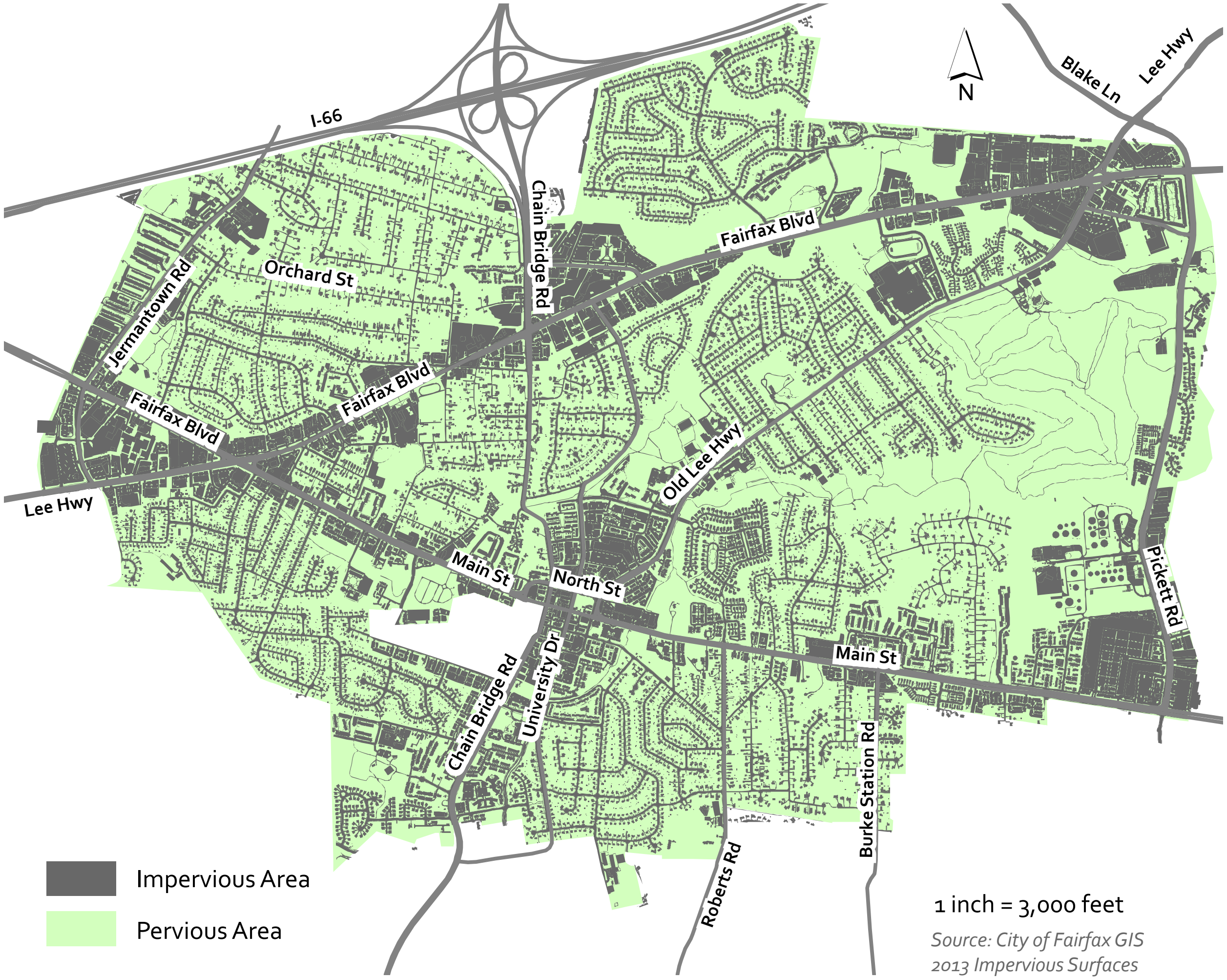
A useful analysis tool in nonpoint source pollution mitigation is to examine where highly impervious areas of the City are in relation to the City's water resources. In this way, various nonpoint source pollution control efforts, from educational programs to redevelopment, can be concentrated on those areas most likely to produce the greatest impact on the quality of City water. Since the City is largely built out, these figures are helpful when considering where to concentrate redevelopment or retrofit to improve water quality. It is also useful in deciding where and what types of public education programs may be beneficial. The City consists of approximately 42.7% impervious land areas and 57.3% pervious land areas (Figure A6).

The City's nonpoint source pollution control program also includes the City's Erosion and Sediment Control Ordinance. This ordinance requires that stormwater management facilities be installed during construction to help control increased stormwater runoff created by development thereby reducing the possibility of downstream flooding and erosion.

4.3. Streambank Erosion and Sedimentation

While streambank and land erosion is a natural process, land development has greatly accelerated this process. As large areas of once forested land have been replaced with impervious land cover, a greater quantity of stormwater is directly piped into local waterways at a much higher velocity. Signs of stormwater erosion include undercut streams and fallen banks, felled bushes and trees which once lined the banks, and exposed sewer and other utility pipes. Suspended sediments choke and muddy local waterways making them uninhabitable to local species of aquatic

FIGURE A6 PERVIOUS AND IMPERVIOUS AREAS



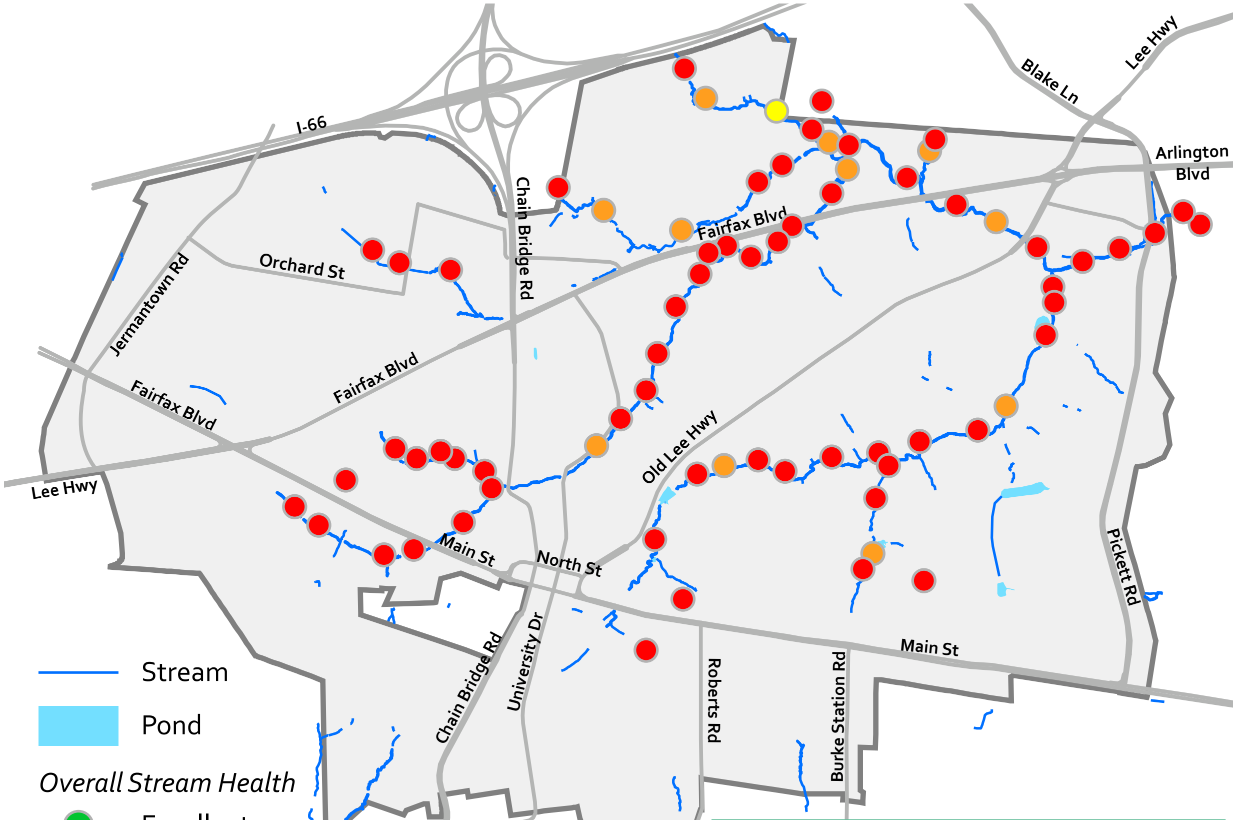
Source: City of Fairfax GIS
2013 Impervious Surfaces

life. In addition, nutrients and other pollutants attach themselves to sediment particles and contribute to eutrophic conditions in the Potomac River and the Chesapeake Bay. Eventually, suspended sediments are deposited in slower moving portions of the stream course, causing buildup, destruction of benthic life forms, and a decreased stream capacity for floodwaters, thus resulting in greater potential for further erosion and property damage.

Completed in 2005, the City's Watershed Management Plan found that overall stream health to be fair to poor in the majority of the City (Figure A7); erosion potential remains at a very high level; there is evidence of sediment deposition which can cause water quality degradation and have negative impacts on aquatic life; and down-cutting streams threaten City utilities and surrounding property.

A bank erosion hazard index (BEHI) assessment was conducted on Accotink Creek (Figure A8) and Daniels Run (Figure A9). The BEHI is a methodology used to assess and predict stream bank erosion potential. Based on the BEHI results, over 90% of studied stream reach length had at least a high potential for stream bank degradation and over half of all stream

FIGURE A7 OVERALL STREAM HEALTH



Overall Stream Health

● Excellent
● Good
● Fair
● Poor

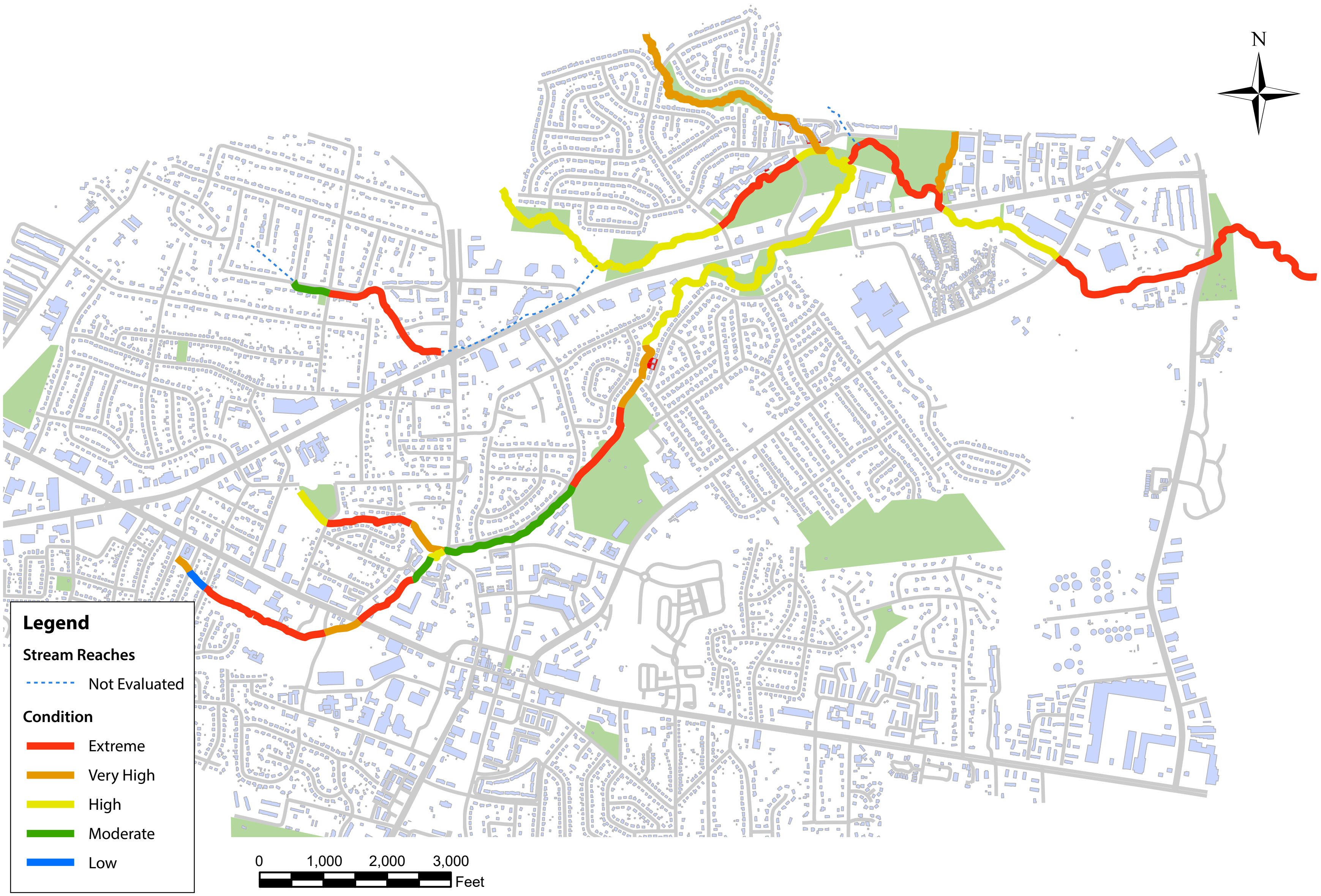
1 inch = 3,200 feet

Source: City of Fairfax GIS , Stream Assessment/Mapping and Chesapeake Bay Preservation Area Mapping Project, 2003; Accotink Creek Stream Stability Assessment and Prioritization Plan Supplemental Report for Daniels Run, 2008

Overall Stream Health Assessment Scores for City of Fairfax Streams

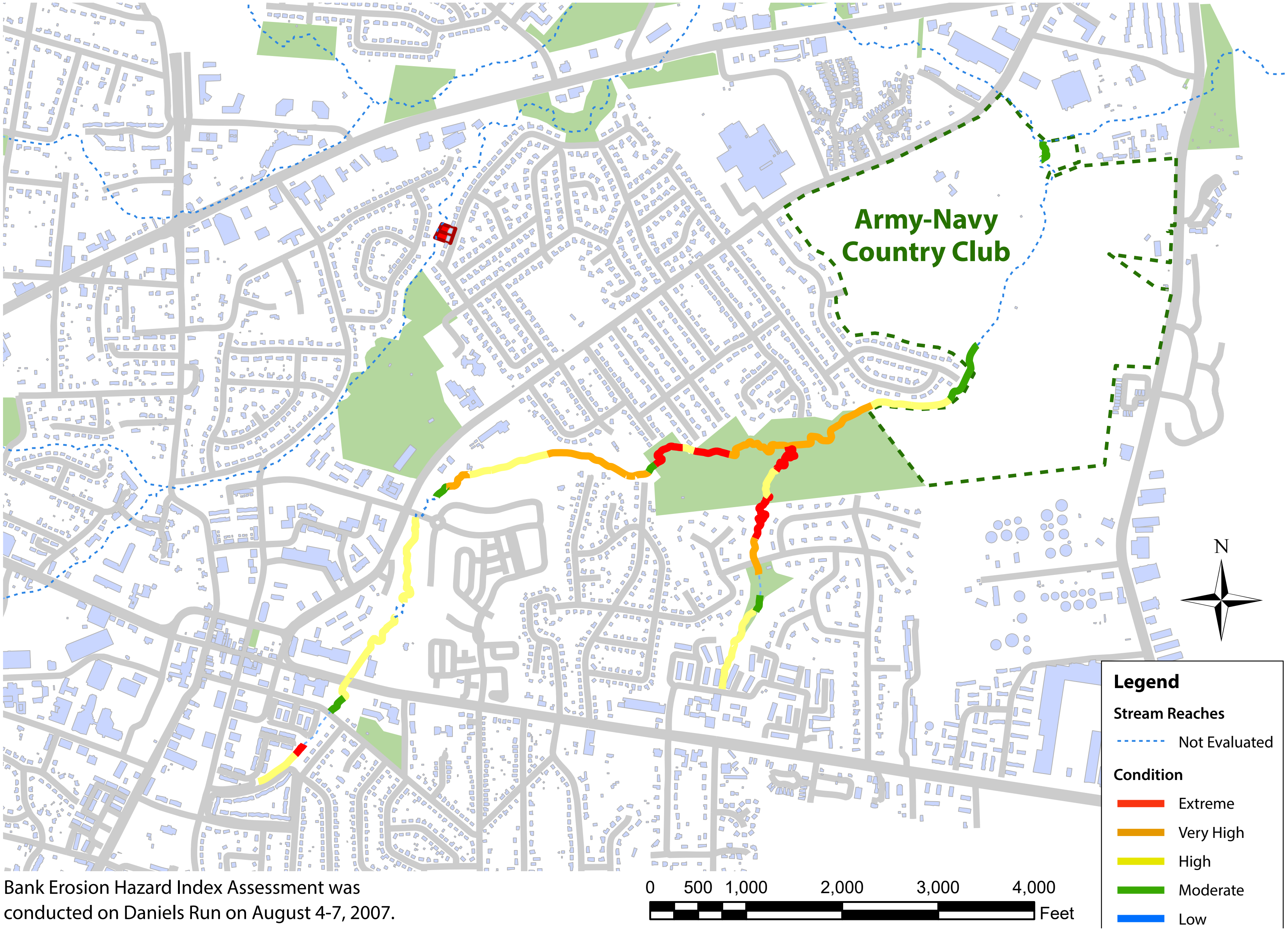
Assessment Score	*Stream Length (Feet)*	*% of Streams*
Excellent	0	0
Good	1,350	3
Fair	10,900	20
Poor	41,360	77

FIGURE A8 BANK EROSION HAZARD INDEX ASSESSMENT RESULTS FOR ACCOTINK CREEK



Bank Erosion Hazard Index Assessment was conducted on Accotink Creek on January 16-19, 2007.

FIGURE A9 BANK EROSION HAZARD INDEX ASSESSMENT RESULTS FOR DANIELS RUN



Bank Erosion Hazard Index Assessment was conducted on Daniels Run on August 4-7, 2007.

reaches were found to be at a very high or extreme risk for stream bank degradation. It is evident from these results that stream bank erosion is a major impact on the stability and overall health of the City's streams

4.4. Malfunctioning Water Quality BMPs

In response to the water quality requirements of the Chesapeake Bay Preservation Act, many development sites within the City will be called upon to establish water quality best management practices (BMPs). These BMPs are designed to detain polluted stormwater runoff until harmful pollutants have had a chance to settle, at which time the stormwater is slowly released. However, BMPs, like most other structural facilities, will deteriorate over time and require regular maintenance. Adequate maintenance will prolong the expected lifespan of a facility, therefore saving considerable money in the long-run. Further, while a properly functioning facility enhances downstream environments by mitigating the environmental impacts of land development, pollutant removal efficiencies will decline over time if regular maintenance is not performed.

Pursuant to the BMP Maintenance and Monitoring Agreement, Erosion and Sediment Control Plan, or Site Plan governing the facilities throughout the City, it is responsibility of the owner(s) to maintain the BMP facility in good working order. The maintenance agreement, Erosion and Sediment Control plan or Site Plan, provides the City of Fairfax with authority to conduct inspections of BMPs and Stormwater Management Facilities.

The City conducts a Citywide assessment to ensure all facilities are in working order on an annual basis. A representative from the City or an authorized consultant visits the property (or HOA property) to conduct an inspection of the stormwater control measures and BMPs in place to ensure proper maintenance is being performed in accordance with the suggested maintenance schedule for each facility.

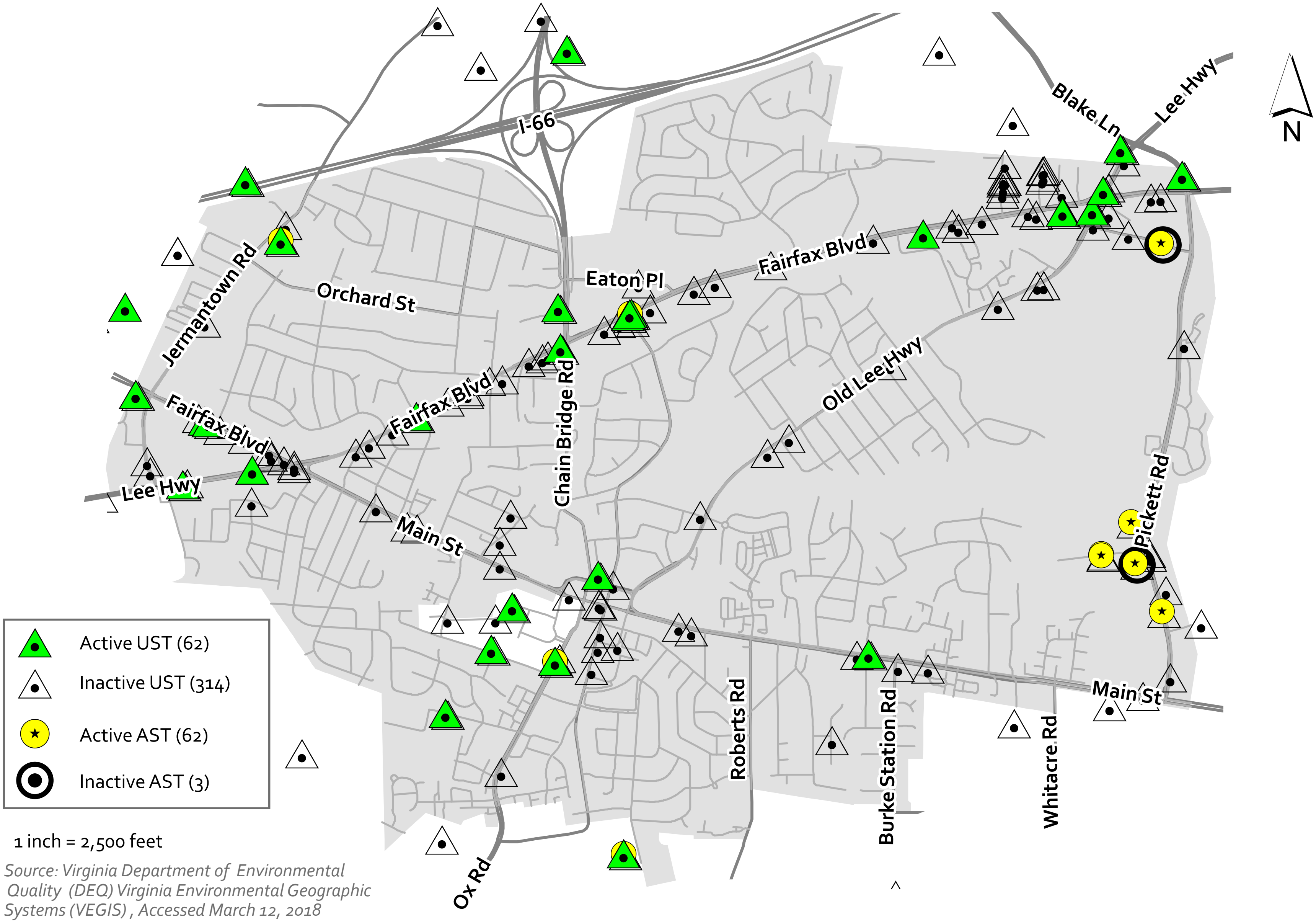
4.5. Underground Storage Tanks

The Virginia Department of Environmental Quality (DEQ), Water Division, is responsible for permitting and tracking underground storage tanks (USTs). Within the City limits, there are approximately 376 USTs of varying capacity at 118 street addresses. Of these USTs, only 62 are still active. The USTs are currently being used to store gasoline, diesel, used oil, heating oil, and other substances. Due to the fact that the City is a major commercial and transportation corridor, the City has a relatively high concentration of USTs for its land area. Underground storage tanks are concentrated along the City's commercial and industrial corridors including lower Pickett Road, Old Town Fairfax, the Kamp Washington area, the intersection of Chain Bridge Road and Fairfax Boulevard, and the Fairfax Circle area (Figure A8).

When properly maintained, underground storage tanks are safe, save space, and are a more aesthetically pleasing alternative than above ground storage tanks. However, leaking tanks are a major source of soil and groundwater contamination. Leaking USTs also have the potential to affect surface waters since many streams are fed by groundwater aquifers. Underground storage tanks often pose a greater threat than other sources of pollution because a leak or spill may not be detected until it has already created extensive damage. Further, there exist many underground storage tanks which were installed before more stringent regulations were applied. The location and condition of these tanks are often unknown.

Another important factor affecting the incidence of leaking tanks is the age of the tanks. Particularly in an area such as Fairfax where soils tend to be acid, older tanks are more likely to be subject to leakage than

FIGURE A10 LOCATION OF UNDERGROUND AND ABOVE GROUND STORAGE TANKS (USTS & ASTS)



Source: Virginia Department of Environmental Quality (DEQ) Virginia Environmental Geographic Systems (VEGIS), Accessed March 12, 2018

newer tanks designed to counter acid soil. Areas where age may be a factor are scattered throughout the City which should be a consideration when targeting areas for further investigation or for public/business education. Another factor to consider is the proximity of USTs to stream sites. Streams which are located near USTs of above average age may be at particular risk to contamination. Most of the commercial areas of the City directly impact on at least one perennial stream.

The City has and will continue to work with the owners of leaking underground storage tanks and the DEQ to ensure that any existing or future contamination is properly addressed and corrected.

4.6. Above Ground Storage Tanks

The Virginia State Water Control Board in 1998 adopted the regulation, 9 VAC 25-91-10 et seq., which consolidated three repealed regulations, that is, (i) Oil Discharge Contingency Plans and Administrative Fees, 9 VAC 25-90-10 et seq. (ii) Facility and Aboveground Storage Tank Registration Requirements, 9 VAC 25-130-10 et seq., and (iii) Aboveground Storage Tanks Pollution Prevention Requirements, 9 VAC 25-140-10 et seq.

The AST regulations were revised primarily to incorporate new performance standards for certain aboveground storage tanks (1 million gallon or more AST facilities) located in the City as mandated by the 2011 General Assembly (CH 884 of the 2011 Acts of Assembly). By July 1, 2021, the impacted facilities must satisfy specific requirements for strength testing, and release prevention barriers.

Individual tanks with a capacity of less than 660 gallons or multiple tanks with an aggregate capacity of less than 1,320 gallons are not currently regulated by the State or the federal government. Within the City limits, there are 65 regulated ASTs of varying capacity at 9 street addresses (Figure A 8). Of these ASTs, 62 are currently active. Most home fuel oil tanks are only 200 to 660 gallons. It is therefore the responsibility of the individual owner to ensure that leaks and spills do not occur. While individual household tanks do not pose a significant risk to the environment, the aggregate of tanks may pose a serious threat if small problems are not taken seriously. Releases from individual tanks may occur as a result of overfill or the tipping over of the tank. To reduce the risk of accidental spill, the homeowner or fuel company should inspect a tank before filling to ensure that it is sturdy and does not exhibit signs of corrosion. An owner should also have the capacity of the tank clearly marked on the tank and specifically indicate the filling cap location.

4.7. Illegal Dumping of Petroleum and Litter

The reported presence of petroleum products in City streams is a major water quality concern. Petroleum can severely damage the ecosystem by destroying plant life and killing aquatic lifeforms. While some petroleum products in the water may be attributable to leaking automobiles on nearby parking areas or leaking underground storage tanks, the most common source of petroleum is illegal dumping by do-it-yourself (DIY) automotive maintenance activities. A DIY is an individual who removes used oil from a motor vehicle, utility engine, or other piece of equipment that he or she operates as opposed to someone who takes the equipment to a lube shop or auto mechanic.

There is a risk that DIYers may pour the oil down a storm drain or throw it out in the trash, resulting in a release of oil into the environment. For areas such as the City of Fairfax, where streams are primarily fed by residential storm drains, only a few careless instances can result in a significant degradation in water quality.

The City provides and advertises for the collection of used oil and oil filters at its Property Yard Recycling Center, implements a storm drain marking program, and works with local civic organizations and volunteers to install storm drain markers, which state "Only rain down the storm drain." These markers are used to educate residents that the storm drain eventually empties to the Chesapeake Bay watershed and to prevent the amount of pollution that reaches local creeks and rivers. The City may wish to consider the implementation of a public education program which not only informs residents what to do with used oil, but also tells them what to do if he/she witnesses a neighbor pouring oil down a storm drain.

4.8. Pet and Animal Wastes

Fecal coliform is a pollutant of concern in the City of Fairfax. While there are several potential sources of fecal coliforms, the most likely source is from pet waste, and particularly dog waste, which is not disposed of properly. City paths and walkways along streams (or near storm drains) provide for public access and scenic areas to walk, run, and bicycle. However, these public areas are also used by some pet owners who leave pet wastes which are then easily transported by the next storm directly into the water course.

Fecal coliform can severely impact on the viability of the City's water resources. Control mechanisms include enforcing local animal waste control provisions, BMPs, and natural stream buffers. While BMPs and natural buffers are established as part of the City's overall Chesapeake Bay Program, the most effective manner of control is through public education and better enforcement of the City's animal waste control regulation. Better enforcement and education can reduce the levels of fecal coliforms and nutrients in stormwater runoff.

The City will continue to promote and maintain the dog waste disposal stations along the park trail. The City will also add brochure holders to each waste station that contain public education / outreach materials related to the water quality impacts of dog waste.

4.9. Air Quality as it Relates to Water Quality

Recent evidence suggests that atmospheric deposition, as a result of poor air quality, has a greater impact on water quality than previously assumed. According to the EPA, air sources contribute about one-third of the total nitrogen loads to the Chesapeake Bay by depositing onto the tidal surface waters of the Bay and Bay watershed. Direct deposition to the Bay's tidal surface waters is estimated to be six to eight percent of the total (air and non-air) nitrogen load delivered to the Bay. Nitrogen deposited onto the land surface of the Bay's watershed and subsequently transported to the Bay is approximately 25 to 28 percent of the total nitrogen load delivered to the Bay.

The Clean Air Act requires significant air quality planning and implementation at local, State, and regional levels. The Clean Air Act regulations and programs are expected to achieve significant decreases in air deposition of nitrogen by 2020.

Nitrogen is the primary pollutant of concern for brackish waterbodies such as the Chesapeake Bay. While very little atmospheric deposition will fall directly into the City's streams, pollutants deposited on impervious surfaces, which make up approximately 42.7% of the City's land area, will be washed into local waterways via curbs, gutters, and storm drains during storm events. This has the potential to contribute significantly to water quality problems within the City and beyond.

The City has already contributed to improving air quality through the establishment of pedestrian and bicycle trails in accordance with the Comprehensive Plan and by keeping CUE bus fares low to encourage ridership. The City also continues to work with George Mason University and Fairfax County to encourage alternative forms of transportation.

Many approaches to improving air quality from mobile source emissions will be implemented at the State and regional levels through transportation control measures such as increased public transportation and high occupancy vehicle lanes. Technological advances such as alternative fuel vehicles and tighter tailpipe standards are other measures whose widespread application is expected. The City continues to contribute to these regional efforts through participation on the Metropolitan Washington Council of Government's Air Quality Committee and The Climate, Energy and Environment Policy Committee (CEEPC).

The City seeks to continue its commitment to clean air by expanding its efforts and adopting policies to increase public awareness of the environmental problems associated with air pollution.

Section 5. Environmentally Sensitive Features and Constraints on Development

Land use planning that takes into account sensitive natural features and water resources has the dual benefit of enhancing quality of life through protecting the environment from degradation as well as protecting businesses and homeowners from potentially harmful environmental hazards. Although land use patterns within much of the City are well established, a few vacant parcels still have development potential. These properties deserve special consideration and should be developed in a manner which integrates the man-made and natural environments.

Most development within the City, however, will take place as a result of redevelopment. Development prior to the late 1980s took place without the benefit of many environmental protection constraints; therefore some existing development is not sensitive to the potential for water quality degradation that development brings. With recent concern raised over environmental degradation, and particularly the effects of increased stormwater runoff on the City's streams, the City has begun to reevaluate past practices. Good planning now prescribes that when possible, development should avoid sensitive environmental features. The following section provides an overview of the sensitive natural resources within the City of Fairfax and an analysis of how these resources are currently being managed and additional management options.

5.1. Floodplains

The relatively flat or low land area adjoining a river, stream, or water course which is subject to partial or complete inundation is known as a floodplain. Encroachment on floodplains, such as artificial fill, reduces a stream's flood-carrying capacity, increases flood heights, and increases flood hazards in areas beyond the encroachment itself. In addition, floodplain soils are often unsuitable for development due to high water table, shrink-swell potential, and highly permeable and hydric soil conditions. Floodplains also provide important habitat for a range of vegetative and animal species.

In 1974, the Federal Emergency Management Agency (FEMA) conducted a study of flooding potential and hazards in the City as part of its national flood insurance program. The plan was also meant to be used as a tool to assist local governments in effective floodplain management. As a result of the study, the City adopted a Floodplain regulation which establishes an overlay as part of the Zoning Ordinance in 1993. As discussed in Section 2.4, the current Floodplain regulation was adopted by the City in March, 2015. The overlay district severely limits the type and location of any development in the floodplain district. The floodplain district includes areas subject to inundation by waters of the one-hundred year flood. The one-hundred year floodplain within the City is associated with areas along the north and central forks of Accotink Creek, Daniels Run, and some major tributaries. A denuded or improperly developed floodplain can result in erosion and a significant reduction in water quality and reduce the effectiveness of the RPA. Figure A1 delineates the approximate extent of the one-hundred year floodplain (1 percent annual chance flood event) in the City.

5.2. Geologic and Sensitive Soil Conditions

It is difficult to overemphasize the importance of geology and soils characteristics when planning for new development and redevelopment. Development should be guided away from sensitive or unstable areas in order to protect the safety of residents, the structural soundness of buildings, and the water quality of Accotink Creek, Pohick Creek, Popes Head Creek, Difficult Run, and eventually the Potomac River and the Chesapeake Bay.

Common constraints placed by geologic conditions or sensitive soils include but are not limited to hydric conditions, shrink-swell potential, wetness, flooding potential, depth to bedrock, and high water table. Proper management of soils will help maintain clean water and will provide areas to recharge groundwater. However, poor management of soils will choke local waterways with silt and sediments and result in the erosion of valuable topsoil as well as spoil the landscape.

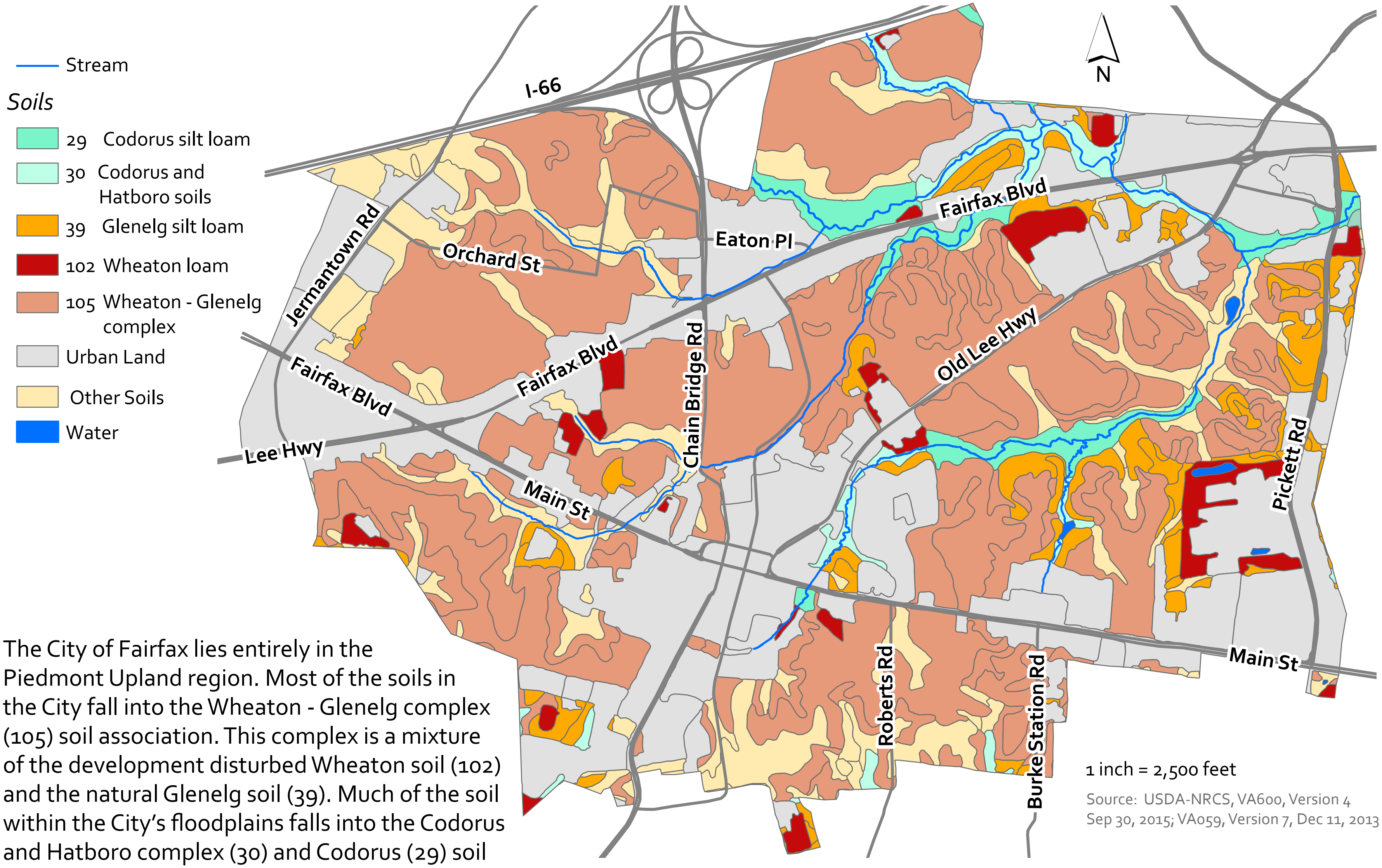
According to the USDA Natural Resources Conservation Service soil survey data (2015), most of the City falls into the Wheaton-Glenelg complex soil association. This complex is a mixture of the development disturbed Wheaton soil and the natural Glenelg soil which is well suited for development. Much of the soil within the City's floodplains falls into the Codorus and Hatboro complex and Codorus silt loam soil associations. These soils are poorly drained, subject to flooding, and not suitable for urban development. Figure A 9 presents the distribution of soil associations in the City.

The underlying geology of the City, along with climate, determines soils characteristics, which offers both constraints and opportunities for development. In order to promote soil conservation and protect water quality, as well as safeguard residents and businesses from potential hazards, including hazards such as radon, it is imperative that future development within the City takes geologic constraints into consideration. Most areas of the City are generally suitable for development purposes if a site is properly engineered. A discussion of the engineering capacity of underlying geology is inappropriate for this Plan due to its technical and detailed nature. Developers must refer to the City's Department of Public Works for more information and recommended resources.

5.3. Vegetative Buffers and Areas with Mature Tree Canopy Cover

To the maximum extent possible, the City wishes to maintain and enhance its urban tree cover. During development, provisions must be made to protect existing trees and replace trees when they are damaged or removed.

FIGURE A11 SOILS



1 inch = 2,500 feet

Source: USDA-NRCS, VA600, Version 4 Sep 30, 2015; VA059, Version 7, Dec 11, 2013

The City of Fairfax lies entirely in the Piedmont Upland region. Most of the soils in the City fall into the Wheaton - Glenelg complex (105) soil association. This complex is a mixture of the development disturbed Wheaton soil (102) and the natural Glenelg soil (39). Much of the soil within the City's floodplains falls into the Codorus and Hatboro complex (30) and Codorus (29) soil associations.

The City's Chesapeake Bay Preservation regulation also requires that a 100-foot buffer area along perennial streams be maintained or established during development or redevelopment in order to protect streams from the adverse effects of increased impervious surfaces and resultant runoff.

Since the City is almost entirely developed, few significant vegetation stands remain. Those that still exist deserve special protection so that their aesthetic and ecological benefits to the City are not lost. The largest City-owned vegetation stand is located at Daniels Run Park. The park covers 48 acres, most of which is in a natural state. It contains deciduous vegetation with an oak canopy and a beech understory. Other tree types found there are hickory, sycamore, tulip poplar, and holly. The 20-acre Van Dyck Park is partially wooded as is the 10-acre Ranger Road Park. The 20-acre Providence Park is largely wooded, and contains many of these same tree types.

The City's concern for trees is reflected in its Arbor Day tree planting activities and its designation every year starting in 1987 as a Tree City by the National Arbor Day Foundation.

5.4. Non-Tidal Wetlands

Wetlands provide a variety of environmental and socio-economical benefits and also serve as important fish and wildlife habitat. Wetlands enhance water quality by filtering water as it passes through, thereby reducing sediments, nutrients, and chemical and organic pollutants flowing to open water. Wetlands also assist with flood control and serve as groundwater discharge and recharge areas. The U.S. Fish and Wildlife Service estimates that up to 43% of the threatened and endangered species rely directly or indirectly on wetlands for their survival.

The City has a total of 11 acres of wetlands. Figure A2 presents the City's water resources, including wetland areas. There are 8.6 acres of woody wetlands, which consist of areas where forest or shrubland vegetation accounts for 25-100 percent of the cover and the soil or substrate is periodically saturated with or covered with water. The remaining 2.4 acres of wetlands are classified as emergent herbaceous wetlands, which consist of areas where perennial herbaceous vegetation accounts for 75-100 percent of the cover and the soil or substrate is periodically saturated with or covered with water.

Pertinent law protecting non-tidal wetlands includes Section 404 of the federal Clean Water Act, which addresses dredge and fill operations and is administered through the Army Corps of Engineers, and the Virginia Water Protection Permit Act. Other programs, such as those under the Virginia Endangered Species Act and various floodplain management regulations, also serve to protect non-tidal wetlands.

Under the City's Chesapeake Bay Preservation regulation, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow are designated as RPAs. All other non-tidal wetlands are protected as part of the RMA. Most wetlands within the City are located contiguous to a tributary stream and within the confines of the floodplain.

5.5. Topography

Poorly designed and constructed developments on steep slopes frequently result in substantial costs to the public, either for repairs or for protective measures to prevent further damage. Increased runoff and sedimentation from denuded hillsides require increased public expenditures for flood control and stormwater management. Further, improperly planned development of hillsides affects the equilibrium of vegetation, geology, slope, and soil.

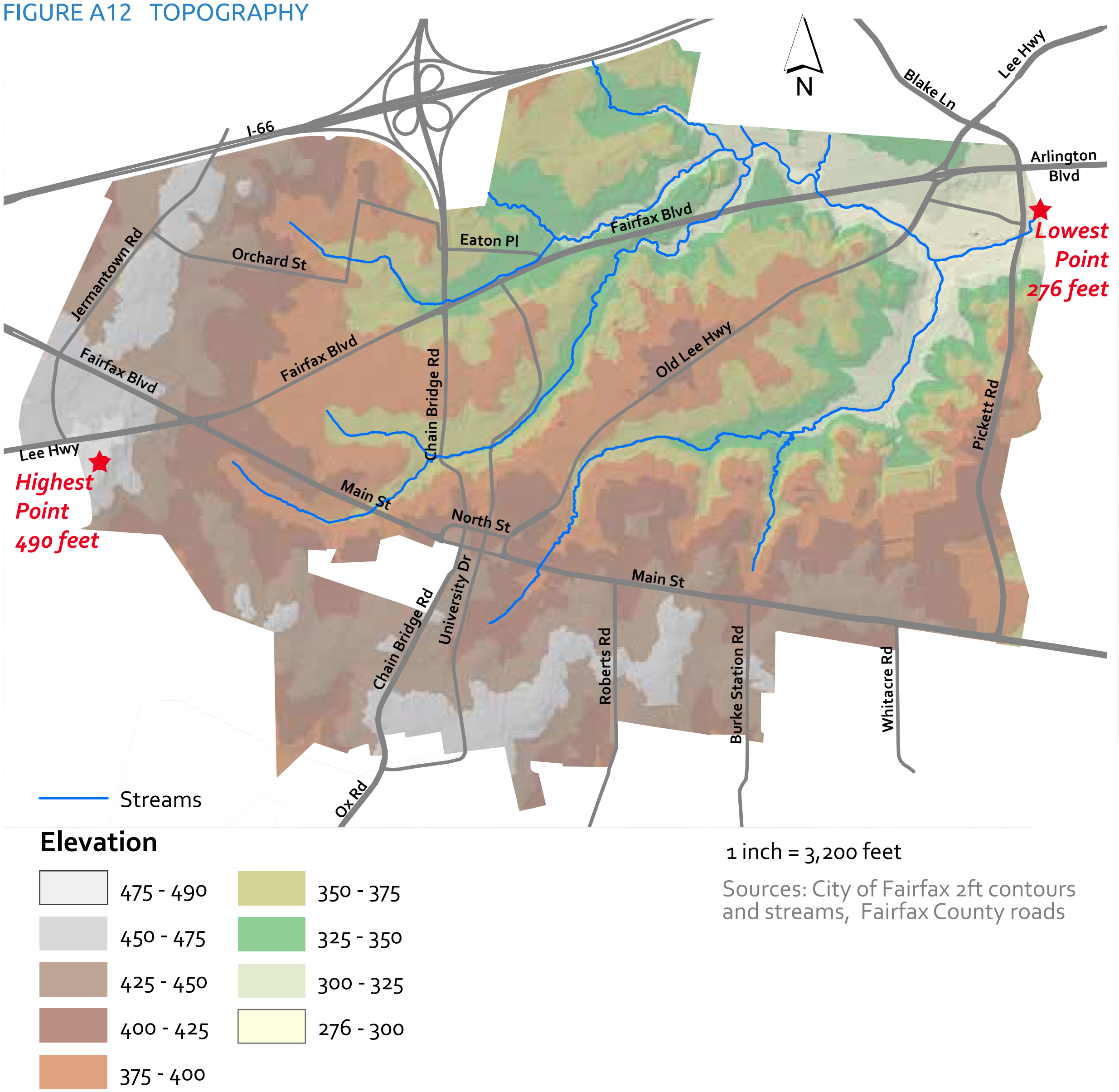
While the City is largely built out, any redevelopment within the City must take topographic constraints into consideration for the following reasons:

- Disturbance of hillsides can result in soil instability and increased erosion.
- Disturbances of hillside can increase runoff.
- Disturbance of hillsides can destroy a community's aesthetic resources.

Steep slopes in excess of 15 percent and slopes located along streams are susceptible to erosion; therefore, particular care must be taken when planning to develop a site with this characteristic. In some instances, special engineering may be required to stabilize slopes. Figure A10 presents a topographic map of the City.

Only a very small portion of the City's land area has slopes of over 15%. These areas are primarily associated with reaches of Accotink Creek and Daniels Run and lie within the City-owned Van Dyck and Daniels Run Parks and in the Army Navy Country Club Property.

FIGURE A12 TOPOGRAPHY



Sources: City of Fairfax 2ft contours and streams, Fairfax County roads

5.6. Groundwater Protection

The importance of groundwater protection was recognized by the Commonwealth of Virginia when the General Assembly enacted the Groundwater Act of 1973 and the Groundwater Management Act of 1992. The Groundwater Management Act reads "... unrestricted usage of groundwater is contributing and will contribute to pollution and shortage of groundwater, thereby jeopardizing the public welfare, safety, and health."

Although the City now receives a treated water supply from the Potomac River and Occoquan Reservoir, protection of the City's groundwater must be a consideration during development and redevelopment. When development occurs, it affects the natural balance of the groundwater flow. Increased imperviousness as a result of development reduces the potential for groundwater recharge and should be taken into consideration when designing a site plan. Generally, high topographic areas are groundwater recharge areas and impervious surface areas in defined groundwater recharge areas should be minimized. By providing recharge areas for stormwater, groundwater equilibrium can be maintained. If recharge areas are not taken into consideration, wells may go dry, base flow to streams is reduced, and wetlands may shrink.

Once contaminated, the usefulness of an aquifer as a resource may be limited or destroyed depending on the toxicity of the contamination and the effort, time, and money involved in clean-up. In most cases it is impractical and sometimes impossible to restore a contaminated aquifer to its original level of purity. Common sources of groundwater contamination include but are not limited to leaking underground storage tanks, antiquated sewer lines, septic systems situated on improper soils, and improperly capped wells. In addition, improperly maintained water quality best management practices may present a groundwater threat. In the City, the most common source of groundwater contamination on record with the DEQ, Water Division, is from petroleum leaks and spills. More stringent underground tank standards enacted in recent years should reduce the level of contamination from these sources.

Recommendations

The City recognizes the importance of the Chesapeake Bay as an economic and social resource and is committed to its protection through the implementation of the Chesapeake Bay Preservation Area Designation and Management Regulations. The following provides the background information and analysis necessary for the City to arrive at informed and proactive policies and goals which address the issue of water quality protection in City streams and the Chesapeake Bay.

These recommendations approach water quality protection from the viewpoint that environmental regulations and healthy economic development are not mutually exclusive, but rather that both may be accomplished simultaneously, and that the result is a better quality of life for all City residents.

Recommendation 1: Protect the quality of the City's surface water resources, the Potomac Estuary, and the Chesapeake Bay from the avoidable impacts of land development.

- **Enforce the provisions of the City's Chesapeake Bay Preservation regulation.**

  The Chesapeake Bay Preservation regulation is the City's primary water quality protection tool. The regulation is designed to protect the overall quality of the City's water resources and the health of the Chesapeake Bay as it relates to impacts from existing and new development.

- **Enforce the City's Erosion and Sediment Control Ordinance.**

  The Erosion and Sediment Control Ordinance serves to protect City streams during site development by minimizing erosion and sedimentation.

- **Maintain strong City oversight of private BMP maintenance programs.**

  Review the effectiveness of the City's current BMP maintenance program and determine whether stronger inspection and maintenance measures are warranted. Make recommendations for how to improve the City's maintenance program, if necessary.

- **Continue implementation of stream restoration and improvement efforts.**

  Continue efforts to stabilize the physical conditions and restore the stream habitat to enable the natural restoration of the streams' biological integrity. The City should continue to prioritize the worst stream reaches, and coordinate improvements with overall watershed strategy.

- **Ensure that development avoids where possible, or minimizes, disturbance of sensitive environmental features, including problem soils.**

  Improper development of sensitive environmental features, and particularly soils, may result not only in structural damage to buildings, but also to a loss of soil to erosion, a decrease in local water quality, and the loss of important habitat and aesthetic resources.

- **Improve the City's ability to identify sensitive environmental features.**

  Readily available information concerning environmentally sensitive features will help the City to better plan for and avoid negative environmental impacts resulting from land disturbing activities. The development and redevelopment processes often result in the generation of substantial information on environmental features. During the development process, the City should take the opportunity to collect information, generated from site plans, reports, etc. on sensitive environmental areas, and particularly on soils.

  The City should arrange a protocol to compile this information to create an overlay map identifying environmentally sensitive features within the City including steep slopes, soils, wetlands, floodplains, undisturbed natural areas, and features that are unique or integral to the City's character.

Recommendation 2: Ensure the adequacy of the City's future stormwater management system while emphasizing the need to protect tributary streams and water quality.

- **Continue to conduct and implement watershed management plans to allow for a holistic approach to local water resource protection.**

  The City should continue to conduct watershed studies and planning to evaluate conditions and identify actions that would improve watershed health. The City should also continue to assess the effectiveness of capital projects and examine long-term trends in the City's water quality.

- **Minimize exposure of the City's natural floodplains to new development.**

  Natural floodplains are essential to the conveyance of stormwater in that they provide extra holding capacity during storms. Floodplains left in their natural condition form a filter for polluted runoff from surrounding land uses. Protection of the City's floodplain is achieved through enforcement of the City's Floodplain regulation.

- **Encourage the use of shared or regional stormwater control measures during development and redevelopment.**

  The implementation of a large number of small, site-specific stormwater quality/quantity management facilities increases maintenance costs and consumes valuable land. The City should seek to facilitate cooperative agreements among developers to encourage the establishment of shared or regional stormwater management facilities.

- **Continue to allocate dedicated and sustainable funding to guarantee the stormwater program's continued viability.**

  Provide the funds necessary to meet MS4 permit and TMDL requirements and to address other stormwater infrastructure needs, such as ensuring adequate capacity for flood control, replacing aging infrastructure, and performing preventive maintenance on all City stormwater management facilities.

  Reassess the Stormwater Fund on a regular basis to ensure that revenue generated adequately covers program needs.

Recommendation 3: Reduce existing sources and prevent potential sources of point and nonpoint source pollution resulting from residential, commercial, and industrial activities within the City.

- **Continue implementation of the City's Water Quality Monitoring Program.**

  At the end of each MS4 permit reporting period, the City prepares annual Water Quality Monitoring Reports, which are included with the City's MS4 Annual Report. Once appropriate amounts of sampling data have been collected under the Water Quality Monitoring Program, the City will analyze the results to determine the next steps (e.g. potentially pinpoint areas that could to be targeted for pollution prevention or source control programs).

- **Encourage the use of green stormwater infrastructure and low impact design on private and public property.**

  Enhance zoning regulations and support initiatives that encourage the use of green stormwater infrastructure and low impact design on private and public property. Consider providing incentives for developers to incorporate green infrastructure and low impact design in their plans.

- **Continue efforts to improve the region's air quality.**

  The City should continue to pursue measures to improve air quality through support of pedestrian access and mass transportation. Since air quality is a regional concern, continued participation on the Metropolitan Washington Air Quality Committee is necessary to achieve many air quality goals.

- **Improve the City's ability to respond to the potential hazards of leaking underground and above ground storage tanks and pipelines.**

  The City should continue to work closely with the DEQ, Water Division, to monitor and enforce clean-up of underground storage tanks.

  The City should support programs to educate residents on how to safely manage above ground storage tanks and should promote policies aimed at providing opportunities to reduce reliance on above ground storage tanks through conversion to alternative forms of fuel.

- **Expand public education and outreach programs.**

  Continue to develop and implement education and outreach programs to improve awareness and encourage the community to protect and improve the quality of area waters. The City will include appropriate public involvement and participation to meet MS4 requirements and satisfy other watershed objectives.

- **Continue to improve upon the City's strong recycling program.**

  A well-publicized recycling program will decrease illegal disposal of materials, and particularly of oil, into the City's storm sewer system.

Recommendation 4: Protect the quality of the City's potable water supply and safeguard the City's groundwater resources against contamination that may adversely affect the ecosystem.

- **Work with the Department of Environmental Quality's Water Division to protect groundwater from contamination from underground storage tanks.**

  The primary threat to the City's groundwater is contamination from underground storage tanks. While the City has no legal authority to regulate underground storage tanks, it should work closely with the DEQ's Water Division to identify areas with high contamination potential and to quickly remediate areas where contamination has already occurred.

B Transportation Practices and Policy

The Multimodal Transportation Chapter of the Comprehensive Plan references several innovative practices that can help the City achieve its goals in improving transportation infrastructure and services. Many of these practices require further study before the proper implementation strategy can be determined. This includes analyses of new advancements in technology as they occur, as well as policy priorities for the City.

Specific actions in the Comprehensive Plan refer to the Transportation Practices and Policy Appendix for more information. This appendix provides detailed information which should be used as an initial step in implementing the recommendations of the Comprehensive Plan that reference these innovative practices.

Contents

Section 1. Best Practices/Future Trends

BIKESHARE

The central jurisdictions of the region (Washington, D.C. and Arlington County) launched Capital Bikeshare (CaBi) in 2010 with 400 bikes and 50 stations. Since that time the system has expanded to 2,500 bikes at over 400 stations across a number of additional jurisdictions in the region, including Fairfax County. City stakeholders and partners expressed an interest in bringing bikeshare to the City, either expanding CaBi or establishing an independent system serving local travel needs.

CARSHARING

Carsharing has been operational in the region for over a decade. Zipcar is the largest operator in the region at the present time, offering round-trip as well as point-to-point or one-way rental options. Round-trip carsharing requires that users return the vehicle to the same designated spot when finished with their rental period.

One-way carshare allows a user to take the car from one point within a service area and leave it at a different legal parking space within the area. Car2go operates within the District of Columbia and Arlington County offering one-way service. The fee for round-trip carshare is typically on an hourly or daily basis while the cost for a one-way carshare trip is typically calculated on a minute and distance basis.

Peer-to-peer carsharing closely mimics the round-trip carshare service provided by carshare companies but is instead provided by individual auto owners listing their personal car available for use to other "members" via an electronic platform.

Photo Credit (all photos): Nelson\Nygaard

RIDESOURCING

Taxis are a traditional form of ridesourcing where a passenger calls into a central dispatch or hails a clearly branded vehicle to provide a one-way ride. Smartphones and app-based services have enabled the rise of Transportation Network Companies (TNCs) such as Uber and Lyft. TNCs use an online mobile platform to connect passengers to drivers, who use their personal vehicles. With less oversight and regulation, the cost of a TNC ride at present is generally lower than that of a taxi trip.

AGGREGATED RIDE SOURCING

The platforms used for ridesourcing have become progressively more sophisticated. Several TNCs now offer riders the option of sharing a ride with others traveling along their general line of travel to further lower trip costs, concurrently increasing travel efficiency with higher vehicle occupancy within the same roadway space. Uber offers "Uber Pool" while Lyft supports "Lyft Line." These aggregated ridesourcing options pool riders, thus lowering travel costs.

Image Credit: Lyft

Photo Credit: Nelson\Nygaard

PRE-ARRANGED OR DYNAMIC CARPOOLING

Multiple web or smartphone based applications facilitate carpooling both on a regular basis (pre-arranged) or sporadically. Apps like Zimride and RideAmigos match drivers with passengers along a pre-determined route and planned time of day. If desired, some applications permit drivers and riders to be matched across complementary characteristics such as employment or student status, gender, age, and even music preferences. Dynamic carpooling is the electronic equivalent of the traditional Washington region practice of "slugging" where drivers can spontaneously be matched with a rider in real time along their intended route. Under both models, drivers and passengers share costs and take advantage of high occupancy lanes by capitalizing on empty seats in their vehicles.

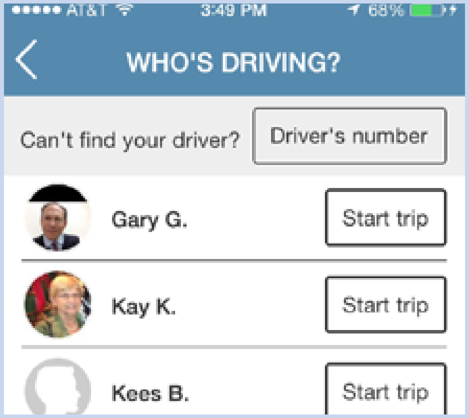
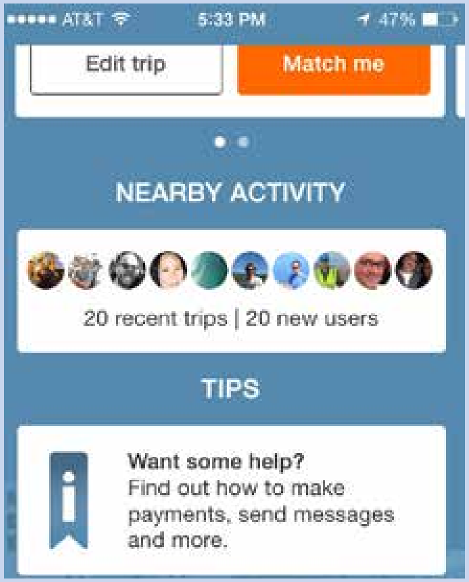


Image Credit: ZimRide



Want some help?
Find out how to make payments, send messages and more.

Image Credit: ZimRide

MICROTRANSIT

Microtransit follows the same principle as aggregated ride sourcing, but generally with more added efficiency. It uses online services to dynamically generate on-demand routes along an efficient travel path. Rather than picking each passenger up at their door of origin, passengers may need to walk a short distance to a collector road and arrive at the designated location shortly before the vehicle arrives. By reducing the amount of circling and the dwell time waiting for passengers, microtransit reduces travel time and delay, increases vehicle efficiency, and reduces individual travel costs.

Image Credit: Via

Image Credit: Via

CONNECTED + AUTONOMOUS VEHICLES

Vehicular technology continues to progress at a rapid rate, and the time is soon coming when human drivers may no longer be needed to operate passenger vehicles. Connected vehicles have the ability to communicate with one another and with the surrounding infrastructure, provided the infrastructure has "smart" capabilities. Autonomous Vehicles can operate independently by observing cues in the built environment. Future vehicles will likely utilize the capabilities of both connected and autonomous technologies. Such vehicles may have the ability to dramatically increase the efficiency and capacity of existing roadway facilities and decrease the need to operate and store (e.g. park) private vehicles. Thus, autonomous vehicles, with the right policy guidance, may reduce vehicle ownership, reduce the need for long-term parking, and increase accessibility and mobility across the economic spectrum.

Image Credit: Bosch

Photo Credit: EasyMile

Section 2. Smart Infrastructure + Real-Time Information

Improved technology in both Intelligent Transportation Systems (ITS) and better information for users provides great promise for more efficiency in mobility systems and greater predictability and control for users. The following system elements have been implemented elsewhere in the greater Washington D.C. area. Some elements may be appropriate for managing traffic and improving trip making in the City.

SMART SIGNALS

These signals are connected to a central control center and may be adjusted either according to a programmed algorithm or by central control. Smart signals can adjust to changing demands in the roadway network and may be used to facilitate the advancement of transit vehicles (transit signal priority or TSP), passively detect pedestrians and bicyclists, and/or meter traffic volumes to even out the flow of traffic and mitigate congestion, improving the operation and efficiency of multiple modes.

DYNAMIC SIGNAGE

Dynamic signage includes variable message boards and variable speed signs such as those found along I-66, and also includes urban signage indicating the location and availability of parking spaces. These signs provide real-time information to motorists without requiring the use of a smartphone or app. Dynamic signage at transit stops can indicate the next bus anticipated to arrive and the time of arrival. Dynamic signage can help to better distribute traffic loads, minimize unnecessary circling of vehicles searching for parking, and increase user confidence with regard to transit. Dynamic signage can reduce traffic volumes by 10% to 30%, particularly in central business areas.

DEMAND-RESPONSIVE PRICING

Applying basic economic principles to encourage more efficient use of the transportation system, demand-responsive pricing uses real time and/or historical information on parking or travel demand to optimize supply and demand. When demand is high and available supply (or capacity) is low, mobility services are priced higher. During periods of low demand, the cost of travel or parking is correspondingly low. Such strategies reduce congestion, increase efficiency in the system, and ensure the availability of reliable capacity (for a price) for essential trips. When coupled with lower cost, higher capacity travel options such as transit, ridesharing/ride sourcing, and safe non-motorized options, demand-responsive pricing can appropriately meet travel needs without necessarily resulting in higher overall transportation costs to users.

TRAVEL PLANNING APPS

The best travel planning apps integrate a number of different travel options including driving (in a personal vehicle or ridesource vehicle), transit, bicycle, walking and/or a combination of multiple modes. These apps provide users with real time information on both travel time and cost, including the probability of travel delay, while some also provide information on personal and environmental health benefits or impacts of various choices. Smart applications link directly to other applications to help the traveler arrange the mode of travel they selected, such as hailing an Uber or reserving a carshare vehicle. Travel apps and mobility service payment systems are evolving such that in the near future, travelers will also be able to pay for their transit trip, bikeshare use, or high-occupancy tolls all from a single point of transaction. This should help to even the playing field of awareness and convenience across all travel options.

Section 3. Transportation Demand Management

Cities have traditionally approached transportation from the supply side of the equation, and this is a critical role for cities to play. Cities have significant control over how much vehicle capacity, bicycle accommodation, or parking is provided in their communities. But some economists advise cities that they must also consider and manage the demand side of the equation as well. Managing demand requires a more nuanced approach, but is, in many ways, more effective than supply-side management alone.

Transportation Demand Management (TDM) provides information and incentives to allow travelers to make the best choices for themselves. It is also a way for jurisdictions to make the most of transportation systems they have already built and optimize investments they have made by encouraging the use of excess capacity before adding additional capacity. Excess capacity exists in the form of empty seats on buses or in cars. It exists on sidewalks, trails, and bike lanes. It exists in the 20 hours of the day outside of the peak hours of traffic congestion. And it exists in the parking spaces that remain empty when the vehicle they are intended for is at another destination.

TDM serves cities, but it also brings benefit to users as well – often saving money on transportation costs, improving reliability and predictability in their travel, giving greater freedom of choice, lowering stress, and perhaps even improving personal health.

Section 4. Pedestrian Accessibility Policy

Best Practice

The best pedestrian-supportive infrastructure policies are applicable to the entire community and focus on safety and connectivity. Best practice policies are compliant with all applicable state and federal regulations, including the Americans with Disabilities Act (ADA) ,and establish a methodology for prioritization and performance evaluation.

The following are potential policies to improve pedestrian-supportive infrastructure.

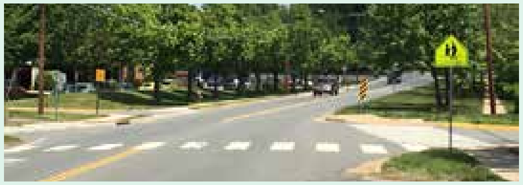
- Prioritize walking connections to transit stops, schools and parks. Implement first-last mile walking connection to transit and prioritize access to transit stops.
- Support projects that improve pedestrian connectivity.
- Improve pedestrian access to destination areas in the City.
- Improve pedestrian routes that connect students to schools.
- Maintain a sidewalk inventory.
- Establish a methodology for project prioritization and performance evaluation.
- Improve pedestrian access across major roadways that create barriers to connecting the network. Comply with all state and federal regulations including the ADA.

Policy Recommendation

The following is a draft recommended policy for the City.

In order to promote safety and provide for the most vulnerable users in the transportation system – children, seniors, and persons with disabilities – it is the policy objective of the City that all streets have at least one sidewalk on both new and existing streets of all street types.

- All new streets should provide sidewalks on both sides of the street irrespective of anticipated traffic volumes, unless explicitly designed as a shared street.
- Sidewalks should be considered with every major maintenance, restoration, or street reconstruction project. Sidewalks may be constructed independent of other street projects.
- Streets with moderate to high vehicle volumes (5,000 or more vehicles per day) should have sidewalks on both sides of the street. Moderate volume streets should have a continuous sidewalk at least along one side. Local streets (less than 5,000 vehicles per day) should have a sidewalk on at least one side of the street, unless specifically designed as a shared street.
- Sidewalks should be a minimum of five feet wide.
- The sidewalk network should be continuous and connected. Curb ramps must be provided at street crossings.



Section 5. Complete Streets Policy

Best Practice

A Complete Streets policy should include a community's vision for transportation, account for many types of uses and community needs, and allow for flexible implementation.

The following are potential policies by which to implement Complete Streets principles:

- Approach every planned transportation improvement as an opportunity to apply the Complete Streets principles.
- Apply Complete Streets policies to all public and private projects and developments that impact the right-of-way.
- Allow Complete Streets elements to be phased over time.
- Identify regional, state, and federal funding for Complete Streets improvements.
- Collaborate and coordinate between departments and transportation agencies to efficiently utilize funds.
- Identify performance measures and report progress annually.
- Maintain an inventory of bicycle and pedestrian infrastructure to identify gaps.
- Identify and prioritize projects based on infrastructure needs.
- Train staff and decision makers on the technical content and best practices of Complete Streets principles.

Policy Recommendation

The City will approach all planned transportation improvements and all development projects with right-of-way impacts as opportunities to advance the value and objective of safety and Complete Streets. It shall be the policy of the city that:

- Every street safely accommodate all users.
- Any street subject to major maintenance, rehabilitation or reconstruction will provide safe accommodation for all users of all abilities.
- The means of accommodation will be appropriate to the street context and developed in consultation with community stakeholders.
- The city will pursue regional, state, and federal funding opportunities to support Complete Streets improvements.
- City agencies and departments will collaborate and coordinate with one another and adjacent jurisdictions to apply Complete Streets principles and provide continuous networks.
- Progress on Complete Streets will be measured in concert with the adopted measures of the City of Fairfax Multimodal Transportation Plan.

Index

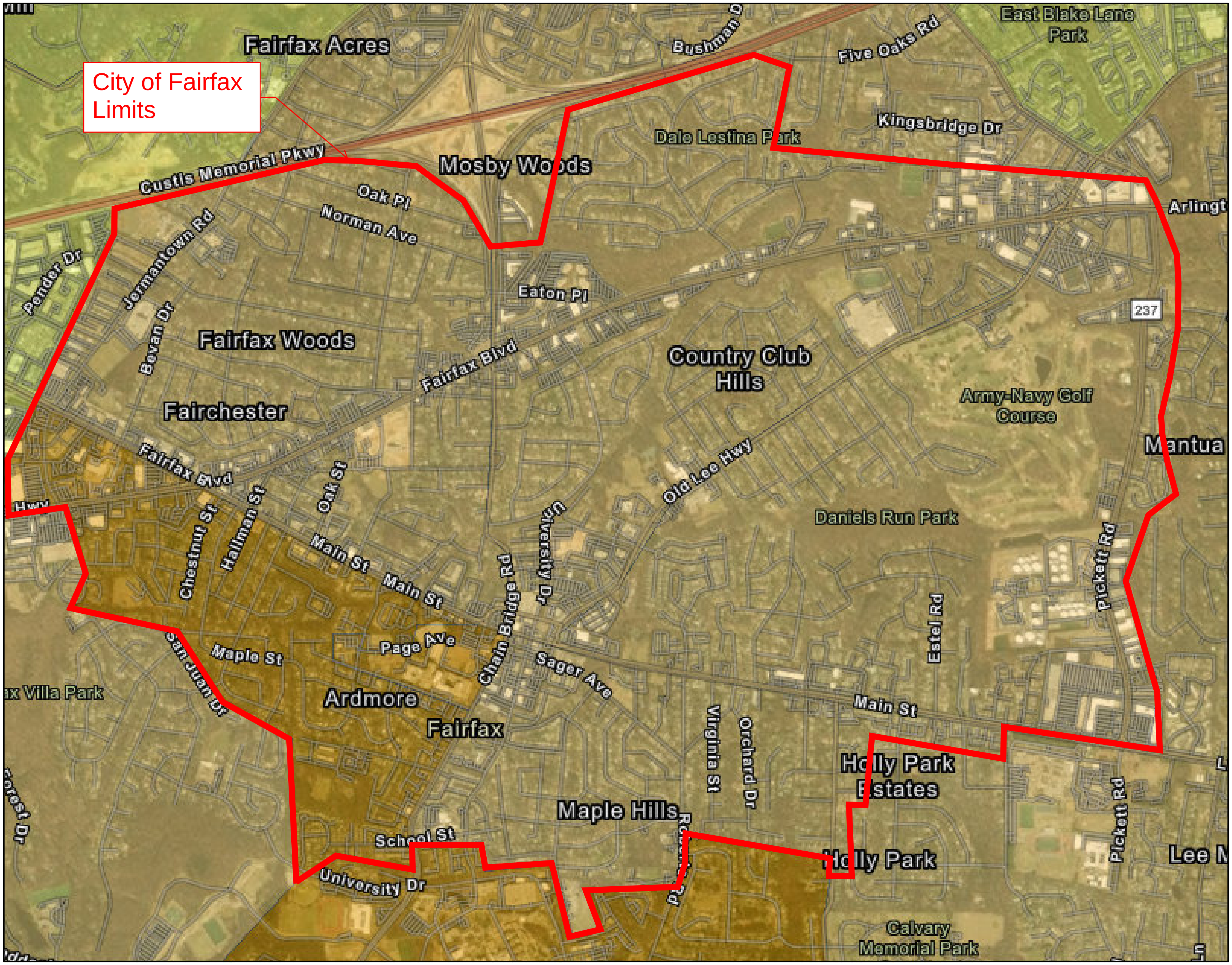
Attachment 3.5

City of Fairfax – ADAPT VA Vulnerability Map

City of Fairfax

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- 🟨 Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟥 High Social Vulnerability
- 🟪 Very High Social Vulnerability
- ⊠ Not inlcuded in the analysis



March 2, 2022

1:36,112

0 0.2 0.4 0.8 mi

0 0.35 0.7 1.4 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPTVA

Narrative:

The ADAPTVA website includes 5 separate regions within the City limits. After discussions with DCR staff, a composite Social Vulnerability Index Score was utilized. Values utilized have been included below:

Census Tract Names: 3001, 3002, 3003, 3004, 3005
Vulnerability Index Score: -0.4, -0.5, -0.9, 0.5, -0.3

Composite Social Vulnerability Score: -0.32

Attachment 3.6

United States Census Median Household Income Virginia & City of Fairfax

QuickFacts

Fairfax city, Virginia; Virginia

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

Income & Poverty	Fairfax city, Virginia	Virginia
Total accommodation and food services sales, 2012 ($1,000) (c)	**218,575**	**17,795,901**
PEOPLE		
Income & Poverty		
Median household income (in 2019 dollars), 2015-2019	$116,979	$74,222
Per capita income in past 12 months (in 2019 dollars), 2015-2019	$50,029	$39,278
Persons in poverty, percent	⚠ 9.3%	⚠ 9.2%

About datasets used in this table

Value Notes

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info ⓘ icon to th
row in TABLE view to learn about sampling error.

The vintage year (e.g., V2021) refers to the final year of the series (2020 thru 2021). Different vintage years of estimates are not comparable.

Fact Notes

(a)	Includes persons reporting only one race
(c)	Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
(b)	Hispanics may be of any race, so also are included in applicable race categories

Value Flags

-	Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper in open ended distribution.
F	Fewer than 25 firms
D	Suppressed to avoid disclosure of confidential information
N	Data for this geographic area cannot be displayed because the number of sample cases is too small.
FN	Footnote on this item in place of data
X	Not applicable
S	Suppressed; does not meet publication standards
NA	Not available
Z	Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and P
Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

City of Fairfax - CFPF Grant Application Submittals

1 message

Eto, Satoshi <Satoshi.Eto@fairfaxva.gov> Fri, Apr 8, 2022 at 7:04 AM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Good morning,

Please follow this link to download two CFPF grant applications from the City of Fairfax.
https://www.dropbox.com/sh/blwg7yl4zo41nbr/AAAx6EfEfrMXYagxxz5REBgMa?dl=0

The applications could not be attached directly to this email due to file size (50MB/ea).

Please feel free to reach out to me if you have any questions. Thank you!

FAIRFAX CITY

Satoshi Eto, CPM

Public Works Program Manager

703 385 7810 **O**• 703 273 6073 **Direct**

TTY:711

www.fairfaxva.gov

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Henrico County

Category of Grant Being Applied for (check one):

____ **Capacity Building/Planning**

X **Project**

____ **Study**

NFIP/DCR Community Identification Number (CID) 510077

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bentley Chan, PE
Director, Henrico DPU

Signature of Authorized Official: ____

Mailing Address (1): 4305 E. Parham Road

Mailing Address (2): ____

City: Henrico **State:** Virginia **Zip:** 23228

Telephone Number: (804) 501-4280 **Cell Phone Number:** (____) N/A

Email Address: cha70@henrico.us

Contact Person (If different from authorized official): Allen Shue, PE, CFM Associate, Greeley and Hansen

Mailing Address (1): 9020 Stony Point Parkway

Mailing Address (2): Suite 475

City: Richmond **State:** VA **Zip:** 23235

Telephone Number: (804) 204-2425 **Cell Phone Number:** (914) 275-2554

Email Address: ashue@greeley-hansen.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☒ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☒ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

- ☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.
- ☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.
- ☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.
- ☐ Studies and Data Collection of Statewide and Regional Significance.
- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- ☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

- ☐ Floodplain Staff Capacity.
- ☐ Resilience Plan Development
  - ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  - ☐ Resource assessments, planning, strategies and development.
    - o Policy management and/or development.
    - o Stakeholder engagement and strategies.

Title of Work: "Gambles Mill Pump Station - Flood Mitigation and Resiliency Implementation"

Location of Project (Include Maps): Tuckahoe Neighborhood, Henrico County

NFIP Community Identification Number (CID#):(See appendix F 510077

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

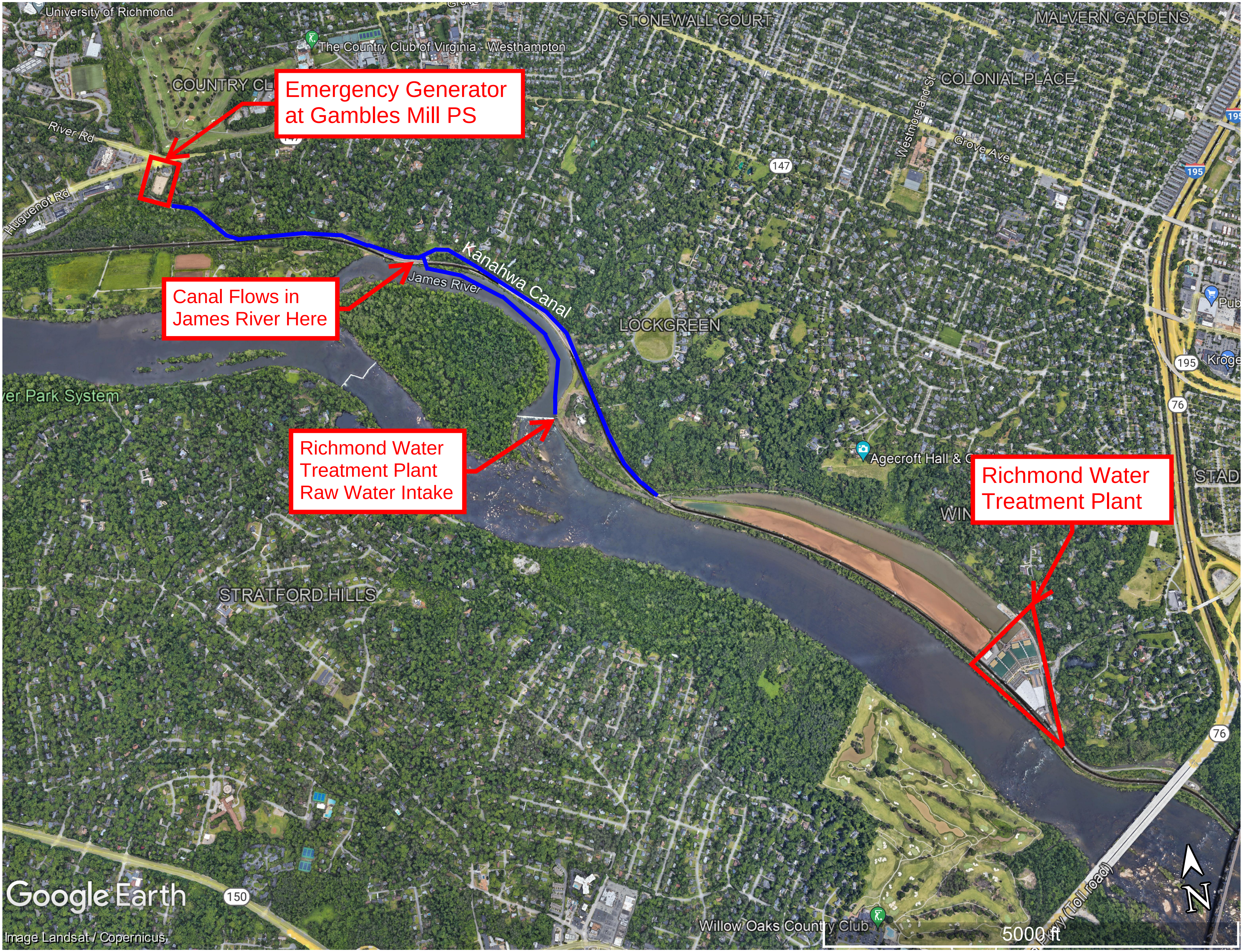
Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Effective: Zone X
Preliminary: Zone AE

Flood Insurance Rate Map Number(s) (If Applicable): Effective: 51087C0110C
Preliminary: 51087C0108D

Total Cost of Project: Phase A: $1,740,488

Total Amount Requested $870,244


Emergency Generator at Gambles Mill PS
Canal Flows in James River Here
Richmond Water Treatment Plant Raw Water Intake
Richmond Water Treatment Plant
Kanahwa Canal
James River
University of Richmond
The Country Club of Virginia - Westhampton
COUNTRY CL
River Rd
Huguenot Rd
STONEWALL COURT
MALVERN GARDENS
COLONIAL PLACE
Westmoreland St
Grove Ave
147
195
76
150
LOCKGREEN
STRATFORD HILLS
ver Park System
Agecroft Hall & G
WIN
STAD
Pub
Kroge
Willow Oaks Country Club
y (Toll road)
Google Earth
Image Landsat / Copernicus
5000 ft
N

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFEs) shown on this map apply only landward of 0.0′ North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Tranverse Mercator (UTM) zone 18. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the Henrico County GIS Department.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

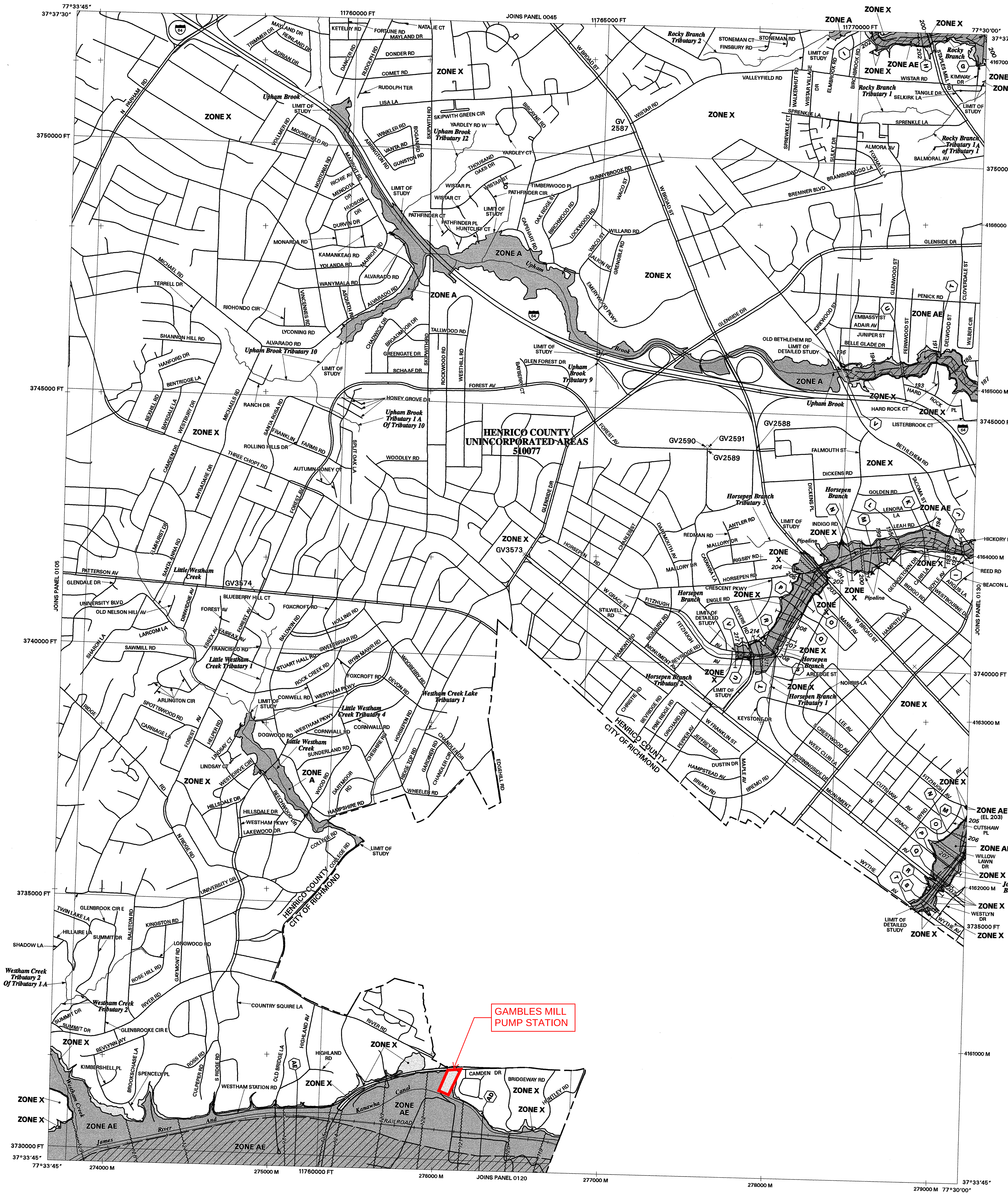
An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for infomation on all related products available from FEMA;

Phone: 800-358-9616
FAX: 800-358-9620
http://msc.fema.gov/

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

CURRENT EFFECTIVE FIRM



GAMBLES MILL PUMP STATION

LEGEND

▩	SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

▨	FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▩	OTHER FLOOD AREAS
ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐	OTHER AREAS
ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧	COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
▧	OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———————	Floodplain boundary
—— —— ——	Floodway boundary
— —— —	Zone D boundary
•••••••••••••••	CBRS and OPA boundary
▩ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
~~513~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

⟨A⟩———⟨A⟩	Cross Section Line
(23)- - - - - -(23)	Transect Line
97°07′30″, 32°22′30″	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000M	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel).
● M1.5	River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
DECEMBER 18, 2007

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

N

MAP SCALE 1″ = 1000′

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0110C

FIRM
FLOOD INSURANCE RATE MAP
HENRICO COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 110 OF 300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HENRICO COUNTY, UNINCORPORATED AREAS	510077	0110	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51087C0110C

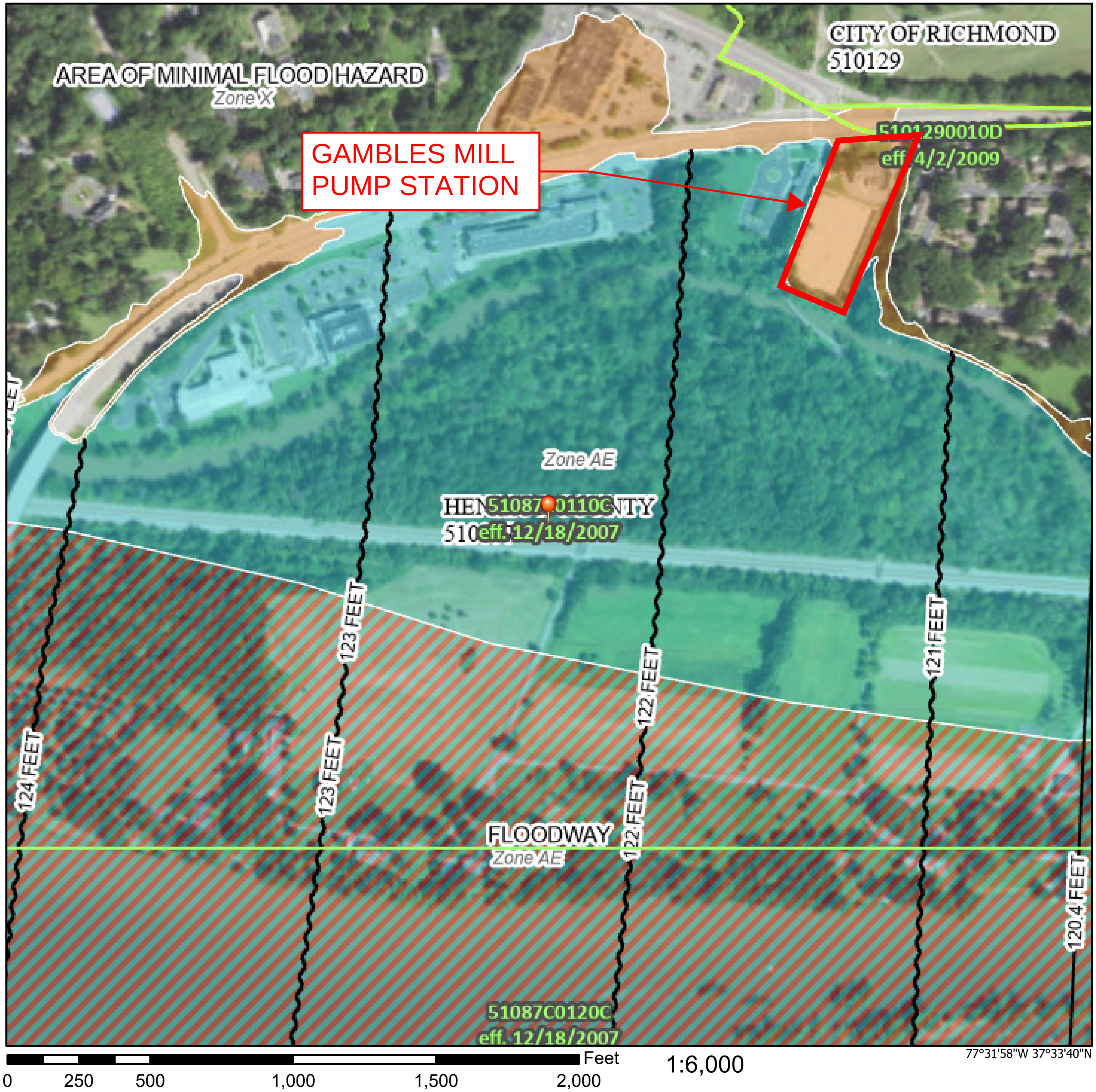
EFFECTIVE DATE:
DECEMBER 18, 2007

Federal Emergency Management Agency

National Flood Hazard Layer FIRMette

FEMA

77°32'35"W 37°34'8"N



1:6,000

77°31'58"W 37°33'40"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	═	Limit of Study
	—	Jurisdiction Boundary
	-- ---	Coastal Transect Baseline
	- —	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

📍 The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/23/2021 at 5:06 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

PRELMINARY FIRM

Emergency Generator at
Gambles Mill PS
Preliminary Map shows PS has
been mapped into Zone AE

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟫	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee See Notes *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	🟨	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- — - — -	Channel, Culvert, or Storm Sewer
	╷╷╷╷╷╷	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2	Cross Sections with 1% Annual Chance
	17.5	Water Surface Elevation
	(8) - - -	Coastal Transect
	-·— -·—	Coastal Transect Baseline
	— -- —	Profile Baseline
	—	Hydrographic Feature
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	═	Limit of Study
	═	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available effective flood hazard information for your community, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping and Insurance Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be downloaded from the website. Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be acquired directly from the Flood Map Service Center at the website listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM Issue Date or Effective Date.

Note: Some Special Flood Hazard Areas with elevations may not appear with elevation labels if the Base Flood Elevation or Cross-section line which communicates the elevation for the location appears on the adjacent panel. Please see the Panel Locator Diagram on this map panel to determine the adjacent panel and find the elevation feature there, or alternatively use the Flood Insurance Study report for detailed elevations by flood source.

SCALE

N

1 inch = 500 feet **1:6,000**

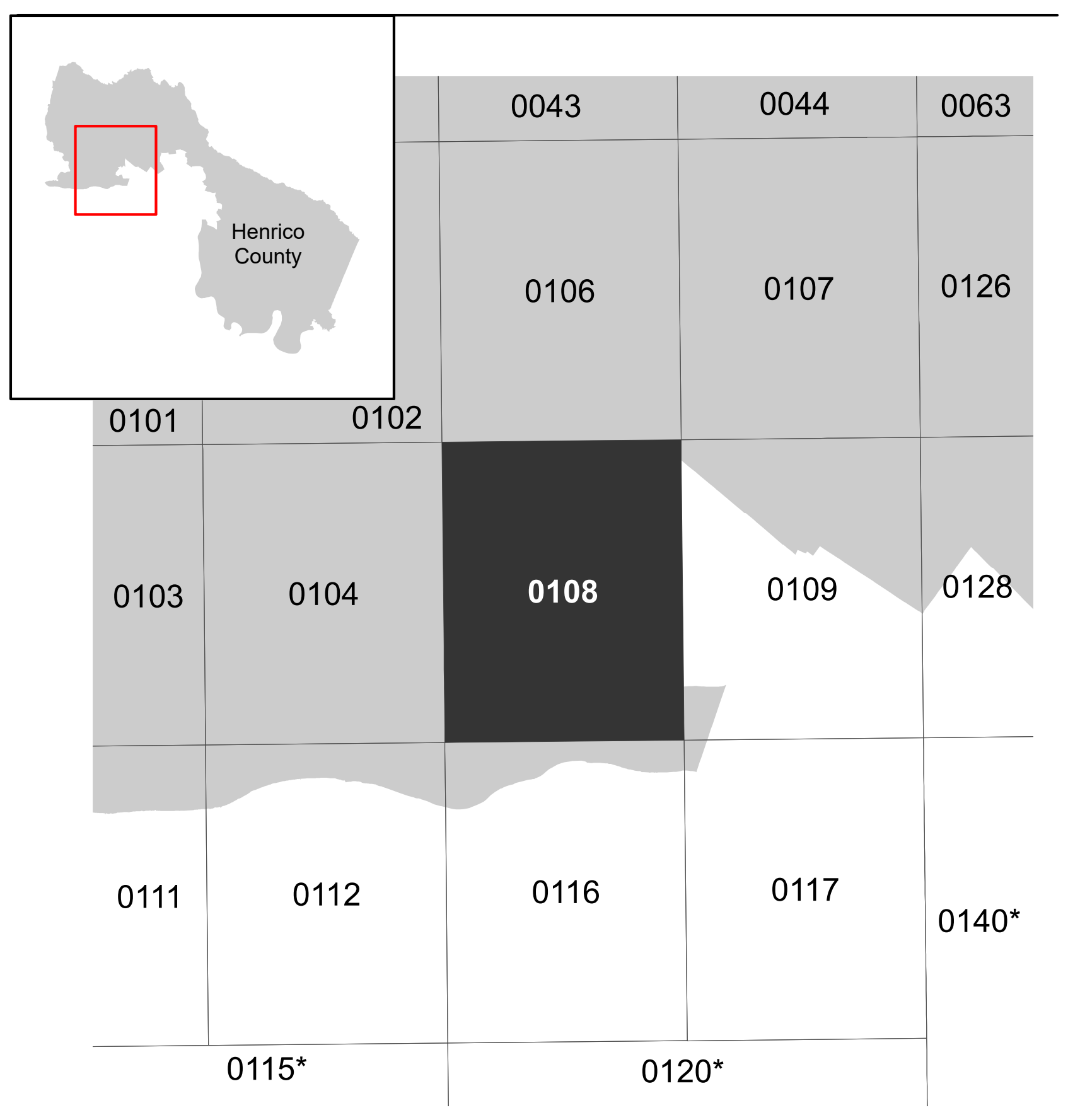
0 250 500 1,000 1,500 2,000 feet

0 50 100 200 300 400 meters

Map Projection:
NAD 1983 StatePlane Virginia South FIPS 4502 Feet

Vertical Datum: NAVD88

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HENRICO COUNTY
VIRGINIA
ALL JURISDICTIONS

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
HENRICO COUNTY UNINCORPORATED AREAS	510077	0108	D

MAP NUMBER
51087C0108D
EFFECTIVE DATE
Prelim Issue Date: 11/12/2021

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map data was obtained from the City of Richmond including transportation, hydrography, and political lines. Basemapping was originally interpreted from the orthophotography flown in March of 1999. Additional information has been derived from other sources.

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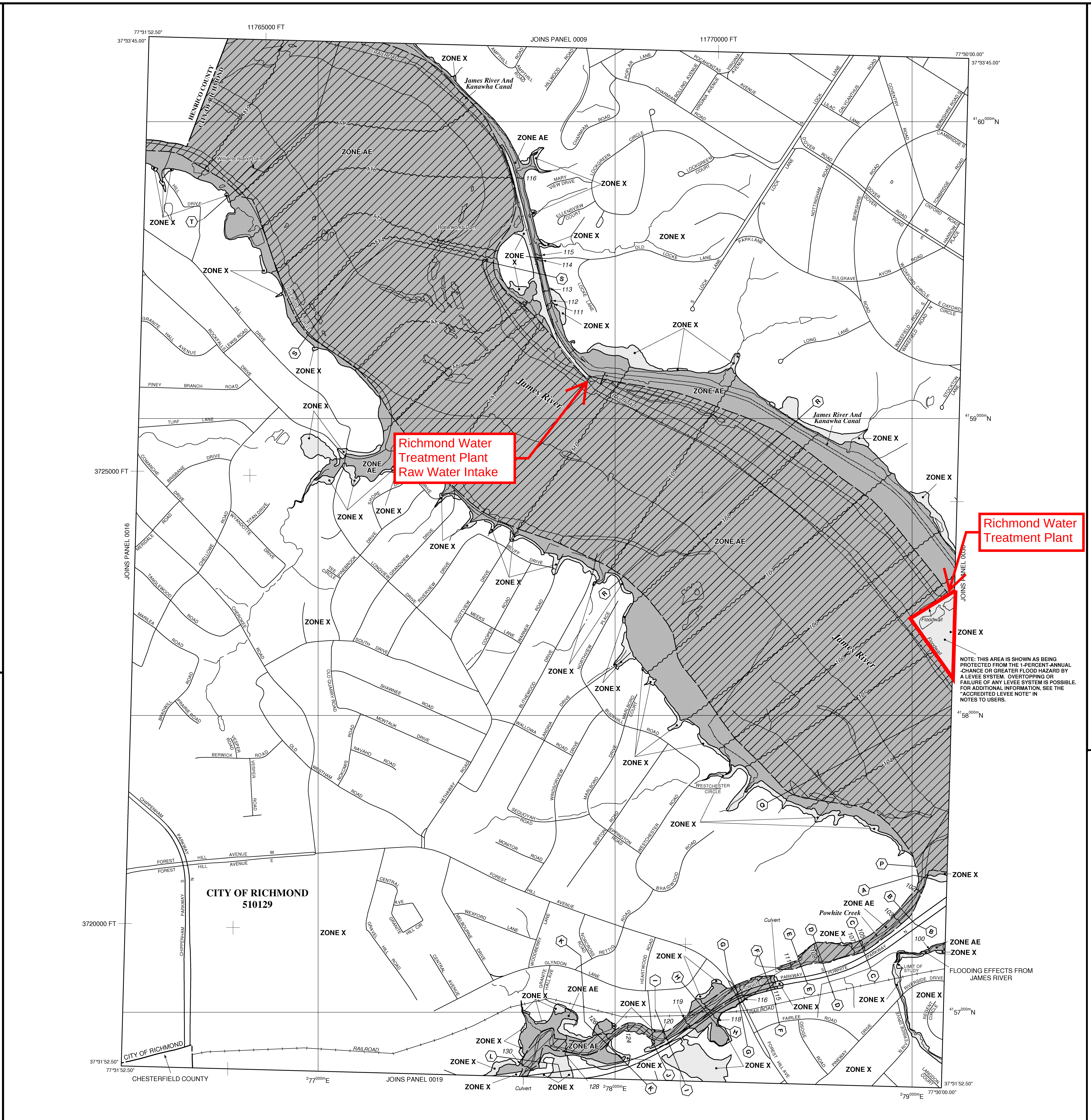
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at http://www.fema.gov/business/nfip/index.shtm.



Richmond Water Treatment Plant Raw Water Intake

Richmond Water Treatment Plant

NOTE: THIS AREA IS SHOWN AS BEING PROTECTED FROM THE 1-PERCENT-ANNUAL-CHANCE OR GREATER FLOOD HAZARD BY A LEVEE SYSTEM. OVERTOPPING OR FAILURE OF ANY LEVEE SYSTEM IS POSSIBLE. FOR ADDITIONAL INFORMATION, SEE THE "ACCREDITED LEVEE NOTE" IN NOTES TO USERS.

LEGEND

▨ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———————	Floodplain boundary
—— —— ——	Floodway boundary
– ——— ——— –	Zone D boundary
•••••••••••••••	CBRS and OPA boundary
▨ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

(A)———(A)	Cross section line
(23)- - - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}75^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 18
6000000 FT	5000-foot grid ticks: Virginia State Plane coordinate system, south zone (FIPSZONE 4502), Lambert Conformal Conic
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
City Of Richmond Department Of Public Works, 900 East Broad Street, Room 704, Richmond, Virginia 23219 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
December 6, 1974
FLOOD HAZARD BOUNDARY MAP REVISIONS
September 19, 1975
FLOOD INSURANCE RATE MAP EFFECTIVE
June 15, 1979
FLOOD INSURANCE RATE MAP REVISIONS
July 20, 1998

April 2, 2009 – to change Special Flood Hazard Areas , to add Base Flood Elevations, to update roads and road names , to incorporate previously issued Letters of Map Amendment, to add Special Flood Hazard Areas , to reflect updated topographic information , and to update corporate limits.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0017D

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
RICHMOND,
VIRGINIA
INDEPENDENT CITY

PANEL 17 OF 83
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RICHMOND, CITY OF	510129	0017	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
5101290017D

MAP REVISED
APRIL 2, 2009

Federal Emergency Management Agency

NOTES TO USERS

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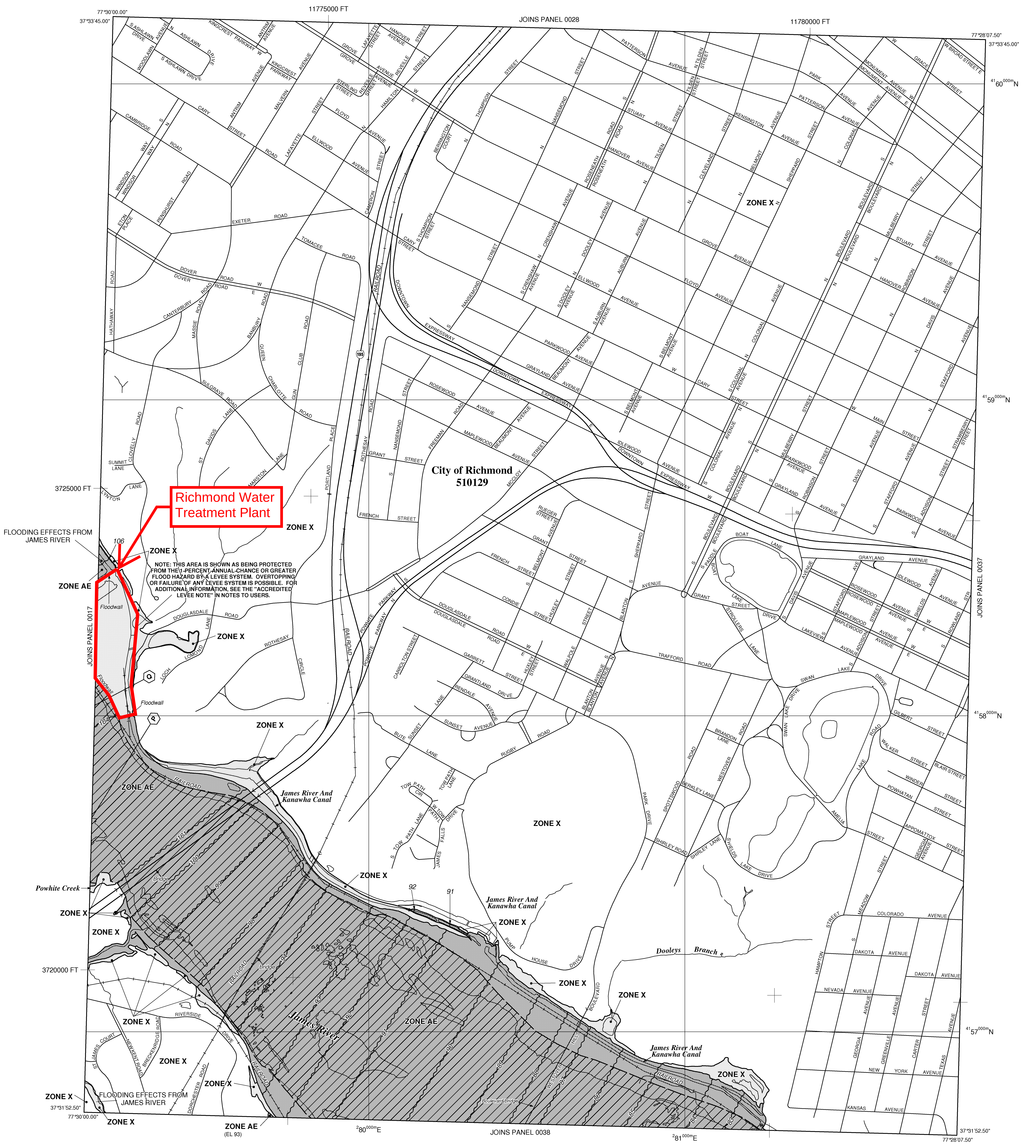
Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at http://www.fema.gov/business/nfip/index.shtm.



NOTE: THIS AREA IS SHOWN AS BEING PROTECTED FROM THE 1-PERCENT-ANNUAL-CHANCE OR GREATER FLOOD HAZARD BY A LEVEE SYSTEM. OVERTOPPING OR FAILURE OF ANY LEVEE SYSTEM IS POSSIBLE. FOR ADDITIONAL INFORMATION, SEE THE "ACCREDITED LEVEE NOTE" IN NOTES TO USERS.

LEGEND

▩ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▩ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———————	Floodplain boundary
—— —— ——	Floodway boundary
– ——— ——— –	Zone D boundary
●●●●●●●●●●●●	CBRS and OPA boundary
▩ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

Ⓐ——Ⓐ	Cross section line
(23)- - - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}75^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 18
6000000 FT	5000-foot grid ticks: Virginia State Plane coordinate system, south zone (FIPSZONE 4502), Lambert Conformal Conic
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
City Of Richmond Department Of Public Works, 900 East Broad Street, Room 704, Richmond, Virginia 23219 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
December 6, 1974
FLOOD HAZARD BOUNDARY MAP REVISIONS
September 19, 1975
FLOOD INSURANCE RATE MAP EFFECTIVE
June 15, 1979
FLOOD INSURANCE RATE MAP REVISIONS
July 20, 1998

April 2, 2009 – to change Special Flood Hazard Areas, to add Base Flood Elevations, to update roads and road names, to incorporate previously issued Letters of Map Amendment, to add Special Flood Hazard Areas, to reflect updated topographic information, and to update corporate limits.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0036D

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
RICHMOND,
VIRGINIA
INDEPENDENT CITY

PANEL 36 OF 83
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RICHMOND, CITY OF	510129	0036	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
5101290036D

MAP REVISED
APRIL 2, 2009

Federal Emergency Management Agency

B. Scope of Work Narrative – Flood Prevention and Protection Projects

Project Information and Description:

The Henrico County Department of Public Utilities (DPU) is responsible for providing water, wastewater, and solid waste services throughout the County, portions of the City of Richmond, and neighboring Goochland County. The Gambles Mill Pump Station (Gambles Mill) is a critical component of the County's wastewater conveyance and treatment system; it is also considered a Category III Critical Facility by FEMA (*FEMA 543 Design Guide for Improving Critical Facility Safety from Flooding and High Winds*). Located at 6173 River Road in Richmond, Virginia, the pump station accepts a peak flow of 28 mgd per day from five drainage subbasins and conveys flow to the County's Water Reclamation Facility (WRF).

Gambles Mill currently has two electrical feeds powered from separate Dominion Energy grids. Historical outage data available from the station indicates that simultaneous power loss has occurred on eight separate occasions since 2010. When both electrical feeds are down and the station does not have power, untreated wastewater is discharged into the Kanawha Canal and the James River both of which are Resource Protection Areas as established by the Chesapeake Bay Preservation Act. Untreated wastewater directly impacts the environmental quality of the receiving waters but also puts the City of Richmond's potable water supply at risk, as the Kanawha Canal connects to the raw water intake for the City of Richmond at the City's Water Treatment Plant which serves more than 200,000 citizens. Although the Gambles Mill Pump Station is not located in a qualified opportunity zone and is in an area with a very low social vulnerability index score, the risk that station power loss has on Richmond's potable water supply affects neighborhoods that are qualified opportunity zones and range from very low social vulnerability to very high social vulnerability in Richmond. The risk of significant overflows of untreated wastewater and subsequent environmental and public health impacts is too great to rely on a portable generator for a redundant power supply. In addition to overflow, the risk of power loss warrants a permanent solution for the criticality of the Gambles Mill Pumping.

In 2003, Hurricane Isabel caused the Richmond metropolitan area to lose power for a week, rendering Gambles Mill inoperable. It is estimated that nearly 200 million gallons of untreated wastewater was discharged into the Kanawha Canal and James River from this pump station alone, based on historical flows. In addition to the historical repetitive losses that are described below, the preliminary FIRMs issued in November 2021 maps the facility basin into Zone AE from Zone X.

Description of the Proposed Mitigation Approach:

Henrico County DPU proposes to mitigate future power loss due to extreme weather events at the Gambles Mill Pump Station through implementation of on-site backup power supply. The electrical upgrades for the redundant power supply will include installation of a 2,500kW generator with a sound attenuated enclosure, 20,000-gallon fuel tank with pumps and piping, 4,000A double-ended switchgear, panels, and duct banks.

Included in this package are the contract documents for this mitigation approach. These improvements will allow the pump station to remain fully operational during periods of power loss from existing commercial feeds. The project reduces the risk of potential functional disruption in the DPU wastewater conveyance and treatment system caused by power losses, improving resilience by ensuring that critical services always remain available and operational for the service population.

The DPU's Operations Division will oversee the project maintenance and daily operations upon completion of the construction. Annual maintenance for the project will include load bank testing for the generator and inspections and testing for switchgear, panelboards, and breakers. Should the generator be used in the event of a power outage, the Operations Division will monitor and document the asset's performance.

This project is comprised of two phases, with the first phase being preliminary planning services required before award and notice to proceed of the construction contract. This grant application is only for the first phase of the project which includes the geotechnical investigations, design of the mitigation, surveying services, environmental assessments, and permitting needs.

History of Hazards and Past Damages:

The table below summarizes the facility power outages, duration, and associated financial losses because of the outages.

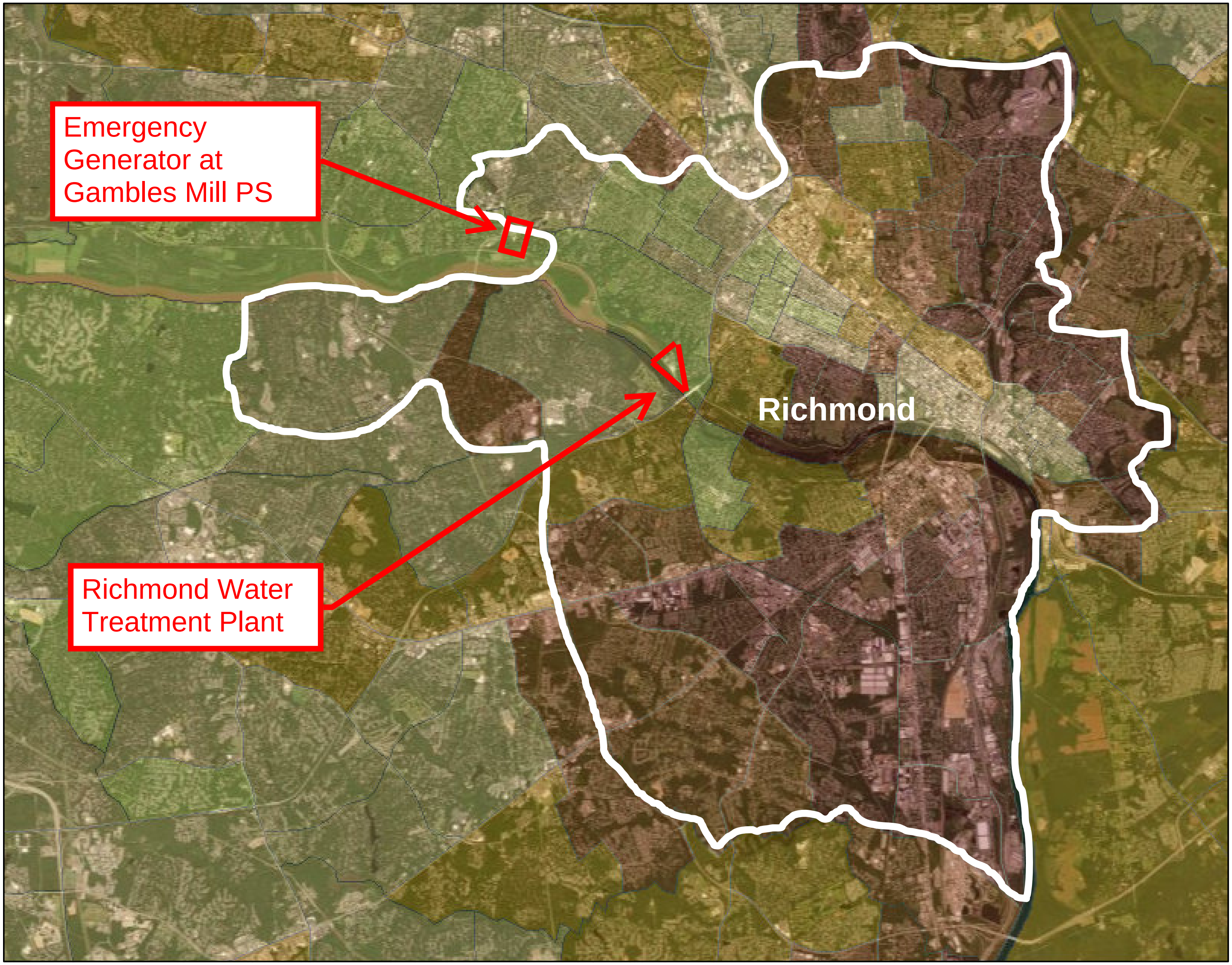
Date	Duration (days)	Loss	Description
6/16/2016	2.0	$12,177,564	Power loss experienced for duration listed; loss of function experienced at pump station
6/11/2014	0.5	$3,044,391	Power loss experienced for duration listed; loss of function experienced at pump station
5/16/2014	0.5	$3,044,391	Power loss experienced for duration listed; loss of function experienced at pump station
7/13/2013	0.5	$3,044,391	Power loss experienced for duration listed; loss of function experienced at pump station
08/27/2011	0.5	$3,044,391	Power loss experienced for duration listed due to Hurricane Irene; loss of function experienced at pump station
06/29/2011	0.5	$3,044,391	Power loss experienced for duration listed; loss of function experienced at pump station
08/16/2010	0.5	$3,044,391	Power loss experienced for duration listed; loss of function experienced at pump station
01/17/2010	0.5	$3,044,391	Power loss experienced for duration listed; loss of function experienced at pump station
09/18/2003	7	$42,621,474	Power loss experienced for at least duration listed due to Hurricane Isabel.
6/19/1972	-	-	Hurricane Agnes likely impacted the site; widespread flooding experienced. Pump station was owned by City of Richmond at the time.
8/17/1969	-	-	Hurricane Camille likely impacted the site; widespread flooding experienced. Pump station was owned by City of Richmond at the time.

Supporting Reference Information

1. Plans for maintaining capacity, as necessary, over the long term.
    a. Henrico County DPU has available yearly allocation for the inspections, maintenance, training, and operation of the portable emergency generator
2. Links to Supporting Documentation
    a. Henrico County Current Floodplain Ordinance
        i. Henrico County Municipal Code - Chapter 24 - Article XXII - Section 24-106.1
        ii. "Development and land disturbing activities within special flood hazard area"
    b. Richmond - Crater Hazard Mitigation Plan 2017
        i. Pertains to entire Richmond metropolitan area, including Henrico County. Document attached in this package.
    c. Henrico County approved Resilience Plan for CFPF
        i. Henrico County Approved Resilience Plan and Approval Letter August 2021

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- ⬜ Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟫 High Social Vulnerability
- 🟪 Very High Social Vulnerability
- ▨ Not inlcuded in the analysis



January 27, 2022

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

1:144,448

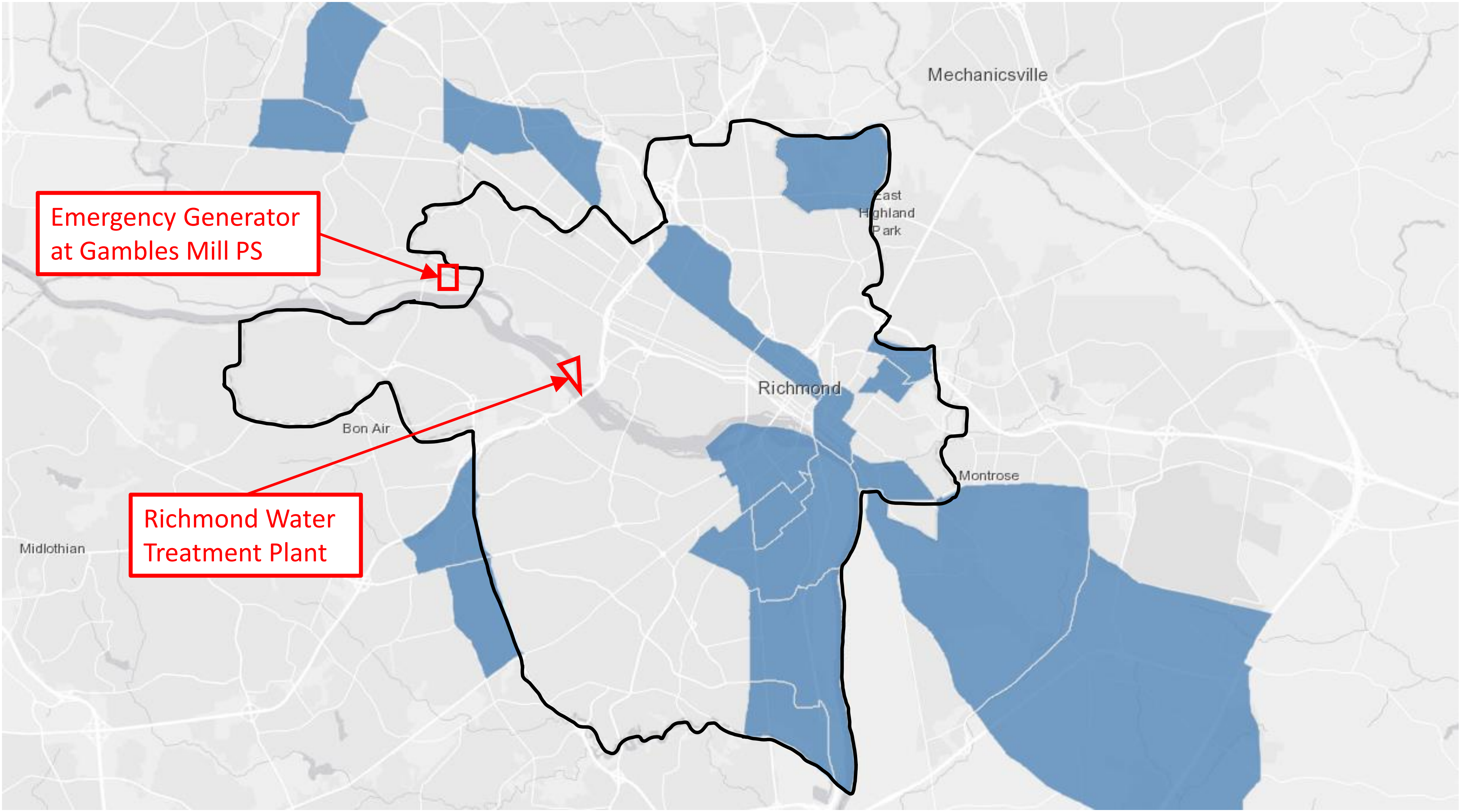
0 0.75 1.5 3 mi

0 1.25 2.5 5 km

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science
ADAPTVA

Qualified Opportunity Zones



Emergency Generator at Gambles Mill PS

Richmond Water Treatment Plant

GAMBLES MILL PUMP STATION
EMERGENCY FACILITY - PHASE 1
REVISED DESIGN SCHEDULE

TASK	START	FINISH
Receive County Comments on 50% Submittal	6/1/2022	6/1/2022
Review Meeting with County	6/6/2022	6/6/2022
Public Informational Meeting (Phase 1 only)	6/1/2022	6/1/2022
Respond to Public Comments	7/1/2022	7/1/2022
Incorporate Public Comments in Design Documents	6/15/2022	7/15/2022
Incorporate County Comments into Design Documents	6/7/2022	8/15/2022
Prepare and Submit Revised POD Submittal	8/29/2022	9/30/2022
County Review (Staff Developer Meeting, Planning Commission Hearing, if required	10/3/2022	11/25/2022
Resubmit Final POD Submittal	11/30/2022	11/30/2022
90% DESIGN TASKS		
Prepare and Submit Permit Applications	11/15/2022	11/25/2022
Prepare 90% Plans and Specifications	11/15/2022	1/10/2023
Prepare SWPPP and cost estimate	11/15/2022	12/5/2022
QA/QC of 90% Submission	1/11/2023	1/18/2023
Submit 90% Plans and Specifications	1/20/2023	1/20/2023
Receive County Review Comments/Review Meeting	1/23/2023	2/15/2023
100% DESIGN TASKS		
Prepare 100% Plans and Specifications	2/16/2023	3/31/2023
Complete permit applications and resubmittals	2/16/2023	3/31/2023
QA/QC of final contract documents	4/1/2023	4/10/2023
Submit to County	4/11/2023	4/11/2023
County Review Comments and Meeting	4/12/2023	4/26/2023
Finalize 100% contract documents and cost estimate	4/27/2023	5/5/2023

C. Budget Narrative

1. **Estimated total project cost:**
   The total estimated cost for Phase A of Gambles Mill PS Emergency Generator project is $1,740,487. This includes all the preliminary planning services required prior to breaking ground and award of the construction contract. This includes the geotechnical investigations, design services, surveying services, environmental assessments, permitting costs, and associated programmatic management costs.

2. **Amount of funds requested from the Fund:**
   Henrico County DPU requests **$870,244** from the Community Flood Preparedness Fund.

3. **Amount of cash funds available:**
   Please find attached statement from the Henrico County DPU indicating the available CIP budget for the year ending June 30, 2022, as **$27.5 million.**

4. **Authorization to request for funding**:
   Please find attached documentation of Henrico County DPU indicating their authorization to request funding.

Phase A Construction Costs

Description	Unit	Price	Subtotal
Phase A			
Geotechnical Investigation (Field, Labs, Analysis)	1	$115,000.00	$115,000.00
Design	1	$1,380,000.00	$1,380,000.00
Surveying	1	$57,500.00	$57,500.00
Environmental Assessment	1	$65,918.89	$65,918.89
Permitting	1	$87,891.84	$87,891.84
Pre-Award Costs	1	$34,176.85	$34,176.85
Phase A Total			**$1,740,487.58**

COMMONWEALTH OF VIRGINIA
COUNTY OF HENRICO

DEPARTMENT OF PUBLIC UTILITIES
804.501.4517

April 5, 2022

Virginia Department of Conservation and Recreation
600 East Main Street
24th Floor
Richmond, VA 23219-2094

To whom it may concern:

The total design contract value of the Gambles Mill PS Emergency Generator project is $1,740,487, which includes the design of the emergency generator and electrical improvements at the Gambles Mill PS. The County of Henrico, Department of Public Utilities is an enterprise fund within the County of Henrico. Therefore, Public Utilities has a dedicated revenue stream and is appropriated Capital Improvement funds annually. Those dedicated revenues are projected to be $27.5 million in FY2022 and part of those funds will cover the total estimated project cost prior to DCR grant reimbursement. The DPU is committed to contribute 50% of the project funds and the source of the funds is from the 2019 Water and Sewer Capital Improvement budget (copy enclosed).

Sincerely,

Bentley P. Chan, PE
Director of Public Utilities

Enclosure

COUNTY OF HENRICO, VIRGINIA
PROPOSED REVENUES & EXPENDITURES - WATER & SEWER ENTERPRISE FUND
FY 2020-21

Water and Sewer Enterprise Fund

Revenues/Resources	**FY 18-19 Actual**	**FY 19-20 Original**	**FY 20-21 Approved**
Water and Sewer Operating Budget:			
Sale of Water	$57,458,997	$59,531,001	$62,252,832
Sale of Sewer	57,593,466	58,909,374	61,440,215
Water Charges	6,847,766	4,785,606	5,189,550
Sewer Charges	6,879,189	4,863,316	5,199,853
Strong Waste Surcharge	375,933	600,000	370,000
City of Richmond	1,348,830	890,100	1,215,688
Interest Earnings	523,389	850,000	981,787
Other Water/Sewer Revenues	1,871,108	1,346,789	1,575,852
Transfer from General Fund	1,930,021	1,928,921	1,929,858
Total Operating Revenues	**134,828,699**	**133,705,107**	**140,155,635**
Operating Expenditures			
Water and Sewer Operating Budget:			
Personnel	21,773,154	22,966,323	23,665,477
Operating	44,731,431	43,638,992	45,274,849
Capital Outlay	580,799	781,922	1,135,653
Sub-Total Operating	**67,085,384**	**67,387,237**	**70,075,979**
Debt Service	26,846,075	29,298,024	31,809,741
Total Operating Expenditures	**93,931,459**	**96,685,261**	**101,885,720**
Results of Operations (Prior to Capital Expenses)	**(40,897,240)**	**(37,019,846)**	**(38,269,915)**
Budget For Capital Use (Below)	**(103,004,520)**	**(69,650,000)**	**(27,500,000)**

Capital Budget Expenditures	**FY 18-19 Actual**	**FY 19-20 Original**	**FY 20-21 Approved**
Approved Capital Projects (FY2019-20 Budget)		69,650,000	
Approved Capital Projects (New FY2020-21 Budget)			27,500,000
Continuing Capital Projects (Previously Approved) (1)	103,004,520		
Total Capital Budget Expenses:	103,004,520	69,650,000	27,500,000
Capital Budget Resources			
Water and Sewer Revenues	28,648,730	61,150,000	27,500,000
Revenue Bonds	74,355,790	8,500,000	0
Total Capital Budget Resources:	103,004,520	69,650,000	27,500,000

Notes:

(1) This number plus the budget figure reflects Utilities estimate of capital spending from previously Board approved capital projects. FY2018-19 represents actual spending, as per the 2019 audit.

County of Henrico, Virginia
Approved Capital Budget
FY2018-19

Project Number	Project Name		Approved FY2018-19
	Enterprise Fund - Public Utilities		
Other Local Revenue			
00782	New Sewer Connections	$	200,000
00772	Sewer Line Extensions		500,000
00732	Sewer Line Rehabilitation		5,000,000
00743	Sewer Pump Station (SPS) Improvements		1,600,000
00737	Sewer Reloc., Adjustments & Crossings		200,000
00725	Plan Review and Inspection		1,700,000
06492	Roof Replacement		50,000
08172	Water Reclamation Facility Improvements		500,000
00735	Water Reclamation Facility Expansion		1,500,000
06449	White Oak SPS Improvements		800,000
06569	Upham Brook Storage Facilities		7,000,000
	Subtotal - Other Local Revenue	$	19,050,000
Revenue Bonds			
01076	Strawberry Hill Basin Sewer Rehab	$	12,500,000
06152	Gambles Mill SPS Flow Equalization Basin (FEB) Modification		7,800,000
	Subtotal - Revenue Bonds	$	20,300,000
	Subtotal - Sewer	$	39,350,000
Other Local Revenue			
00771	New Water Connections	$	150,000
00770	Water Line Extensions		300,000
00768	Water Line Rehabilitation		4,000,000
00769	Water Pumping Station Improvements		1,300,000
00780	Water Meters		500,000
00767	Water Reloc., Adjustments & Crossings		200,000
00811	Information Technology Projects		15,000,000
08171	Water Treatment Facility Improvements		1,300,000
08162	Woodman Road Water Line		300,000
	Subtotal - Water	$	23,050,000
	Total - Enterprise Fund - Public Utilities	**$**	**62,400,000**
TOTAL APPROVED CAPITAL BUDGET FOR FY2018-19		**$**	**176,964,800**

COUNTY OF HENRICO, VIRGINIA
BOARD OF SUPERVISORS
MINUTE

Agenda Item No. 95-22
Page No. 1 of 1

Agenda Title: RESOLUTION — Authorization to Submit Applications — Community Flood Preparedness Fund

For Clerk's Use Only:
Date: 3/8/2022
(✓) Approved
( ) Denied
( ) Amended
( ) Deferred to: ______

BOARD OF SUPERVISORS ACTION
Moved by (1) Schmitt Seconded by (1) Brani
(2) ______ (2) ______
REMARKS: APPROVED

	YES	NO	OTHER
Branin, T.	✓		
Nelson, T.	✓		
O'Bannon, P.	✓		
Schmitt, D.	✓		
Thornton, F.			

WHEREAS, the Virginia Department of Conservation and Recreation's ("DCR") Community Flood Preparedness Fund ("CFPF") was established to provide grant funding for regions and localities across Virginia to reduce the impacts of flooding, including flooding driven by climate change ("Flood Preparedness Projects"); and,

WHEREAS, the CFPF program reimburses eligible recipients up to 90% of the approved costs of Flood Preparedness Projects; and,

WHEREAS, the County must submit applications for CFPF funding through DCR; and,

WHEREAS, the County has identified two Flood Preparedness Projects that are eligible for CFPF funds:

(1) planning for stream restoration and utility rehabilitation at utility stream crossings; and

(2) installation of an emergency generator at the Gambles Mill Sewage Pump Station to provide redundant power for continuous operation of the pump station.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors authorizes the Director of Public Utilities to submit applications for CFPF funding for the projects identified above.

Comment: The Director of Public Utilities recommends approval of the Board paper, and the County Manager concurs.

By Agency Head ______ JM By County Manager ______

Certified:
A Copy Teste ______
Clerk, Board of Supervisors

Copy to: ______

Date: ______

COUNTY OF HENRICO, VIRGINIA
BOARD OF SUPERVISORS
MINUTE

Page No. 1 of 5
Agenda Item No. 87A-21

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

For Clerk's Use Only:
Date: 4/13/2021
(✓) Approved
( ) Denied
( ) Amended
( ) Deferred to:

BOARD OF SUPERVISORS ACTION

Moved by (1) Nelson Seconded by (1) Obannon
(2) Branin (2) Thornton

REMARKS:

APPROVED

	YES	NO	OTHER
Branin, T.	✓		
Nelson, T.	✓		
O'Bannon, P.	✓		
Schmitt, D.	✓		
Thornton, F.	✓		

WHEREAS, the Board of Supervisors of the County of Henrico, Virginia, held an advertised public hearing at 6:00 p.m., on March 23, 2021, to consider the proposed Operating and Capital Annual Fiscal Plans for FY 2021-22; and,

WHEREAS, the Board wishes to approve the proposed Plans with the changes noted below.

NOW, THEREFORE, BE IT RESOLVED that the proposed Operating and Capital Annual Fiscal Plans for FY 2021-22 are hereby approved for informative and fiscal planning purposes only, with the changes noted.

OPERATING ANNUAL FISCAL PLAN
ESTIMATED OPERATING RESOURCES

01- GENERAL FUND:	Manager Proposed	Board Approved
General Property Taxes	$ 531,320,000	$ 531,320,000
Other Local Taxes	170,610,000	170,610,000
Permits, Fees, & Licenses	6,754,000	6,754,000
Fines & Forfeitures	2,085,000	2,085,000
Use of Money & Property	11,334,700	11,334,700
Charges for Services	3,710,500	3,710,500
Miscellaneous	3,969,000	3,969,000
Recovered Costs	4,338,000	4,338,000
Total from Local Sources	$ 734,121,200	$ 734,121,200
Non-Categorical Aid	$ 14,057,000	$ 14,057,000
Shared Expenses	17,200,000	17,200,000
Categorical Aid	362,395,040	362,395,040
Total from State	$ 393,652,040	$ 393,652,040
Categorical Aid - Total Federal	$ 385,000	$ 385,000
GENERAL FUND REVENUE	$ 1,128,158,240	$ 1,128,158,240
Operating Transfers	$ (183,357,196)	$ (183,357,196)
From (To) Fund Balance	39,124,300	39,124,300
GENERAL FUND RESOURCES	$ 983,925,344	$ 983,925,344

By Agency Head ____________ By County Manager ____________

Certified:
A Copy Teste:

Copy to: Clerk, Board of Supervisors

Date: ____________

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

11 – SPECIAL REVENUE FUND:		
Permits, Fees, & Licenses	$ 1,059,905	$ 1,059,905
Fines & Forfeitures	283,360	283,360
Use of Money & Property	143,108	143,108
Charges for Services	31,573,153	31,573,153
Miscellaneous	9,091,888	9,091,888
Recovered Costs	618,008	618,008
Total from Local Sources	$ 42,769,422	$ 42,769,422
Non-Categorical Aid	$ 4,239,382	$ 4,239,382
Categorical Aid	52,381,040	52,381,040
Total from State	$ 56,620,422	$ 56,620,422
Categorical Aid - Total Federal	$ 63,016,717	$ 63,016,717
SPECIAL REVENUE FUND REVENUE	$ 162,406,561	$ 162,406,561
Operating Transfers	$ 36,906,981	$ 36,906,981
From (To) Fund Balance	1,574,041	1,574,041
SPECIAL REVENUE FUND RESOURCES	$ 200,887,583	$ 200,887,583
51 – WATER AND SEWER ENTERPRISE FUND:		
Fines & Forfeitures	$ 159,485	$ 159,485
Charges for Services	135,779,291	135,779,291
Miscellaneous	2,557,472	2,557,472
W&S ENTERPRISE FUND REVENUE	$ 138,496,248	$ 138,496,248
Operating Transfers	$ 1,932,108	$ 1,932,108
From (To) Retained Earnings	(36,156,652)	(36,156,652)
W&S ENTERPRISE FUND RESOURCES	$ 104,271,704	$ 104,271,704
61 – CENTRAL AUTO MAINTENANCE (C.A.M.) FUND:		
Use of Money & Property	$ 400,000	$ 400,000
Recovered Costs	22,561,406	22,561,406
C.A.M. FUND REVENUES	$ 22,961,406	$ 22,961,406
Operating Transfers	0	0
C.A.M. FUND RESOURCES	$ 22,961,406	$ 22,961,406
62 – TECHNOLOGY REPLACEMENT FUND:		
Operating Transfers	$ 3,000,000	$ 3,000,000
From (To) Retained Earnings	1,314	1,314
TECH. REPLACE. FUND RESOURCES	$ 3,001,314	$ 3,001,314
63 – RISK MANAGEMENT/WORKPLACE SAFETY FUND:		
Recovered Costs - Total Revenue	$ 1,000,000	$ 1,000,000
Operating Transfers	9,493,570	9,493,570
RISK MANAGEMENT/WORKPLACE SAFETY RES.	$ 10,493,570	$ 10,493,570
64 - HEALTHCARE FUND:		
Interest on Investment	$ 400,000	$ 400,000
Miscellaneous	200,000	200,000
Recovered Costs	142,438,275	142,438,275
HEALTHCARE FUND RESOURCES	$ 143,038,275	$ 143,038,275
71 – DEBT SERVICE FUND:		
Operating Transfers - TOTAL RESOURCES	$ 78,346,649	$ 78,346,649
DEBT SERVICE FUND RESOURCES	$ 78,346,649	$ 78,346,649

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

82 – JAMES RIVER JUVENILE DETENTION CENTER AGENCY FUND:		
Shared Expenses - Local	$ 534,082	$ 534,082
Shared Expenses - State	1,565,294	1,565,294
JRJDC AGENCY FUND REVENUE	$ 2,099,376	$ 2,099,376
Operating Transfers	$ 3,451,088	$ 3,451,088
From (To) Fund Balance	133,512	133,512
JRJDC AGENCY FUND RESOURCES	$ 5,683,976	$ 5,683,976
83 – FIDUCIARY FUNDS		
Recovered Costs	$ 75,000	$ 75,000
Operating Transfers	4,525,000	4,525,000
OPEB, LINE OF DUTY AND LTD RESOURCES	$ 4,600,000	$ 4,600,000
90 – ADJUSTMENT FOR INTERFUND TRANSACTIONS:		
Operating Transfers - TOTAL RESOURCES	$ (125,273,753)	$ (125,273,753)
TOTAL OPERATING RESOURCES	$ 1,431,936,068	$ 1,431,936,068
Including: REVENUE TOTAL	$ 1,597,654,773	$ 1,597,654,773
OPERATING TRANSFERS	(170,911,553)	(170,911,553)
FUND BALANCE/RETAINED EARNINGS	5,192,848	5,192,848
	$ 1,431,936,068	$ 1,431,936,068

- -

ESTIMATED OPERATING REQUIREMENTS

Department	Manager Proposed	Board Approved
01- GENERAL FUND:		
General Government Administration	$ 64,023,716	$ 64,023,716
Judicial Administration	10,276,583	10,276,583
Public Safety	215,015,894	215,015,894
Public Works	54,651,170	54,651,170
Health & Welfare	2,687,497	2,687,497
Education	560,920,241	560,920,241
Recreation, Parks, & Culture	42,355,130	42,955,130 *
Community Development	20,627,148	20,627,148
Miscellaneous	13,367,965	12,767,965 *
TOTAL GENERAL FUND	$ 983,925,344	$ 983,925,344
11 – SPECIAL REVENUE FUND:		
Judicial Administration	$ 2,555,354	$ 2,555,354
Public Safety	3,940,367	3,904,967 *
Public Works	18,289,050	18,289,050
Health & Welfare	74,893,137	74,893,137
Education	100,959,675	100,959,675
Miscellaneous	250,000	285,400 *
TOTAL SPECIAL REVENUE FUND	$ 200,887,583	$ 200,887,583
51 – WATER AND SEWER ENTERPRISE FUND:		
Public Utilities - Operations	$ 73,918,961	$ 73,918,961
- Debt Service	30,352,743	30,352,743
TOTAL W&S ENTERPRISE FUND	$ 104,271,704	$ 104,271,704
61 – CENTRAL AUTO MAINTENANCE FUND:		
Central Auto. Maint. - TOTAL FUND	$ 22,961,406	$ 22,961,406

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

62 – TECHNOLOGY REPLACEMENT FUND:				
Technology Replacement - TOTAL FUND	$	3,001,314	$	3,001,314
63 – RISK MANAGEMENT/WORKPLACE SAFETY FUND:				
Finance	$	10,493,570	$	10,493,570
TOTAL RISK MANAGEMENT/WORKPLACE SAFETY	$	10,493,570	$	10,493,570
64 – HEALTHCARE FUND:				
Healthcare - TOTAL FUND	$	143,038,275	$	143,038,275
71 – DEBT SERVICE FUND:				
General Government	$	32,711,095	$	32,711,095
Education		45,635,554		45,635,554
TOTAL DEBT SERVICE FUND	$	78,346,649	$	78,346,649
82 – JAMES RIVER JUVENILE DETENTION CENTER AGENCY FUND:				
JRJDC - Operations	$	5,683,976	$	5,683,976
83 – FIDUCIARY FUND:				
OPEB - GASB 45	$	2,750,000	$	2,750,000
Long-Term Disability		600,000		600,000
Line of Duty Act (LODA)		1,250,000		1,250,000
TOTAL FIDUCIARY FUND	$	4,600,000	$	4,600,000
90 – ADJUSTMENT FOR INTERFUND TRANSACTIONS:				
Interdepartmental Billings - CAM	$	(22,961,406)	$	(22,961,406)
- Healthcare		(102,312,347)		(102,312,347)
TOTAL ADJUSTMENTS	$	(125,273,753)	$	(125,273,753)
TOTAL OPERATING REQUIREMENTS	$	1,431,936,068	$	1,431,936,068

* Indicates a change

CAPITAL ANNUAL FISCAL PLAN
ESTIMATED CAPITAL RESOURCES

Source	Manager Proposed		Board Approved	
21 - CAPITAL PROJECTS FUND:				
Central Virginia Transit Authority	$	22,500,000	$	22,500,000
Education Meals Tax Revenue		9,000,000		9,000,000
G. O. Bonds - General		48,400,000		48,400,000
G. O. Bonds - Education		19,000,000		19,000,000
Bond Premiums		12,305,685		12,305,685
General Fund - Stormwater Dedication		2,348,000		2,348,000
Designated Capital Reserve		12,440,000		12,440,000
VPSA Bonds		54,055,000		54,055,000
Fund Balance - General Fund		10,825,000		10,825,000
TOTAL CAPITAL PROJECTS FUND	$	190,873,685	$	190,873,685
22 - VEHICLE REPLACEMENT RESERVE:				
Fund Balance - General Fund	$	11,024,800	$	11,024,800
TOTAL VEHICLE REPLACEMENT RESERVE	$	11,024,800	$	11,024,800
51 – WATER AND SEWER ENTERPRISE FUND:				
Water & Sewer Fees/Charges	$	33,300,000	$	33,300,000
TOTAL WATER AND SEWER ENTERPRISE FUND	$	33,300,000	$	33,300,000
TOTAL CAPITAL RESOURCES	$	235,198,485	$	235,198,485

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

ESTIMATED CAPITAL REQUIREMENTS

Department	Manager Proposed	Board Approved
21 - CAPITAL PROJECTS FUND:		
General Government	$ 101,318,685	$ 101,318,685
Education	89,555,000	89,555,000
TOTAL CAPITAL PROJECTS FUND	$ 190,873,685	$ 190,873,685
22 - VEHICLE REPLACEMENT RESERVE:		
Public Safety	$ 6,324,800	$ 6,324,800
Education	4,700,000	4,700,000
TOTAL VEHICLE REPLACEMENT RESERVE	$ 11,024,800	$ 11,024,800
51 – WATER AND SEWER ENTERPRISE FUND:		
Public Utilities - Water	$ 5,200,000	$ 5,200,000
- Sewer	28,100,000	28,100,000
TOTAL WATER & SEWER ENTERPRISE FUND	$ 33,300,000	$ 33,300,000
TOTAL CAPITAL REQUIREMENTS	$ 235,198,485	$ 235,198,485

BE IT FURTHER RESOLVED that the funds included in the Operating and Capital Annual Fiscal Plans for any County department, office, or agency may be used as participating funds in any Federal or State aid program for like purpose upon appropriation by the Board of Supervisors; and,

BE IT FURTHER RESOLVED that the Schedule of Compensation attached hereto effective at the beginning of FY 2021-22 is approved; and,

BE IT FURTHER RESOLVED that the approved Operating Annual Fiscal Plan for FY 2021-22 includes:

1. An increase in the personnel complement of 13 positions for General Government and 91.5 positions for Schools;
2. Continued funding for a 2% scale adjustment for all employees effective in the fourth quarter of FY 2020-21;
3. Continued funding for market adjustments for certain public safety, education, and other positions effective in the fourth quarter of FY 2020-21;
4. New funding for a 2.372% wage increase for all eligible General Government and Schools employees, to be effective on June 19, 2021; and
5. New funding for a wage increase ranging from 2.372% to 9.831%, based on length of service in Henrico County and other eligibility criteria, to be effective in the second quarter of FY 2021-22.

BE IT FURTHER RESOLVED that in order to implement changes to the Personal Property Tax Relief Act of 1998 (the "PPTRA") made by legislation adopted by the Virginia General Assembly:

1. Any qualifying vehicle, as defined in the PPTRA, sitused within the County commencing January 1, 2021, shall receive personal property tax relief in the following manner:
    a. Qualifying vehicles valued at $1,000 or less shall receive 100% tax relief;
    b. Qualifying vehicles valued at between $1,001 to $20,000 shall receive 48% tax relief;
    c. Qualifying vehicles valued at $20,001 or more shall receive 48% tax relief on the first $20,000 of value only; and
    d. All other vehicles which do not meet the definition of "qualifying vehicles" will not receive any form of tax relief under the PPTRA.
2. The amount of tax relief shall be a specific dollar amount offset against the total personal property taxes that would otherwise be due on a qualifying vehicle but for the PPTRA. The specific dollar amount of relief shall be shown on the tax bill for each qualifying vehicle, together with a general description of the criteria upon which relief has been allocated.

COMMENTS: The Director of Finance recommends approval of the Board paper, and the County Manager concurs.

FY22 SCHEDULE OF COMPENSATION
County of Henrico, Virginia

OFFICE, BOARD, COMMISSION, AUTHORITY OR JOB TITLE	RATE
Board of Supervisors	$ 58,498.11 per annum (1)
Board of Zoning Appeals	$6,600.00 per annum
Electoral Board - General Election (members other than the Secretary)	$4,649.40 per annum (2)
Secretary, Electoral Board - General Election	$9,289.80 per annum (2)
Election Officials	$150.00 base pay per workday (3)
Assistant Chief Election Officials	$180.00 base pay per workday (3)
Chief Election Officials	$200.00 base pay per workday (3)
Planning Commission	$20,000.00 per annum
Richmond Regional Planning District Commission	$3,000.00 per annum
Capital Region Airport Commission	$3,000.00 per annum
Board of Real Estate Review & Equalization	$300.00 per month
School Board	$21,786.60 per annum (4)
Social Services Board	$3,000.00 per annum
Volunteer Firefighters	$2.00 per call
Economic Development Authority	$200.00 per meeting
Parks and Recreation Advisory Commission	$75.00 per meeting
Housing Advisory Committee	$225.00 per meeting

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(1) Acting pursuant to Va. Code Sec. 15.2-1414.2, on April 23, 2019, the Board set the maximum annual salaries for calendar years 2020-2023 as follows: 2020-$57,142.69; 2021-$58,498.11; 2022-$59,885.69; 2023-$61,306.17, and the Chairman and Vice-Chairman receive the additional sum of 15% and 10%, respectively, of the annual salary prevailing in each calendar year. The Board elected to forgo the increase in its compensation previously authorized for 2021. Effective January 12, 2021 the pay for the Board will be adjusted to reflect the rate previously authorized for 2021.

(2) The annual compensation rate and effective date are set by the General Assembly and subject to the Governor's approval. Salary amounts for FY22 are based upon current salaries and increases approved by the 2020 General Assembly. To date, the General Assembly has agreed to a 5% pay increase on July 1, 2021. However, the FY22 budget has not been approved by the Governor so the salary shown here may change.

(3) Rate approved by the Henrico County Board of Supervisors on October 14, 2008.

(4) Acting pursuant to Va. Code Sec. 22.1-32, on May 9, 2019, the School Board set the maximum annual salary for calendar year 2020 at $21,359.41, and determined, in each calendar year 2021, 2022, and 2023, that each member of the School Board will receive a maximum increase equal to any wage increase established for School Board employees. For FY22, the pay increase is 2%. The Chairman receives an additional sum of $2,000.00 per year.

9)

FY21 SCHEDULE OF COMPENSATION
County of Henrico, Virginia

NAME AND OFFICE OR JOB TITLE	SALARY
Heidi Barshinger Clerk of Circuit Court	$ 172,460.43 (5) (7)
Alisa Gregory Sheriff	$ 171,959.70 (5) (6) (8)
Mark Coakley General Registrar	$ 109,919.76 (6) (9)
Shannon Taylor (10) Attorney for the Commonwealth	$ 195,371.85 (6) (10)

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(5) The Clerk of the Circuit Court and the Sheriff are elected positions. The General Assembly sets the annual compensation and effective dates subject to the Governor's approval. Salaries for FY22 are based on current salaries and reflect the 5% pay increase effective July 1, 2021 as approved by the General Assembly in the 2021 Special Session I. The County adjusts these salaries if and as required by the General Assembly's actions.

(6) 2012 Va. Acts c. 822 requires persons employed by local government to contribute five percent of their creditable compensation for the employee contribution to the Virginia Retirement System. To comply with 2012 Va. Acts c. 822 and the non-supplant requirement, the current incumbent in this elected/appointed position, who was employed or hired on or before July 1, 2012, receives an additional amount equal to 5% of the salary approved by the General Assembly. Future incumbents in this position will not receive an additional 5% locality supplement for the VRS employee member contribution per 2012 Va. Acts c. 822.

(7) Salary reflects the current Clerk of the Circuit Court's certification.

(8) Consistent with historical pay practice for this position, the current Sheriff will receive the longevity pay adjustment approved by the County Board of Supervisors. Consistent with the approved longevity pay formula, the current position incumbent will receive a pay supplement equal to 3-steps (7.286%) effective September 25, 2021.

(9) Effective June 22, 2019 (FY20), the constitutional position of General Registrar was adopted into the County classification and compensation plan at grade HU.34. However, the General Assembly has approved repositioning the General Registrar classification/salary within the State's compensation system. If the budget approved by the General Assembly is approved by the Governor, the General Assembly's actions may result in this position/classification being returned to the Schedule of Compensation.

(10) Effective June 22, 1988 (FY89), the constitutional position of Attorney for the Commonwealth was adopted into the County classification and compensation plan. The position is currently assigned to pay grade HU.49 and the current elected position incumbent (Taylor) receives the pay increases and wage adjustments approved by the County Board of Supervisors for county pay plans.

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Henrico County Department of Public of Utilities**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	-
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	-
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	-
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	-
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	-
N/A	Match not required	-

Project Eligible for Consideration	☒ **Yes** ☐ **No**
Applicant Name:	

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	**-**
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	**-**
1.b. any other nature-based approach	**40**	**-**
All hybrid approaches whose end result is a nature-based solution	**35**	**-**
All other projects	**25**	**25**
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	**-**
High Social Vulnerability (1.0 to 1.5)	**12**	**-**
Moderate Social Vulnerability (0.0 to 1.0)	**8**	**8**
Low Social Vulnerability (-1.0 to 0.0)	**0**	**-**
Very Low Social Vulnerability (Less than -1.0)	**0**	**-**
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	**-**
No	**0**	**0**
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	**10**
No	**0**	**-**
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	**-**
No	**0**	**0**
11. Does this project provide "community scale" benefits?		
Yes	**20**	**20**
No	**0**	**-**
Total Points		**63**

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID_510077 - Henrico County CFPF Round 3 Submission

1 message

Shue, Allen <ashue@greeley-hansen.com> Thu, Apr 7, 2022 at 8:43 PM
To: Virginia Department of Conservation & Recreation <cfpf@dcr.virginia.gov>
Cc: "Chan, Bentley" <cha70@henrico.us>, "Claytor, Ralph" <cla01@henrico.us>, "Sossong, Marchelle" <sos@henrico.us>, "Logue, Kyle" <klogue@greeley-hansen.com>

Hello,

I am a consulting engineer assisting Henrico County (County) with submitting two grant applications for this round of the VA DCR Community Flood Preparedness Fund Grant.

Due to the size of the applications they are not able to be transmitted through email. Please find the following .zip files through the service WeTransfer:

- CID# 510077_HenricoCounty.Gambles_Mill_PS_Flood_Mitigation_and Resiliency_CFPF-1
- CID# 510077_HenricoCounty.Stream_Restoration_at_Utility Xing_CFPF-2

At this link:

- Henrico County - CFPF Round 3 Applications
- Please note that you will need to click through the splash page before clicking the download link.

Thank you very much for the consideration. Looking forward to speaking with you.

Regards,

Allen

GREELEY AND HANSEN

Allen Shue, PE, CFM

Associate

9020 Stony Point Parkway, Suite 475

Richmond, VA 23235

P: 804.204.2425 C: 914.275.2554

greeley-hansen.com

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: Henrico County

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

____ **Project**

____ **Study**

NFIP/DCR Community Identification Number (CID) 510077

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Bentley Chan, PE
Director, Henrico DPU

Signature of Authorized Official: ____

Mailing Address (1): 4305 E. Parham Road

Mailing Address (2): ____

City: Henrico **State:** Virginia **Zip:** 23228

Telephone Number: (804) 501-4280 **Cell Phone Number:** (____) N/A

Email Address: cha70@henrico.us

Contact Person (If different from authorized official): Allen Shue, PE, CFM Associate, Greeley and Hansen

Mailing Address (1): 9020 Stony Point Parkway

Mailing Address (2): Suite 475

City: Richmond **State:** VA **Zip:** 23235

Telephone Number: (804**)** 204-2425 **Cell Phone Number: (**914**)** 275-2554

Email Address: ashue@greeley-hansen.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☒ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Title of Work: "Identifying Restoration Opportunities at Stream Utility Crossings"

Location of Project (Include Maps): Henrico County; County-wide

NFIP Community Identification Number (CID#):(See appendix F 510077

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

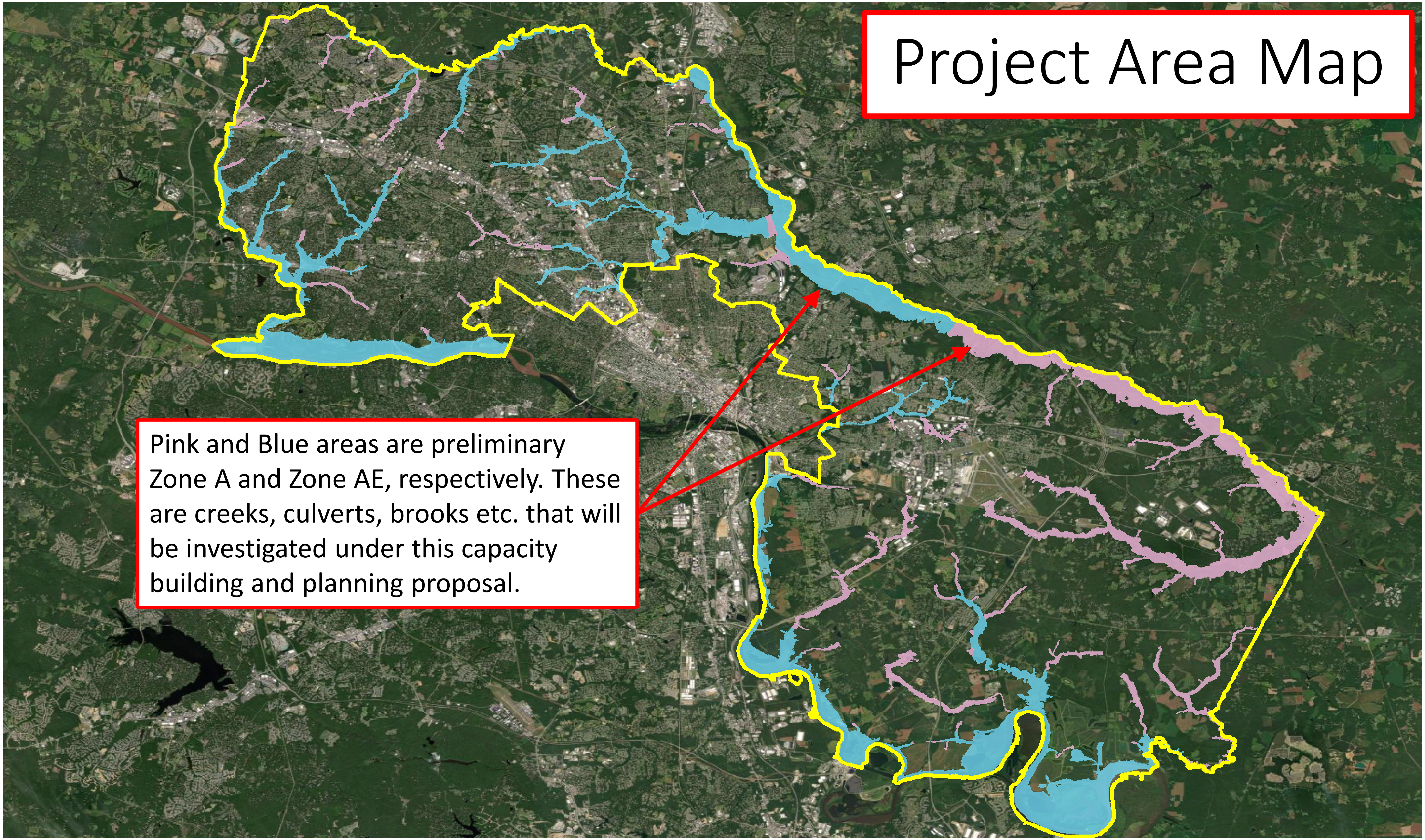
Flood Zone(s) (If Applicable): Preliminary: Zone AE and Zone A

Flood Insurance Rate Map Number(s) (If Applicable): Preliminary Throughout County

Total Cost of Project: $126,060

Total Amount Requested $ 94,545

Project Area Map



Pink and Blue areas are preliminary Zone A and Zone AE, respectively. These are creeks, culverts, brooks etc. that will be investigated under this capacity building and planning proposal.

B. Scope of Work Narrative – Planning and Capacity Building

Title of Work:

"Identifying Restoration Opportunities at Stream Utility Crossings"

Description of the Problem:

Henrico County is home to more than 300,000 residents and spans nearly 250 square miles in central Virginia, with streams, creeks, and brooks coursing throughout serving as vital conduits to convey stormwater away from residents. Additionally, there are miles of storm and sanitary sewers which cross or run parallel to these bodies of water.

Despite their importance, no comprehensive data exists cataloging the condition of the water bodies or the locations of sewers in them. As a result, minimal to no maintenance is performed on these assets which continually degrade over time. Meaning that the conveyance capacity of the water bodies continually decreases worsening flooding conditions and erosion, exposing sewers and manholes. Additionally, because it is unknown what sewer utilities exist in these water bodies, ageing stormwater outfalls can increase the severity of soil erosion, while damaged sanitary sewers with dislodged joints become submerged in stormwater triggering sanitary sewer overflows (SSOs) and backing up into homes.

The accompanying photo log demonstrates only the a few known areas that would benefit from the dual approach restoration and identification, with the assistance of the Fund, a comprehensive approach can be undertaken to identify needs throughout the County.

Proposed Planning and Programmatic Approach:

To restore these water bodies and renew the sewer assets within them, the County must first identify and prioritize the natural and built assets most in need. With this strong data basis in hand, the County will be empowered to pursue a programmatic and efficient strategy to protect its residents from external floods and from within the built infrastructure.

To maximize the benefit of identification and prioritization, the proposed scope of work is to perform a system wide desktop analysis of the sanitary sewer systems near or crossing creeks and other waterways to address two needs at the same time; develop a ranking matrix to prioritize the water bodies and sewer inspections based on the known condition information and risk analysis (both likelihood and consequence of failure); conduct preliminary field investigation to further refine the inspection prioritization; and based on the data collected, develop a list of water bodies and sewers to be further inspected (including CCTV). The following section details the proposed tasks to perform the investigations and prioritization.

Proposed Scope of Work:

Task 1 – Desktop Analysis

1. **Delineation and GIS Basemap:** Perform a system wide desktop analysis of the storm and sanitary sewer systems to identify sewer reaches near or crossing creeks and other waterways. The GIS database, sewer Atlas maps and contour information provided by the County will be used for the delineation.

2. **Review Existing Records:** The following records will be reviewed (if available) to obtain an understanding of the existing system characteristics:
    a. **Contractor Repairs and Improvements:** The data on contractor repairs and improvements, performed by County's crew and County's Annual Services Contractor within the last 5 years will be obtained from the County and analyzed to locate problem areas and rehabilitation histories. This data will be used as one of the indicators for potential problem areas and for developing the priority ranking of the reaches.

    b. **Existing Service Calls History:** The service calls recorded into County's Citizens' Request System (CRS) and Customer Information System (CIS) within the last 5 years will be obtained from County's Department of Information Technology and analyzed to quantify and locate the types and frequencies of sewer problems. This data will be used as one of the indicators for potential problem areas and for developing the priority ranking of the reaches.

    c. **SSO Reports Submitted to DEQ:** SSO reports submitted to DEQ in the last 5 years will be obtained from the County. The results will be used to identify potential capacity and/or O&M related issues within the system.

3. **GIS Mapping:** The sewer problem history based on the evaluation of the above data will be incorporated into project GIS to prepare mapping which will help visualize the extent and location of problems.

4. **Problem Areas Identification and Prioritization:** A GIS map will be used to identify the problem areas in the wastewater collection system near waterways and to prepare a priority ranking of the reaches. Rating criteria will be developed to identify the critical areas and the extent of field investigation within the wastewater collection system.

5. **Field Investigation Plan (FIP):** The results of the desktop analysis will be used to develop a FIP and the proposed extent of the work within the wastewater collection system. The FIP will include tables and field maps, utilizing GIS mapping, to outline the location and types of field investigations required.

6. **County Meeting:** A meeting will be scheduled with the County to review the FIP.

Task 2 - Field Investigations:

The field investigations will be conducted based on the FIP approved by the County in Task 1. Field investigations will be assigned to critical reaches first, followed by non-critical reaches. Information from the field investigations will be used to evaluate the condition of the wastewater collection system near or crossing creeks or other bodies of water. The following types of field investigations will be conducted concurrently:

1. **Checks (aerial creek crossings):** Checks will include visual inspection of the aerial sewer crossing and manholes and may include, but not limited to documentation of the following: condition of pipe/encasement; manhole material type; system flow characteristics; O&M issues; and evidence of surcharging and I/I on a check form included in Appendix A. Digital photos of each aerial crossing and manhole checked will be taken to supplement the documented information. The selection of aerial crossings and manholes to be checked will be based on the results of the desktop analysis and FIP. Checks will be conducted for up to 200 manholes along the aerial sewer crossings. The results of the checks will be used for selection and prioritization of sewer reaches for CCTV inspections.

2. **Inspection (buried creek crossings):** This will include inspection of the manholes using a zoom camera and may include, but not limited to documentation of the following: evidence of surcharging, overflows, infiltration, grease, blockage and direction of flow. Inspections will be conducted for up to 100 manholes along the buried creek crossings. The purpose of a manhole inspection program is to obtain a condition assessment of the mainline sanitary sewer manholes and to identify sewer problems such as surcharging, grease blockages etc. The zoom camera will also be used for identification of major problems in the sewer for approximately 30-50 feet upstream and downstream of the manhole. The condition of the manholes will be documented using the inspection included in Appendix B. The results of the inspections will be used for selection and prioritization of sewer reaches for CCTV inspections.

Task 3 – Recommendation Memorandum and CCTV Assignment Sheets

1. Prepare a draft memorandum summarizing the field investigation data and prioritize sewer reaches in need of CCTV investigation to identify potential rehabilitation needs and stream reaches in need of restoration.
2. Submit the draft memorandum to the County for review and comments. Conduct a meeting with the County to review the draft memorandum.
3. Incorporate the review comments and submit the final memorandum and CCTV assignment sheets to the County.
4. Review of the CCTV has not been included with this work order; CCTV review and rehabilitation recommendation will be authorized as an amendment to this work order (Phase II). Rehabilitation recommendations under this amendment will consider available funding and the overall CSMP implementation schedule. For sewers that need attention immediately or in the next 2-3 years, begin working on obtaining utility easements, either permanent or temporary construction easements. For streams that were identified as stream restoration project candidates, conduct a total maximum daily load (TMDL) credit analysis and incorporate the information in the TMDL action plan development. Prioritization will be developed on the combined benefit of stream restoration and utility failure risk.

Task 4 – Project Management

1. This task will include monthly invoicing; general communications; and coordination for completion of the project.

Task 5 – Schedule

1. The performance of this work is anticipated to take 24 weeks.

Supporting Reference Information

1. Plans for maintaining capacity, as necessary, over the long term.
    a. Henrico County DPU has available yearly allocation for the inspections, maintenance, training, and operation of the portable emergency generator
2. Links to Supporting Documentation
    a. Henrico County Current Floodplain Ordinance
        i. https://henrico.us/works/design/floodplain/build-responsibly/floodplain-permits/
    b. Richmond - Crater Hazard Mitigation Plan 2017
        i. Pertains to entire Richmond metropolitan area, including Henrico County. Document attached in this package.
    c. Henrico County approved Resilience Plan for CFPF
        i. Henrico County Approved Resilience Plan and Approval Letter August 2021

Photo Log

Known Restoration Opportunities at Utility Crossings

Figure 1 - Behind Tuckahoe Library

Figure 2 - 406 September Drive

Photo Log

Known Restoration Opportunities at Utility Crossings

Figure 3 & 4 - Along Gillies Creek

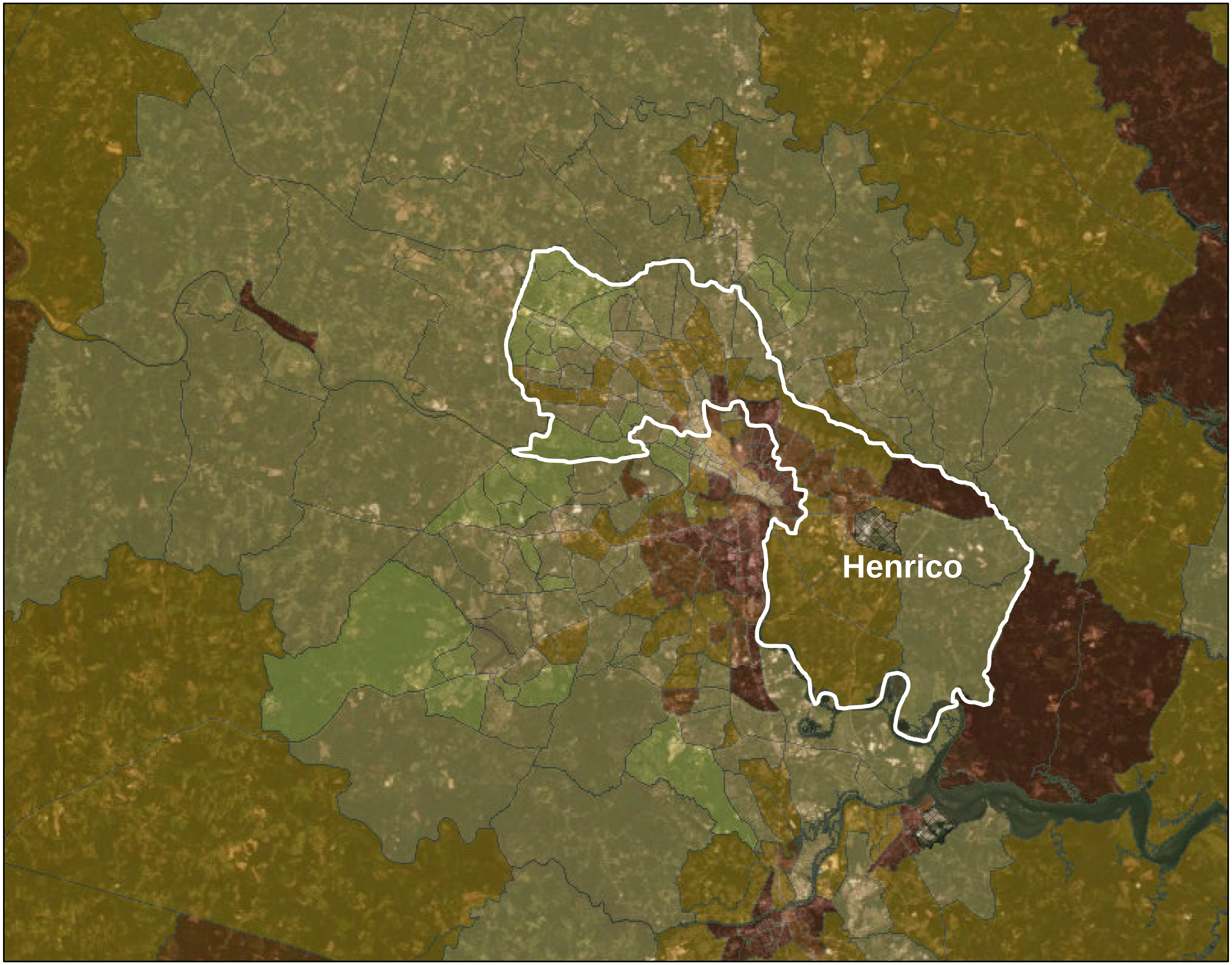
Photo Log

Known Restoration Opportunities at Utility Crossings

Figure 5 - 2608 Hollybrook Avenue

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- 🟨 Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟥 High Social Vulnerability
- 🟪 Very High Social Vulnerability
- ▨ Not inlcuded in the analysis



January 28, 2022

1:577,791

0 3.5 7 14 mi

0 5 10 20 km

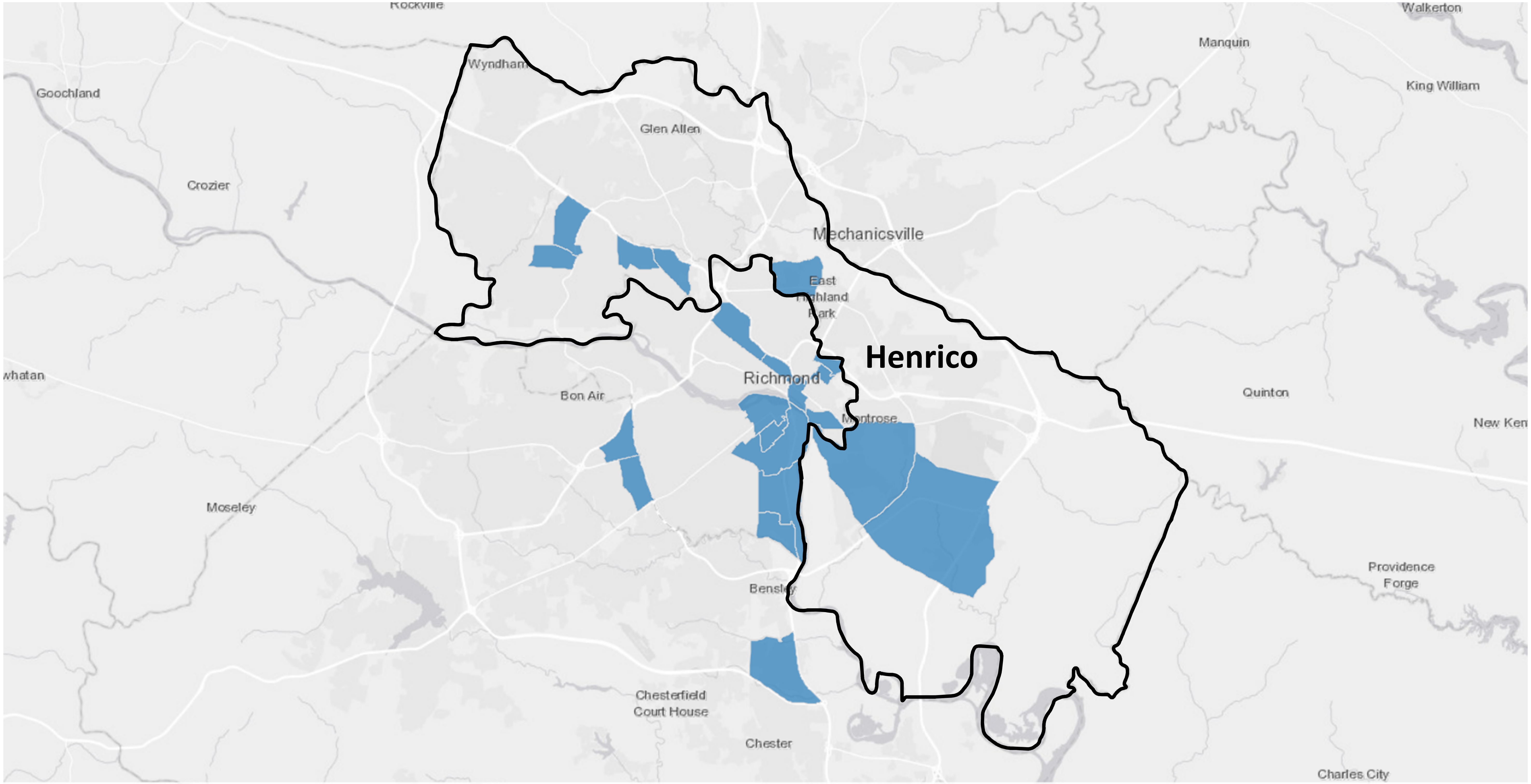
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPTVA

Qualified Opportunity Zones



C. Budget Narrative

1. **Estimated total project cost:**
   The total estimated cost for the “Identifying Restoration Opportunities at Stream Utility Crossings” project is **$126,060**. Please find attached estimated cost of engineering services to perform this work.

2. **Amount of funds requested from the Fund:**
   Henrico County DPU requests **$94,545** from the Community Flood Preparedness Fund.

3. **Amount of cash funds available:**
   Please find attached statement from the Henrico County DPU indicating the available projected CIP budget for the year ending FY2022 as **$27.5 million**.

4. **Authorization to request for funding**:
   Please find attached documentation Henrico County DPU indicating their authorization to request funding.

VA DCR Application for Identifying Restoration Opportunities at Stream Utility Crossings

Estimated Cost of Engineering Services

Estimated Labor Costs:

Tasks	**Project Director**	**Project Manager**	**Engineer III**	**Engineer II**	**Engineer I**	**Total Hours**	**Estimated Labor Costs**
Task 1 - Desktop Analysis							
1. Kickoff Meeting		2			2	4	$660
2. Desktop Assessment - Indentify Buried and Aerial Crossings		1			24	25	$2,975
3. Collect Data from County					12	12	$1,380
4. Develop Ranking Criteria	1	1			4	6	$981
5. Prioritize Reaches for Field Investigation		4			64	68	$8,220
6. City Meeting to Review Prioritization Results		4			4	8	$1,320
Task 2 - Field Investigation							
1. Perform Field Investigation of Aerial Crossings		8			400	408	$47,720
2. Poll Camera Investigation of Buried Crossings		8			150	158	$18,970
Task 3 - Recommendation Memorandum and CCTV Assignment							
1. Prepare Draft Memorandum		2			100	102	$11,930
2. Draft Memorandum Review Meeting		2			8	10	$1,350
3. Prepare Final Memorandum					70	70	$8,050
4. Prepare CCTV Assignment Sheets	1	2			60	63	$7,636
Task 4 - Project Management							
1. General Project Communications and Coordination		16			8	24	$4,360
Subtotal Labor Hours	2	50	0	0	906	958	
Hourly Rate	$306	$215	$145	$130	$115		
Total Estimated Labor Cost	$612	$10,750	$0	$0	$104,190	$115,552	**$115,552**

Estimated Other Direct Costs:

Item	**Cost**	**Multiplier**	**Total Estimate**
1. Field Investigation Subcontractor	$ 10,000	1.05	$10,500
Subtotal Estimated Other Direct Costs			**$ 10,500**

Total Estimated Cost

Total Estimated Cost of Labor and Other Direct Costs	**$126,060**

COMMONWEALTH OF VIRGINIA
COUNTY OF HENRICO

DEPARTMENT OF PUBLIC UTILITIES
804.501.4517

April 5, 2022

Virginia Department of Conservation and Recreation
600 East Main Street
24th Floor
Richmond, VA 23219-2094

To whom it may concern:

The total design contract value for identifying restoration opportunities at stream utility crossings project is $126,060, which includes the identification and prioritization of sanitary sewers crossing creeks and other waterways. The County of Henrico, Department of Public Utilities is an enterprise fund within the County of Henrico. Therefore, Public Utilities has a dedicated revenue stream and is appropriated Capital Improvement funds annually. Those dedicated revenues are projected to be $27.5 million in FY2022 and part of those funds will cover the total estimated project cost prior to DCR grant reimbursement. The DPU is committed to contribute 25% of the project funds and the source of the funds is from the Sewer Line Rehabilitation project in the 2022 Water and Sewer Capital Improvement budget (copy enclosed).

Sincerely,

Bentley P. Chan, PE
Director of Public Utilities

Enclosure

PARHAM AND HUNGARY SPRING ROADS / P.O. BOX 90775 / HENRICO, VIRGINIA 23273-0775

COUNTY OF HENRICO, VIRGINIA
PROPOSED REVENUES & EXPENDITURES - WATER & SEWER ENTERPRISE FUND
FY 2020-21

Water and Sewer Enterprise Fund

Revenues/Resources	FY 18-19 Actual	FY 19-20 Original	FY 20-21 Approved
Water and Sewer Operating Budget:			
Sale of Water	$57,458,997	$59,531,001	$62,252,832
Sale of Sewer	57,593,466	58,909,374	61,440,215
Water Charges	6,847,766	4,785,606	5,189,550
Sewer Charges	6,879,189	4,863,316	5,199,853
Strong Waste Surcharge	375,933	600,000	370,000
City of Richmond	1,348,830	890,100	1,215,688
Interest Earnings	523,389	850,000	981,787
Other Water/Sewer Revenues	1,871,108	1,346,789	1,575,852
Transfer from General Fund	1,930,021	1,928,921	1,929,858
Total Operating Revenues	**134,828,699**	**133,705,107**	**140,155,635**
Operating Expenditures			
Water and Sewer Operating Budget:			
Personnel	21,773,154	22,966,323	23,665,477
Operating	44,731,431	43,638,992	45,274,849
Capital Outlay	580,799	781,922	1,135,653
Sub-Total Operating	**67,085,384**	**67,387,237**	**70,075,979**
Debt Service	26,846,075	29,298,024	31,809,741
Total Operating Expenditures	**93,931,459**	**96,685,261**	**101,885,720**
Results of Operations (Prior to Capital Expenses)	**(40,897,240)**	**(37,019,846)**	**(38,269,915)**
Budget For Capital Use (Below)	**(103,004,520)**	**(69,650,000)**	**(27,500,000)**

Capital Budget Expenditures	FY 18-19 Actual	FY 19-20 Original	FY 20-21 Approved
Approved Capital Projects (FY2019-20 Budget)		69,650,000	
Approved Capital Projects (New FY2020-21 Budget)			27,500,000
Continuing Capital Projects (Previously Approved) (1)	103,004,520		
Total Capital Budget Expenses:	103,004,520	69,650,000	27,500,000
Capital Budget Resources			
Water and Sewer Revenues	28,648,730	61,150,000	27,500,000
Revenue Bonds	74,355,790	8,500,000	0
Total Capital Budget Resources:	103,004,520	69,650,000	27,500,000

Notes:

(1) This number plus the budget figure reflects Utilities estimate of capital spending from previously Board approved capital projects. FY2018-19 represents actual spending, as per the 2019 audit.

County of Henrico, Virginia
Approved Capital Budget
FY2020-21

Project Number	Project Name		Approved FY2020-21
	Capital Projects Fund		
G.O. Bonds - General Government - 2016			
28001	Richmond - Henrico Turnpike	$	5,000,000
	Subtotal - Public Works	$	5,000,000
23004	Deep Run Park	$	4,000,000
23005	Taylor Park		5,000,000
	Subtotal - Recreation and Parks	$	9,000,000
	Subtotal - G.O. Bonds - General Government - 2016	$	14,000,000
	Total - Capital Projects Fund	**$**	**14,000,000**
	Enterprise Fund - Public Utilities		
Other Local Revenue			
00782	New Sewer Connections	$	300,000
00772	Sewer Line Extensions		500,000
00732	Sewer Line Rehabilitation		4,000,000
00743	Sewer Pump Station Improvements		400,000
00737	Sewer Relocation, Adjustments & Crossings		200,000
00725	Plan Review and Inspection		2,000,000
06492	Roof Replacement		50,000
08172	Water Reclamation Facility Improvements		500,000
07027	Rooty Branch Sewers		1,500,000
06159	Almond Creek Force Main		600,000
06157	Almond Creek Sewer Pump Station Replacement		4,600,000
	Subtotal - Other Local Revenue	$	14,650,000
Revenue Bonds			
01076	Strawberry Hill Basin Sewer Rehabilitation	$	5,000,000
	Subtotal - Revenue Bonds	$	5,000,000
	Subtotal - Sewer	$	19,650,000

County of Henrico, Virginia
Approved Capital Budget
FY2020-21

Project Number	Project Name		Approved FY2020-21
	Enterprise Fund - Public Utilities (Continued)		
Other Local Revenue			
00771	New Water Connections	$	150,000
00770	Water Line Extensions		300,000
00768	Water Line Rehabilitation		4,000,000
00769	Water Pumping Station Improvements		500,000
00780	Water Meters		1,000,000
00767	Water Relocation, Adjustments & Crossings		200,000
08171	Water Treatment Facility Improvements		1,500,000
00811	Information Technology Projects		200,000
	Subtotal - Water	$	7,850,000
	Total - Enterprise Fund - Public Utilities	**$**	**27,500,000**
TOTAL APPROVED CAPITAL BUDGET FOR FY2020-21		**$**	**41,500,000**

COUNTY OF HENRICO, VIRGINIA
BOARD OF SUPERVISORS
MINUTE

Agenda Item No. 95-22

Page No. 1 of 1

Agenda Title: RESOLUTION — Authorization to Submit Applications — Community Flood Preparedness Fund

For Clerk's Use Only:
Date: 3/8/2022
(✓) Approved
( ) Denied
( ) Amended
( ) Deferred to: ______

BOARD OF SUPERVISORS ACTION

Moved by (1) Schmitt Seconded by (1) Branin
(2) ______ (2) ______

REMARKS: APPROVED

	YES	NO	OTHER
Branin, T.	✓		
Nelson, T.	✓		
O'Bannon, P.	✓		
Schmitt, D.	✓		
Thornton, F.			

WHEREAS, the Virginia Department of Conservation and Recreation's ("DCR") Community Flood Preparedness Fund ("CFPF") was established to provide grant funding for regions and localities across Virginia to reduce the impacts of flooding, including flooding driven by climate change ("Flood Preparedness Projects"); and,

WHEREAS, the CFPF program reimburses eligible recipients up to 90% of the approved costs of Flood Preparedness Projects; and,

WHEREAS, the County must submit applications for CFPF funding through DCR; and,

WHEREAS, the County has identified two Flood Preparedness Projects that are eligible for CFPF funds:

(1) planning for stream restoration and utility rehabilitation at utility stream crossings; and

(2) installation of an emergency generator at the Gambles Mill Sewage Pump Station to provide redundant power for continuous operation of the pump station.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors authorizes the Director of Public Utilities to submit applications for CFPF funding for the projects identified above.

Comment: The Director of Public Utilities recommends approval of the Board paper, and the County Manager concurs.

By Agency Head ______ JM By County Manager ______

Copy to: ______

Certified:
A Copy Teste ______
Clerk, Board of Supervisors

Date: ______

COUNTY OF HENRICO, VIRGINIA
BOARD OF SUPERVISORS
MINUTE

Page No. 1 of 5
Agenda Item No. 87A-21

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

For Clerk's Use Only:
Date: 4/13/2021
(✓) Approved
( ) Denied
( ) Amended
( ) Deferred to:

BOARD OF SUPERVISORS ACTION
Moved by (1) Nelson Seconded by (1) O'Bannon
(2) Branin (2) Thornton
REMARKS:

APPROVED

	YES	NO	OTHER
Branin, T.	✓		
Nelson, T.	✓		
O'Bannon, P.	✓		
Schmitt, D.	✓		
Thornton, F.	✓		

WHEREAS, the Board of Supervisors of the County of Henrico, Virginia, held an advertised public hearing at 6:00 p.m., on March 23, 2021, to consider the proposed Operating and Capital Annual Fiscal Plans for FY 2021-22; and,

WHEREAS, the Board wishes to approve the proposed Plans with the changes noted below.

NOW, THEREFORE, BE IT RESOLVED that the proposed Operating and Capital Annual Fiscal Plans for FY 2021-22 are hereby approved for informative and fiscal planning purposes only, with the changes noted.

OPERATING ANNUAL FISCAL PLAN
ESTIMATED OPERATING RESOURCES

01- GENERAL FUND:	Manager Proposed	Board Approved
General Property Taxes	$ 531,320,000	$ 531,320,000
Other Local Taxes	170,610,000	170,610,000
Permits, Fees, & Licenses	6,754,000	6,754,000
Fines & Forfeitures	2,085,000	2,085,000
Use of Money & Property	11,334,700	11,334,700
Charges for Services	3,710,500	3,710,500
Miscellaneous	3,969,000	3,969,000
Recovered Costs	4,338,000	4,338,000
Total from Local Sources	$ 734,121,200	$ 734,121,200
Non-Categorical Aid	$ 14,057,000	$ 14,057,000
Shared Expenses	17,200,000	17,200,000
Categorical Aid	362,395,040	362,395,040
Total from State	$ 393,652,040	$ 393,652,040
Categorical Aid - Total Federal	$ 385,000	$ 385,000
GENERAL FUND REVENUE	$ 1,128,158,240	$ 1,128,158,240
Operating Transfers	$ (183,357,196)	$ (183,357,196)
From (To) Fund Balance	39,124,300	39,124,300
GENERAL FUND RESOURCES	$ 983,925,344	$ 983,925,344

By Agency Head _______ By County Manager _______

Certified:
A Copy Teste:

Copy to:

Clerk, Board of Supervisors

Date: _______

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

11 – SPECIAL REVENUE FUND:		
Permits, Fees, & Licenses	$ 1,059,905	$ 1,059,905
Fines & Forfeitures	283,360	283,360
Use of Money & Property	143,108	143,108
Charges for Services	31,573,153	31,573,153
Miscellaneous	9,091,888	9,091,888
Recovered Costs	618,008	618,008
Total from Local Sources	$ 42,769,422	$ 42,769,422
Non-Categorical Aid	$ 4,239,382	$ 4,239,382
Categorical Aid	52,381,040	52,381,040
Total from State	$ 56,620,422	$ 56,620,422
Categorical Aid - Total Federal	$ 63,016,717	$ 63,016,717
SPECIAL REVENUE FUND REVENUE	$ 162,406,561	$ 162,406,561
Operating Transfers	$ 36,906,981	$ 36,906,981
From (To) Fund Balance	1,574,041	1,574,041
SPECIAL REVENUE FUND RESOURCES	$ 200,887,583	$ 200,887,583
51 – WATER AND SEWER ENTERPRISE FUND:		
Fines & Forfeitures	$ 159,485	$ 159,485
Charges for Services	135,779,291	135,779,291
Miscellaneous	2,557,472	2,557,472
W&S ENTERPRISE FUND REVENUE	$ 138,496,248	$ 138,496,248
Operating Transfers	$ 1,932,108	$ 1,932,108
From (To) Retained Earnings	(36,156,652)	(36,156,652)
W&S ENTERPRISE FUND RESOURCES	$ 104,271,704	$ 104,271,704
61 – CENTRAL AUTO MAINTENANCE (C.A.M.) FUND:		
Use of Money & Property	$ 400,000	$ 400,000
Recovered Costs	22,561,406	22,561,406
C.A.M. FUND REVENUES	$ 22,961,406	$ 22,961,406
Operating Transfers	0	0
C.A.M. FUND RESOURCES	$ 22,961,406	$ 22,961,406
62 – TECHNOLOGY REPLACEMENT FUND:		
Operating Transfers	$ 3,000,000	$ 3,000,000
From (To) Retained Earnings	1,314	1,314
TECH. REPLACE. FUND RESOURCES	$ 3,001,314	$ 3,001,314
63 – RISK MANAGEMENT/WORKPLACE SAFETY FUND:		
Recovered Costs - Total Revenue	$ 1,000,000	$ 1,000,000
Operating Transfers	9,493,570	9,493,570
RISK MANAGEMENT/WORKPLACE SAFETY RES.	$ 10,493,570	$ 10,493,570
64 - HEALTHCARE FUND:		
Interest on Investment	$ 400,000	$ 400,000
Miscellaneous	200,000	200,000
Recovered Costs	142,438,275	142,438,275
HEALTHCARE FUND RESOURCES	$ 143,038,275	$ 143,038,275
71 – DEBT SERVICE FUND:		
Operating Transfers - TOTAL RESOURCES	$ 78,346,649	$ 78,346,649
DEBT SERVICE FUND RESOURCES	$ 78,346,649	$ 78,346,649

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

82 – JAMES RIVER JUVENILE DETENTION CENTER AGENCY FUND:		
Shared Expenses - Local	$ 534,082	$ 534,082
Shared Expenses - State	1,565,294	1,565,294
JRJDC AGENCY FUND REVENUE	$ 2,099,376	$ 2,099,376
Operating Transfers	$ 3,451,088	$ 3,451,088
From (To) Fund Balance	133,512	133,512
JRJDC AGENCY FUND RESOURCES	$ 5,683,976	$ 5,683,976
83 – FIDUCIARY FUNDS		
Recovered Costs	$ 75,000	$ 75,000
Operating Transfers	4,525,000	4,525,000
OPEB, LINE OF DUTY AND LTD RESOURCES	$ 4,600,000	$ 4,600,000
90 – ADJUSTMENT FOR INTERFUND TRANSACTIONS:		
Operating Transfers - TOTAL RESOURCES	$ (125,273,753)	$ (125,273,753)
TOTAL OPERATING RESOURCES	$ 1,431,936,068	$ 1,431,936,068
Including: REVENUE TOTAL	$ 1,597,654,773	$ 1,597,654,773
OPERATING TRANSFERS	(170,911,553)	(170,911,553)
FUND BALANCE/RETAINED EARNINGS	5,192,848	5,192,848
	$ 1,431,936,068	$ 1,431,936,068

- -

ESTIMATED OPERATING REQUIREMENTS

Department 01- GENERAL FUND:	Manager Proposed	Board Approved
General Government Administration	$ 64,023,716	$ 64,023,716
Judicial Administration	10,276,583	10,276,583
Public Safety	215,015,894	215,015,894
Public Works	54,651,170	54,651,170
Health & Welfare	2,687,497	2,687,497
Education	560,920,241	560,920,241
Recreation, Parks, & Culture	42,355,130	42,955,130 *
Community Development	20,627,148	20,627,148
Miscellaneous	13,367,965	12,767,965 *
TOTAL GENERAL FUND	$ 983,925,344	$ 983,925,344
11 – SPECIAL REVENUE FUND:		
Judicial Administration	$ 2,555,354	$ 2,555,354
Public Safety	3,940,367	3,904,967 *
Public Works	18,289,050	18,289,050
Health & Welfare	74,893,137	74,893,137
Education	100,959,675	100,959,675
Miscellaneous	250,000	285,400 *
TOTAL SPECIAL REVENUE FUND	$ 200,887,583	$ 200,887,583
51 – WATER AND SEWER ENTERPRISE FUND:		
Public Utilities - Operations	$ 73,918,961	$ 73,918,961
- Debt Service	30,352,743	30,352,743
TOTAL W&S ENTERPRISE FUND	$ 104,271,704	$ 104,271,704
61 – CENTRAL AUTO MAINTENANCE FUND:		
Central Auto. Maint. - TOTAL FUND	$ 22,961,406	$ 22,961,406

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

62 – TECHNOLOGY REPLACEMENT FUND:		
Technology Replacement - TOTAL FUND	$ 3,001,314	$ 3,001,314
63 – RISK MANAGEMENT/WORKPLACE SAFETY FUND:		
Finance	$ 10,493,570	$ 10,493,570
TOTAL RISK MANAGEMENT/WORKPLACE SAFETY	$ 10,493,570	$ 10,493,570
64 – HEALTHCARE FUND:		
Healthcare - TOTAL FUND	$ 143,038,275	$ 143,038,275
71 – DEBT SERVICE FUND:		
General Government	$ 32,711,095	$ 32,711,095
Education	45,635,554	45,635,554
TOTAL DEBT SERVICE FUND	$ 78,346,649	$ 78,346,649
82 – JAMES RIVER JUVENILE DETENTION CENTER AGENCY FUND:		
JRJDC - Operations	$ 5,683,976	$ 5,683,976
83 – FIDUCIARY FUND:		
OPEB - GASB 45	$ 2,750,000	$ 2,750,000
Long-Term Disability	600,000	600,000
Line of Duty Act (LODA)	1,250,000	1,250,000
TOTAL FIDUCIARY FUND	$ 4,600,000	$ 4,600,000
90 – ADJUSTMENT FOR INTERFUND TRANSACTIONS:		
Interdepartmental Billings - CAM	$ (22,961,406)	$ (22,961,406)
- Healthcare	(102,312,347)	(102,312,347)
TOTAL ADJUSTMENTS	$ (125,273,753)	$ (125,273,753)
TOTAL OPERATING REQUIREMENTS	$ 1,431,936,068	$ 1,431,936,068

* Indicates a change

CAPITAL ANNUAL FISCAL PLAN
ESTIMATED CAPITAL RESOURCES

Source	Manager Proposed	Board Approved
21 - CAPITAL PROJECTS FUND:		
Central Virginia Transit Authority	$ 22,500,000	$ 22,500,000
Education Meals Tax Revenue	9,000,000	9,000,000
G. O. Bonds - General	48,400,000	48,400,000
G. O. Bonds - Education	19,000,000	19,000,000
Bond Premiums	12,305,685	12,305,685
General Fund - Stormwater Dedication	2,348,000	2,348,000
Designated Capital Reserve	12,440,000	12,440,000
VPSA Bonds	54,055,000	54,055,000
Fund Balance - General Fund	10,825,000	10,825,000
TOTAL CAPITAL PROJECTS FUND	$ 190,873,685	$ 190,873,685
22 - VEHICLE REPLACEMENT RESERVE:		
Fund Balance - General Fund	$ 11,024,800	$ 11,024,800
TOTAL VEHICLE REPLACEMENT RESERVE	$ 11,024,800	$ 11,024,800
51 – WATER AND SEWER ENTERPRISE FUND:		
Water & Sewer Fees/Charges	$ 33,300,000	$ 33,300,000
TOTAL WATER AND SEWER ENTERPRISE FUND	$ 33,300,000	$ 33,300,000
TOTAL CAPITAL RESOURCES	$ 235,198,485	$ 235,198,485

Agenda Title: **RESOLUTION - Approval of Operating and Capital Annual Fiscal Plans for FY 2021-22 and Allocation of Car Tax Relief for Tax Year 2021**

ESTIMATED CAPITAL REQUIREMENTS

Department	Manager Proposed	Board Approved
21 - CAPITAL PROJECTS FUND:		
General Government	$ 101,318,685	$ 101,318,685
Education	89,555,000	89,555,000
TOTAL CAPITAL PROJECTS FUND	$ 190,873,685	$ 190,873,685
22 - VEHICLE REPLACEMENT RESERVE:		
Public Safety	$ 6,324,800	$ 6,324,800
Education	4,700,000	4,700,000
TOTAL VEHICLE REPLACEMENT RESERVE	$ 11,024,800	$ 11,024,800
51 – WATER AND SEWER ENTERPRISE FUND:		
Public Utilities - Water	$ 5,200,000	$ 5,200,000
- Sewer	28,100,000	28,100,000
TOTAL WATER & SEWER ENTERPRISE FUND	$ 33,300,000	$ 33,300,000
TOTAL CAPITAL REQUIREMENTS	$ 235,198,485	$ 235,198,485

BE IT FURTHER RESOLVED that the funds included in the Operating and Capital Annual Fiscal Plans for any County department, office, or agency may be used as participating funds in any Federal or State aid program for like purpose upon appropriation by the Board of Supervisors; and,

BE IT FURTHER RESOLVED that the Schedule of Compensation attached hereto effective at the beginning of FY 2021-22 is approved; and,

BE IT FURTHER RESOLVED that the approved Operating Annual Fiscal Plan for FY 2021-22 includes:

1. An increase in the personnel complement of 13 positions for General Government and 91.5 positions for Schools;
2. Continued funding for a 2% scale adjustment for all employees effective in the fourth quarter of FY 2020-21;
3. Continued funding for market adjustments for certain public safety, education, and other positions effective in the fourth quarter of FY 2020-21;
4. New funding for a 2.372% wage increase for all eligible General Government and Schools employees, to be effective on June 19, 2021; and
5. New funding for a wage increase ranging from 2.372% to 9.831%, based on length of service in Henrico County and other eligibility criteria, to be effective in the second quarter of FY 2021-22.

BE IT FURTHER RESOLVED that in order to implement changes to the Personal Property Tax Relief Act of 1998 (the "PPTRA") made by legislation adopted by the Virginia General Assembly:

1. Any qualifying vehicle, as defined in the PPTRA, sitused within the County commencing January 1, 2021, shall receive personal property tax relief in the following manner:
    a. Qualifying vehicles valued at $1,000 or less shall receive 100% tax relief;
    b. Qualifying vehicles valued at between $1,001 to $20,000 shall receive 48% tax relief;
    c. Qualifying vehicles valued at $20,001 or more shall receive 48% tax relief on the first $20,000 of value only; and
    d. All other vehicles which do not meet the definition of "qualifying vehicles" will not receive any form of tax relief under the PPTRA.
2. The amount of tax relief shall be a specific dollar amount offset against the total personal property taxes that would otherwise be due on a qualifying vehicle but for the PPTRA. The specific dollar amount of relief shall be shown on the tax bill for each qualifying vehicle, together with a general description of the criteria upon which relief has been allocated.

COMMENTS: The Director of Finance recommends approval of the Board paper, and the County Manager concurs.

FY22 SCHEDULE OF COMPENSATION
County of Henrico, Virginia

OFFICE, BOARD, COMMISSION, AUTHORITY OR JOB TITLE	RATE
Board of Supervisors	$ 58,498.11 per annum (1)
Board of Zoning Appeals	$6,600.00 per annum
Electoral Board - General Election (members other than the Secretary)	$4,649.40 per annum (2)
Secretary, Electoral Board - General Election	$9,289.80 per annum (2)
Election Officials	$150.00 base pay per workday (3)
Assistant Chief Election Officials	$180.00 base pay per workday (3)
Chief Election Officials	$200.00 base pay per workday (3)
Planning Commission	$20,000.00 per annum
Richmond Regional Planning District Commission	$3,000.00 per annum
Capital Region Airport Commission	$3,000.00 per annum
Board of Real Estate Review & Equalization	$300.00 per month
School Board	$21,786.60 per annum (4)
Social Services Board	$3,000.00 per annum
Volunteer Firefighters	$2.00 per call
Economic Development Authority	$200.00 per meeting
Parks and Recreation Advisory Commission	$75.00 per meeting
Housing Advisory Committee	$225.00 per meeting

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(1) Acting pursuant to Va. Code Sec. 15.2-1414.2, on April 23, 2019, the Board set the maximum annual salaries for calendar years 2020-2023 as follows: 2020-$57,142.69; 2021-$58,498.11; 2022-$59,885.69; 2023-$61,306.17, and the Chairman and Vice-Chairman receive the additional sum of 15% and 10%, respectively, of the annual salary prevailing in each calendar year. The Board elected to forgo the increase in its compensation previously authorized for 2021. Effective January 12, 2021 the pay for the Board will be adjusted to reflect the rate previously authorized for 2021.

(2) The annual compensation rate and effective date are set by the General Assembly and subject to the Governor's approval. Salary amounts for FY22 are based upon current salaries and increases approved by the 2020 General Assembly. To date, the General Assembly has agreed to a 5% pay increase on July 1, 2021. However, the FY22 budget has not been approved by the Governor so the salary shown here may change.

(3) Rate approved by the Henrico County Board of Supervisors on October 14, 2008.

(4) Acting pursuant to Va. Code Sec. 22.1-32, on May 9, 2019, the School Board set the maximum annual salary for calendar year 2020 at $21,359.41, and determined, in each calendar year 2021, 2022, and 2023, that each member of the School Board will receive a maximum increase equal to any wage increase established for School Board employees. For FY22, the pay increase is 2%. The Chairman receives an additional sum of $2,000.00 per year.

Prepared by: County of Henrico Department of Human Resources
Employment and Compensation Services Division
Revised March 31, 2021

9)

FY21 SCHEDULE OF COMPENSATION
County of Henrico, Virginia

NAME AND OFFICE OR JOB TITLE	SALARY
Heidi Barshinger Clerk of Circuit Court	$ 172,460.43 (5)(7)
Alisa Gregory Sheriff	$ 171,959.70 (5)(6)(8)
Mark Coakley General Registrar	$ 109,919.76 (6)(9)
Shannon Taylor (10) Attorney for the Commonwealth	$ 195,371.85 (6)(10)

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(5) The Clerk of the Circuit Court and the Sheriff are elected positions. The General Assembly sets the annual compensation and effective dates subject to the Governor's approval. Salaries for FY22 are based on current salaries and reflect the 5% pay increase effective July 1, 2021 as approved by the General Assembly in the 2021 Special Session I. The County adjusts these salaries if and as required by the General Assembly's actions.

(6) 2012 Va. Acts c. 822 requires persons employed by local government to contribute five percent of their creditable compensation for the employee contribution to the Virginia Retirement System. To comply with 2012 Va. Acts c. 822 and the non-supplant requirement, the current incumbent in this elected/appointed position, who was employed or hired on or before July 1, 2012, receives an additional amount equal to 5% of the salary approved by the General Assembly. Future incumbents in this position will not receive an additional 5% locality supplement for the VRS employee member contribution per 2012 Va. Acts c. 822.

(7) Salary reflects the current Clerk of the Circuit Court's certification.

(8) Consistent with historical pay practice for this position, the current Sheriff will receive the longevity pay adjustment approved by the County Board of Supervisors. Consistent with the approved longevity pay formula, the current position incumbent will receive a pay supplement equal to 3-steps (7.286%) effective September 25, 2021.

(9) Effective June 22, 2019 (FY20), the constitutional position of General Registrar was adopted into the County classification and compensation plan at grade HU.34. However, the General Assembly has approved repositioning the General Registrar classification/salary within the State's compensation system. If the budget approved by the General Assembly is approved by the Governor, the General Assembly's actions may result in this position/classification being returned to the Schedule of Compensation.

(10) Effective June 22, 1988 (FY89), the constitutional position of Attorney for the Commonwealth was adopted into the County classification and compensation plan. The position is currently assigned to pay grade HU.49 and the current elected position incumbent (Taylor) receives the pay increases and wage adjustments approved by the County Board of Supervisors for county pay plans.

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Henrico County Department of Public of Utilities

Eligibility Information

Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
[✓ Yes]	Eligible for consideration	X
No	Not eligible for consideration	-
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
[✓ Yes]	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	-
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	-
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	-
[✓ No]	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
[✓ Yes]	Eligible for consideration	X
No	Not eligible for consideration	-
N/A	Match not required	-

Capacity Building and Planning Eligible for Consideration		☒ **Yes** ☐ **No**
Applicant Name:	Henrico County Department of Public of Utilities	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	-
Development of a new resilience plan.	**55**	-
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development.	**40**	-
Stakeholder engagement and strategies.	**25**	-
Goal planning, implementation and evaluation.	**25**	-
Long term maintenance strategy.	**25**	25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	-
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	-
High Social Vulnerability (1.0 to 1.5)	**12**	-
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	-
Very Low Social Vulnerability (Less than -1.0)	**0**	-
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	-
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	-
10. Does this project provide "community scale" benefits?		
Yes	**20**	-
No		0
Total Points		**88**

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID_510077 - Henrico County CFPF Round 3 Submission

1 message

Shue, Allen <ashue@greeley-hansen.com> Thu, Apr 7, 2022 at 8:43 PM
To: Virginia Department of Conservation & Recreation <cfpf@dcr.virginia.gov>
Cc: "Chan, Bentley" <cha70@henrico.us>, "Claytor, Ralph" <cla01@henrico.us>, "Sossong, Marchelle" <sos@henrico.us>, "Logue, Kyle" <klogue@greeley-hansen.com>

Hello,

I am a consulting engineer assisting Henrico County (County) with submitting two grant applications for this round of the VA DCR Community Flood Preparedness Fund Grant.

Due to the size of the applications they are not able to be transmitted through email. Please find the following .zip files through the service WeTransfer:

- CID# 510077_HenricoCounty.Gambles_Mill_PS_Flood_Mitigation_and Resiliency_CFPF-1
- CID# 510077_HenricoCounty.Stream_Restoration_at_Utility Xing_CFPF-2

At this link:

- Henrico County - CFPF Round 3 Applications
- Please note that you will need to click through the splash page before clicking the download link.

Thank you very much for the consideration. Looking forward to speaking with you.

Regards,

Allen

GREELEY AND HANSEN

Allen Shue, PE, CFM

Associate

9020 Stony Point Parkway, Suite 475

Richmond, VA 23235

P: 804.204.2425 C: 914.275.2554

greeley-hansen.com

Town of Buchanan
Post Office Box 205
Buchanan, Virginia 24066
Phone: 540-254-1212

April 8, 2022

Wendy Howard-Cooper
Director for Dam Safety and Floodplain Management
Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, Virginia 23219

RE: Town of Buchanan Flood Resilience Plan and Staff Training CFPF Application

Ms. Howard-Cooper:

The Town of Buchanan is pleased to submit the following application for funding from the Community Flood Preparedness Fund (CFPF) to develop a Flood Preparedness Resilience Plan and for Town staff to receive training to become a Certified Floodplain Manager. A CFPF Grant will enable the Town to develop a Resilience Plan in accordance with the DCR's five key elements, which will guide the implementation of flood mitigation projects and work towards a more resilient, flood ready community.

The Town of Buchanan is located adjacent to the James River and its economy and identity are closely linked to the river. In the past, the Town has experienced significant flood events, a Resilience Plan will provide a roadmap for our community to prepare for future floods while maintaining our close connection to the river. The plan will include specific community flood preparedness projects to guide our efforts. The Town of Buchanan lacks the financial resources to prepare a Resilience Plan without a CFPF Grant.

Please accept this letter and supporting documents as the Town's application for CFPF funding. Please feel free to reach out to Susan McCulloch, Town Manager, if you have any questions.

Sincerely,

Susan McCulloch, Town Manager
Buchanan, Virginia

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Town of Buchanan

Category of Grant Being Applied for (check one):

__X__Capacity Building/Planning

_____Project

_____Study

NFIP/DCR Community Identification Number (CID)510019

If a state or federally recognized Indian tribe, Name of tribe______________________________

Name of Authorized Official: Susan McCulloch

Signature of Authorized Official: Susan McCulloch

Mailing Address (1): P.O. Box 205, 19753 Main St.

Mailing Address (2): ____

City: Buchanan State: Virginia Zip: 24066

Telephone Number: (540) 254-1212, Ext 3 Cell Phone Number: (____) ______________

Email Address: smcculloch@buchanan-va.gov

Contact Person (If different from authorized official): **SAME AS AUTHORIZED OFFICIAL**

Mailing Address (1): ____

Mailing Address (2): ____

City: __________________________ State: ________________ Zip: __________________

Telephone Number: (____) ______________ Cell Phone Number: (____) _______________

Email Address: ____

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes _**X**_ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

X Floodplain Staff Capacity.

X Resilience Plan Development

- **X** Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- **X** Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Town of Buchanan, Virginia (See Attachment A)

NFIP Community Identification Number (CID#): 510019

Is Project Located in an NFIP Participating Community? **X** Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes **X** No

Flood Zone(s) (If Applicable): Zones AE, AO, and AH

Flood Insurance Rate Map Number(s) (If Applicable): 51023C0264C, 51023C0265C, 51023C0266C, 51023C0268C

Total Cost of Project: **$60,000**

Total Amount Requested **$54,000**

Scope of Work Narrative Supporting Documentation:

- A link to or a copy of the current floodplain ordinance: MASTER Buchanan Town Zoning word ver..docm (00011659.DOCM;1) (townofbuchanan.com)

- A link to or a copy of the current hazard mitigation plan: I (botetourtva.gov)

- A link to or a copy of the current comprehensive plan: https://www.townofbuchanan.com/home/~ptow/public_html/ckfinder/userfiles/files/Comprehensive Plan - 2019 - 2025.pdf

- Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer

  Social Vulnerability Index Classification: Low Social Vulnerability
  Vulnerability Index Score: -0.0
  Housing Vulnerability: fragile stock
  Housing Characteristics: high pct. mobile homes/long-term renters
  Social Vulnerability Status: Not Socially Vulnerable
  Socio-Economic Characteristics: No extreme values
  Tract Name: Census Tract 402, Botetourt County, VA

  Hazardous/Toxic Index Classification: Low Potential Hazardous/Toxic Exposure
  Hazardous/Toxic Index Score: -0.0
  Tract Name: Census Tract 402, Botetourt County, VA

- Completed Scoring Criteria Sheet in Appendix D: See **Attachment B**

Budget Narrative Supporting Documentation

- Authorization to request funding from the Fund from governing body or chief executive of the local government: **See Attachment C**

Scope of Work Narrative – Capacity Building and Planning

All applications must include a Scope of Work Narrative that clearly describes the proposed activities, including supporting documentation as necessary and, at a minimum, includes the following.

1. Assess capacity needs and assets to include:
   a. Resource needs identification – financial, human, technical assistance, training.

      Financial – The Town of Buchanan is a small community with a population of 1,196 people (2020 U.S. Census). Buchanan has extremely limited financial resources to address community flood preparedness concerns. Furthermore, Buchanan is a low-income community that has been financially depressed for decades. The Town of Buchanan's Median Household Income ($50,278) is only 69.1% of the surrounding Botetourt County's ($72,719) (2020 U.S. Census).
      Human and Technical Assistance – As a small community, the Town of Buchanan simply does not have the staff resources available to adequately address community flood preparedness concerns on its own. The Town has two staff members whose responsibilities include planning related to flood preparedness. These individuals are the Town Manager and the Community Development Planner. The responsibilities of these positions cover a range of operational and planning issues. These staff members do not have the time or the specialized knowledge to adequately address community flood preparedness concerns. The Town will utilize funds from the Virginia Community Flood Preparedness Fund to contract with qualified planning and engineering professionals. Through a competitive Request for Qualifications procurement process, the Town has selected *Cardno now Stantec* to assist with community flood preparedness and brownfield redevelopment concerns.
      Training – The Town of Buchanan recognizes the need to educate its leaders, staff, and citizens regarding community flood preparedness concerns. Training will include formal training of the Town Manager to become a Certified Floodplain Manager (CFM) in order to better understand, prepare for, and if necessary recover from flood hazards. Local leaders will be invited to participate in an educational exercise emphasizing what can be done to minimize flood hazards, how to prepare for an imminent flood event, and how to best recover from a flood. Citizens will be invited to learn about the Town's efforts and offer input during future planning and project implementation efforts.

   b. Plan for developing, increasing, or strengthening knowledge, skills and abilities of existing or new staff. This may include training of existing staff, hiring personnel, contracting with of expert consultants or advisors.

      The overarching goal of this proposed scope of work is to evaluate existing plans, ordinances, and related policies, address key information gaps, and develop a Resilience Plan, which includes the following five key elements:

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a locality regardless of socioeconomics or race.
4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
5. Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.

To achieve this goal the Town of Buchanan has contracted with *Cardno now Stantec* to assist the Town in developing a Resilience Plan that will guide the Town's community flood preparedness efforts. Development of the Resilience Plan and future implementation of flood control projects will be a collaborative effort between Town leadership, staff, citizens and selected contractors. In addition, the Town will communicate with adjacent jurisdictions, such as Botetourt County, and relevant state and federal agencies regarding its planning and flood control project implementation decisions.

Specific training for Town staff will include the Town Manager becoming a CFM. This position will become the primary contact for the Town regarding flood related concerns. Local officials will be invited to participate in a table top training exercise to identify flood hazards, discuss strategies and procedures in the event of an imminent flood, and how to mitigate and manage damage after an event. The public will be invited to attend an informational meeting regarding the Town's efforts to develop Resilience Plan and implement future flood preparedness projects. The results of these combined efforts will increase the knowledge and overall level of preparedness for all community stakeholders.

c. Resource development strategies. Where capacity is limited by funding, what strategies will be developed to increase resources in the local government? This may include work with non-governmental organizations, or applying for grants, loans, or other funding sources.

Financial resources to address community flood preparedness efforts are extremely limited for the Town of Buchanan. Projects specified in the Resilience Plan will require funding assistance from various sources. The Town intends to apply for additional funds from the Virginia Community Flood Preparedness Fund for implementation of projects specified in its Resilience Plan. Local funds necessary for future grant matches, to maintain and update the Resilience Plan, and staff time to address citizen concerns will be considered by the Town leadership. Staff will also coordinate with their selected consultants to identify additional grant resources for flood preparedness projects.

d. Policy management and/or development.

As part of the Resilience Plan development process the *Cardno now Stantec* staff will review Town's Comprehensive Plan, local ordinances related to flood management, the Botetourt County Emergency Operations Plan, and other related documents. Based on this review, consultation between the Town's selected consultants and local leaders, input from citizens, and best management practices the Town will revise its policies and ordinances accordingly.

2. Goals and objectives tied to improving flood protection and prevention in a whole community approach to resilience. Identify and describe the goals and objectives of the project.

In order to develop a Resilience Plan that includes the five key elements outlined in the *2022 Grant Manual for the Virginia Community Flood Preparedness Fund*, which will guide the Town's approach to community flood preparedness for the foreseeable future, the Town and *Cardno now Stantec* will perform the following tasks:

Baseline Information for Resilience Plan Development

- ***Flood Scenario Modeling*****:** The Town of Buchanan has an existing detailed FEMA flood model that will be obtained to ascertain flood risk and evaluate alternatives. The existing FEMA Flood Insurance Rate Map (FIRM) model for regulatory and non-regulatory data will be requested and purchased within ten (10) days of project start. The model will then be used to develop multiple return periods (up to five) which are likely the 10-year, 50-year, 100-year, 500-year, and 1,000-year. Decisions on which frequencies to include will include research on past events and likely future conditions. Spatial GIS files will be produced to evaluate alternatives including depth grids and water surface elevations. Up to five (5) different flood control options will be evaluated for various return periods as part of this evaluation.
- ***Visual Inspections*****:** The Town's selected consultant will perform visual inspections of features of interest to the community flood preparedness program located along the James River and within the floodway. This effort will also include an inspection of tributary streams and relevant drainage structures to insure localized flooding is not occurring as a result of maintenance related issues.
- ***Review of Flood Related Documents and Coordination with Town Staff*****:** The Town's selected consultant will compile and review relevant local, County, and regional flood related documents to establish a baseline of Town's current community flood preparedness. As part of this effort the consultant will interview Town staff to capture their institutional knowledge.

Resilience Plan Development

- ***Proposed Flood Control Projects*****:** Based on the information learned while compiling the baseline information about the Town's current community flood preparedness, *Cardno now Stantec* will develop a list of specific potential future community flood preparedness projects. Principles from the five key resilience plan elements will guide the inclusion of projects. An initial working list of projects will be developed and may change during the resilience plan development process. The list of projects ultimately included in the Town's Resilience Plan will incorporate input from key stakeholders and will provide the path for the Town's flood preparedness efforts.

- ***Table Top Exercise for Key Stakeholders***: *Cardno now Stantec* will conduct a presentation/training for local officials and other key stakeholders, which is designed to educate and collect input regarding the Town's redevelopment, planning, and community flood preparedness priorities. This event will be limited to two (2) hours in consideration of the stakeholders' schedules. However, if any attendees have additional questions or comments the Town's consultants will conduct follow up discussions with those individuals.
- ***Public Information and Input Meeting***: *Cardno now Stantec* will conduct a public meeting with the goal of educating the citizens of Buchanan about Town's community flood preparedness efforts and soliciting public input on the proposed projects that will be included in the Town's Resilience Plan. This event will be limited to two (2) hours.
- ***Develop Town of Buchanan Resilience Plan***: *Cardno now Stantec* will integrate all the information gathered throughout the information collection, project development, the stakeholder table top exercise, and the public information meeting to develop the Town of Buchanan's Community Flood Preparedness Resilience Plan. The Resilience Plan will be made available to the public through the Town's website and as a hardcopy at the Town Offices.
- ***Town Staff CFM Training***: Training for Town staff will include the Town Manager becoming a Certified Floodplain Manager. This position will become the primary contact for the Town regarding flood related concerns.

3. Stakeholder identification, outreach and education strategies.

   Stakeholders will include the Town's elected officials, key staff members, and interested property owners. The Town will apprise adjacent government jurisdictions of its plans to develop a Resilience Plan. As part of the plan development process the Town staff and *Cardno now Stantec* plan to conduct an in-person and possibly virtual educational table top exercise to provide information and solicit input about the Resilience Plan and future community flood preparedness efforts. Also, a public meeting to educate the Town's citizens about the Resilience Plan and the Town's community flood preparedness efforts will be held prior to finalization of the Resilience Plan. Once completed the Resilience Plan will be available online and in hardcopy for review. Moving forward the Town Manager will be available to address questions and receive comments from interested parties. When determined to be helpful, the Town may hold additional public meetings prior to the start of significant projects.

4. Implementation plan and timelines for specific elements of completion such as training, certifications, plan development, etc.

   In March 2022, the Town of Buchanan issued a Request for Qualifications, reviewed all responses, and selected *Cardno now Stantec* to assist with developing a Resilience Plan for the Town. Once the Town is notified of award of requested the funds it will instruct its selected contractor to commence with the Resilience Plan development process. The approximate timeline to complete the tasks associated with developing the plan are outlined below:

Baseline Information for Resilience Plan Development	
Project Task	**Months from Award Announcement**
Review of Flood Related Documents and Coordination with Town Staff	3
Visual Inspections	3
Flood Scenario Modeling	4
Resilience Plan Development	
Proposed Flood Control Projects	5
Table Top Exercise for Key Stakeholders	6
Public Information and Input Meeting	6
Develop Town of Buchanan Resilience Plan	9
Town Staff CFM Training	9

   Assuming a June 2022 Community Flood Preparedness Fund Grant award, the Town anticipates completing all project tasks including development of a Resilience Plan by March 2023.

5. Parties responsible for capacity building and/or plan development process.

   The **Authorized Official** and **Contact Person** for the Town is the Town Manager, Susan McCulloch. Ms. McCulloch is also the individual designated to become a CFM and manage all future community flood preparedness issues for the Town. Susan will coordinate closely with *Cardno now Stantec*, the Town's selected consultant to develop the Resilience Plan.

   The *Cardno now Stantec* Project Manager is Joe Morici. Mr. Morici is a Professional Engineer and a Senior Principal. He leads the regional efforts to collaborate with local governments to develop programs in their communities. This includes identifying potential project sites, developing community support, authoring successful grant applications, developing work plans, and identifying, obtaining, and leveraging multiple sources of funding. For each project, he partners with the client to develop a tailored solution to ensure the project meets the both the short-term and long-term needs of the client. Mr. Morici will coordinate with a range of qualified professional engineers, planners, and environmental consultants to develop this project.

6. Performance outputs and measures. Describe the expected results and benefits and how success will be measured.

   The primary objectives of this project include the following:

   - Development of a Community Flood Preparedness Resilience Plan that includes the five key elements outlined by the Virginia Department of Conservation and Recreation. The Resilience Plan will serve as a road map for the Town to improve its community flood preparedness in the coming years.
   - Education about community flood preparedness for the key stakeholders and citizens of the Town. Education efforts will prepare local officials regarding next steps to prevent flooding, steps to take to prepare for an impending flood event, and what to do to clean up after a flood.
   - Development of a sustainable community flood preparedness program. Development of Resilience Plan is a first step. In the coming years, the Town will strive to complete projects specified in the plan. The Resilience Plan is also a dynamic document in that the Town will revisit the plan's projects and insure they are still in accordance with the Town's overall priorities.
   - Funds from this grant will also pay for the Town Manager to become a CFM. The CFM certification will insure that there is an individual on staff that is knowledgeable regarding a wide range of flood related issues. This position will become the Town's point of contact regarding all flood related concerns from stakeholders and citizens.

7. Plans for maintaining capacity, as necessary, over the long term.

   Capacity for community flood preparedness will be maintained by integrating responsibility for the program into the duties of the Town Manager. The current Town Manager will become certified as a CFM and recognizes the importance of flood preparedness. Furthermore, the Town will be implementing projects specified in the Resilience Plan in the coming years, and public education and outreach efforts will raise awareness of these issues with the Town's citizens.

Budget Narrative

Estimated Total Project Cost

The total cost of the project outlined in the Scope of Work is $60,000. This cost includes development of the Town of Buchanan's Community Flood Preparedness Resilience Plan and Certified Floodplain Manager training for the Buchanan Town Manager. The estimated costs for tasks to complete the proposed Scope of Work are noted in the following table:

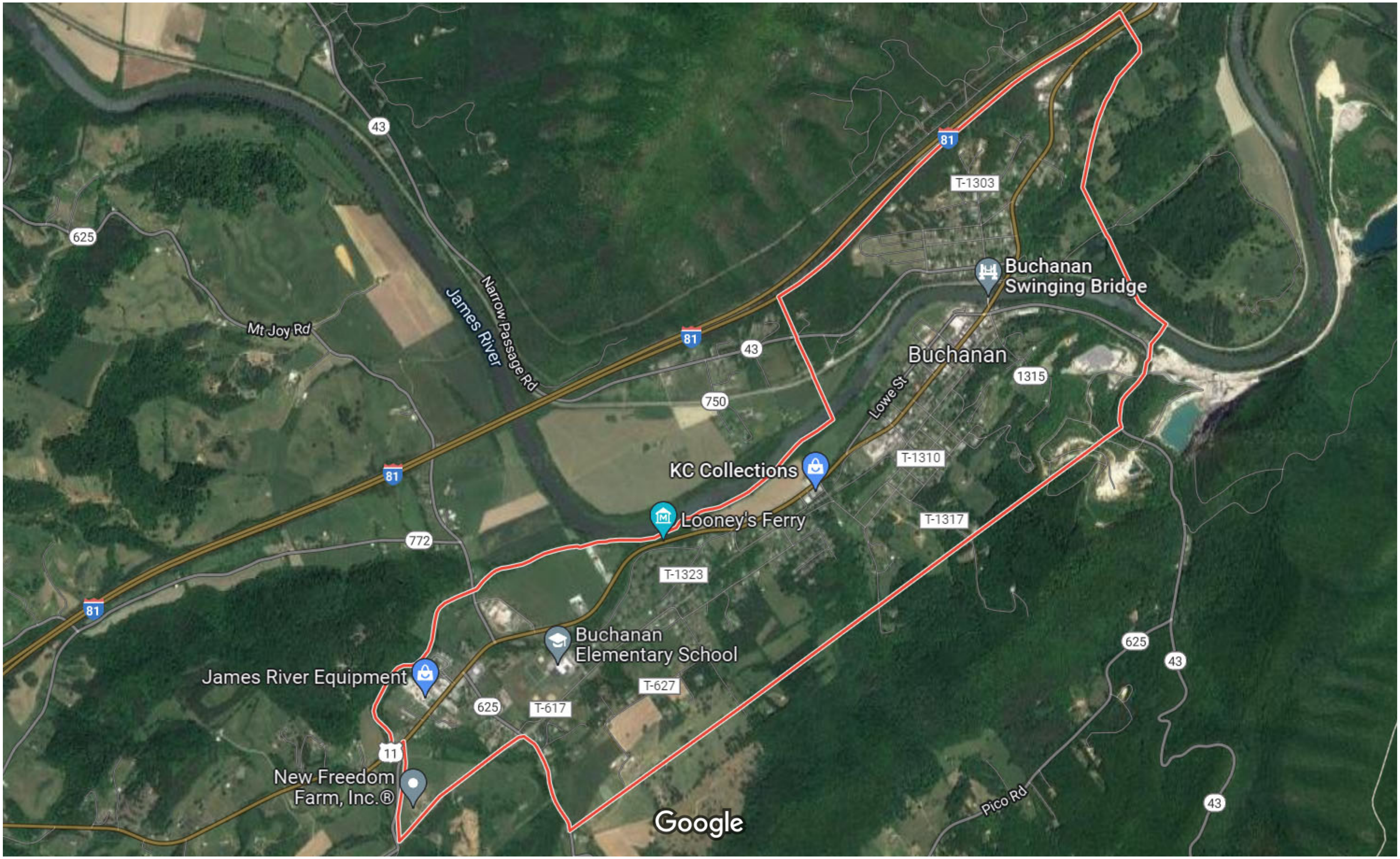
Baseline Information for Resilience Plan Development	
Project Task	**Estimated Cost**
Review of Flood Related Documents and Coordination with Town Staff	$4,000
Visual Inspections	$4,000
Flood Scenario Modeling	$20,000
Resilience Plan Development	
Develop Proposed Flood Control Projects	$10,000
Table Top Exercise for Key Stakeholders	$3,000
Public Information and Input Meeting	$3,000
Develop Town of Buchanan Resilience Plan	$12,000
Town Staff CFM Training	$4,000
Total Cost	**$60,000**

- **Amount of funds requested from the Fund,**
- **Amount of cash funds available,**
- **Authorization to request for funding**

The total amount the Town is requesting from the Virginia Community Flood Preparedness Fund is $54,000. All of these funds will be used to compensate *Cardno now Stantec* to complete the Scope of Work outlined in this application. The Town of Buchanan is providing a local match of $6,000. The authorization for the Town to request funds and the commitment of the $6,000 match has been attached as **Attachment C**.

Attachment A

Town of Buchanan, Virginia



Imagery ©2022 Commonwealth of Virginia, Landsat / Copernicus, Maxar Technologies, USDA/FPAC/GEO, Map data ©2022 Google 2000 ft

Attachment B

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Buchanan, Virginia**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application? – NOT APPLICABLE		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	**X Yes** **☐ No**

Applicant Name:	**Buchanan, Virginia**

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	
Development of a new resilience plan.	**55**	**55**
Resource assessments, planning, strategies and development.	**45**	**45**
Policy management and/or development.	**40**	**40**
Stakeholder engagement and strategies.	**25**	**25**
Goal planning, implementation and evaluation.	**25**	**25**
Long term maintenance strategy.	**25**	**25**
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	**8**
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	**0**
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	**10**
No	**0**	
10. Does this project provide "community scale" benefits?		
Yes	**20**	**20**
No		
Total Points		**253**

Attachment C

Resolution R22-0314-07

At a regular meeting of the Town Council of the Town of Buchanan held at the Buchanan Town Hall on the 14th day of March 2022 beginning at 7:00 p.m.:

MEMBERS:	VOTE:
Craig Bryant, Mayor	YES
Chris Witt, Vice-Mayor	YES
James Manspile	YES
Chris Petty	YES
Marlon Rickman	YES

On motion of Councilmember Manspile, which carried by a vote of 5 - 0, the following was adopted:

A Resolution

Authorizing Contracting with Stantec to Provide Planning/Engineering Services for the Department of Conservation and Recreation (DCR) Community Flood Preparedness Grant Fund

Whereas, the Town of Buchanan has had challenges in the past with flooding, and

Whereas, there is now a grant program available for Flood Preparedness Planning offered by the Department of Conservation and Recreation;

Whereas, the Town Manager issued a Request for Qualifications that was due March 8, 2022 and Stantec successfully responded and has been working with the Town on brownfield projects;

Now, therefore, be it resolved that the Town of Buchanan does hereby authorize the Town Manager to work with Stantec (formerly Cardno); and

Now, therefore, be it further resolved that the Town authorizes Stantec to apply for a planning grant for Community Flood Preparedness Planning with a Town cash match of up to $6,000 and submit it on or before April 8, 2022.

AYES: 5

NAYS: 0

ABSENT: 0

APPROVED:

Mayor

ATTEST:

Claudine Stump

Town Clerk

Attachment D

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No X N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No X N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No X N/A
A link to or a copy of the current floodplain ordinance	X Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No X N/A
A link to or a copy of the current hazard mitigation plan	X Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	X Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	X Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No X N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	X Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	X Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No X N/A

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Correction, Town of Buchanan CFPF Application

1 message

Susan McCulloch <SMcCulloch@buchanan-va.gov> Thu, Apr 7, 2022 at 5:55 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Harry Gleason <hgleason@buchanan-va.gov>

Good afternoon,

Please see attached the Town of Buchanan's submission for a planning grant for the CFPF Program.

Should you have any questions, please don't hesitate to contact me at 540-254-1212 x3.

Sincerely,

Susan

Susan McCulloch, Town Manager

Town of Buchanan, Virginia

Office: 540-254-1212 X3

Email: SMcCulloch@buchanan-va.gov

Alt Email: townmanager@buchanan-va.gov

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Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Application

April 8, 2022 (3rd round)

*Requesting support for **capacity building and planning** to facilitate the development of a **flood resilience plan**.*

Albemarle County
Facilities and Environmental Services

401 McIntire Road
Charlottesville, VA 22902
434.296.5816

Cover page photo descriptions and credits (clockwise from upper left):

1. *Holkham Road washout in Albemarle County following a flash flood on May 30, 2018 due to Tropical Storm Alberto. Water and sewer lines remain suspended.*
2. *Old Ivy Road at railroad bridge in Albemarle County – which experiences frequent flooding – on September 29, 2015. Credit: Daily Progress (https://dailyprogress.com/cdp-0930-weather168-jpg/image_77f826dc-66fd-11e5-bacb-97fe1ed460ad.html)*
3. *Rivanna River at Highway 250 bridge ("Free Bridge") following May 30, 2018 storm. Albemarle County is on the left side of the river in this photo. Credit: Skyclad Aerial.*

Table of Contents

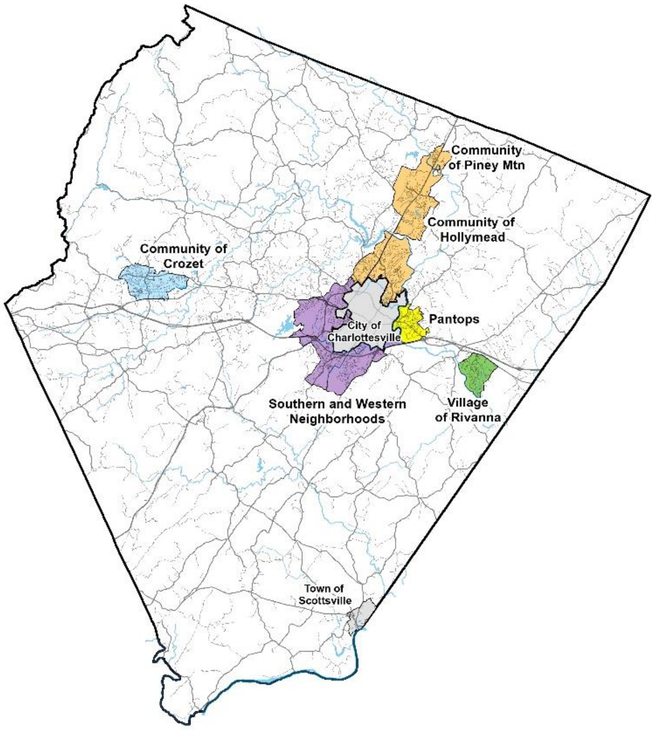
Introduction and Background

Albemarle County is committed to developing a **flood resilience plan** over the course of fiscal year 2023. Our ambition to do this is driven by the alignment of several related priorities that include climate action and drainage infrastructure improvements, described in the following sections. But like many localities, we are constrained by limited resources. While we typically have the funding and staffing necessary to implement and develop our major programs, this is not necessarily the case for emerging demands – such as flood resilience planning. In addition to requiring more staff *capacity* to take on the development of a flood resilience plan, we also lack some of the internal technical expertise required for this type of endeavor.

Therefore, we are grateful for this opportunity to receive grant support from DCR's Community Flood Preparedness Fund (CFPF) that would allow the County to immediately move forward with this matter of increasing importance and urgency.

About Albemarle County

At 726 square miles, Albemarle County is one of the largest counties in Virginia. As early as 1971, the Albemarle County Board of Supervisors (Board) began establishing growth areas with the intent of focusing new development to create quality living areas, avoid sprawl, improve access to services, and protect the remaining rural areas. Today, the Development Areas – designated by the Comprehensive Plan and shown in the figure on the right – make up approximately five percent of the county's geographic area, or 35 square miles. The other 95% of the County is rural and exurban in nature.

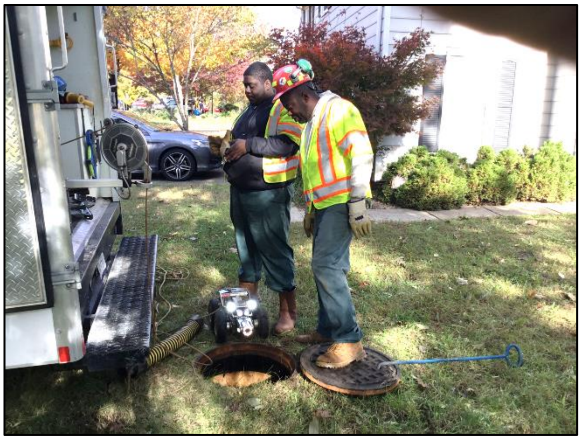


Flood Resilience Planning – A Convergence of Priorities

As indicated in the introduction, Albemarle County is engaged in several initiatives that converge at the commencement of flood resilience planning. Two programs in particular – climate protection and drainage infrastructure – are identified as key priorities in the Board's Strategic Plan for fiscal years 2020 – 2023.

Climate Protection Program – In 2019, the Board adopted community-wide greenhouse gas emission reduction targets. These targets include a 45% reduction from 2008 emission levels by 2030 and achieving zero net emissions by 2050. In 2020, the Board adopted the County's first Climate Action Plan, developed by staff with significant contributions from residents and other community stakeholders. The Climate Action Plan defines objectives and action areas to meet the emission reduction targets and contribute towards the mitigation of global climate change.

The Climate Action Plan also commits to developing a climate adaptation and resilience plan to prepare the community and County operations for the inevitable intensification of rainfall, heat, drought, and other local manifestations of climate change. The County's Comprehensive Plan, adopted in 2015, also calls for the development of a climate resilience plan. Staff are currently working with a consultant – fully supported by a local benefactor – to prepare a climate vulnerability assessment, the first step in developing a resilience plan. The assessment is expected to be completed by June 2022. Much of this assessment is devoted to the evaluation of the increasing risk of flooding due to climate change.



Drainage Infrastructure Program – Out of a concern about the condition of aging drainage infrastructure – particularly in the County's Development Areas, where it is ubiquitous and interconnected – the Board has directed staff to explore a program to proactively manage this infrastructure. Staff have so far invested in creating a GIS-map of this infrastructure and video-assessing a portion large enough to make sound estimates of long-term maintenance costs. However, absent from the current exploration is an analysis of the *adequacy* of this urban drainage system. We do not have a sense of conveyance deficiencies and flood risks.

Flood Study for Branchlands Neighborhood – The County recently received news that it will receive funding assistance from the Federal Emergency Management Agency (FEMA) through the 2020 Building Resilient Infrastructure and Communities (BRIC) grant program. This anticipated grant will support the development of a flood study for a particular urban area that is believed to be at elevated flood risk. The study will include the development of a flood model for the 770-acre watershed and the identification of flood mitigation projects to reduce the risks.

Together, these programs provide a logical path towards – and a sound foundation for – a community-wide flood resilience planning effort. The soon-to-be completed climate vulnerability assessment is a prerequisite to resilience planning, including flood resilience. The County's drainage improvement program will be significantly informed by the flood risks and mitigation projects identified by a flood resilience plan. And the Branchlands neighborhood flood study will allow for a sharper focus within an area of particular concern – both complementing the broader County-wide flood resilience plan and benefitting from its context.

Additionally, an obvious motivation for the County is to receive DCR approval of a flood resilience plan so that we will be eligible to submit future CFPF grant applications in the Project category, furthering the County's ability to implement capital projects and initiatives identified in the flood resilience plan.

Scope of Work

With the climate vulnerability assessment scheduled to be completed by June 2022 (comprising steps 1 and 2 in the adjacent image from the U.S. Climate Resilience Toolkit), the County is prepared to begin the next steps of developing a *climate* resilience plan – **investigate options** and **prioritize and plan**, steps 3 and 4.

The proposed flood resilience plan would be a major component of the climate resilience plan, and we envision these being developed in a single, coordinated process.

Steps to Resilience

1. Explore Hazards ✓
2. Assess Vulnerability & Risks ✓
3. Investigate Options
4. Prioritize & Plan
5. Take Action

Assessment of Capacity Needs and Assets

The County currently employs numerous staff in key roles who are proposed to be involved with this project, including:

- Irtefa Binte-Farid – Coordinator for Equity and Accountability
- Gabe Dayley* – Climate Protection Program Manager
- Serena Gruia – Public Engagement Coordinator
- Greg Harper*, P.E. – Chief of Environmental Services
- John Oprandy – Deputy Chief, Emergency Management (Fire Rescue)
- Frank Pohl, P.E. – County Engineer and Certified Floodplain Manager
- Laurel Williamson* – Watershed Stewardship Manager

** staff of Environmental Services Division*

Nonetheless, these staff do not have the current capacity necessary to successfully administer a planning initiative of this scale and within the desired timeframe. Each of the staff members listed above manage a large portfolio of projects. While they will contribute valuable knowledge and skills to the planning process, extra help with resilience planning project management is sorely needed. The County is therefore requesting CFPF support for hiring a qualified person in a temporary, full-time position to coordinate the overall process of developing a flood resilience plan. This person would work most directly with Gabe Dayley, the Climate Protection Program Manager.

In addition, although the existing staff listed above have a reasonable level of knowledge within their areas of expertise, the goals, strategies, and nature-based projects of the adopted plan will be sounder and more comprehensive with support from risk and resilience planning specialists. To this end, we also request CFPF funding to allow the County to secure technical assistance.

Finally, the best resilience plan will result from a planning process that centers equity and inclusive community engagement. We have identified two gaps in capacity in this regard that grant funds will allow us to fill. First, localities across the country have recognized the need for paid equity advisory groups comprised of residents who are often excluded from planning processes; such groups play a critical role in outreach to historically marginalized groups and in vetting strategies that local government staff develop.[1] Second, the success of such equity advisory groups hinges on adequate and appropriate training in understanding climate change; beyond compensation, this training builds the capacity of participants to engage in the process meaningfully. We include items in our budget to meet these needs for a robust, equity-centered flood resilience plan.

Goals and Objectives

The overall **goal** of the proposed planning effort is to better prepare the Albemarle community for future extreme storms driven by climate change by reducing risks to personal health and safety, to community wellbeing, and to property. This will be accomplished through the development and implementation of a county-wide flood resilience plan that is generally consistent with guidance provided in the *Grant Manual, Appendix G: Elements of Resilience Plans* (repeated in adjacent text box).

Elements of Resilience Plans (from CFPF Grant Manual)

- *is project-based with projects focused on flood control and resilience*
- *incorporates nature-based infrastructure to the maximum extent possible*
- *includes considerations of all parts of a locality regardless of socioeconomics or race*
- *includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation*
- *is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps*

Staff envision the plan incorporating the following **objectives**:

- covers the entire county jurisdiction – Development Areas and Rural Areas
- includes the engagement of local partners and stakeholders, including the City of Charlottesville, the Town of Scottsville, and the Virginia Department of Transportation
- emphasizes strengthening resilience among frontline communities, at-risk groups, lower-income areas, and communities of color
- includes considerable opportunities for community input – through the formation of a stakeholder advisory group and through broad community engagement
- considers and attempts to address historic and existing community inequities
- utilizes and builds on available science, technologies, local plans and analyses, and community knowledge and experiences
- identifies areas of flood risk
- identifies capital investments in infrastructure (nature-based to the extent possible) and policies and other adaptation measures to reduce the risks

Photo by Andrew Shurtleff (Daily Progress)

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[1] Recent examples include climate action plans developed by Richmond, VA; Portland, OR, Oakland, CA; Washington, DC; and other localities.

- integrates other County goals into risk mitigation measures, such as pollution reduction to address local and Chesapeake Bay TMDLs, enhanced native biodiversity, climate change mitigation, and providing outdoor amenities for residents

Although the Albemarle community is fortunate in not having areas that experience significant, repetitive flood losses, there is still a history of losses across the county due to flooding – ranging from single residential lots to roadways and entire neighborhoods. County staff are aware of locations throughout the county that have experienced damages or are perceived to be at elevated risk. For instance, a very localized and extremely intense storm occurred in the vicinity of Ivy Creek in 2018 – killing two people and washing out Holkham Road, the only access to the neighborhood of Lewis Hill (see adjacent photo).

However, staff don't currently have a good sense of where risks are higher and could lead to greater losses – particularly in the denser Development Areas where risks may be driven by infrastructure deficiencies. One of the first steps in the development of a plan will be identifying knowledge gaps such as this.

Stakeholder Identification, Outreach, and Education Strategies

As mentioned, Albemarle County's climate resilience planning process – and flood resilience planning component – will involve robust, equitable engagement of community stakeholders, prioritizing engagement of historically marginalized communities who often lack the capacity to participate in traditional, centralized public engagement efforts (e.g., town halls at the County office building). We plan to use the results of our climate vulnerability assessment to engage in a three-pronged stakeholder engagement strategy, described below.

First, we will conduct outreach to and relationship-building with residents in areas of greater vulnerability identified in our climate vulnerability assessment, focusing on reaching residents who are lower income, communities of color, single-parent households, older populations, and other frontline communities. Our engagement of these residents will focus on asking questions about their lived experience in the community, drawing out information that is relevant to flood resilience and other climate resilience strategies. Following the example of Richmond, VA, we will ask questions at the level of people's daily lives and do the work ourselves of translating answers into more technical information to support our planning and projects. We will leverage partnerships with community-based organizations to help us reach communities who for a variety of reasons may distrust local government.

To support this crucial element of equity-centered community engagement, we will form a group of 10-12 people to serve on an Equity Working Group of grassroots community leaders. This working group will conduct outreach to frontline and underserved communities and will help to define and vet the plan's strategies. Group members will receive stipends to compensate them for their time and ensure diverse participation. Because this approach will be new for Albemarle County, we will reach out to other localities who have used similar working group formats to help develop our protocols for the Equity Working Group (e.g., attendance expectations, compensation).[2]

Second, we will engage key institutional stakeholders whose operations play a role or have a stake in Albemarle County's flood resilience. Examples include Albemarle County Fire Rescue, the City of Charlottesville, Town of Scottsville, Rivanna Water & Sewer Authority, Albemarle County Service Authority, Virginia Department of Transportation, internet service providers, electric utilities, Charlottesville Gas utility, University of Virginia, and others. Our resilience plan will reflect an understanding of the ways in which our actions to promote flood resilience will have ripple effects on our broader community and its infrastructure, and we will consider the needs, concerns, and ideas of these stakeholders (and the people they represent) when creating our strategies.

Third, we will include a traditional community engagement effort (e.g., town halls, public meetings) to reach a broad swath of interested and concerned residents.

To achieve meaningful involvement for members of the Equity Working Group, focus group participants, partner agencies, and the community as a whole, we need to ensure that participants are sufficiently knowledgeable about climate change.[3] To this end, our proposed project budget also includes funds to contract with a communications consultant well-versed in climate science who can help develop and support broad community engagement and outreach materials, training activities, and focus groups.

Photo by Andrew Shurtleff (Daily Progress)

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[2] This model was piloted in Virginia by the Richmond 300 Master Plan and RVAgreen 2050 climate action planning process. Other localities across the country have piloted similar approaches, such as Washington, DC's Clean Energy Plan and Oakland, CA's Equitable Climate Action Plan.

[3] See the following EPA glossary for a definition of "meaningful involvement": EJ 2020 Glossary | US EPA

Implementation Plan and Timelines

Staff estimate that the entire process to develop a flood resilience plan – in coordination with the effort to develop a broader *climate* resilience plan – will take approximately 12 months, based on the following list of tasks and approximate date ranges.

Task	**Date**
Document existing social, economic, natural, and other conditions present in Albemarle County	completed
Review flood vulnerabilities, risks, and stressors, both natural and social	completed
Inventory & review of existing County and regional plans, policies, & programs that may influence Flood Resilience Plan (e.g., Comp Plan, Hazard Mitigation Plan, ordinances, dam safety program, TMDL Action Plans)	July 2022
Building on CVA, utilize FEMA's Hazus or comparable tool(s) to create model and identify flooding risks and hotspots	July – Sept
Utilize Hazus, GIS, and other tools to identify potential nature-based projects to mitigate flood risks and other adaptation measures	Aug – Oct
Form Equity Working Group (EWG) through an application and review process	Aug – Sept
Train EWG in principles of climate adaptation and resilience and equity-centered community engagement	Sept – Oct
Facilitate focus groups to explore identified risks and potential projects/measures	Oct – Nov
Broad stakeholder outreach & community engagement (town halls, workshops, digital events)	Nov – Jan 2023
Distill themes from community outreach	Jan 2023
Develop SMART goals and actionable strategies that establish parameters for projects and measures	Jan
Refine and prioritize list of projects and measures based on goals and strategies	Feb
Collect feedback from staff, community, frontline community representatives, and EWG on draft goals, strategies, projects, and measures	Feb – Mar
Conduct Equity Impact Assessment for each project/measure	Mar
Revise and finalize goals, strategies, projects, and measures	Apr
Finalize Flood Resilience Plan	May
Present Flood Resilience Plan to Board of Supervisors	May
Submit Flood Resilience Plan to DCR	Jun
Staff training on Flood Resilience Plan	July 2023

Responsible Party

Greg Harper – working with Gabe Dayley and other Environmental Services staff – will be the designated responsible party overseeing the plan development process.

Performance Outputs and Measures

The output from this initiative will be a county-wide flood resilience plan that will serve as a major component of a climate resilience plan. These two plans will be developed concurrently. The flood resilience plan will complement existing programs and initiatives by revealing currently unrecognized flood risks throughout the County and identifying projects, policies, and other mechanisms to effectively mitigate or adapt to these risks.

A successful project will have the following characteristics:

- the plan is consistent with DCR's guidance on plan elements and is ultimately approved by DCR
- the plan is developed through a process involving key stakeholders and the community at-large, prioritizing the engagement of historically marginalized communities
- the plan development process does not overstretch the current capacity limits of County staff
- the plan development process merges well with the broader process of developing a climate resilience plan
- the plan outcomes (i.e., project and policies) are clear, constructive, and practical and can be easily integrated into existing County programs and plans
- the plan is developed to the satisfaction of the Albemarle County Board of Supervisors

The following table presents a logic model for the County's flood resilience planning process. This model will guide project design, monitoring, and evaluation. A similar logic model will guide the County's overall climate resilience planning. Some elements of this logic model (e.g., goals and impacts) will be refined during the planning process through input from additional staff and community engagement.

Flood Resilience Planning Logic Model

Inputs	Activities	Outputs	Outcomes	Goals/Impacts
People • County staff • broad community • frontline community members • partner and stakeholder organizations • subject matter experts Funding • County funds • grants • partners Other Resources • County plans • model plans • best practices • agency resources • web tools	• vulnerability assessment (quantitative and qualitative) • community engagement (focus groups, town halls, digital) • staff engagement • partner and stakeholder engagement • technical analyses • define goals and impacts based on stakeholder input • draft plan with strategies and projects • seek feedback	Flood resilience plan (within an overall climate resilience plan) with project-based strategies for building resilience.	Projects, programs, policies, and procedures that build resilience and adaptive capacity among people, the built environment, and local ecosystems to increasingly frequent and severe extreme weather events induced by climate change.	Communities, neighborhoods, infrastructure, businesses, and institutions that are resilient to and able to adapt to the impacts of extreme rainfall and flooding caused by climate change.

Building and Maintaining Capacity

While this grant will fill a crucial capacity gap in *developing* an innovative and actionable flood resilience plan, the County has sufficient capacity to *implement* the plan in the long-term – essentially through integrating the plan outcomes into well-resourced existing programs and processes.

Staff capacity-building and training will be an important outcome of the process. Through involvement with this project, the staff identified above – and others as appropriate – will become more knowledgeable regarding community flood risks, the adaptive and resilience measures identified through the process, any tools that may be developed as part of this process, and the policies and other mechanisms put in place to formalize the flood resilience plan. In addition, once the plan is finalized, we will conduct internal training to familiarize appropriate staff with the final Plan and ways to incorporate the elements of the Plan into their roles.

For example, staff anticipate that the resulting plan will be incorporated into existing County and regional plans, including the County's Comprehensive Plan (currently under revision), the County's Climate Resilience and Adaptation Plan (to be developed concurrently with the flood resilience plan), and the regional Hazard Mitigation Plan, managed by the Thomas Jefferson Planning District Commission (currently under revision).

Staff also anticipate that the identified capital projects and other outcomes of the plan will be integrated into existing programs, such as the climate protection program, the drainage infrastructure program, the Total Maximum Daily Load (TMDL) program, and small-area planning processes. Through this assimilation, the plan's resilience and adaptation measures will be sustained by the influence, energy, and funding of these plans and programs.

One example of assimilating the flood resilience plan into an existing program relates to the drainage infrastructure program. If, for instance, a deteriorating culvert needs to be replaced (one such culvert from the recent past is shown in the adjacent image), the flood resilience plan would be referenced to determine whether the culvert is a restriction to sufficient flow and putting areas at increased flood risk. If so, the culvert would be upsized, reconfigured, or augmented with green infrastructure upstream to reduce the flood risk.

Another example relates to the County's long-standing tradition of incorporating green infrastructure into the built environment when opportunities arise. The adjacent image depicts a project in which a simple detention basin was converted into a constructed-wetland system for better water quality treatment. The County implements projects such as this to meet TMDL-driven pollution reduction requirements but also voluntarily in the spirit of the County's vision and values relating to environmental protection. The nature-based projects that will be identified in the flood resilience plan will provide additional inspiration for future projects.

While implementation of the flood resilience plan will be sustained through its integration into existing programs, the County also intends to advance implementation by using the flood resilience plan in the future to support grant applications to the CFPF and other external funding sources.

Outside local government, we also expect our equitable and inclusive planning process to build the capacity of our community members to participate in flood and climate resilience efforts. The process will therefore yield ripple-effect benefits in the community beyond the direct outputs of the plan itself.

Budget Narrative

Estimated Total Project Cost – We estimate that the total cost of this project is **$213,750**. This total includes costs to hire a new temporary staff person, a subject-matter consultant, a communications consultant, and stipends for 12 Equity Working Group members. This total does *not* include any costs associated with existing County staff who will also be working on the project. The level of effort needed to implement each project task is quantified as hours and costs in the table below, divided up among the various project players.

	HOURS				
TASKS	**Existing Staff**	**New Temp Staff**	**Subject-Matter Consultant**	**Communi-cations Consultant**	**Equity Working Group**
Document existing social, economic, natural, and other conditions present in Albemarle County	Completed as part of Climate Vulnerability Assessment (CVA)				
Review flood vulnerabilities, risks, and stressors, both natural and social	Nearly complete, as part of CVA				
Inventory & review of existing County and regional plans, policies, & programs that may influence Flood Resilience Plan (e.g., Comp Plan, Hazard Mitigation Plan, ordinances, dam safety program, TMDL Action Plans)	10	40	10		
Building on CVA, utilize FEMA's Hazus or comparable tool(s) to create model and identify flooding risks and hotspots	20	20	250		
Utilize Hazus, GIS, and other tools to identify potential nature-based projects to mitigate flood risks and other adaptation measures	20	20	100		
Form Equity Working Group (EWG) through an application and review process	80	80			
Train EWG in principles of climate adaptation and resilience and equity-centered community engagement	20	80		40	60
Facilitate focus groups to explore identified risks and potential projects/measures	40	100	20	40	200
Broad stakeholder outreach & community engagement (town halls, workshops, digital events)	40	100		100	400
Distill themes from community outreach	10	40		20	100
Develop SMART goals and actionable strategies that establish parameters for projects and measures	10	50	20	20	200
Refine and prioritize list of projects and measures based on goals and strategies	10	50	80	20	200
Collect feedback from staff, community, frontline community representatives, and EWG on draft goals, strategies, projects, and measures	40	80			200
Conduct Equity Impact Assessment for each project/measure	20	40			200
Revise and finalize goals, strategies, projects, and measures	20	40	60		300
Finalize Flood Resilience Plan	40	150			
Present Flood Resilience Plan to Board of Supervisors	8	20			
Submit Flood Resilience Plan to DCR		20			
Staff training on Flood Resilience Plan	120	40			
Additional project management & coordination	20	80	50		
Estimated HOURS	528	1050	590	240	1860
Estimated RATES* (per hour)		$45	$150	$150	
Equity Working Group STIPEND (per member)					$3,500
# of Equity Working Group members					12
Subtotals	*n/a*	*$47,250*	*$88,500*	*$36,000*	*$42,000*
**New Temp Staff rate includes salary + 30% fringe*			**Total Project Cost**		**$213,750**

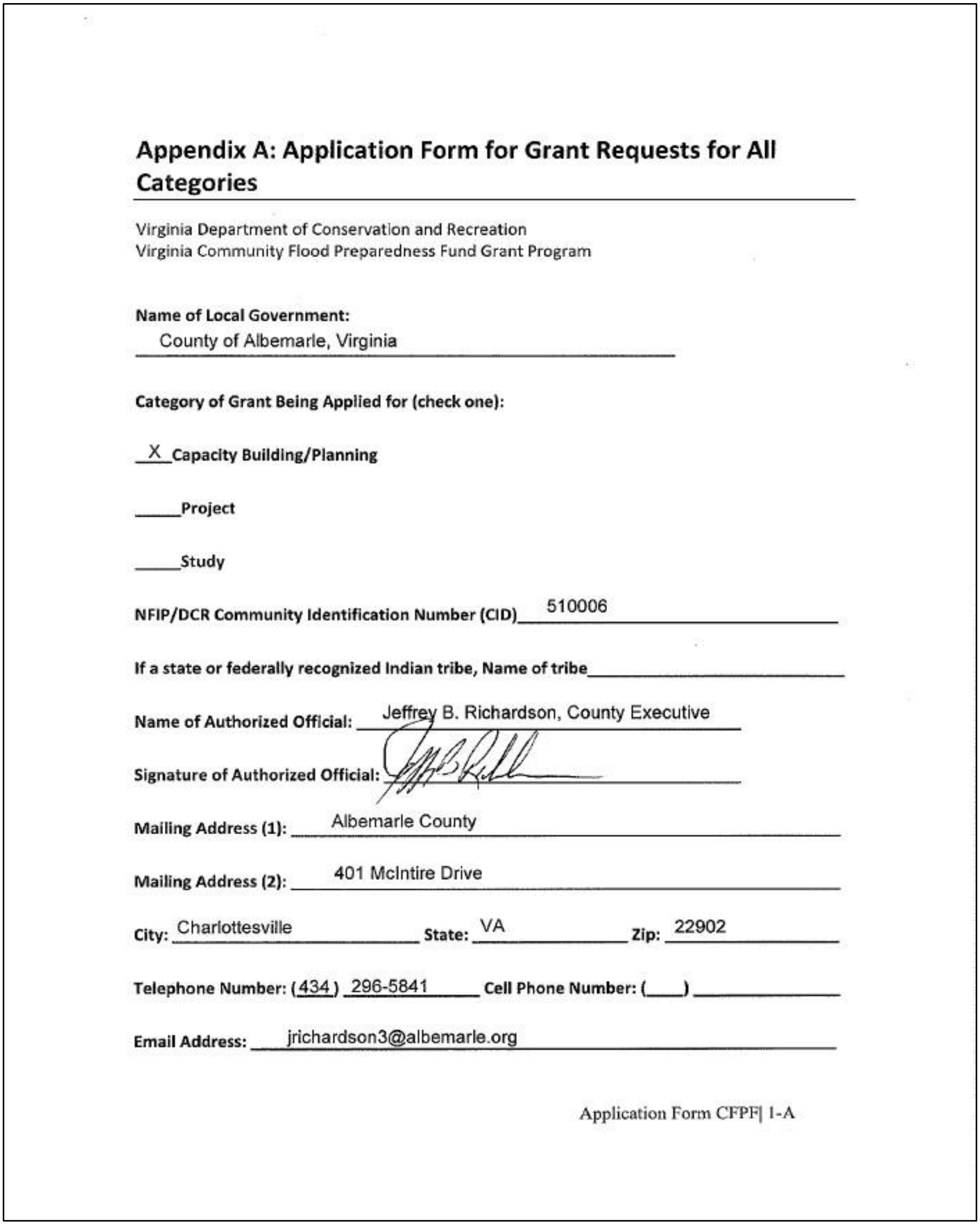
Amount of Funds Requested from the Fund – We request **$160,313** from the CFPF, which reflects 75% of the estimated total project cost shown above. We propose that these CFPF grant funds be allocated as such:

Budget Category	CFPF Budget	Notes
Salary (New Temp Staff)	$33,075	CFPF covers New Temp Staff costs
Fringe (New Temp Staff)	$14,175	
Contractual	$71,063	CFPF covers **portion** of consultant costs
Stipends (Equity Working Group)	$42,000	CFPF covers Equity Working Group stipends
TOTAL:	**$160,313**	

Amount of Cash Funds Available – Albemarle County will provide **$53,438** in cash match to cover the 25% remainder of the estimated total project cost. See **Appendix B** for assurance of matching cash funds available. The County's matching funds will be provided through two budgets – an operating budget associated with the climate protection program and a capital budget associated with the drainage infrastructure program.

Appendices

Appendix A: Application Form



Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
County of Albemarle, Virginia

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

_____**Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510006

If a state or federally recognized Indian tribe, Name of tribe_______________________

Name of Authorized Official: Jeffrey B. Richardson, County Executive

Signature of Authorized Official:

Mailing Address (1): Albemarle County

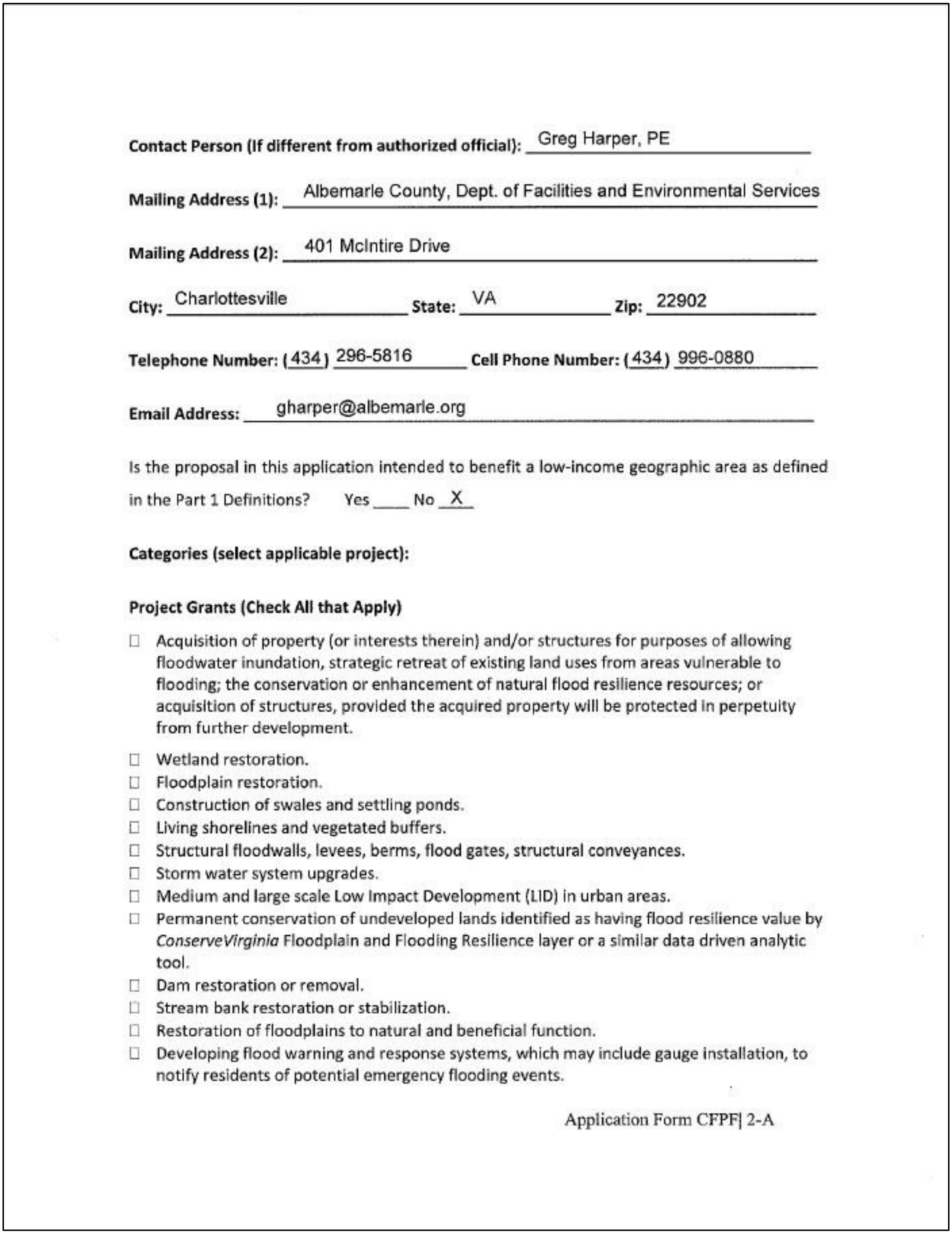
Mailing Address (2): 401 McIntire Drive

City: Charlottesville **State:** VA **Zip:** 22902

Telephone Number: (434) 296-5841 **Cell Phone Number:** (____) ______________

Email Address: jrichardson3@albemarle.org

Application Form CFPF| 1-A



Contact Person (If different from authorized official): Greg Harper, PE

Mailing Address (1): Albemarle County, Dept. of Facilities and Environmental Services

Mailing Address (2): 401 McIntire Drive

City: Charlottesville **State:** VA **Zip:** 22902

Telephone Number: (434) 296-5816 **Cell Phone Number:** (434) 996-0880

Email Address: gharper@albemarle.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Application Form CFPF| 2-A

Study Grants (Check All that Apply)

- ☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.
- ☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.
- ☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.
- ☐ Studies and Data Collection of Statewide and Regional Significance.
- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- ☐ Other relevant flood prevention and protection project or study.

<u>**Capacity Building and Planning Grants**</u>

- ☒ Floodplain Staff Capacity.
- ☒ Resilience Plan Development
  - ☒ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  - ☒ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): extent of Albemarle County

NFIP Community Identification Number (CID#):(See appendix F 510006

Application Form CFPF| 3-A

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): various

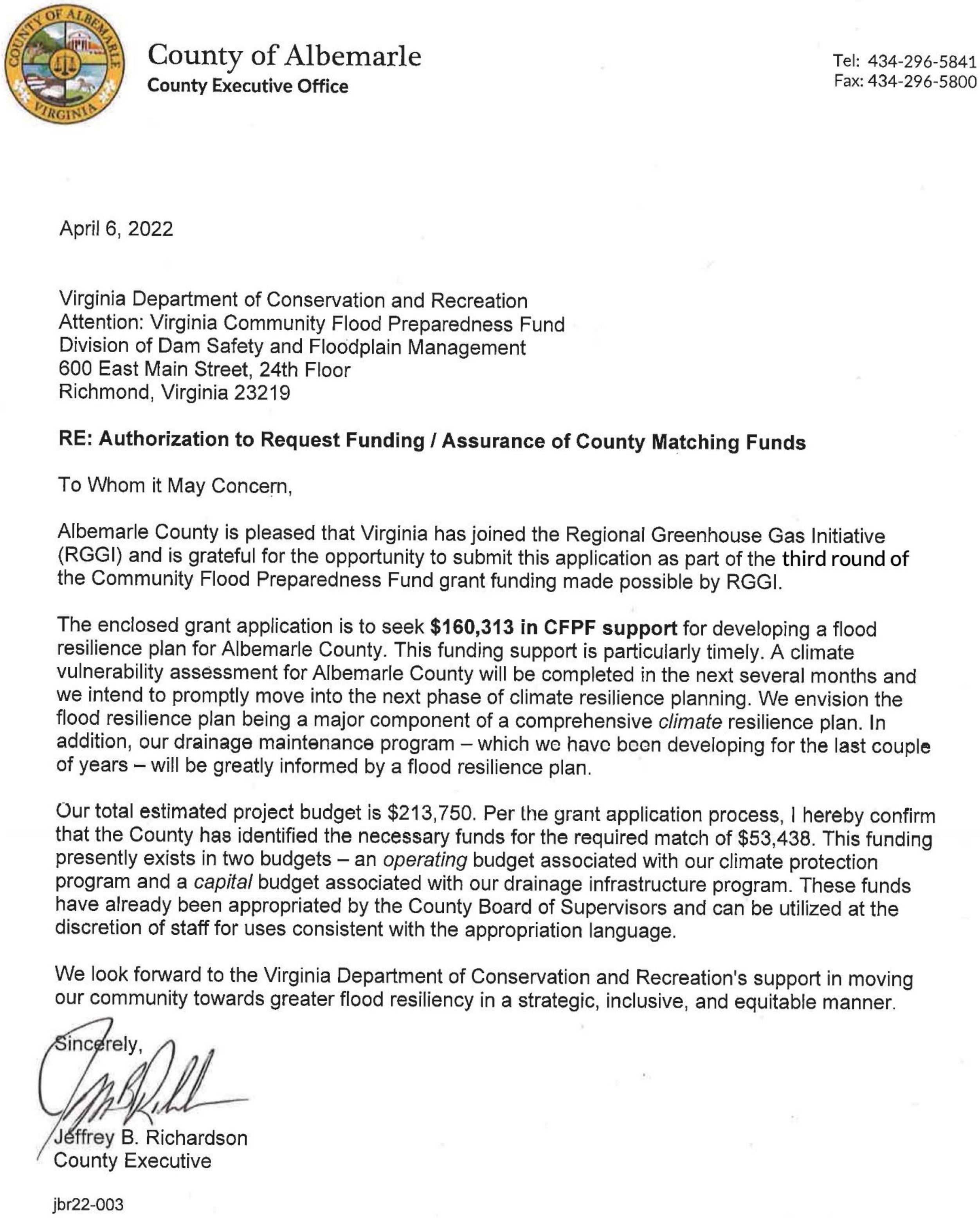
Flood Insurance Rate Map Number(s) (If Applicable): plan will cover entire County (+50 maps)

Total Cost of Project: $213,750

Total Amount Requested $160,313

Application Form CFPF| 4-A

Appendix B: Authorization to Request Funding



County of Albemarle
County Executive Office

Tel: 434-296-5841
Fax: 434-296-5800

April 6, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

RE: Authorization to Request Funding / Assurance of County Matching Funds

To Whom it May Concern,

Albemarle County is pleased that Virginia has joined the Regional Greenhouse Gas Initiative (RGGI) and is grateful for the opportunity to submit this application as part of the **third round of** the Community Flood Preparedness Fund grant funding made possible by RGGI.

The enclosed grant application is to seek **$160,313 in CFPF support** for developing a flood resilience plan for Albemarle County. This funding support is particularly timely. A climate vulnerability assessment for Albemarle County will be completed in the next several months and we intend to promptly move into the next phase of climate resilience planning. We envision the flood resilience plan being a major component of a comprehensive *climate* resilience plan. In addition, our drainage maintenance program – which we have been developing for the last couple of years – will be greatly informed by a flood resilience plan.

Our total estimated project budget is $213,750. Per the grant application process, I hereby confirm that the County has identified the necessary funds for the required match of $53,438. This funding presently exists in two budgets – an *operating* budget associated with our climate protection program and a *capital* budget associated with our drainage infrastructure program. These funds have already been appropriated by the County Board of Supervisors and can be utilized at the discretion of staff for uses consistent with the appropriation language.

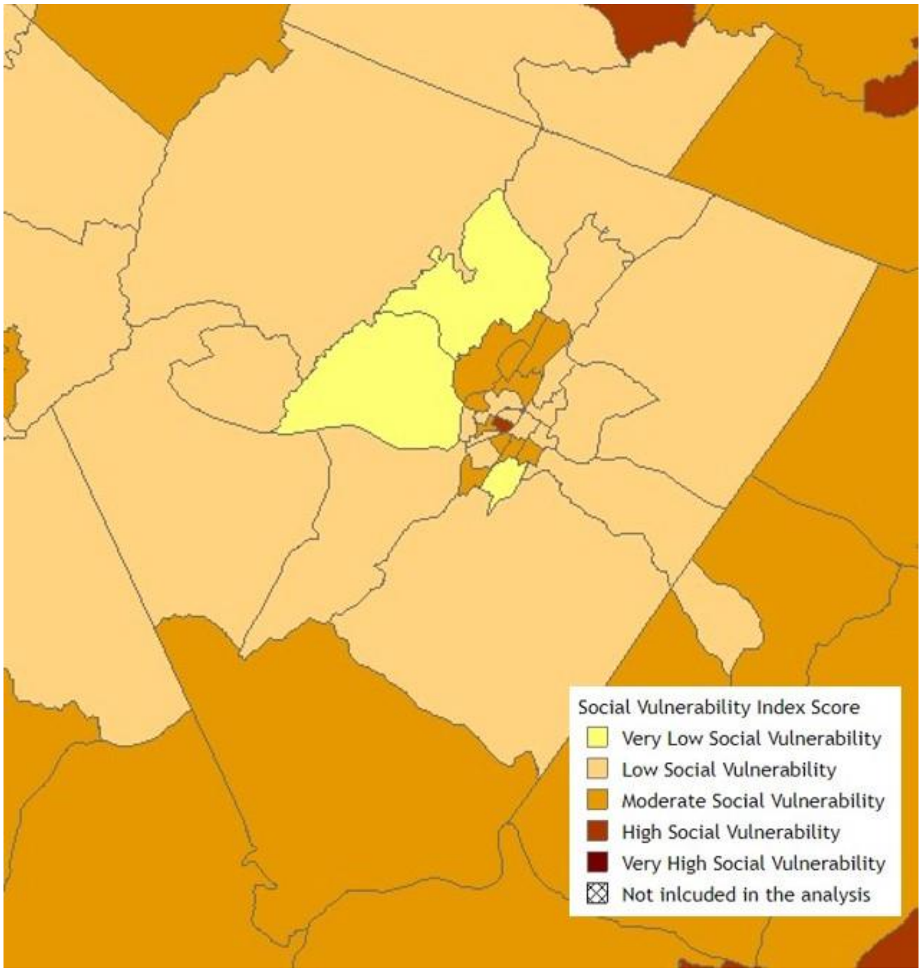
We look forward to the Virginia Department of Conservation and Recreation's support in moving our community towards greater flood resiliency in a strategic, inclusive, and equitable manner.

Sincerely,

Jeffrey B. Richardson
County Executive

jbr22-003

Appendix C: Supporting Documentation

Albemarle County Floodplain Ordinance	The County's floodplain ordinance is codified in the following ordinance sections: - Zoning Ordinance Section 30.3 – Flood Hazard Overlay District - Subdivision Ordinance Section 14-308 - Floodplain and topographic information; information to demonstrate that damage from flooding will be minimized
Hazard Mitigation Plan	The Natural Hazard Mitigation Plan is developed at a regional level by the Thomas Jefferson Planning District Commission. This Plan was last adopted in 2018 and is currently under revision.
Albemarle County Comprehensive Plan	The County's Comprehensive Plan was last adopted in 2015 and is currently under revision.
Social vulnerability index score(s) for the project area	The social vulnerability index scores range across the county from *very low* to *moderate* (see image below), with the majority of the County being *low*. 

Appendix D: Scoring Criteria for Capacity Building & Planning

Applicant Name:	**County of Albemarle, Virginia**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	XX
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	XX
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	XX
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	XX
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration			Yes No
Applicant Name:	**County of Albemarle, Virginia**		
Scoring Information			
Criterion		**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)			
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans. (Note: proposed flood resilience plan will be used to inform updates to the County's Comprehensive Plan and the regional Hazard Mitigation Plan.)		**55**	**55**
Development of a new resilience plan.		**55**	**55**
Resource assessments, planning, strategies, and development. (Note: intended to be outcomes of proposed flood resilience planning process.)		**45**	**45**
Policy management and/or development. (Note: intended to be outcomes of proposed flood resilience planning process.)		**40**	**40**
Stakeholder engagement and strategies. (Note: will be part of the proposed flood resilience planning process.)		**25**	**25**
Goal planning, implementation, and evaluation. (Note: intended to be outcomes of proposed flood resilience planning process.)		**25**	**25**
Long term maintenance strategy.		**25**	**25**
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.		**15**	n/a
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)			
Very High Social Vulnerability (More than 1.5)		**15**	
High Social Vulnerability (1.0 to 1.5)		**12**	
Moderate Social Vulnerability (0.0 to 1.0)		**8**	2
Low Social Vulnerability (-1.0 to 0.0)		**0**	0
Very Low Social Vulnerability (Less than -1.0)		**0**	0
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?			
Yes		**10**	
No		**0**	**0**

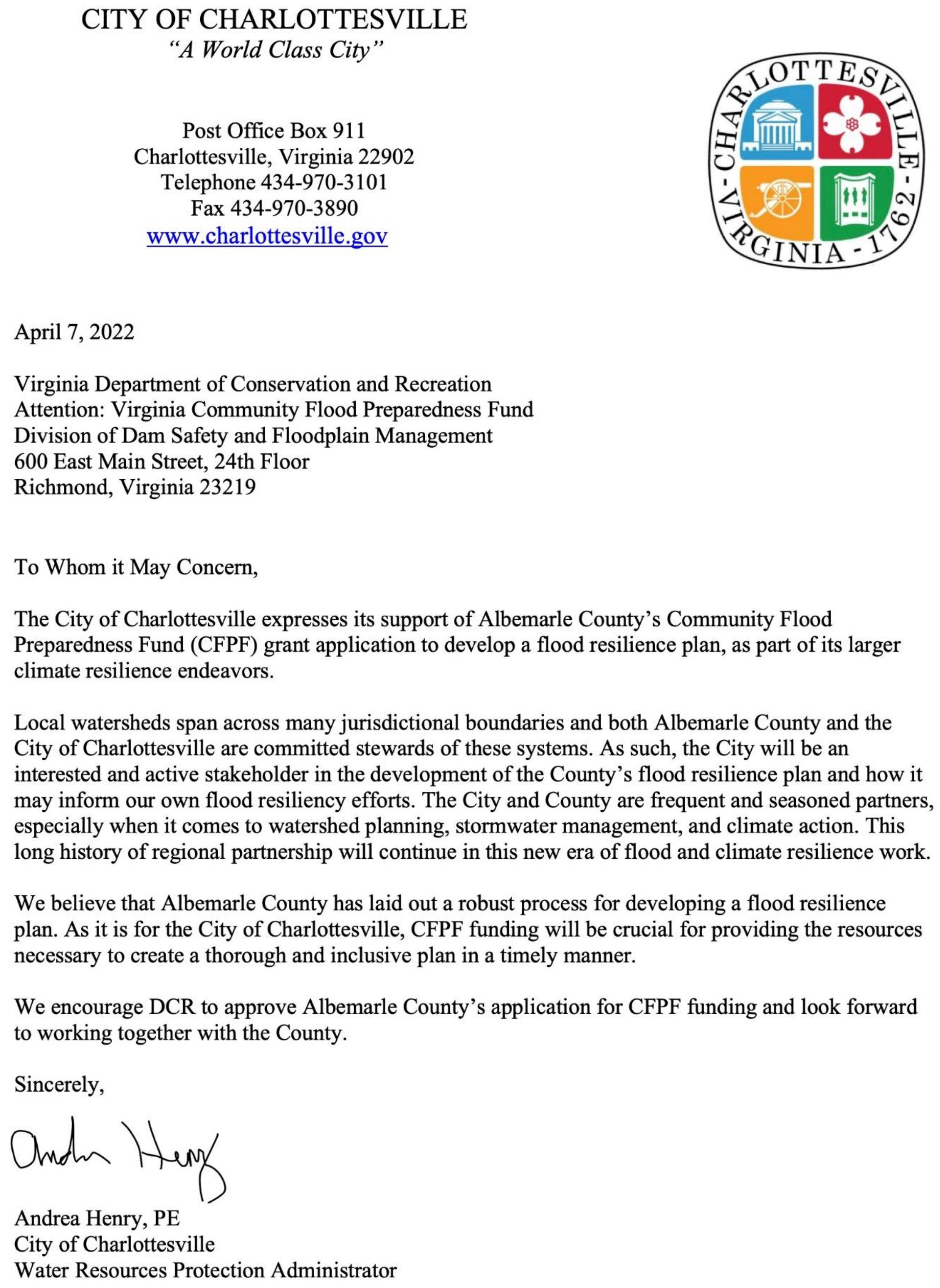
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	**0**
10. Does this project provide “community scale” benefits?		
Yes	**20**	**20**
No	**0**	
Total Points		**292**

Appendix E: Checklist All Categories

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Appendix F: Letters of Support



CITY OF CHARLOTTESVILLE
"A World Class City"

Post Office Box 911
Charlottesville, Virginia 22902
Telephone 434-970-3101
Fax 434-970-3890
www.charlottesville.gov

April 7, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

To Whom it May Concern,

The City of Charlottesville expresses its support of Albemarle County's Community Flood Preparedness Fund (CFPF) grant application to develop a flood resilience plan, as part of its larger climate resilience endeavors.

Local watersheds span across many jurisdictional boundaries and both Albemarle County and the City of Charlottesville are committed stewards of these systems. As such, the City will be an interested and active stakeholder in the development of the County's flood resilience plan and how it may inform our own flood resiliency efforts. The City and County are frequent and seasoned partners, especially when it comes to watershed planning, stormwater management, and climate action. This long history of regional partnership will continue in this new era of flood and climate resilience work.

We believe that Albemarle County has laid out a robust process for developing a flood resilience plan. As it is for the City of Charlottesville, CFPF funding will be crucial for providing the resources necessary to create a thorough and inclusive plan in a timely manner.

We encourage DCR to approve Albemarle County's application for CFPF funding and look forward to working together with the County.

Sincerely,

Andrea Henry

Andrea Henry, PE
City of Charlottesville
Water Resources Protection Administrator

TOWN OF SCOTTSVILLE

VICTORY HALL
401 VALLEY STREET
SCOTTSVILLE, VIRGINIA 24590

TELEPHONE: (434) 286-9267
FACSIMILE: (434) 286-4237
www.scottsville.org

Town Administrator
MATTHEW R. LAWLESS
Town Clerk
JAVIER A. RAUDALES
Town Attorney
JAMES M. BOWLING IV

Mayor
RONALD L. SMITH
Town Council
ALEX BESSETTE
ZACHARY BULLOCK
MEREDITH HYNES
R. DANIEL GRITSKO
STUART MUNSON
EDWARD PAYNE

April 4, 2022

Virginia Department of Conservation and Recreation
Community Flood Preparedness Fund
Richmond

Dear grant review team,

Please accept for your consideration this letter of support from the Town of Scottsville, with regard to the Albemarle County application for the Community Flood Preparedness Fund. The County's proposal for flood resilience planning has substantial benefits to the Town of Scottsville, and we commend the work of the County staff on this project.

The County proposal applies industry best practices to an urgent need, where existing capacity is weak.

The Town is currently working on a grant from this program, awarded in the December round, to update our obsolete floodplain maps. The County's proposal enhances our work and extends it to a much larger service area, over 700 square miles. The resilience plan takes a wider view of both prevention and response priorities, and it connects the disciplines of emergency management and climate science, which suffer from silo thinking.

The County plan will have direct benefits to the Town of Scottsville. Most notably, it will assess aging urban drainage infrastructure. No such study exists for the historical stormwater system in town. The plan is also notable for its very deliberate equity lens. Infrastructure in town has never before been studied this way. I am eager to support a process of inclusive outreach and community engagement.

Please feel free to contact me with any questions about the project, or if I can be of other assistance.

Respectfully,

Matthew Lawless
Town Administrator

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Albemarle County - CFPF Application Submittal (Round 3)

2 messages

Laurel Williamson <lwilliamson2@albemarle.org> Thu, Apr 7, 2022 at 4:49 PM
To: "CFPF, rr" <cfpf@dcr.virginia.gov>
Cc: Greg Harper <gharper@albemarle.org>, Gabe Dayley <gdayley2@albemarle.org>

To Whom it May Concern,

Albemarle County is pleased to submit this application to the Virginia Department of Conservation and Recreation for grant support from the Community Flood Preparedness Fund (Round 3). Attached you will find a PDF document that includes all the necessary elements of a CFPF application in the "Capacity Building and Planning" category, as described in the grant manual.

I wanted to note that we submitted an application in the last round, but it apparently got lost and wasn't reviewed. So to be safe, could you please confirm that you have received the application?

We greatly appreciate this opportunity!

Sincerely,

Laurel

Laurel Williamson (she/her)

Watershed Stewardship Manager

Facilities & Environmental Services Department

Albemarle County

lwilliamson2@albemarle.org

434-296-5816 x3411

401 McIntire Road, Charlottesville, VA 22902

CID510006_AlbemarleCounty_CFPF.pdf
2854K

CFPF, rr <cfpf@dcr.virginia.gov> Fri, Apr 8, 2022 at 10:31 AM
To: Laurel Williamson <lwilliamson2@albemarle.org>

Received. Thank you for the resubmittal.
[Quoted text hidden]

Westview Lakes Grant Application

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
The City of Hampton Virginia

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

✓ **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 515527

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Carolyn Hall

Signature of Authorized Official: C. Hall

Mailing Address (1): 603 Pilot House Drive Suite#300

Mailing Address (2): ______________________

City: New Port News **State:** Virginia **Zip:** 23606

Telephone Number: (757) 534.7751 **Cell Phone Number:** (757) 355.0490

Email Address: chall@1cbm.com

Contact Person (If different from authorized official): ______________________

Mailing Address (1): ______________________

Mailing Address (2): ______________________

City: ______________ **State:** __________ **Zip:** __________

Telephone Number: (____) __________ **Cell Phone Number: (____)** __________

Email Address: ______________________

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

☑ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☑ Wetland restoration.
☑ Floodplain restoration.
☑ Construction of swales and settling ponds.
☑ Living shorelines and vegetated buffers.
☑ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☑ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☑ Stream bank restoration or stabilization.
☑ Restoration of floodplains to natural and beneficial function.
☑ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Map included

NFIP Community Identification Number (CID#):(See appendix F 515529

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☒ No

Flood Zone(s) (If Applicable): ____________________

Flood Insurance Rate Map Number(s) (If Applicable): ____________________

Total Cost of Project: $812,500.00

Total Amount Requested $812,500.00

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		☐ **Yes** ☐ **No**
Applicant Name:		
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Scoring Criteria Projects 2-B

Yes	**10**	
No	**0**	
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	
No	**0**	
Total Points		

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	

Eligibility Information

Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration	☐ **Yes** ☐ **No**
Applicant Name:	

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	
☐ Regional hydrologic and hydraulic studies of floodplains.	**45**	
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	
Total Points		

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☐ Yes ☐ No

Applicant Name:	

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	55	
Development of a new resilience plan.	55	
Resource assessments, planning, strategies and development.	45	
Policy management and/or development.	40	
Stakeholder engagement and strategies.	25	
Goal planning, implementation and evaluation.	25	
Long term maintenance strategy.	25	
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	15	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	15	
High Social Vulnerability (1.0 to 1.5)	12	
Moderate Social Vulnerability (0.0 to 1.0)	8	
Low Social Vulnerability (-1.0 to 0.0)	0	
Very Low Social Vulnerability (Less than -1.0)	0	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	10	
No	0	
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	10	
No	0	
10. Does this project provide "community scale" benefits?		
Yes	20	
No		
Total Points		

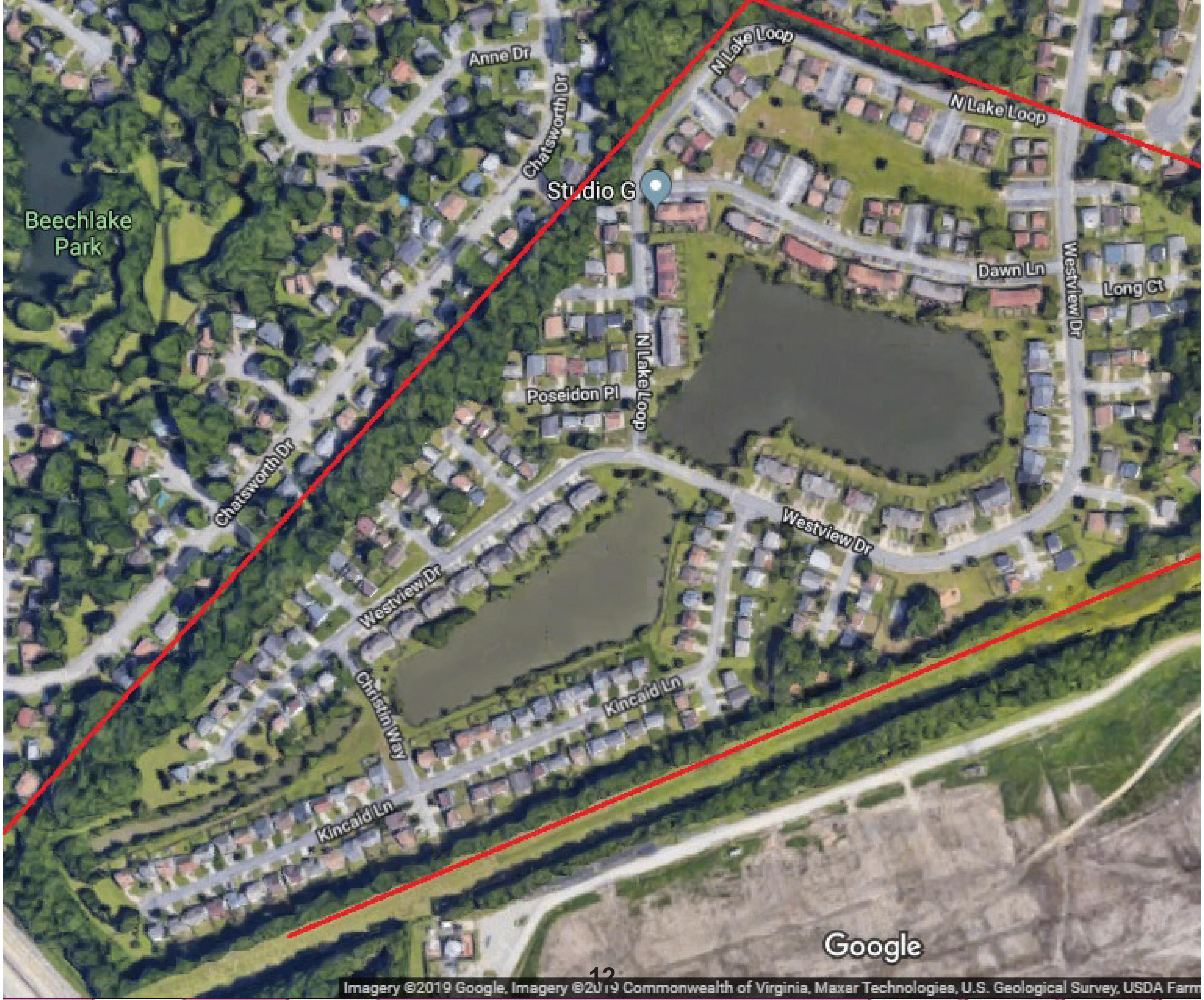
Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☐ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☐ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☐ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☐ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☐ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☐ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☐ N/A



Imagery ©2019 Google, Imagery ©2019 Commonwealth of Virginia, Maxar Technologies, U.S. Geological Survey, USDA Farm

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Grant Application for Westview Lakes-

1 message

Carolyn Hall <chall@1cbm.com> Thu, Apr 7, 2022 at 4:31 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Good evening, see attached Grant application for Westview Lakes Homeowners Association.

Thanks and have a great day.

*****Submit all invoices to 1cbminvoices@payableslockbox.com for processing*****

Carolyn Hall

Association Manager

Chesapeake Bay Management, Inc., AAMC®

603 Pilot House Drive, Suite 300

Newport News, VA 23606

phone 757-534-7751 or 757-706-3000

fax 757-534-7765

www.1cbm.com

-

CID515527_CityofHampton_CFP.pdf
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CATHY E. BINDER
Shiloh Election District

TERENCE T.C. COLLINS
James Monroe Election District

ANN C. CUPKA
At-Large Election District

RICHARD A. GRANGER
James Madison Election District

JEFFREY L. STONEHILL
Dahlgren Election District

King George County, Virginia

Est 1720

OFFICE OF THE COUNTY ADMINISTRATOR
10459 Courthouse Drive
Suite 200
King George, VA 22485
Telephone: (540) 775-9181
Fax: (540) 775-5248
www.kinggeorgecountyva.gov

April 5, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, VA 23219

Re: Authorization of King George County CFPF Application

To Whom it May Concern,

King George County is pleased to submit this application for capacity building and planning funds to develop a Resiliency Plan. The Plan will fulfill a pressing need for the County to have a plan that addresses flood resiliency. Flooding is a major concern for the County's citizens and until now, there has not been a focused effort to address it directly. Additionally, having a Plan will make the County eligible for future participation in the Community Fund Preparedness Fund (CFPF).

Under the direction of the King George County Board of Supervisors, I, as County Administrator, am authorized to request funding from the CFPF for the development of a Resiliency Plan as outlined in the enclosed application. The application includes a budget narrative containing the estimated cost to develop the Plan, amount of funds requested from the CFPF, and the amount of cash funds available as match. I am reconfirming what is stated therein, that the County will appropriate the requisite 25% or \$10,100 in required local cash match funds, and that these funds will be paid from the County's *Professional Services - Engineering* budget, which currently contains approximately \$50,000. Please note that this budget contains sufficient funds to cover the total costs of the project pending reimbursement of awarded funds.

Sincerely,

Christopher Miller
County Administrator
King George County, VA

KING GEORGE COUNTY

Round 3 Application for the
Virginia Community Flood
Preparedness Fund
2022 Grant Funding

Capacity and Planning
Resiliency Plan Development

DCR
Virginia Department of Conservation & Recreation

Est. 1720

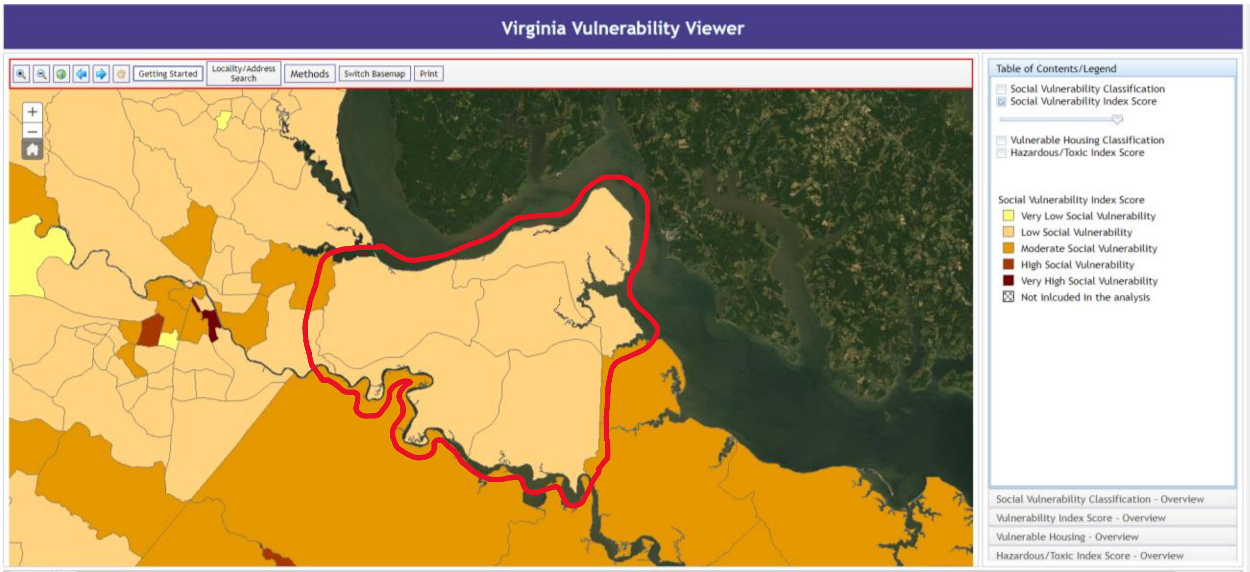
Contents

Introduction

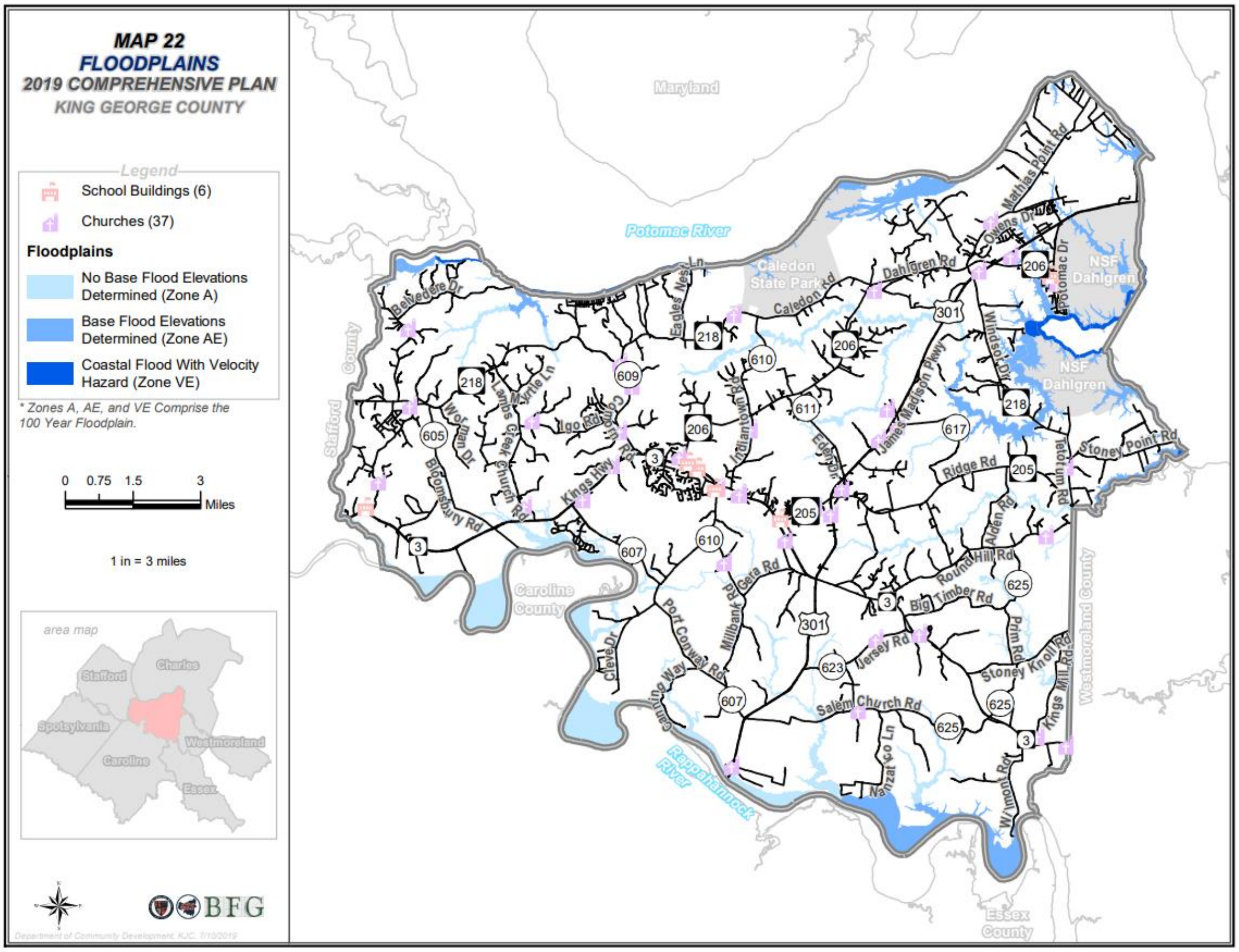
King George County lies between the Potomac and Rappahannock rivers with a population of approximately 27,489 (U.S. Census Quickfacts). It is comprised of a number of designated communities: Courthouse/Courthouse West, Dahlgren, Route 3 West, Fairview Beach, Hopyard, Cleydael, Oakland Park, Rappahannock River/South, and Potomac River/North. The County Comprehensive Plan (link) details the demographic makeup of each of these communities.

The Comprehensive Plan also details the issues of shoreline erosion and flooding in the County. Certain reaches of the Potomac are experiencing 2.2 ft of erosion per year. Due to the adopted Chesapeake Bay Preservation Ordinance, several stormwater BMPs have been installed in the County, which are all relatively new but will require inspection and maintenance. The Plan also discusses the FEMA floodplains and ratings. King George is part of the GW Regional Planning District, and is included in their regional Hazard Mitigation Plan (HMP; link). The HMP covers the threat of flooding in a general sense and illustrates that although the County has relatively fewer flooding problems overall, there are significant problem areas that need addressing.
What the Comprehensive Plan and Hazard Mitigation Plan do not address – and what this Resilience Plan aims to cover – is a more comprehensive overview of the flooding issues in the County, the communities those issues affect and their socioeconomic vulnerability to such threats, prioritization of flood mitigation projects that can address them community-wide, and support for community education on flood resilience goals, objectives, and practices.

According to the AdaptVA Social Vulnerability Tool, Census Tracts in King George County (outlined in red in the image below) have Low Social Vulnerability Index Scores. Additionally, according to the US Census Bureau, the median household income for King George County is $96,711, which is above the state median income ($76,398), meaning the County does not qualify as a low-income geographic area for purposes of the CFPF program.



(Source: AdaptVA Vulnerability Viewer)



(Source: King George County Comprehensive Plan)

In compliance with participation in the NFIP, King George County has also adopted a Floodplain Management Overlay District to address existing buildings and new construction permits within FEMA designated floodplains (link). The Resilience Plan planning process may be useful for crafting policies to support future implementation through zoning.

The Virginia Coastal Resilience Master Plan effort undertaken in 2021 attempted to capture coastal flooding's effect on infrastructure, natural resources, and different populations. However, this undertaking only captured coastal effects (and not riverine/fluvial), and because of time constraints may not have fully captured flooding problems that residents of King George County face. It may also have used methodologies for determining vulnerability that relevant stakeholders might alter based on their local experience. So, whereas this effort, too, found many areas of King George County comparatively less vulnerable (except for some highly vulnerable hotspots), it did not capture the whole story. The Resilience Plan would seek to fill in some of the gaps in identifying communities and flood issues, helping the County to inventory and development a plan to capitalize on opportunities and address issues.

The Resilience Plan can then serve as a tool for public and policymaker education on flooding resiliency and can serve as a formally adopted plan for future grant applications.

Scope of Work Narrative

The development of the King George Resilience Plan will involve three principal tasks:

- Kick-off meeting with County Staff and identified stakeholders to focus the development of the Plan and collect initial input;

- Development of a draft Resilience Plan with consultation and direction from County staff and identified stakeholders, and drawing upon the regional *Hazard Mitigation Plan* and *King George County Comprehensive Plan*. The draft Resilience Plan will describe the County's approach to flooding and meet the following criteria:

  1. It is project-based with projects focused on flood control and resilience.
  2. It incorporates nature-based infrastructure to the maximum extent possible.
  3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
  4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
  5. It is based on the best available science and incorporates climate change and current flood maps.

  Additionally, the Plan will include a project prioritization component.

- Based upon feedback and comments, a final Resilience Plan will be prepared and presented to County Staff for consideration and adoption. Once adopted, the Plan will be submitted to the Virginia Department of Conservation and Recreation for approval.

Development of the Resilience Plan will address the following, as detailed:

1. **The Plan will assess capacity needs and assets to include**:

   a. **Resource needs identification - financial, human, technical assistance, training.** King George County is building off of the Floodplain Management Overlay District ordinance, regional Hazard Mitigation Plan, Coastal Resilience Master Plan, the 2019 Comprehensive Plan update, and local knowledge of flooding issues to provide a more complete look at the flooding problems in the County, the specific communities and geographies they affect, and potential projects to remediate them. King George County is not an MS4 community, and much of the stormwater infrastructure is private, so identifying projects that the County, as well as the local Service Authority, can manage will be a priority.

Organizationally, the County acknowledges the need to prioritize and focus efforts on proactively addressing community flooding issues, and the Resilience Plan will be responsive to these needs. County staff are especially interested in education on how nature-based solutions can alleviate identified concerns.

b. **Plan for developing, increasing, or strengthening knowledge, skills and abilities of existing or new staff. This may include training of existing staff, hiring personnel, contracting with of expert consultants or advisors.** The Plan will identify education or resource capacity needs of the County and its Staff, and present recommendations and best practices to address prioritized issues and opportunities.

c. **Resource development strategies. Where capacity is limited by funding, what strategies will be developed to increase resources in the local government? This may include work with non-governmental organizations, or applying for grants, loans, or other funding sources.** The Plan will work to identify strategies to address identified resource capacity needs. Additionally, the Plan itself will qualify the County for further project funding, and will be leveraged to support other funding opportunities, such as FEMA HMA, BRIC, and FMA, among others.

d. **Policy management and/or development.** The Plan will work to identify and inventory County policies pertaining to flooding and related resilience, and explore the development of new policies based upon identified issues and opportunities.

2. **Goals and objectives tied to improving flood protection and prevention in a whole community approach to resilience. Identify and describe the goals and objectives of the project.** The Resilience Plan will identify communities most affected by flooding and use a stakeholder engagement and data-focused approach to identify community-wide and County-wide benefits when selecting potential flood remediation projects. The Resilience Plan will be used as focused guide to addressing flooding within the County.

3. **Stakeholder identification, outreach and education strategies.** Stakeholders will include representatives of County staff and elected and appointed officials, and may also include, with outreach to, emergency managers, the local Service Authority, Naval Support Facility (NSF) Dahlgren, state agency representatives, community champions, HOAs, and other parties. Outreach and meetings will be mostly if not entirely virtual. The Resilience Plan may be disseminated online or otherwise used to inform the public and illustrate the work necessary to alleviate flooding issues.

4. **Implementation plan and timelines for specific elements of completion such as training, certifications, plan development, etc.** After receipt of award

notice, a kick-off meeting will be held within 30 days. A draft of the Resilience Plan will be delivered within 60 days of that kick-off meeting. Based upon feedback and comments from County staff, elected and appointed officials, and the public, a final version of the Plan will be developed within 30 days of the receipt of all comments; this final version of the Plan will be presented to the County's Board of Supervisors for consideration and adoption, with any revisions made as requested. Upon adoption, the Plan will be submitted to the Virginia Department of Conservation and Recreation for approval.

5. **Parties responsible for capacity building and/or plan development process.** King George County will utilize professional and non-professional services consultants to develop the plan in coordination with County staff and other stakeholders.

6. **Performance outputs and measures. Describe the expected results and benefits and how success will be measured.** Success will be measured firstly by adequately meeting the five requirements of a Resilience Plan as outlined by the Community Flood Preparedness Fund Manual, while also providing robust project prioritization metrics and carry-through to local adoption. The Resilience Plan will include a prioritized list of projects, the success of which will be measured by their adoption and utility in leading to flood mitigation.

7. **Planning for maintaining capacity, as necessary, over the long term.** The Resilience Plan is perhaps an initial step in establishing the County's capacity and planning for addressing flooding issues. The County intends to use the opportunity for the Plan to serve as a foundational document to support emerging and future efforts. King George County is committed to helping its member localities tackle the threat to property, lives, and livelihoods resulting from preventable flood damage.

Budget Narrative

ESTIMATED TOTAL PROJECT COST

The estimated total project cost is $40,400 based upon a scope of services provided by The Berkley Group (Attachment 1), along with costs associated with public engagement and advertising to support adoption of the Plan.

AMOUNT OF FUNDS REQUESTED

The total amount of requested grant assistance is $30,300, or 75% of total project costs, as the project is not located in a low-income geographic area.

AMOUNT OF CASH FUNDS AVAILABLE

King George County will appropriate the requisite 25% or $10,100 in required local cash match funds, to be combined with the $30,300 in grant assistance to equal the total estimated project cost. The County's commitment to the match is addressed in the authorization to request funding, as the Application cover letter. Match funds will be paid from the County's *Professional Services - Engineering* budget; currently this budget contains approximately $50,000. This budget contains sufficient funds to cover the total costs of the project pending reimbursement of awarded funds.

Additionally, while not qualifying as match, County staff time will be dedicated to the project, including that of the Senior Planner, Environmental Inspector, and County Engineer).

AUTHORIZATION TO REQUEST FUNDING

The authorization to request funding is addressed in the Application cover letter.

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
King George County

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

____ **Project**

____ **Study**

NFIP/DCR Community Identification Number (CID) 510312

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Christopher Miller, County Administrator

Signature of Authorized Official: ____________________

Mailing Address (1): 10459 Courthouse Drive, Suite 200

Mailing Address (2): ____________________

City: King George **State:** Virginia **Zip:** 22485

Telephone Number: (540) 775-9181 **Cell Phone Number:** (____) ____________

Email Address: cmiller@co.kinggeorge.state.va.us

Application Form CFPF| 1-A

Contact Person (If different from authorized official): Louis Pancotti, Senior Planner

Mailing Address (1): 10459 Courthouse Drive, Suite 104

Mailing Address (2): ____________

City: King George **State:** Virginia **Zip:** 22485

Telephone Number: (540) 775-8553 **Cell Phone Number:** (____) ____________

Email Address: lpancotti@co.kinggeorge.state.va.us

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X* No ____

*while the County does not qualify as a low-income geographic area, as defined, it is the County's intent for the developed resilience plan to benefit low-income populations within the County.

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☒ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☒ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): King George County

NFIP Community Identification Number (CID#):(See appendix F 510312

Application Form CFPF| 3-A

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Various; this proposal covers a county

Flood Insurance Rate Map Number(s) (If Applicable): See below*

Total Cost of Project: $40,400

Total Amount Requested $30,300

*Flood Insurance Rate Map Numbers

51099C0014E
51099C0018E
51099C0019E
51099C0029E
51099C0031E
51099C0033E
51099C0034E
51099C0050E
51099C0053E
51099C0054E
51099C0056E
51099C0057E
51099C0058E
51099C0059E
51099C0075E
51099C0076E
51099C0077E
51099C0078E
51099C0079E
51099C0081E
51099C0082E
51099C0083E
51099C0084E
51099C0086E
51099C0087E
51099C0090E
51099C0091E
51099C0093E
51099C0094E
51099C0150D
51099C0170D
51099C0175D
51099C0190D
51099C0191D
51099C0200D

Appendix D: Scoring Criteria for Capacity Building & Planning

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	☑
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	☑
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☑ **Yes** ☐ **No**

Applicant Name:	

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	
Development of a new resilience plan.	**55**	55
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development.	**40**	40
Stakeholder engagement and strategies.	**25**	25
Goal planning, implementation and evaluation.	**25**	25
Long term maintenance strategy.	**25**	25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	15
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	0
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		**250**

Appendix D: Checklist All Categories

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☑ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☑ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

BERKLEY
GROUP

ATTACHMENT 1

February 24, 2022

Ms. Angela (Tina) Turner
Procurement Specialist
King George County
10459 Courthouse Drive, Suite 201
King George, Virginia 22485

RE: Work Order ##: Grant Assistance and Resilience Plan

Dear Ms. Turner:

We are pleased to present the attached scope and fee to prepare an application for a Virginia Community Flood Preparedness Fund grant and to develop a Resilience Plan for King George County.

If you have any questions or need additional information, please feel free to contact me at any time.

Sincerely,

Andrew D. Williams, AICP
Chief Executive Officer

I have reviewed the scope and fee for the associated work order, and I hereby give the consultant notice to proceed for the work described herein.

____ ____________________

Ms. Angela Turner, Procurement Specialist Date

SCOPE OF SERVICES

The Scope of Services will include the following phases, tasks, and deliverables:

Phase 1 - Grant Application

Task 1 - Application Preparation

The Berkley Group will work with the County to prepare an application seeking a grant under Round 3 of the Virginia Community Flood Preparedness Fund for the development of a Resilience Plan for the County.

Deliverables: The Berkley Group will provide the final application to the County no later than April 1, 2022, one week prior to the April 8, 2022 submittal deadline. The County will be responsible for filing the application.

Phase 2 - Development of Resilience Plan

Phase 2 is contingent upon the County being successfully awarded a Community Flood Preparedness Fund grant in the amount requested for the development of a Resilience Plan.

Task 1 - Project Management and Coordination

The Berkley Group will manage the project and coordinate with County staff as needed to collect input, provide updates, and share information related to the project. This scope assumes that all meetings, as well as the associated tasks noted herein, will be conducted virtually.

Task 2 - Kick-Off Meeting

The Berkley Group will conduct a kick-off meeting with County staff to review the scope, expectations, schedule, deliverables, and any additional considerations associated with the development of the Resilience Plan. This kick-off meeting will occur within 30 days of the Berkley Group's receipt of a notice to proceed with Phase 2 from the County (presumed to follow the award of the grant and/or the execution of a contract between the County and the funding agency).

Task 3 - Draft Plan

With consultation and direction from County staff, and associated public engagement, the Berkley Group will prepare a draft of the Resilience Plan for the County. Pursuant to Virginia Department of Conservation and Recreation and Community Flood Preparedness Fund standards and requirements, the draft plan will describe the County's approach to flooding and meet the following criteria:

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
5. It is based on the best available science and incorporates climate change and current flood maps.

Deliverables: The Berkley Group will provide a draft of the Resilience Plan to the County for review. The draft of the Resilience Plan will be provided to the County no later than 60 days following the date of the kick-off meeting conducted under Phase 2, Task 1.

Task 4 - Final Plan
Once all feedback and comments have been received from the County, the Berkley Group will address comments, make final revisions to the Plan, and produce a final Plan.

Deliverables: The Berkley Group will provide a final Resilience Plan to the County for review. The final Resilience Plan will be provided to the County no later than 30 days following the Berkley Group's receipt of feedback and comments from the County.

Task 5 - Plan Adoption
The Berkely Group will assist County staff, as requested, with the presentation of the Resilience Plan to the Commission for adoption. The Berkley Group will make any revisions to the Plan as requested by the Commission. Contingent upon the County's adoption of the Plan, the Berkley Group will assist the County in the submission of the Plan to the Virginia Department of Conservation and Recreation for approval. The Berkley Group will make any revisions to the Plan as requested by the Department of Conservation and Recreation which are necessary for Department approval.

Deliverables: Contingent upon revisions necessary under Phase 2, Task 4, the Berkley Group will provide a final Resilience Plan to the County incorporating revisions requested by the Commission and the Department of Conservation and Recreation.

ASSUMPTIONS

1. **Contact Person:** The County will provide a single staff contact that will be responsible for collecting and transmitting data, resources, and other related information to the Berkley Group.
2. **Deliverables:** Deliverables will be provided in digital format to the County.
3. **Covid-19 Policy:** Berkley Group staff will adhere to all public health best practices as recommended by the Center for Disease Control (CDC) or state/local regulations, whichever is more stringent. When engaging in face-to-face meetings with clients and citizens, The Berkley Group requires adherence with the Commonwealth of Virginia's prevailing guidelines as it pertains to social gatherings for business sectors and/or the locality's, in the event they are more stringent. For meetings where attendance from the general public is expected, the locality should consider if/how the prevailing safety guidelines will be enforced and what acceptable measures will be taken for those refusing compliance and communicate those plans to The Berkley Group prior to the meeting date.

FEE

The fee for the services to be provided under Phase 1 of the Scope of Services will be based upon the hours necessary to complete the work, at the following rates, but shall not exceed $3,600.

Hourly Rates	
Owner/Principal	$175
Executive Manager	$120
Director	$100
Principal Planner	$80
Senior Planner	$65
Planner	$50

The lump sum fee for services to be provided under Phase 2 of the Scope of Services for the development of a Resilience Plan is $38,000.

CFPF, rr <cfpf@dcr.virginia.gov>

King George County - Community Flood Preparedness Fund Application

1 message

Louis Pancotti <lpancotti@co.kinggeorge.state.va.us> Thu, Apr 7, 2022 at 3:39 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Heather Hall <heatherh@co.kinggeorge.state.va.us>

Good afternoon,

Attached to this email is King George County’s application for Round 3 of the CFPF program. We are seeking funds for the development of a Resiliency Plan as part of capacity building and planning. We feel that a resiliency plan would be a great planning tool for crafting future policies and identifying potential flooding related issues in the County. Please feel free to contact me with any questions or concerns regarding the application. We look forward to hearing from you soon.

Sincerely,

Louis Pancotti, CZA

Senior Planner

(540)775-8553

10459 Courthouse Drive, Suite 104

King George, VA 22485

CID510312_KingGeorgeCounty_CFPF-1.pdf
3038K

Virginia Community Flood Preparedness Fund Grant Application

2-Dimensional Stormwater Management Model for Meadow Creek and Rivanna River Watersheds

Rivanna River Flooding, May 2018

CITY OF CHARLOTTESVILLE
Department of Public Works
305 4th Street NW • Charlottesville, Virginia 22903
Telephone 434-970-3631

Grant Application Information

This Virginia Community Flood Preparedness Fund (CFPF) grant application is being submitted by the City of Charlottesville, Virginia. Completed copies of the CFPF grant application form (Attachment A) and Study Scoring Sheet (Attachment B) are provided.

The completion of this project will, in conjunction with the City's Round 1 grant award, result in a series of stormwater management models covering the entirety of the City's jurisdictional limits. These models will meet the criteria for studies, as outlined in the 2022 grant manual, including:

- Hydrologic or hydraulic studies of floodplains to clarify or update FEMA Flood Insurance Rate Maps. (Schenks Branch Tributary, Meadow Creek).
- Studies and Data Collection of Statewide or Regional Significance:
    - Updating precipitation data and IDF information
    - Other proposals that will significantly improve protection from flooding on a statewide and regional basis. (informs future conveyance needs to mitigate damage from nuisance flooding)
- Revisions to existing comprehensive and hazard plans, based on the 2008 SWWM model.
- Other relevant flood prevention and protection project or study (the impacts of climate influenced storm events on pluvial flooding in urban environments).

Overview

The City of Charlottesville, Virginia's corporate limits of 10.2 square miles and population of just under 46,786 people are located within the 750 square mile Rivanna River watershed, one of the largest watersheds in Virginia and a major tributary to the Chesapeake Bay.

As stewards of the watershed, the City of Charlottesville manages many components of a stormwater infrastructure system, both natural and built, including the following:

- 35 miles of open waterways
- 130 miles of storm drain
- 8,250 stormwater structures (inlets, manholes, junction boxes, etc.)
- 460 outfalls
- 294 BMPs
- 445 acres of Zone AE floodplain

In 2008, the City of Charlottesville, in partnership with the Army Corp of Engineers (USACE), hired URS to develop a comprehensive stormwater model representing the majority of the City's stormwater management inventory. This model was designed to do the following:

1. Produce an updated technical basis for the City's stormwater management program that could be used to make good management decisions,

2. Create computer models that could be modified in the future as additional field data was collected and future developments were considered, and

3. Identify major flooding points within the City's stormwater and drainage systems for both existing and future land cover conditions.

The existing model represents the input data and best methodology available in 2008. The purpose of this grant application is to update a portion of the existing SWMM model for use as initially intended, as well as expanding the model beyond its originally identified applications. Uses will include analyses of storm sewer capacity issues, identification of special flood hazard zones for major tributaries, identification of problem areas, development and prioritization of solutions, and support for public outreach and education.

Area of Interest

The grant application will focus on the portion of the Meadow Creek and Rivanna River watersheds within City limits, approximately 6.5 square miles and 63% of the City's geographical area.

Because of the increased complexity of the updated model, each watershed will be evaluated in separate models, including the Moores Creek watershed model currently under development.

SWMM Inventory

PCSWMM Version 5.0.11 was originally used by URS in 2008. The model delineated approximately 360 subbasins in order to distribute point sources for inflow throughout the entire area. The entire SWMM model has over 750 nodes and over 800 links, making it an extremely large and complex model for this locality.

The focus of model updates will include the following general categories:

Increased Functionality

The existing model will be imported to the most current version of PCSWMM, running on an EPA SWMM 5.1.015 engine. This will enable the City to take advantage of increased functionality in the model, especially a combined 1D-2D approach to system analysis. The 1D model cannot identify flood at-risk areas due to a lack of infrastructure. Additionally, it cannot support an impact analysis of undersized or non-existent systems. Identifying areas of vulnerability, including roads, residences, and critical facilities, will be important when prioritizing improvement projects and can be accomplished with 2D modeling.

Future areas of vulnerability will be identified based on predictions of climate change- influenced storm events and records of recent storm data. The City will use NOAA Atlas 14 adjusted IDF curves and IDF curves developed specifically for the Chesapeake Bay watersheds. These precipitation events will be important for determine future stormwater conveyance and land use needs.

2D capabilities within the model will now allow the City to develop existing and potential future floodplain delineations for tributaries that are currently unmapped.

Updated Data

Since 2008, the City has been actively updating GIS layers for impervious cover, streams, and the storm drain network. This GIS layer will be compared against the network in the existing SWMM model to identify discrepancies and the model will be updated accordingly. Select areas of the watershed will be surveyed to validate or clarify the GIS data provided by the City.

The City implemented a stormwater utility fee in 2013 and has been implementing a vigorous storm drain rehabilitation program. The updated model will incorporate increased conveyance and alignment changes associated with work done under this program in the last 8 years. Updates from other projects, including private developments and transportation improvements, will also be incorporated into the new model.

Manageable Output

In this iteration of the model buildout, careful consideration will be given to how output data is organized and communicated. While the SWMM model will be run and managed by engineers within the City, the data should be useful to parties beyond experienced SWMM users. Nomenclature in the model should mirror that used by the City’s utility inventory. GIS output should include not only location but useful information for future design and analysis of the system, including inverts, size, material, depth of cover, and percent capture for design storms.

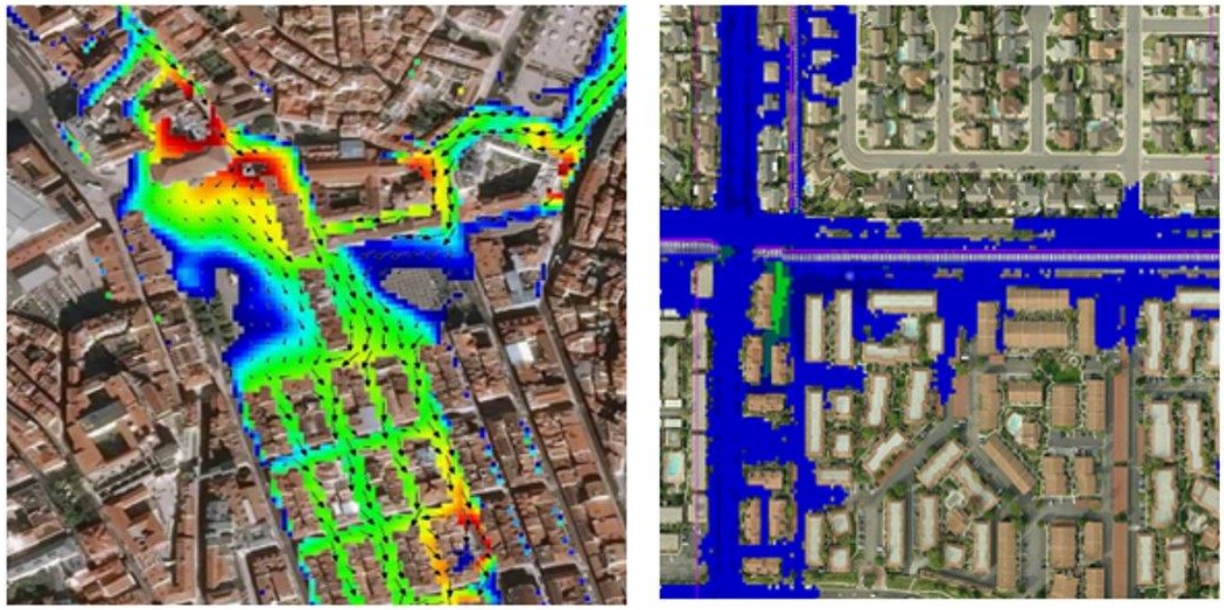
Aggregated sub-basin delineations should match larger delineations for minor and major tributaries, allowing for an infrastructure inventory and flood assessment per receiving water body. This will be especially useful as the City considers simplifying its 38 named drainage areas to less than a dozen drainage areas associated with named tributaries.

Future Uses

Master Planning

The primary function of the SWMM model is to analyze the watershed by using configurations to quantify flooding associated with both existing and future watershed conditions. Potential drainage improvement projects can be geospatially mapped in relation to predicted future flooding, so City staff can make assessments about the value of individual projects. The advantage of this approach is that the entire drainage system can be evaluated on a consistent, system-wide basis.

Consistent and transparent methods of analysis when determining how and where to spend taxpayer money are essential for prioritizing improvements in an equitable manner. Although additional consideration factors, including other master plan objectives, location-specific funding opportunities, a history of underinvestment, etc., can also be incorporated into a system of project selection, the foundation of project prioritization should be the quantification of potential impacts from existing and future flooding events. An objective analysis using industry standard methodology applied over the entire City is a key element to achieving this goal.



2D Flood Modeling output

Images Courtesy of: Montalto, Franco, PE, PhD.(2021), “H&H Modeling 101” from Overwhelmed? Reevaluating Stormwater Modeling in Changing Climate webinar series, Power Point Presentation

Flood Mitigation Projects

The SWMM model can also be used to design improvement projects based on impact analyses and the subsequent development of a prioritization system. The benefit of having larger projects designed within a SWMM model is that the effects of the individual projects on the performance of the entire drainage system can be evaluated holistically, rather than in piecemeal fashion. This approach ensures that monies are well spent, and that each project is truly needed as part of an overall master drainage plan. The model should also be useful for obtaining starting hydraulic grade line elevations for design purposes on smaller development projects, and for designing stormwater management BMPs. Once a level of confidence is achieved for the model, it can be shared with consultants and private developers to support public/private partnerships to improve flood mitigation and water quality.

Allied Street Flooding, Meadow Creek Watershed, August 2008

BMP/Green Infrastructure Performance Assessments

Increased functionality in SWMM will allow for assessment of various green infrastructure techniques with continuous simulation modeling. Existing BMPs can be evaluated for performance over a range of storm events and retrofits can be designed within SWMM to protect treatment volumes from intense, destructive rainfalls.

The City will work collaboratively with a team from the University of Virginia to calibrate the Meadow Creek model to low-flow events so that it may be reliably used for the design of distributed, nature-based infrastructure.

Climate Resilient Stormwater Management

In order to incorporate climate change impacts into stormwater management design standards, a wide range of potential extreme rainfall events must be analyzed. The suite of rainfall events will be derived from multiple methodologies to determine future IDF (intensity-duration-frequency) curve values that best fit Charlottesville's location and geography. These rainfall events will be routed through SWMM to determine confidence intervals around the predictive performance of stormwater management infrastructure. Based on the SWMM results, both storm drain conveyance goals and maintenance routines may be updated to reflect future needs.

Backwater effects from climate change – influenced floodplains can also be modeled in SWMM to determine impacts on stormwater infrastructure performance.

Community Engagement

Using the outputs of these models, comprehensive stormwater management plans can be developed and communicated to the public per City "watershed" to promote a sense of ownership among residents. The stormwater management models can provide visual displays that will be the building blocks for a data driven community outreach plan.

Future Maintenance

Moving forward, the updated PCSWMM models will be an active tool in the City's stormwater management practices. As such, the models will be continuously updated by existing in-house staff. The City's Water Resource Protection (WRP) Administrator is a professional engineer with almost two decades of hydrologic and hydraulic modeling experience. As more data, better methodologies, and updated SWMM versions become available, the Administrator will revise the City's working model. As the confidence in the SWMM model's accuracy increases, the Administrator will also be responsible for sharing model results with other design professionals in the community so that everyone works from a shared point of knowledge.

As-built plans, for both private development and public improvement projects, will be submitted to the City's Stormwater Technician and WRP Administrator so that storm drain infrastructure and BMPs can be added to both the GIS inventory and SWMM model. Additionally, this team will take on the responsibility of utility mapping beyond the scope of survey included in this grant application to identify discrepancies and provide accurate data in areas of the City's storm drain inventory that are less susceptible to flooding.

The grant application also includes SWMM training for up to four professional engineers or engineers in training in the City of Charlottesville to provide overlap in technical skill sets and distributed responsibility of model use and management.

Stakeholders

Model Update

A consulting firm with significant hydrologic and 2D hydraulic modeling experience will be hired with funds from the grant to update the model, incorporate new data, expand analyses to include minor tributaries and select portions of the storm drain network, and introduce future climate change adjustments. It will be important to select a firm with the man-hour capacity to complete the update in a timely manner, so that the model results can be used as soon as possible for master planning.

A technical advisor from the University of Virginia's Department of Engineering Systems and Environment, Dr. Teresa Culver, will be involved to review model extensions, to provide insight into the Meadow Creek system, and to facilitate integration of data collected through the University. Dr. Culver recently received the Margaret S. Petersen Award from the American Society of Civil Engineers for her leadership and contributions to the field of water resource engineering. She and her students have been studying Meadow Creek and its watershed for over a decade. Her work includes modeling to support multi-objective water resource management, including flood reduction.

The WRP Administrator, Andrea Henry, PE will serve as the project manager and City's technical advisor for the model update. The WRP Administrator, along with staff in the Public Works – Engineering Division will provide active, hands-on leadership throughout the 36-month process and manage and direct the selected consultants. The WRP Stormwater Tech will be tasked with data collection, including gathering as-builts, conducting field investigations, and providing pertinent GIS layers.

Future Use

The SWMM model will be used internally for master planning, identification of under-capacity systems, and project design. Public Works Engineering staff will be offered opportunities for training to become proficient in SWMM modeling techniques.

The model will be maintained by the WRP Administrator and used to build a master plan, to be incorporated into the City's resilience plan, and develop annual budgets. The WRP Administrator will communicate the results of modeling efforts and how they will be used in project prioritization efforts to the City's Water Resource Protection Program (WRPP) Advisory Committee. This committee is made up of City residents with a variety of professional experiences that ensure the stormwater utility fee is managed appropriately.

The 1D portion of the model will be available to design professionals in the community and the City will undertake outreach efforts to encourage its use when conducting drainage analyses for site development.

Implementation Plan

Once grant funding is awarded, select stakeholders for the model buildout will meet to develop a detailed scope of work and identify areas that need additional survey data. A request for proposal will be advertised no later than two months after the award agreement is executed.

Efforts to upgrade model methodology and inputs, collect survey data (including select utilities, roadways, and open channels), and conduct field investigations for problematic areas in the terrain data will happen concurrently to build out a draft model within a year of the RFP selection. Once the draft model is finalized and a level of confidence is achieved using standard design storms, stakeholders will conduct a detailed review and identify where additional survey data will be necessary to quantify impacts of flooding. A portion of the funding allocated to survey efforts will be reserved for the final model update.

As the model is upgraded, the technical advisor and stakeholders will determine the appropriate suite of climate-informed storm events to include in an analysis of future flood vulnerability and best methods for communicating the results of climate-informed stormwater management analysis.

The City’s stormwater management models will be used to communicate the potential effects of climate-influenced storm events on existing infrastructure and may support future regional floodplain studies.

Performance Metrics

Once the model is finalized, it will be used in conjunction with visual assessments of stream degradation to identify and prioritize projects, funded in part with the City’s stormwater utility fee, in the following categories: flood mitigation, outfall protection, and BMP development. The model will also be used to develop scopes of work for each project identified in these categories that provides a comprehensive solution to overall stormwater management in the City. For example, an outfall protection project should be designed based on future predicted storm events and necessary conveyance upgrades to the outfall. Flood mitigation projects should evaluate the cost effectiveness and co-benefits of volume reduction techniques such as distributed green infrastructure. These are all design scenarios that can be built and analyzed within SWMM.

Immediate success metrics will include the development of a master plan with a prioritized project list that includes a comprehensive review of vulnerabilities to flooding throughout the City’s watersheds and a transparent pathway to equity-based funding strategies. Maps will be developed for each drainage area contributing to minor and major tributaries, conveying flood vulnerability assessments for both design storms and climate change – informed storm events.

A scope and budget for annual maintenance of grey infrastructure will be developed using the SWMM model as the basis for selection. Model results will be compared against recently identified (within the last 5-years) drainage issues to determine areas prone to flooding as a result of infrastructure clogging.

Budget

The total budget for this grant application is **$550,000**, broken down into the following general categories:

- $255,000: 1D model methodology updates, 2D mesh and model development, incorporation of stormwater infrastructure information from as-built drawings and prior field investigations conducted by the City of Charlottesville and survey and utility mapping conducted during this study. Technical methodology report included.
- $190,000: Survey and utility mapping in select areas.
- $20,000: Incorporation/calibration of flow gauge data in Meadow Creek
- $60,000: Model analyses, technical report, and maps for climate-influenced storm events.
- $15,000: Visual displays and power point for community outreach
- $5,000: PCSWMM license for 4 users within the City of Charlottesville for 1 year.
- $5,000: PCSWMM training for 4 City of Charlottesville staff.

This project falls under the funding category of a flood prevention and protection study. As such, the City of Charlottesville is requesting funding in the amount of $275,000, a cost participation percentage of 50%. These funds will come from money dedicated to the Water Resources Protection Program and are confirmed in the accompanying letter from the Deputy City Manager.

Category	**City of Charlottesville - direct expense**	**CFPF grant reimbursement**	**Total:**
Salary	$0.00	$0.00	$0.00
Fringe Benefits	$0.00	$0.00	$0.00
Travel	$0.00	$0.00	$0.00
Supplies (PCSWMM)	$5,000.00	$0.00	$6,000.00
Other (Staff Training)	$5,000.00	$0.00	$5,000.00
Contractual	$265,000.00	$275,000.00	$285,000.00
TOTAL:	$275,000.00	$275,000.00	**$550,000.00**

Attachments

Attachment A: Application Form for Grant Requests

Attachment B: Scoring Criteria for Studies

Attachment C: Checklist for All Categories

Attachment D: City of Charlottesville Local Waterways Map

Attachment E: Meadow Creek and Rivanna River Watershed Location Map

Attachment F: Charlottesville Social Vulnerability Index Location Map

Attachment G: City of Charlottesville Floodplain Ordinance

Attachment H: Thomas Jefferson Planning District Regional Natural Hazard Mitigation Plan (2018)

Attachment I: City of Charlottesville Comprehensive Plan (2021)

Attachment J: Authorization to Request Funding, Charlottesville City Manager

Attachment K: FIRM Panels

Attachment A

Application Form for Grant Requests

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

_City of Charlottesville____

Category of Grant Being Applied for (check one):

____Capacity Building/Planning

_____Project

___X_Study

NFIP/DCR Community Identification Number (CID)___510033___________________________

If a state or federally recognized Indian tribe, Name of tribe______________________________

Name of Authorized Official: __Tony Edwards, CFM Tony Edwards

Signature of Authorized Official: ____

Mailing Address (1): ___Department of Public Works_____________________________

Mailing Address (2): ___305 4th Street NW______________________________________

City: __Charlottesville____________ State: __VA_____________ Zip: __22903____________

Telephone Number: (_434_) _970-3992_____ Cell Phone Number: (434_) ___981-9293_____

Email Address: ____edwards@charlottesville.gov___________________________________

Contact Person (If different from authorized official): _Andrea Henry, PE________________

Mailing Address (1): ____Public Works Department______________________________

Mailing Address (2): _____305 4th Street NW ___________________________________

City: __Charlottesville____________ State: __VA____________ Zip: _22903__________

Telephone Number: (_434) _970-3529_____ Cell Phone Number: (512) _923-2756_______

Email Address: ___henrya@charlottesville.gov___________________________________

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No _X___

Categories (select applicable project):

Project Grants (Check All that Apply)

Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

Wetland restoration.
Floodplain restoration.
Construction of swales and settling ponds.
Living shorelines and vegetated buffers.
Structural floodwalls, levees, berms, flood gates, structural conveyances.
Storm water system upgrades.
Medium and large scale Low Impact Development (LID) in urban areas.
Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
Dam restoration or removal.
Stream bank restoration or stabilization.
Restoration of floodplains to natural and beneficial function.
Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

[✓ Studies and Data Collection of Statewide and Regional Significance.]

[✓ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.]

[✓ Other relevant flood prevention and protection project or study.]

Capacity Building and Planning Grants

Floodplain Staff Capacity.

Resilience Plan Development

Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

Resource assessments, planning, strategies and development.

- Policy management and/or development.
- Stakeholder engagement and strategies.

Location of Project (Include Maps): see Appendix E

NFIP Community Identification Number (CID#):(See appendix F 510033

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): A/AE/X

Flood Insurance Rate Map Number(s) (If Applicable): 51003- C0267D/C0278D/C0279D/
C0286D/C0287D/C0288D/
C0289D

Total Cost of Project: $550,000

Total Amount Requested $275,000

Attachment B

Scoring Criteria for Studies

Appendix B: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name: City of Charlottesville

Eligibility Information

Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration		Yes No
Applicant Name: City of Charlottesville (510033)		
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	15
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	45
Regional relative sea level rise projections for use in determining future impacts.	**45**	
Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	45
Flash flood studies and modeling in riverine regions of the state.	**45**	
Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	50
Regional hydrologic and hydraulic studies of floodplains.	**45**	
Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	
Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	35
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	
Total Points		190

Attachment C

Checklist for All Categories

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

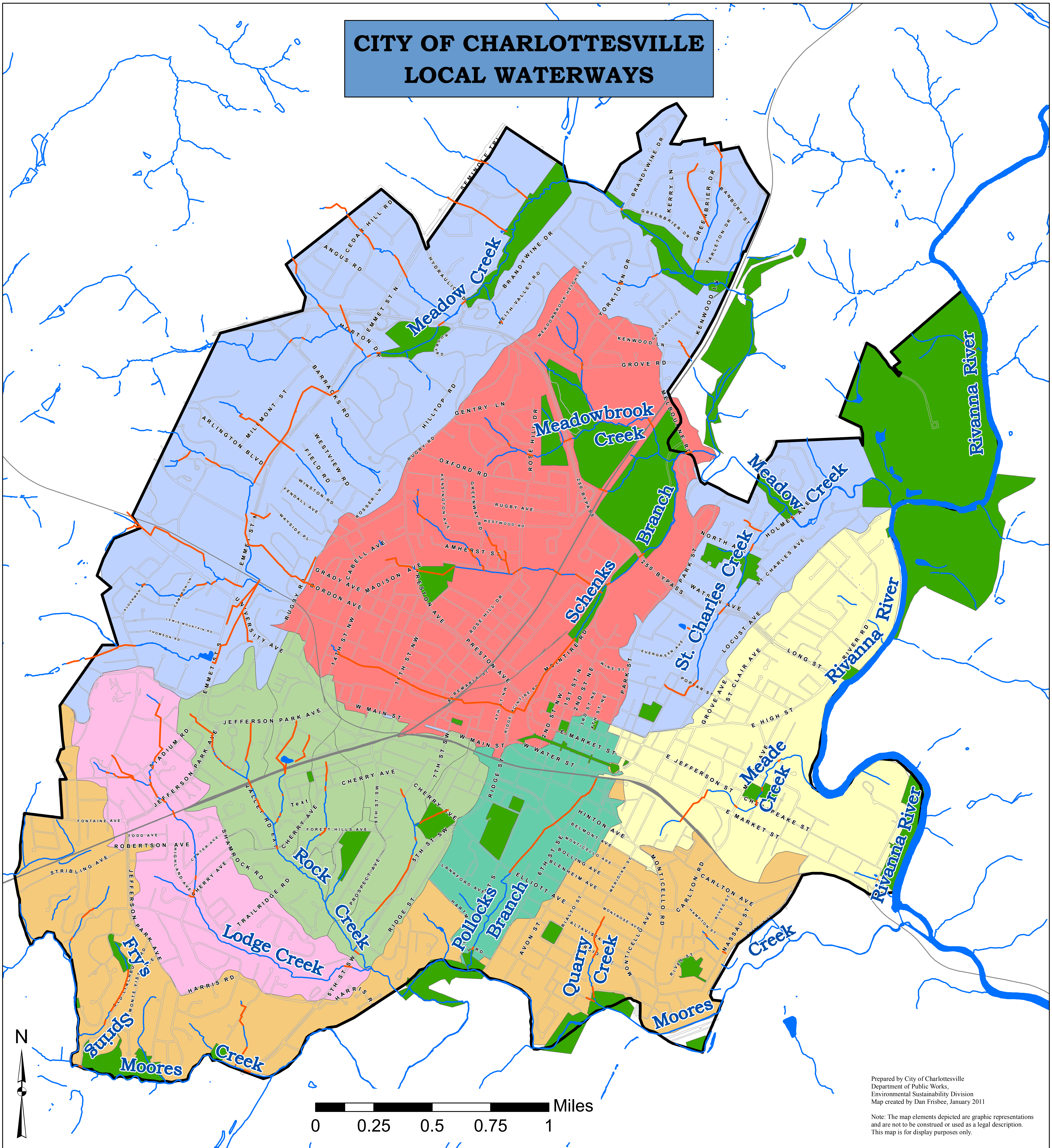
Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Attachment D

City of Charlottesville Local Waterways Map

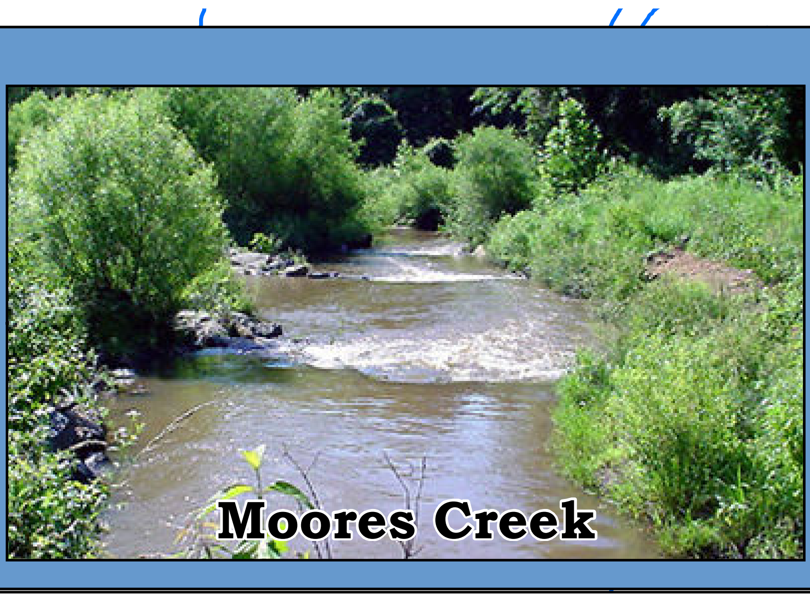
CITY OF CHARLOTTESVILLE
LOCAL WATERWAYS

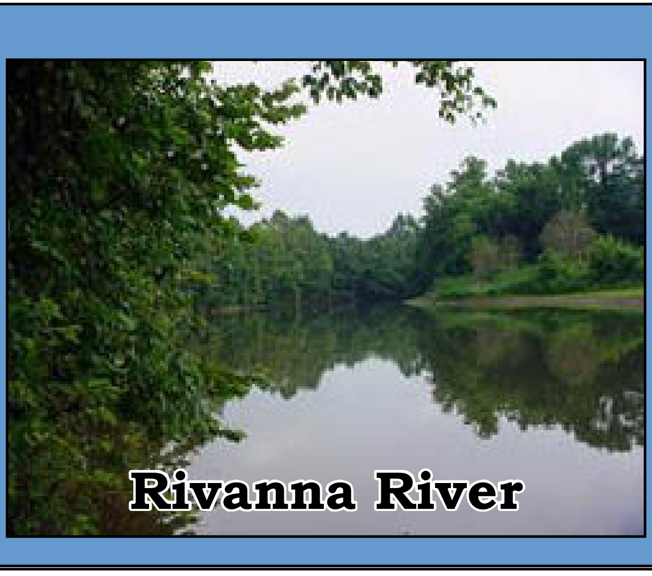


Prepared by City of Charlottesville
Department of Public Works,
Environmental Sustainability Division
Map created by Dan Frisbee, January 2011

Note: The map elements depicted are graphic representations and are not to be construed or used as a legal description. This map is for display purposes only.


Meadow Creek


Moores Creek

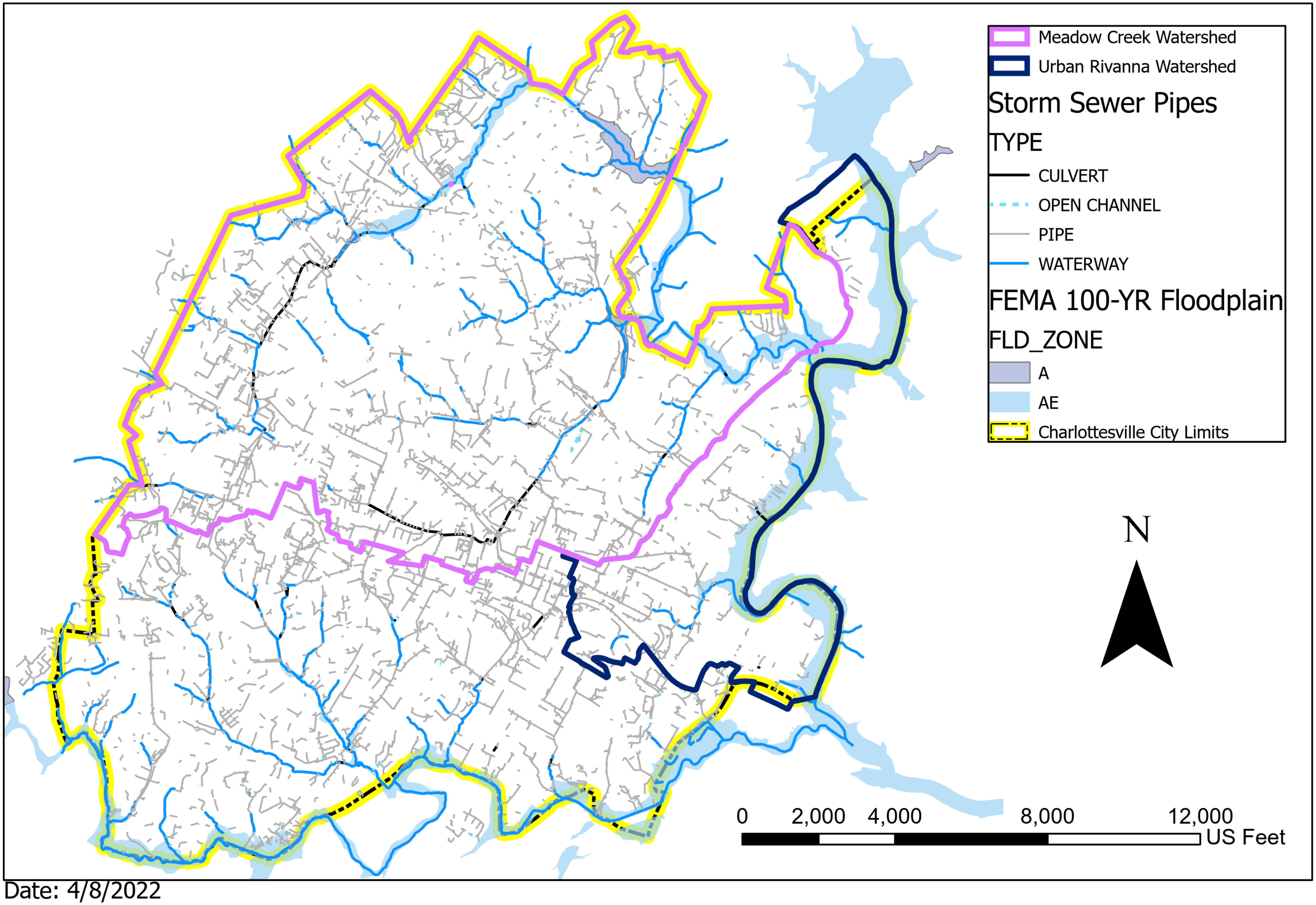

Rivanna River

Legend

Waterways	Drains to Moores Creek
City Limits	Drains to Meadow Creek
Roads	Drains to Rivanna River
Parks	Drains to Schenks Branch
Railroads	Drains to Lodge Creek
Waterways in Pipes	Drains to Rock Creek
	Drains to Pollocks Branch

Attachment □

Meadow Creek and Rivanna River Watershed Location Map

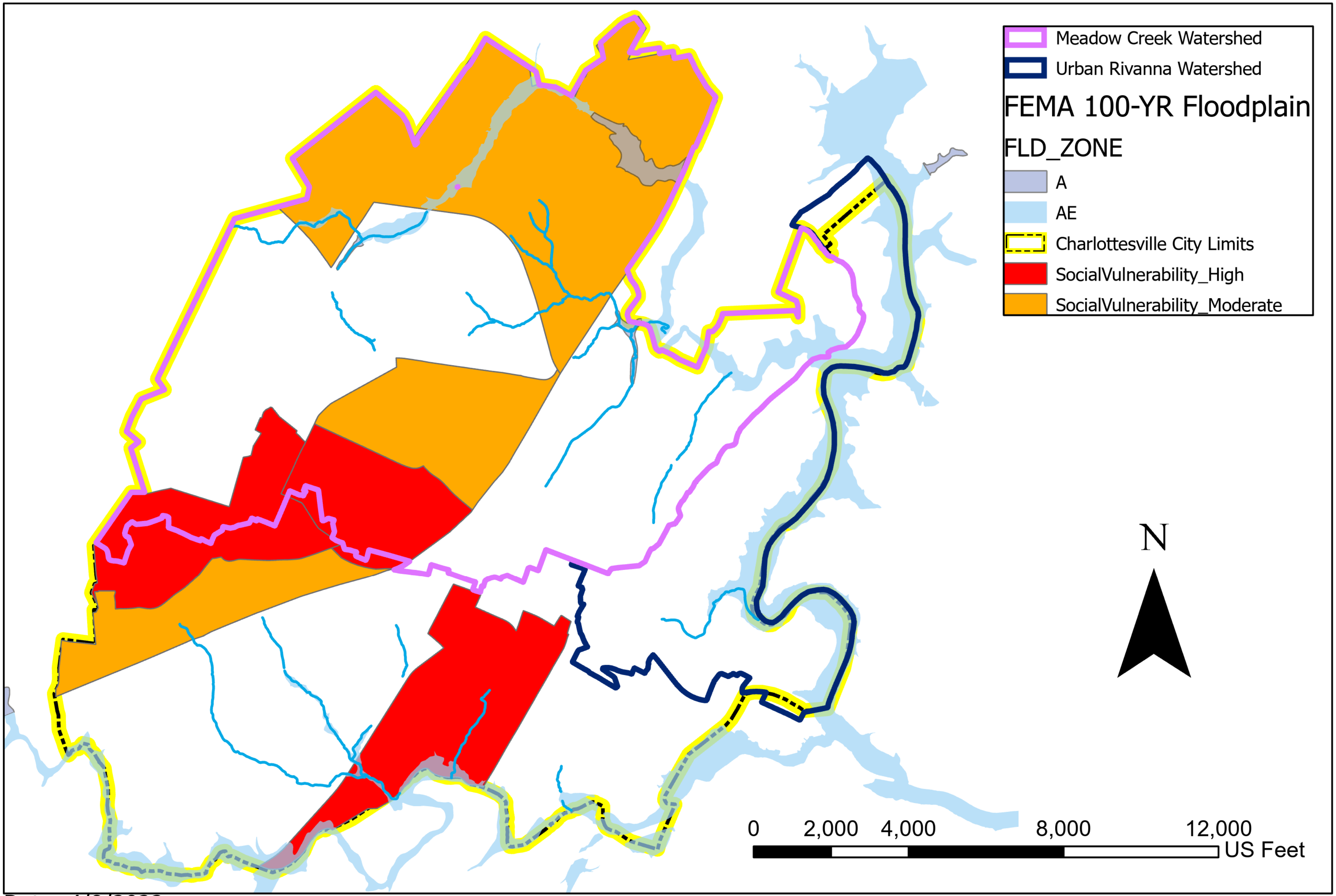


Date: 4/8/2022

Meadow Creek and Rivanna River Watershed in Charlottesville City Limits

Attachment F

Charlottesville Social Vulnerability Index Location Map



Date: 4/8/2022

Charlottesville Social Vulnerability Index

Attachment □

City of Charlottesville Floodplain Ordinance

https://www.charlottesville.gov/DocumentCenter/View/1380/City-Ordinance-34-240-PDF

Attachment H

Thomas Jefferson Planning District Regional Natural Hazard Mitigation Plan (2018)

https://tjpdc.org/wp-content/uploads/pdf/Environment/Hazard-Mitigation/Hazard-Mitigation-Plan-2018.pdf

Attachment I

City of Charlottesville Comprehensive Plan (2021)

https://www.charlottesville.gov/DocumentCenter/View/7073/Comprehensive-Plan-Document---2021-1115-Final?bidId=

Attachment □

Authorization to Request Funding, Charlottesville City Manager

CITY OF CHARLOTTESVILLE
"A World Class City"

Office of The City Manager

Post Office Box 911
Charlottesville, Virginia 22902
Telephone 434-970-3101
Fax 434-970-3890
www.charlottesville.gov

April 8, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

To Whom it May Concern,

The City of Charlottesville is excited for the opportunity to submit this application for the third round of the Community Flood Preparedness Fund grant awards. We have been strong proponents of the Commonwealth of Virginia joining the Regional Greenhouse Gas Initiative and are pleased that funds are now being made available to support our efforts to mitigate and protect against flooding in neighborhoods across our entire community.

The enclosed grant application will assist the City with the development of stormwater management models for the Meadow Creek and Rivanna River watersheds within City limits. This application is the 2nd in a series, the first being our Round 1 CFPF grant award for a model of the Moore's Creek watershed. Combined, these grants will produce models covering Charlottesville's entire jurisdictional limits so that we may identify drainage problems across the City using the same methods of evaluation. The total estimated project budget is $550,000. Per the grant application process, I hereby confirm that the City has identified the necessary resources for the required 50% match of $275,000, which will be composed of cash allocated to our Water Resources Protection Program. Upon Notice of Award of the grant, a resolution will be presented to City Council of Charlottesville for appropriation of the grant funds and the identified matching funds.

We look forward to the VA Department of Conservation and Recreation's support in developing the tools necessary to protect our community in a strategic, equitable, and proactive manner.

Sincerely,

Samuel Sanders, Jr.
Deputy City Manager for Operations

Attachment K

FIRM Panel
51003C0267D/51003C0278D/51003C0279D/51003C0286D/51003C0287D/51003C0288D/51003C0289D

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 17. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Albemarle County Department of Planning & Community Development. This information was photogrammetrically compiled at a scale of 1:4,800 from aerial photography dated March 2000.

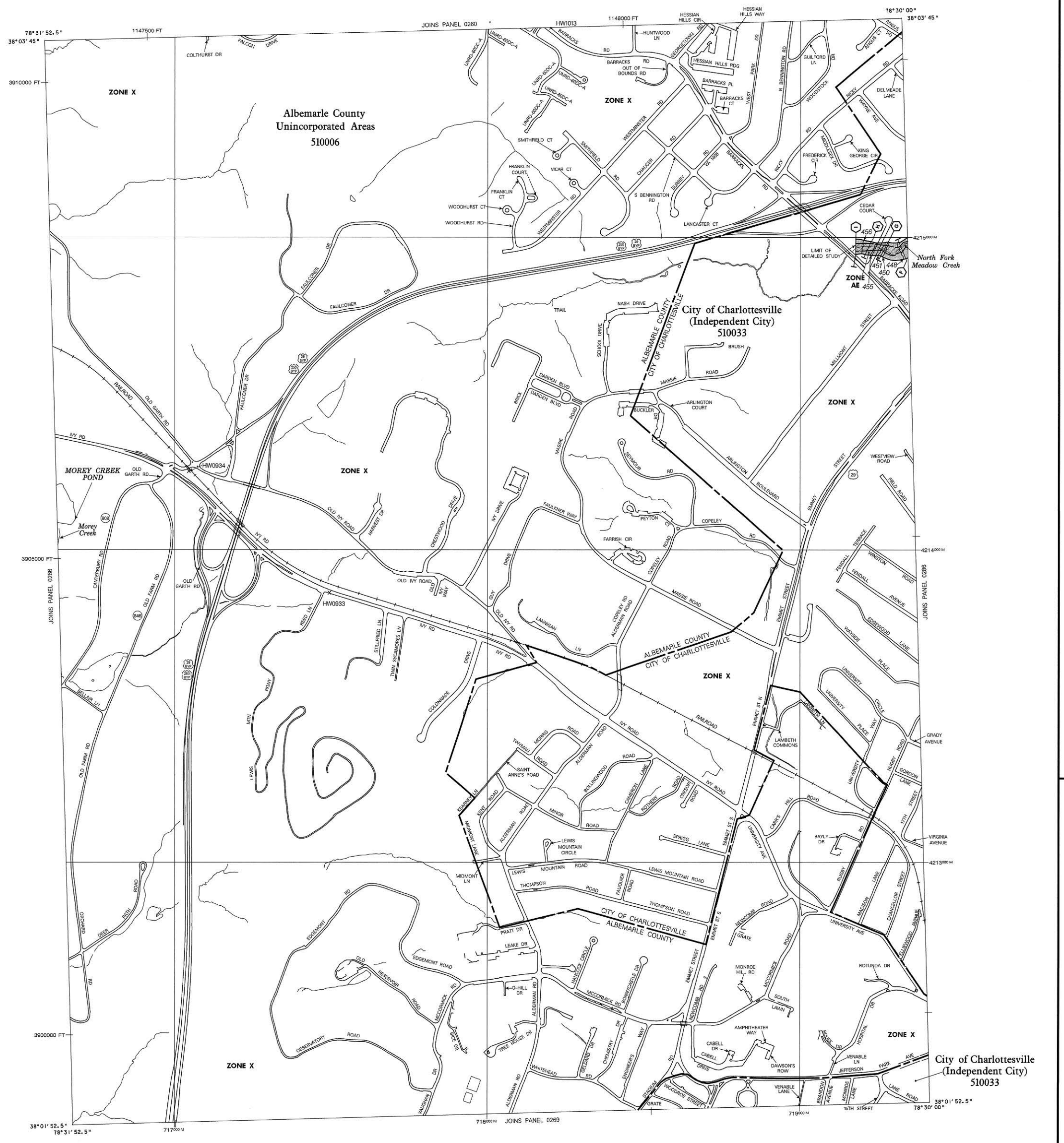
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contain authoritative hydaulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

▩	SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨	FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▒	OTHER FLOOD AREAS
ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
☐	OTHER AREAS
ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.
▧	COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
▧	OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
- —— —— -	Zone D boundary
••••••••••	CBRS and OPA boundary
▒ ←	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~513~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

⬡A——⬡A	Cross section line
(23)- - - -(23)	Transect line
97°07′30″, 32°22′30″	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000 M	1000-meter Universal Transverse Mercator grid values, zone 17
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system, south zone (FIPSZONE 4502), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

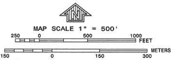
MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
February 4, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0267D

FIRM
FLOOD INSURANCE RATE MAP

ALBEMARLE COUNTY, VIRGINIA
AND INCORPORATED AREAS
AND THE INDEPENDENT CITY
OF CHARLOTTESVILLE

PANEL 267 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBEMARLE COUNTY	510006	0267	D
CHARLOTTESVILLE, CITY OF (INDEPENDENT CITY)	510033	0267	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51003C0267D

EFFECTIVE DATE
FEBRUARY 4, 2005

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 17. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic at the following address:

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National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov.

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This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contain authoritative hydaulic data) may reflect stream channel distances that differ from what is shown on this map.

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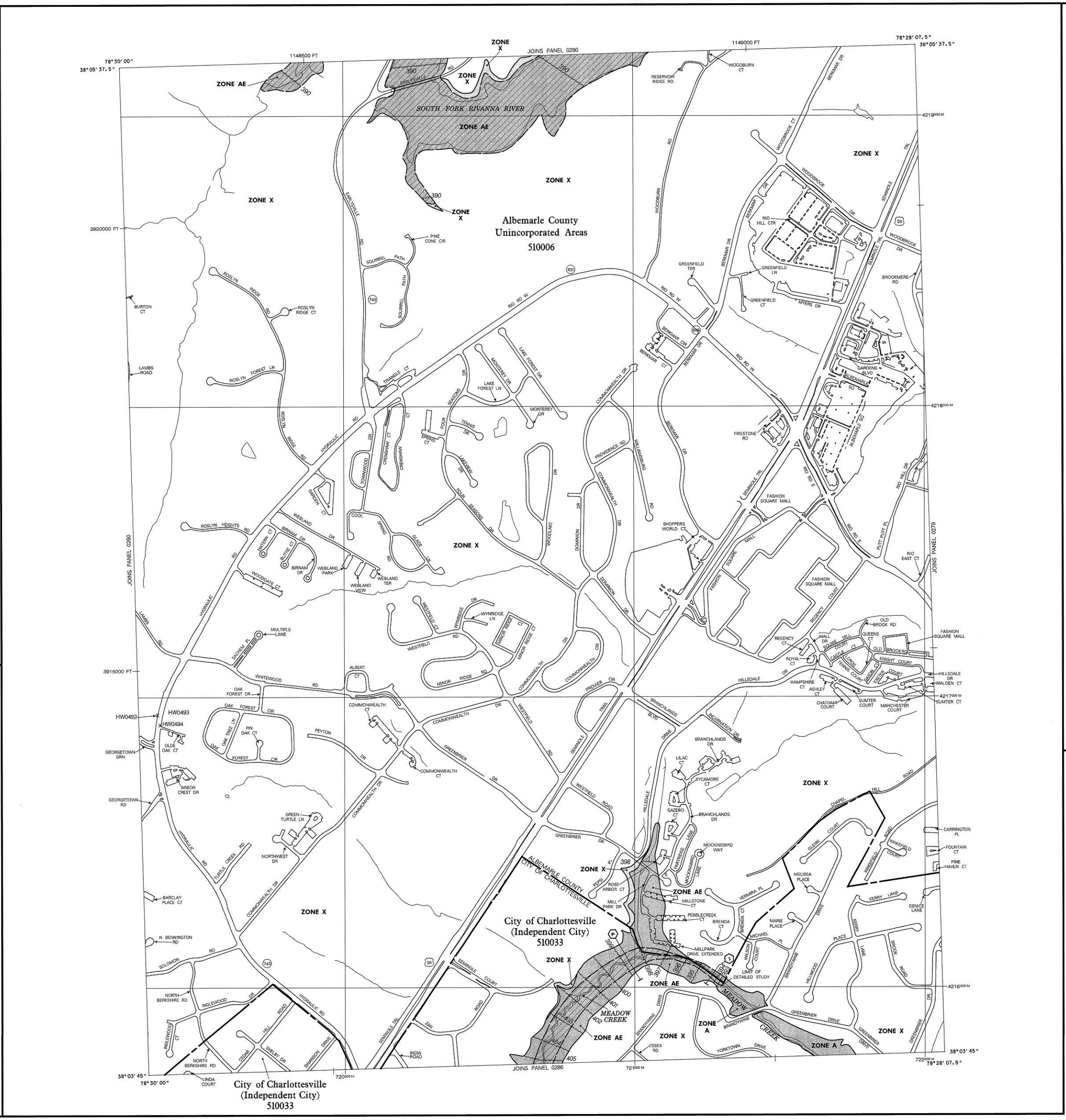

LEGEND

▩ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

░ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
- —— —— -	Zone D boundary
••••••••	CBRS and OPA boundary
▩ ←	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~513~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - -(23)	Transect line
97°07' 30", 32°22' 30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000 M	1000-meter Universal Transverse Mercator grid values, zone 17
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system, south zone (FIPSZONE 4502), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
February 4, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0278D

FIRM
FLOOD INSURANCE RATE MAP

ALBEMARLE COUNTY, VIRGINIA
AND INCORPORATED AREAS
AND THE INDEPENDENT CITY
OF CHARLOTTESVILLE

PANEL 278 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBEMARLE COUNTY	510006	0278	D
CHARLOTTESVILLE, CITY OF (INDEPENDENT CITY)	510033	0278	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51003C0278D

EFFECTIVE DATE
FEBRUARY 4, 2005

Federal Emergency Management Agency

NOTES TO USERS

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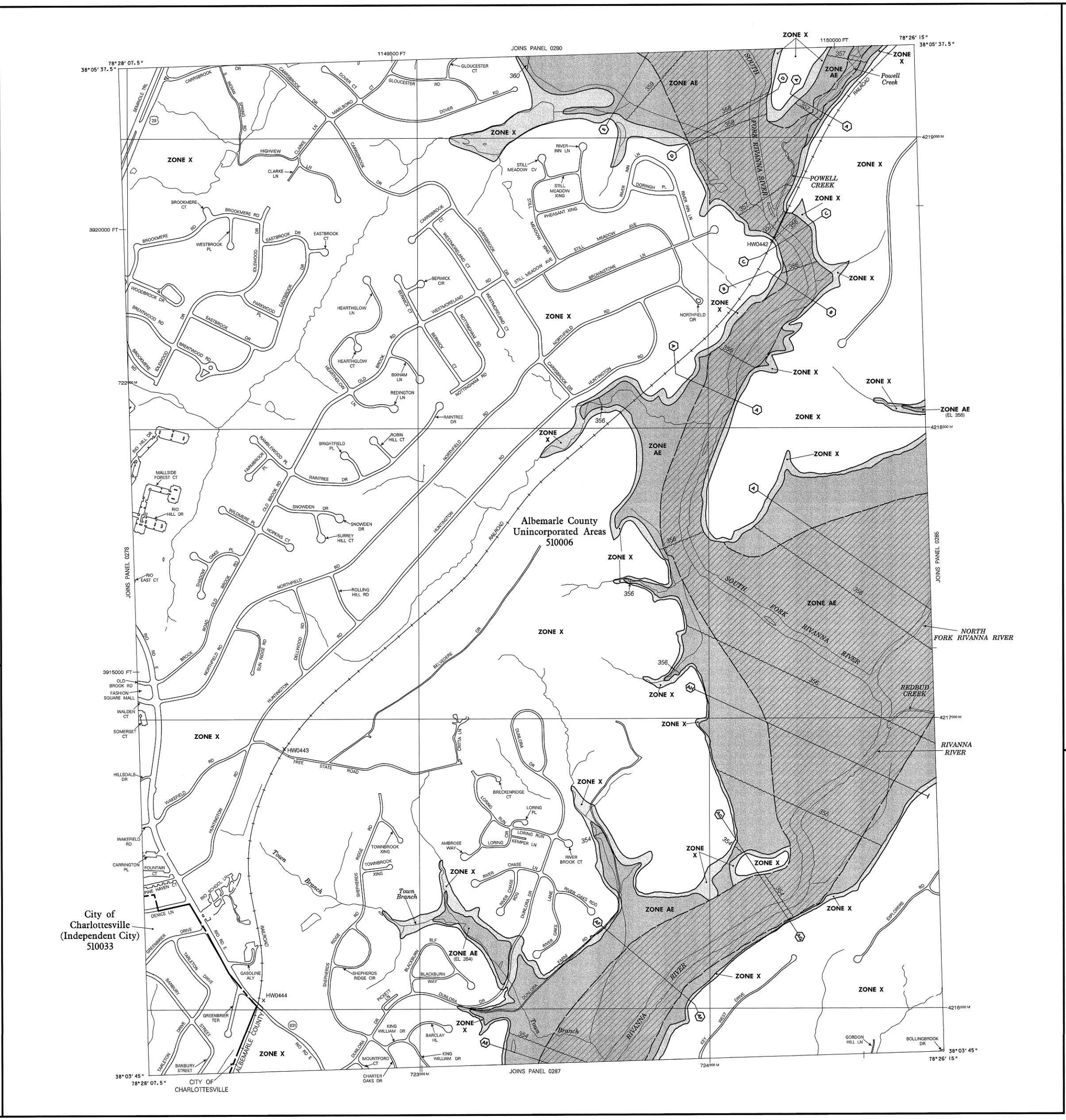

LEGEND

▩	SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨	FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

░	OTHER FLOOD AREAS
ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
☐	OTHER AREAS
ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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▧	COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
▧	OTHERWISE PROTECTED AREAS (OPAs)

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———	Floodplain boundary
— — —	Floodway boundary
- —— —— -	Zone D boundary
••••••••••	CBRS and OPA boundary
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~~513~~~	Base Flood Elevation line and value; elevation in feet*
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*Referenced to the North American Vertical Datum of 1988

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● M1.5	River Mile

MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
February 4, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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N

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250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0279D

FIRM
FLOOD INSURANCE RATE MAP

ALBEMARLE COUNTY, VIRGINIA
AND INCORPORATED AREAS
AND THE INDEPENDENT CITY
OF CHARLOTTESVILLE

PANEL 279 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBEMARLE COUNTY	510006	0279	D
CHARLOTTESVILLE, CITY OF (INDEPENDENT CITY)	510033	0279	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51003C0279D

EFFECTIVE DATE
FEBRUARY 4, 2005

Federal Emergency Management Agency

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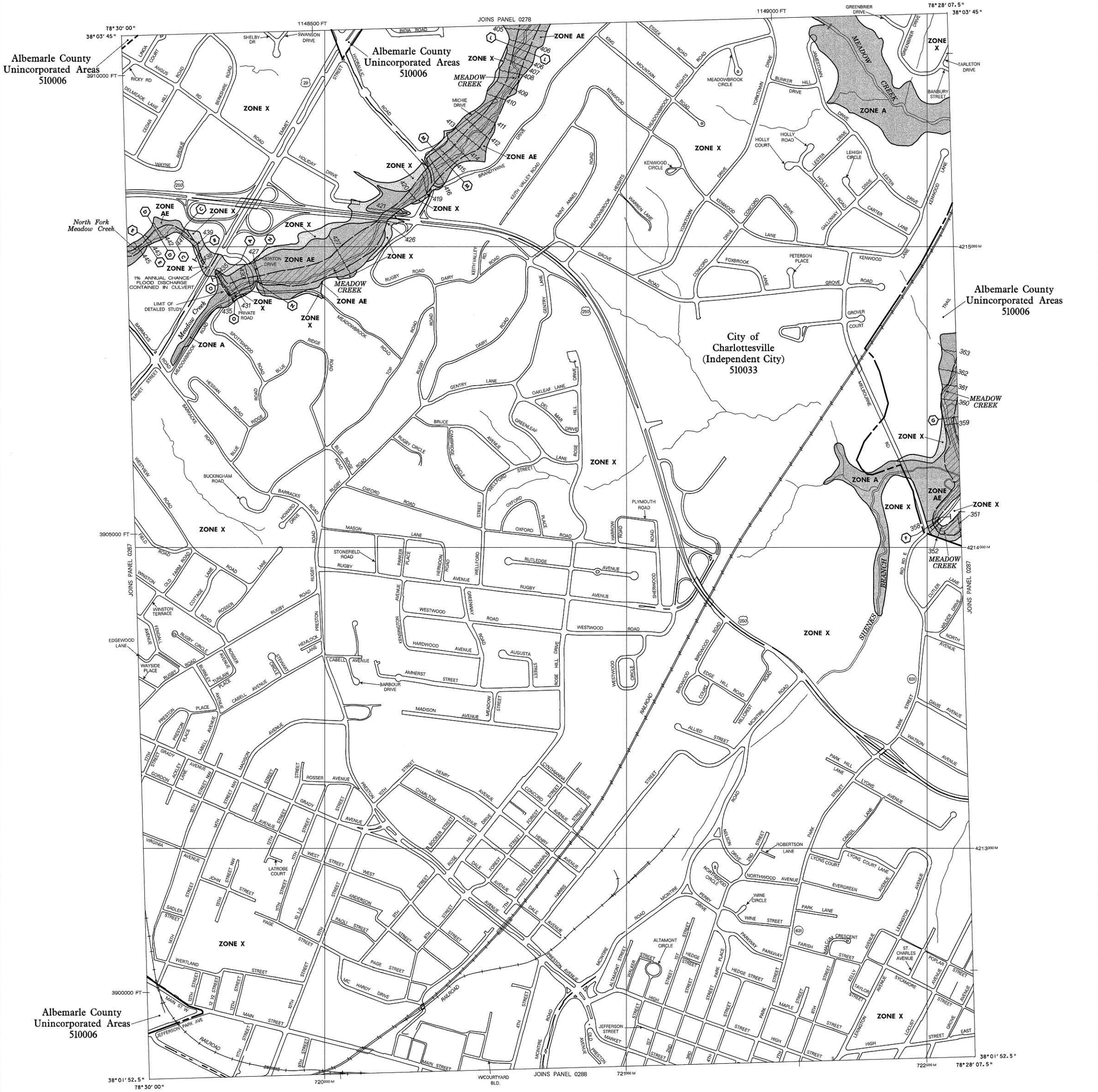

LEGEND

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▨	FLOODWAY AREAS IN ZONE AE

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▒	OTHER FLOOD AREAS
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MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
February 4, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0286D

FIRM
FLOOD INSURANCE RATE MAP

ALBEMARLE COUNTY, VIRGINIA
AND INCORPORATED AREAS
AND THE INDEPENDENT CITY
OF CHARLOTTESVILLE

PANEL 286 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBEMARLE COUNTY	510006	0286	D
CHARLOTTESVILLE, CITY OF (INDEPENDENT CITY)	510033	0286	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51003C0286D

EFFECTIVE DATE
FEBRUARY 4, 2005

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 17. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Albemarle County Department of Planning & Community Development. This information was photogrammetrically compiled at a scale of 1:4,800 from aerial photography dated March 2000.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contain authoritative hydaulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

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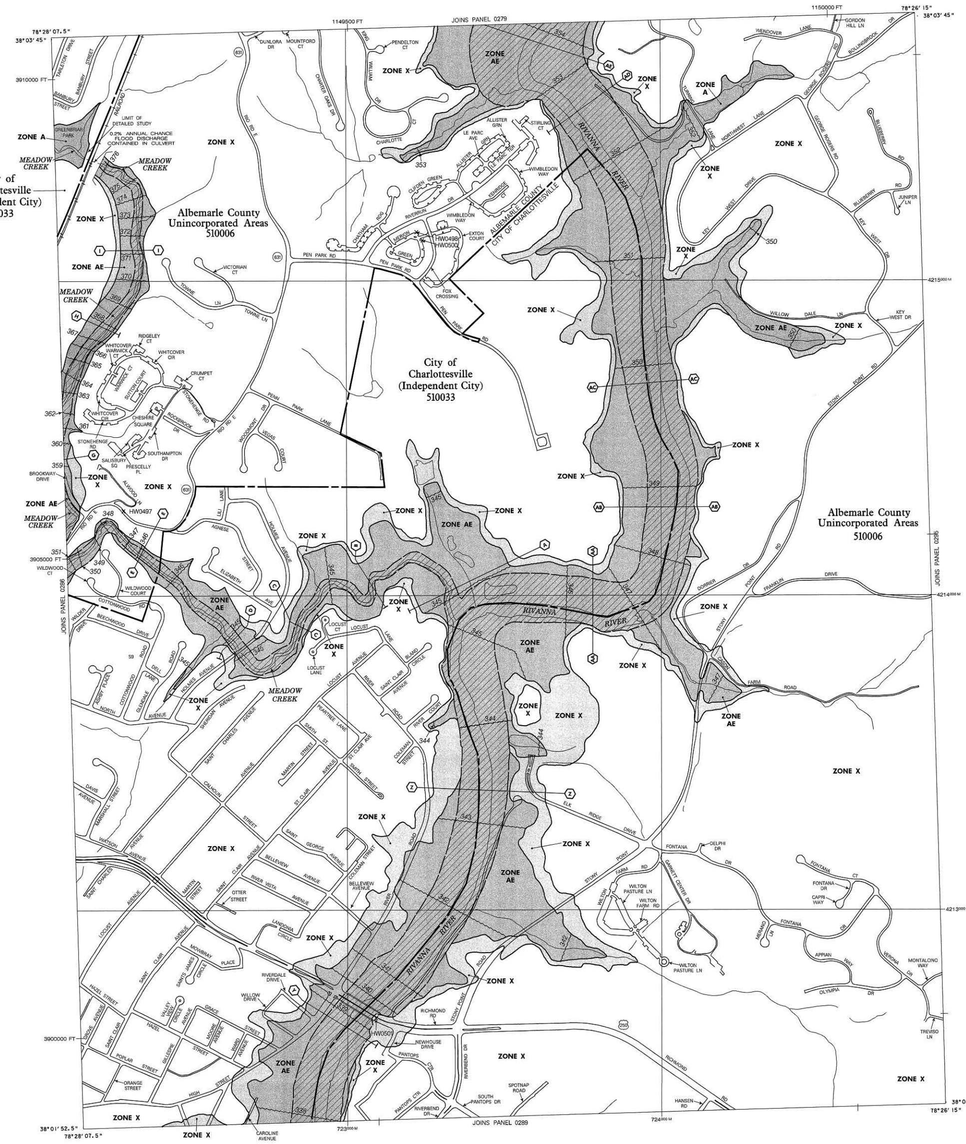

LEGEND

▩	SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨	FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▒	OTHER FLOOD AREAS
ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
☐	OTHER AREAS
ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.
▧	COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
▧	OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
- —— —— -	Zone D boundary
••••••••	CBRS and OPA boundary
▒ ←	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~513~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

Ⓐ——Ⓐ	Cross section line
㉓- - -㉓	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000 M	1000-meter Universal Transverse Mercator grid values, zone 17
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system, south zone (FIPSZONE 4502), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
February 4, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0287D

FIRM
FLOOD INSURANCE RATE MAP

ALBEMARLE COUNTY, VIRGINIA
AND INCORPORATED AREAS
AND THE INDEPENDENT CITY
OF CHARLOTTESVILLE

PANEL 287 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBEMARLE COUNTY	510006	0287	D
CHARLOTTESVILLE, CITY OF (INDEPENDENT CITY)	510033	0287	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51003C0287D

EFFECTIVE DATE
FEBRUARY 4, 2005

Federal Emergency Management Agency

NOTES TO USERS

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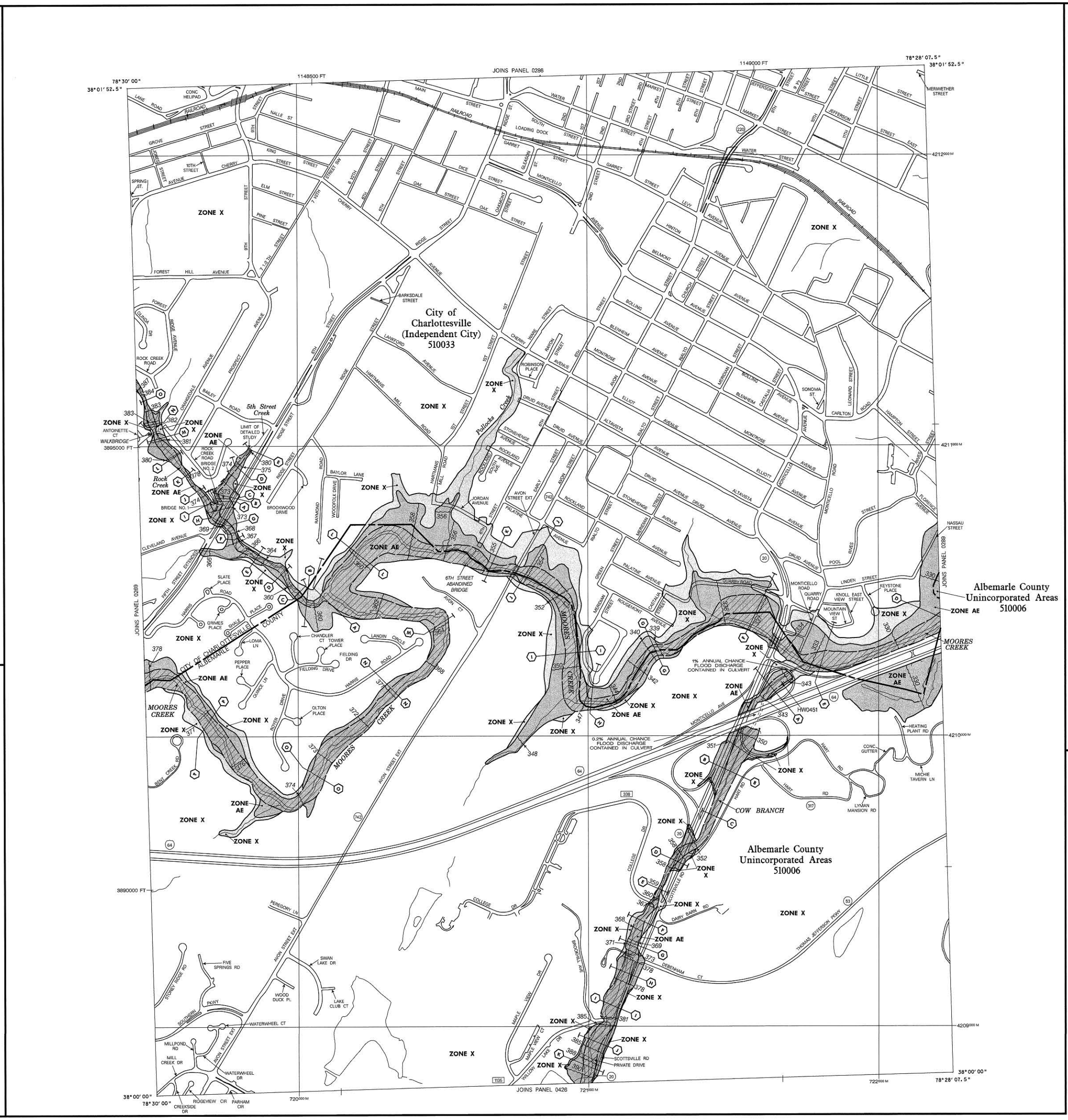

LEGEND

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The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
▨	FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

░	OTHER FLOOD AREAS
ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
☐	OTHER AREAS
ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.
▧	COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
▧	OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— — —	Floodway boundary
- —— —— -	Zone D boundary
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~~513~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000 M	1000-meter Universal Transverse Mercator grid values, zone 17
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system, south zone (FIPSZONE 4502), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
February 4, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0288D

FIRM
FLOOD INSURANCE RATE MAP

ALBEMARLE COUNTY, VIRGINIA
AND INCORPORATED AREAS
AND THE INDEPENDENT CITY
OF CHARLOTTESVILLE

PANEL 288 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBEMARLE COUNTY	510006	0288	D
CHARLOTTESVILLE, CITY OF (INDEPENDENT CITY)	510033	0288	D

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MAP NUMBER
51003C0288D

EFFECTIVE DATE
FEBRUARY 4, 2005

Federal Emergency Management Agency

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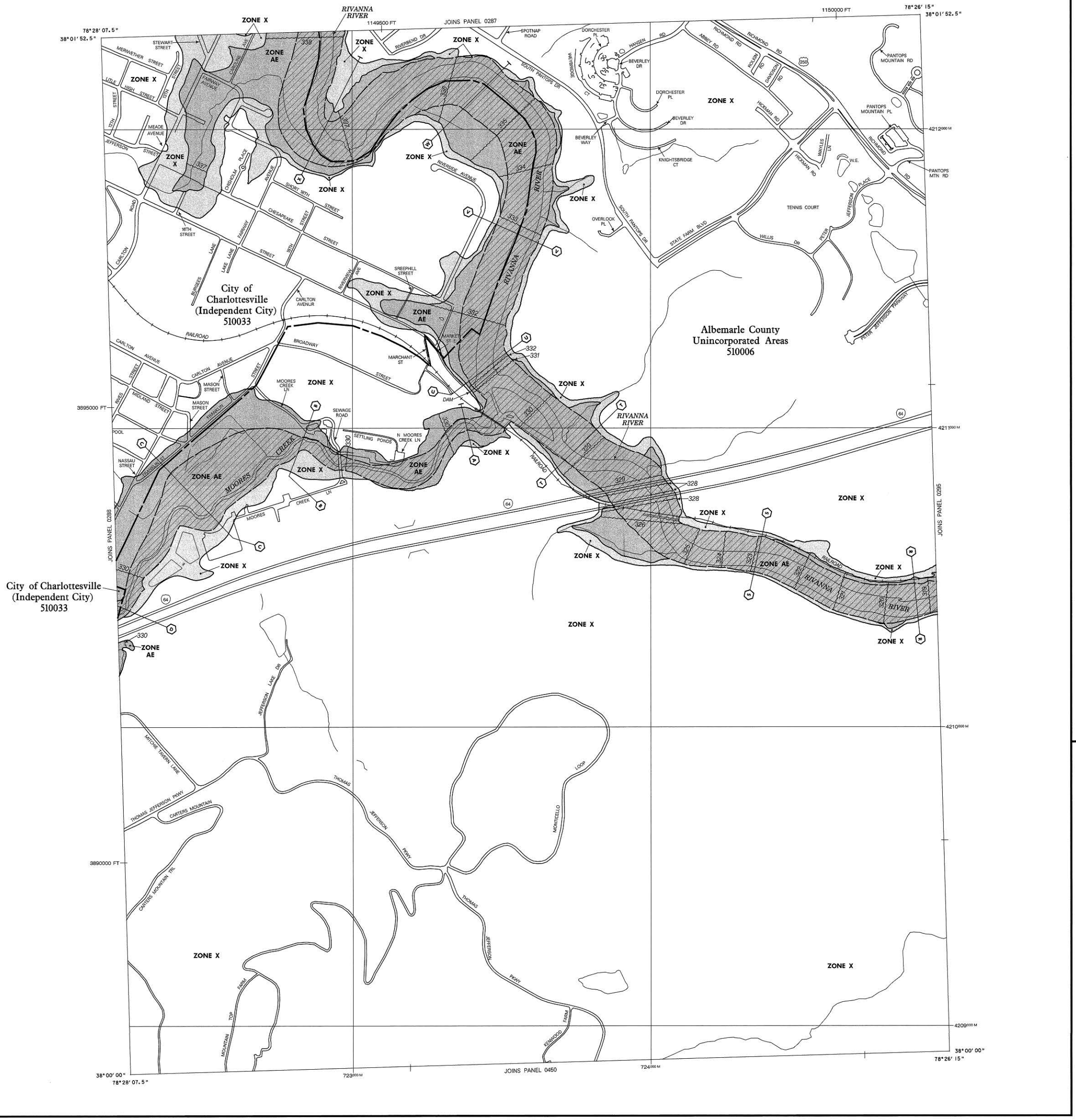

LEGEND

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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨	FLOODWAY AREAS IN ZONE AE

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░	OTHER FLOOD AREAS
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▧	OTHERWISE PROTECTED AREAS (OPAs)

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— — —	Floodway boundary
-—— ——-	Zone D boundary
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(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

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● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
February 4, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0289D

FIRM
FLOOD INSURANCE RATE MAP

ALBEMARLE COUNTY, VIRGINIA
AND INCORPORATED AREAS
AND THE INDEPENDENT CITY
OF CHARLOTTESVILLE

PANEL 289 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBEMARLE COUNTY	510006	0289	D
CHARLOTTESVILLE, CITY OF (INDEPENDENT CITY)	510033	0289	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
51003C0289D

EFFECTIVE DATE
FEBRUARY 4, 2005

Federal Emergency Management Agency

CFPF Grant Application, City of Charlottesville 4.8.22

1 message

Henry, Andrea E <henrya@charlottesville.gov> Fri, Apr 8, 2022 at 1:13 PM
To: "CFPF, rr" <cfpf@dcr.virginia.gov>
Cc: "Edwards, Tony" <Edwardst@charlottesville.gov>

To Whom It May Concern,

The City of Charlottesville is thrilled to submit our third grant application for the Community Flood Preparedness Fund. This grant is the second in a series of two, aimed at developing a strategic approach to both identifying and prioritizing flood mitigation and protection projects. The City strives to plan projects in an equitable and comprehensive manner, relying on watershed-scale solutions when possible. Development of watershed-scale models is the cornerstone to these future efforts and we are committed to developing stormwater management and resilience plans that reflect the best science and methodology available.

Please let me know if you have any questions or concerns about the attached application.

Have a wonderful day!

Andrea Henry, PE

Water Resources Protection Administrator

Public Works Department

City of Charlottesville

(434) 970 - 3529

henrya@charlottesville.gov

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Appendix A: Application Form for Grant Requests for All Categories: Round 3 – 2022 Virginia Community Flood Preparedness Fund

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Chesapeake

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

✓ **Study**

NFIP/DCR Community Identification Number (CID) 510034

If a state or federally recognized Indian tribe, Name of tribe______________________________

Name of Authorized Official: Crystal Bloom, PE, LEED GA

Signature of Authorized Official: ______________________________

Mailing Address (1): City of Chesapeake – Department of Public Works

Mailing Address (2): 306 Cedar Road

City: Chesapeake **State:** Virginia **Zip:** 23322

Telephone Number: (757) 382-6101 **Cell Phone Number: (____)** ________________

Email Address: cbloom@cityofchesapeake.net

Contact Person (If different from authorized official): Deva K. Borah, PhD, PE, F.ASCE

Mailing Address (1): City of Chesapeake – Department of Public Works

Mailing Address (2): 306 Cedar Road

City: Chesapeake **State:** Virginia **Zip:** 23322

Telephone Number: (757) 382-6101 **Cell Phone Number:** (757) 705-6341

Email Address: dborah@cityofchesapeake.net

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No ✓

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

✓ **Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.**

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

☐ **Capacity Building and Planning Grants**

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  - ☐ Resource assessments, planning, strategies and development.
    - ○ Policy management and/or development.
    - ○ Stakeholder engagement and strategies.

Location of Project (Include Maps): Goose Creek Watershed, City of Chesapeake, Virginia, Western Branch Elizabeth River, James River Basin (Attachment 1)

NFIP Community Identification Number (CID#): (See appendix F) 510034

Is Project Located in an NFIP Participating Community? ✓ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ✓ Yes ☐ No

Flood Zone(s) (If Applicable): AE, X shaded

Flood Insurance Rate Map Number(s) (If Applicable): 05101560140D, 05100340010D, 05100340011D, 05100340012D, 05100340013D, 05100340019D, 05100340020D, 05100340021D, 05100340022D

Total Cost of Project: $185,000.00

Total Amount Requested $92,500.00

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
	Eligibility Information	
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	**Submitted for approval**
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration		✓ **Yes** ☐ **No**
Applicant Name:		
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	**35**
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	
☐ Regional hydrologic and hydraulic studies of floodplains.	**45**	
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
Total Points		35

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Scope of Work Narrative – Studies

All applications for proposed studies the applicant should include the following:

1. The specific type of study proposed including whether the study is new or updates a prior study.

Hydraulic and hydrologic study of the Goose Creek watershed/floodplain with historic and predicted floods for the assessment of flood risk and the development of strategies to prevent or mitigate damages from coastal and riverine flooding. The Goose Creek watershed is the uppermost watershed of the Western Branch Elizabeth River in the City of Chesapeake, Virginia with a drainage area of 7,083 acres (11 sq. mi.) with an elongated shape along the east-west directions (approximately 2.2 sq. mi. into the City of Suffolk on the west) discharging into the Western Branch Elizabeth River to the north-east as shown in the attached map. The Goose Creek watershed and the Western Branch Elizabeth River are in the James River Basin.

This is a new study. The City of Chesapeake has been systematically studying the major watersheds throughout the locality since 2008 using current technologies. The Goose Creek watershed has not yet had such a study conducted although has been suffering damages from both riverine flooding during severe storms and coastal flooding via the Western Branch Elizabeth River which has prompted the city to request funding for this watershed and build its resiliency.

The study goal is to develop a computer model of the Goose Creek watershed using the currently industry-accepted Storm Water Management Model (SWMM) of the U.S. Environmental Protection Agency (USEPA) and using watershed characteristic data that the city already has and collecting the missing data through field surveying and observations, and using climate data from the internet considering climate changes resulting increased rainfall depths and sea level rise, and use the model to identify and quantify flooding areas and severity of the flooding, and prepare resilient drainage plans using all the available natural storages and conveyances (nature based) and adding resilient structures wherever needed to mitigate the floodings.

2. The relationship of the study to the local government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual.

The City of Chesapeake has been systematically studying the major watersheds throughout the locality. The Goose Creek watershed is one of the remaining watersheds that has not yet had a study conducted. The study proposed here is more than the other completed studies. In this study, flood measures in the Goose Creek watershed will be planned and designed to be resilient to climate change and sea level rise scenarios as much as possible.

THE GOOSE CREEK WATERSHED AND ITS ISSUES

As shown in the attached map (Attachment 1) of the Goose Creek watershed, the eastern, north-eastern, and central parts of the watershed along the I-64, I-664, and I-264 corridors are well developed with residential and commercial properties. The western (including the 2.2-sq. mi. area in the City of Suffolk) and the southern farmlands and woodlands have potentials for housing and industrial growths that the City of Chesapeake must be prepared for managing increased coastal and riverine floodings due to the land use changes from woodland and farmlands to impervious lands with housings and industries under the new climate change scenarios.

Three smaller areas of the watershed were studied in 1985 using older (outdated) technology although providing useful background information: (i) a 5.6-sq. mi. westernmost and uppermost area extending to the City of Suffolk (estimated then as 1.85 sq. mi.) flowing easterly with its outfall at Jolliff Road, (ii) A 0.5-sq. mi. area on the north-central part of the watershed flowing south-easterly with its outfall at Old Dock Landing Road, and (iii) a 2.4-sq. mi. easternmost area of the watershed called Bower Hill flowing north-westerly with its outfall at the Airline Blvd. These older (1980s) studies analyzed flooding during design storms up to 50-year return period and recommended drainage improvements or limiting developments. Climate change scenarios were not addresses in those older studies. Therefore, new studies of these areas are needed. Besides, the remaining approximately 2.5-sq. mi. north-eastern and downstream part of the Goose Creek watershed that were not part of 1985 studies but in the special flood hazard area (Zone AE) as shown in the attached FIRMette map (Attachment 2) suffering from both riverine flooding during severe storms and coastal flooding via the Western Branch Elizabeth River, deserving of study and protection.

There are approximately 2,542 residential, 264 commercial, 22 government, and 5 critical facilities (elevated storage tank, Lake Gaston Water Treatment Plant, Jolliff Middle School, Southwestern Elementary School, and Station 10 Fire Station) within the Goose Creek watershed. Both the schools serve as emergency shelters. According to data provided by the Virginia Department of Emergency Management, there are four (4) Repetitive Losses in the Goose Creek Watershed.

The Dock Landing Road between Mariner Drive and Devon Drive within the Goose Creek watershed (Attachment 3 FIRMette map) with the lowest road elevation of 3.6 ft. constantly floods from both rainfall and tidal flooding events. It is becoming part of Hampton Road Planning District Commission's (HRPDC) flood monitoring and warning and road closure sign posting program in cooperation with the City. This critical flooding road location where 6,000 vehicles pass in a day will be addressed in this study, and a permanent solution will be recommended. Attachment 4 shows this site (Location 1) in the Goose Creek watershed as part of HRPDC's plan on installing flood sensors by its contractor XYLEM.

Attachment 5 includes 13 recent Work Orders that City of Chesapeake completed in response to citizens' flooding complaints within the Goose Creek watershed and a flooding image of the Willow Lake in the Goose Creek watershed during a storm on September 30, 2010.

SCOPE OF WORK

This application seeks support for contractual engineering services from a qualified Engineering Consultant with a sub-contractual Surveyor support for developing a computer model and using it to develop flood resilient plans for the Goose Creek watershed in the City of Chesapeake. The deliverables will include SWMM models of the watershed depicting current and future watershed conditions and will identify nature based and infrastructure projects that can be implemented to mitigate existing and future floodings and build resiliency towards climate change scenarios.

This project will conform to the CITY's Resilience Plan that is being developed with support from DCR CFPF Round 1 Grants, current (2014) Hazard Mitigation Plan, floodplain management ordinance, and Federal Emergency Management (FEMA) National Flood Insurance Program (NFIP) requirements, as applicable. The CITY participates in FEMA's Community Rating System, with a current Class 8 rating, and is in good standing with the NFIP.

The CITY will provide to the Consultant the following documents and information for using as input data to the Goose Creek watershed SWMM to be developed:

- Copies of pertinent existing stormwater studies and computations.
- As-built or approved site plans within the watershed.
- Lists of flood-prone areas and problem structures in the watershed.
- GIS data in ESRI-ArcMap-compatible format for the subject watershed and surrounding areas.
- Development plans for projects under construction or expected to be under construction within the watershed before or during 2022, to be modeled as 'existing' conditions.
- Future land cover guidance (imperviousness) and applicable engineering studies or plans for areas expected to be developed or redeveloped.
- Hydraulic boundary conditions, primarily tidal boundary elevations considering sea level rise, to be used in the modeling.

BASIC SERVICES FROM THE CONSULTANT

The Basic Services include analyses of flooding in the Goose Creek watershed, building of the computer models of current and future design storm flooding, and to identify specific nature based and infrastructure projects that could be implemented to reduce the frequency and severity of street and parcel floodings and build resilience to extreme event floodings.

Task 1: Project Management, Coordination, Meetings, Quality Control

This task includes administrative time associated with invoicing, progress reporting, communications (email and phone calls), as well as all internal project planning and setup. The consultant will manage the project workflow and coordinate with the CITY to ensure that the work proceeds in an efficient and cost-effective manner.

Task 2: Assessment of the City Provided data and Surveying of Missing data

The Consultant will evaluate all the data received from the City and identify field-surveying data needed to support the modeling effort and will provide a list of selected locations at which surveying shall be performed by a Subcontracted certified Surveyor to make and report various measurements such as inverts, ground elevations, and culverts and pipe or channel configuration information. Any other required data will be estimated from readily available data sources, such as existing GIS and topographic data and construction plans that will be provided by the CITY. The Consultant will also visit key locations in the watershed to photograph conditions and resolve modeling issues as needed.

The subcontracted Surveyor will carry out the surveying per Consultant's directions and hand over all the surveyed data to the Consultant who will use those in the SWMM model and also submit to the City along with the final deliverables for City's records and future uses.

Task 3: SWMM Modeling

The consultant will prepare a SWMM computer model of the Goose Creek watershed using the popular PCSWMM software to reflect existing and future conditions within the watershed. The model will identify flooding areas under existing conditions and improvement scenarios through nature-based and/or infrastructure modifications to mitigate flooding following Master Drainage Plan methodology that has been used in other Chesapeake watersheds and following the City Resilience Plan that are currently being developed and submitted along with this application.

After putting the base model together using all the City-supplied and newly surveyed data, the Consultant will calibrate the model by running a historical storm and comparing the model predicted flood elevations and flows with any available observed data to ensure those reasonably match, if not, the Consultant will review and revise the model data and parameter values as appropriate until the model predicted and field observed flow and water surface elevations closely match.

The Consultant will evaluate the 2-, 5-, 10-, 25-, 50-, 100-year, and potential higher design storm events using the model developed to check the adequacy of the existing stormwater infrastructure. The Consultant will use available information and professional judgment to define the hydrology to reflect existing and future hydrologic conditions; estimate model parameters; adapt the configurations of the models to reflect future conditions; and make other assumptions required to complete the task.

The consultant will produce and run the PCSWMM models to obtain 'existing' and 'future' conditions results, including the effects of the recommended improvements, considered in three modeling scenarios:

1. Existing Hydrology with Existing Drainage (Calibration),
2. Future Hydrology (Climate Change) with Existing Drainage, and
3. Future Hydrology (Climate Change) with Recommended Improvements.

The scenarios modeled shall reflect existing conditions and future alternatives. Future hydrology will incorporate climate change scenarios adopted in the industry (neighboring communities) and available in the literature.

Eight models shall be constructed for the watershed for each scenario created. Specifically, each scenario will include the 2-, 5-, 10-, 25-, 50-, 100-year, and other higher design storm events. The consultant will work with the CITY to develop the future improvement recommendations by submitting preliminary future recommendations for review and comment by the CITY, then incorporate the CITY's comments and preferences into the final future recommendations scenario.

Task 4: Production of Deliverables

The Consultant will prepare model documentation, in electronic Adobe portable document file (PDF) format. The documentation will contain updated watershed maps in GIS format that clearly depict the layout and construction of the models, overlaid on current CITY-furnished digital orthophotos. The documentation will contain a narrative describing the modeling effort, a description of the computer files and scenarios used, and a list of the recommended improvements and alternatives considered.

The consultant will prepare a cost opinion for the recommended future improvements included in Scenario 3. The cost opinion will be suitable for use in computing future pro-rata shares.

The quarterly and final project reports produced under this application will be submitted to DCR for approval (per the applicable grant requirements). DCR's comments, preferences, and any applicable guidance for the final report will be solicited.

DELIVERABLES

The Consultant will deliver to the CITY the followings:

- Quarterly grant reports.
- A grant reimbursement form.
- A Resilient Drainage Plan report with supporting documentation.

- **All digital engineering files (e.g., PCSWMM, GIS shapefiles and geodatabases, spreadsheets, cost estimates) produced or collected as part of the engineering work for this project.**

Consultant will provide secure downloadable link for all draft and final deliverables.

COMPENSATION: CONTRACTED ENGINEERING CONSULTANT'S AND SURVEYOR SUBCONTRACTOR'S FEE ESTIMATES:

Engineers' salaries and fringe benefits:	**$130,000.00**
GIS Specialist's salaries and fringe benefits:	**3,000.00**
Surveyors' salaries and fringe benefits:	**45,000.00**
Admin/Clerical for Engineering:	**1,500.00**
Admin/Clerical for Surveying:	**1,000.00**
Engineers' Milage:	**500.00**
Surveyors' Milage:	**1,500.00**
Surveyors' Traffic Control:	**2,500.00**
TOTAL PROJECT COST ESTIMATE:	**$185,000.00**

3. The qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications

The City of Chesapeake plans to use a consultant with current Annual Civil Engineering Services Contract, to perform the work for this study. Please refer to *Attachment 6*, City of Chesapeake Request for Proposals Professional Services, Page 39 L. QUALIFICATIONS OF OFFERORS. A consultant with reputable qualifications and experiences performing similar modeling studies successfully for the City will be selected.

4. The expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach.

It is intended that the recommended projects identified as a result of the study shall be added to the City's Resilience Plan in Amendments. Please see the City Preliminary Resilience Plan being submitted with this study and other two (2) project applications.

5. If applicable, how the study may improve Virginia's flood protection and prevention abilities in a statewide context. **N/A**

Supporting Documentation

- Detailed Map of the project area(s)

See *Attachment 1:* Goose Creek Watershed Map, City of Chesapeake, Virginia, within the Western Branch Elizabeth River Basin which is withing the James River Basin.

- FIRMette of the project area(s)

  Attachment 2 is a combined FIRMette of the entire Goose Creek watershed showing the high flood hazard areas and Attachment 3 is a FIRMette at the critical flooding location on the Dock Landing Road.

  A list of all FIRM panels that comprise the study area can be found on the Application Form Page 4.

- Historic flood damage and/or images

***Attachment 4* shows the critical flooding location on Dock Landing Road (6,000 vehicles/day) where HRPDC is installing sensor to monitor flood and post warnings on road closures during rain and tide driven unpassable floods.**

Attachment 5 includes 13 recent Work Orders that City of Chesapeake completed in response to citizens' flooding complaints within the Goose Creek watershed and a flooding image of the Willow Lake in the Goose Creek watershed during a storm on September 30, 2010.

- A link to a copy of the current floodplain ordinance

  ADOPTED+Floodplain+Ordinance--7-16-2013.pdf (cityofchesapeake.net)

- A link to or a copy of the current hazard mitigation plan

  Hampton Roads Hazard Mitigation Plan | Emergency Management | Departments | Departments | Emergency Management | Departments | Departments | Hampton Roads Planning District Commission (hrpdcva.gov)

- A link to or a copy of the current comprehensive plan

  Comprehensive Plan 2035 (cityofchesapeake.net)

- Social vulnerability index score(s) for the project area

Most of the Goose Creek watershed is not socially vulnerable, only the eastern (less than a quarter) is moderately vulnerable. See *Attachment 7* map. Dock Landing Road is the same way, LOW vulnerability (Attachment 8 map).

- Completed Scoring Criteria Sheet

  The completed Appendix C: Scoring Criteria for Studies (Pages 1-C to 3-C) follows the Appendix A: Application Form (Pages A-1 to A-4).

Budget Narrative- Required for All Grant Categories

Each application must include a detailed Budget Narrative explaining all proposed expenditures. A budget narrative is applicable to requests from any category of grants in this manual. The following items must be included in the Budget Narrative:

- *Estimated total project cost*: **$185,000.00**.

  This amount represents to-be-Contracted Consultant Engineers' and it's to-be-Subcontracted Surveyor's fees as tabulated in the Scope of Work Narrative for Studies above (Page 6).

- *Amount of funds requested from the Fund*: **$92,500.00**

  This is the total amount of any grant assistance sought from the Fund. 100% of this is to be provided through a contract with the Consultant.

- *Amount of cash funds available*: **$92,500.00**

  The source of these funds is Project Number: 10-150 Project Title: Stormwater Mapping & Master Drainage Plan III in the City Capital Improvement Plan. See *Attachment 9* for a description of the fund allowable expenditures and funding plan as well as a financial statement indicating sufficient funds to cover the match requirement for this grant application. Also provided is evidence of the City's ability to obtain these funds to complete the project.

Authorization to request for funding: Local governments seeking funding shall also attach signed documentation authorizing the request for funding. (**Supporting Documentation**.)

Provided as *Attachment 10,* a letter authorizing a request for funding through the program.

Attachment-1

Map of the Goose Creek Watershed, City of Chesapeake, Virginia, Tributary to the Western Branch Elizabeth River, James River Basin

Goose Creek Watershed

Attachment-2

National Flood Hazard Layer FIRMette – Goose Creek Watershed

76°26'15.44"W 36°48'31.61"N

76°24'11.08"W 36°46'45.94"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) Zone A, V, A99 With BFE or Depth Zone AE, AO, AH, VE, AR
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	▨	Future Conditions 1% Annual Chance Flood Hazard Zone X
	▨	Area with Reduced Flood Risk due to Levee See Notes Zone X
	▨	Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard Zone X
	☐	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	- - - -	Channel, Culvert, or Storm Sewer
	········	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2	Cross Sections with 1% Annual Chance
	17.5	Water Surface Elevation
	(8) - - - -	Coastal Transect
	— — —	Coastal Transect Baseline
	— - —	Profile Baseline
	——	Hydrographic Feature
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	——	Limit of Study
	——	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on [illegible] and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE

Map Projection:
GCS, Geodetic Reference System 1980
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

N

1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 Feet

0 50 100 200 300 400 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL 11 OF 121

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF CHESAPEAKE	510034	0011

MAP NUMBER
51003400110
EFFECTIVE DATE
December 16, 2014

76°27'35.71"W 36°48'31.62"N

76°26'1.35"W 36°46'45.98"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	**Without Base Flood Elevation (BFE)** Zone A, V, A99 **With BFE or Depth** Zone AE, AO, AH, VE, AR
	▨	**Regulatory Floodway**
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	▨	Future Conditions 1% Annual Chance Flood Hazard Zone X
	▨	Area with Reduced Flood Risk due to Levee See Notes. Zone X
	▨	Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard Zone X
	☐	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	- - - - -	Channel, Culvert, or Storm Sewer
	┼┼┼┼┼	Levee, Dike, or Floodwall
OTHER FEATURES	20.2	Cross Sections with 1% Annual Chance
	17.5	Water Surface Elevation
	- - - -	Coastal Transect
	— — —	Coastal Transect Baseline
	— - —	Profile Baseline
	——	Hydrographic Feature
	—(8)—	Base Flood Elevation Line (BFE)
	——	Limit of Study
	——	Jurisdiction Boundary

NOTES TO USERS

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

SCALE

Map Projection:
GCS, Geodetic Reference System 1980
Vertical Datum: For elevation features on the FIRM
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

N

1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 Feet

Meters 0 50 100 200 300 400

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL **10** OF **121**

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF SUFFOLK	510156	0010
CITY OF CHESAPEAKE	510034	0010

MAP NUMBER
51003400100
EFFECTIVE DATE
December 16, 2014

Attachment-3

National Flood Hazard Layer FIRMette – Dock Landing Road, Goose Creek Watershed

National Flood Hazard Layer FIRMette

FEMA

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- - - -	Channel, Culvert, or Storm Sewer
	❘❘❘❘❘❘❘	Levee, Dike, or Floodwall
OTHER FEATURES	Ⓑ 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	— - —	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

📍 The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2022 at 10:31 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment-4

Hampton Road Planning District Commission (HRPDC) Flood Sensor Location #1, Dock Landing Road, Goose Creek Watershed

1 inch = 150 feet

Xylem Location 1: Dock Landing Rd

7/27/2021

Dock Landing Rd. 6,000 veh/day
Low point road elevation: 3.60
Lat: 36° 47' 58.98" N
Lon: 76° 24' 35.44" W

Attachment-5

Recent Work Orders Completed (13) by City of Chesapeake in Response to Citizens' Flooding Complaints within the Goose Creek Watershed

&

Flooding Image (1) of the Willow Lake in the Goose Creek Watershed

IBM®

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1116776	Storm Choke Point - 1509 Jolliff Rd - template	CM	CLOSE							8/23/11	8/23/11
1116811	Storm Choke Point - 1509 Jolliff Rd - Hurricane Irene	CM	CLOSE						1116677		
1196225	23321 1509 Jolliff Rd regrade front ditch/clean side ditch no easements - (11) letters - Charlton Ct	CM	CLOSE			PW-ST-2921	PW-STS-2921012				
1440444	23321-- 1509 Jolliff Rd - side ditch blocked - CBPA	CM	CLOSE	6						11/5/12	
1967651	23321- 1509 Jolliff Rd - blockage removal cross pipe and downstream lead ditch	PM	CLOSE		JCHERRY						
2277601	23321 - Lead Ditch - 1509 Jolliff Rd	CM	CLOSE		JCHERRY						
2278053	23321 - Bockage - 1509 Jolliff Rd	PM	CLOSE		JCHERRY						

Number of Records: 7

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1810372	23321-- 4420 Airline Blvd - poor drainage - significant flooding - front of location	CM	CLOSE	6		PW-ST-2012	PW-STS-2012016				
1814074	23321-- 4316 Airline Blvd - flooding	CM	CLOSE	3		PW-ST-2012	PW-STS-2012019		1813659		
1814579	Airline Blvd & Keaton Way - flooding at this intersection	CM	CLOSE	3	CRIDDICK	PW-ST-2012	PW-STS-2012002				
1972810	23321 - Airline Blvd & Keaton - flooding in the street	CM	CLOSE	3		PW-ST-2012	PW-STS-2012010		1972609		
2067495	airline blvd--INTERSECTION/ STREET	CM	CLOSE	3							

Number of Records: 5

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1878401	23321 - 4900 Charlton Dr - street is flooded	CM	CLOSE	3	ROLSEN	PW-ST-2343	PW-STS-2343003		1877641		
191536	4900 blk - Charlton Dr - FLOODING	EM	CLOSE						192532		
2265904	23321 -Flooding - 5000 CHARLTON Dr	CM	CLOSE	3							
265522	4700 Charlton Dr,,-Flooding - Intersection/Street	EM	CLOSE			PW-ST-2343	PW-STS-2343001				
265676	4908 Charlton Dr,-Flooding - Stormwater	EM	CLOSE			PW-ST-2343	PW-STS-2343003				
543125	4717 Charlton Dr - flooding - blocked cross pipe	EM	CLOSE			PW-ST-2343	PW-STS-2343001		542707		

Number of Records: 6

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1603627	23321--DAVIDS MILL--Flooding-PW	CM	CLOSE	3							
191890	Davids Mill - FLOODING	EM	CLOSE						192532		

Number of Records: 2

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1478687	1611 Dock Landing Rd - flooding - possible blocked basin	CM	CLOSE			PW-ST-2496	PW-STS-2496017		1478506		
1941199	23321 - 1732 Dock Landing Rd - flooding - street is flooded	CM	CLOSE	3		PW-ST-2496	PW-STS-2496022		1941196		
212185	Dock Landing Road and Devin Drive.- Flooding	EM	CLOSE						212197		
2265849	23321 - FLOODING - 1664 DOCK LANDING RD	CM	CLOSE	3							

Number of Records: 4

IBM®

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
158397	FLOODING - Homestead & Peach Rd	EM	CLOSE								
191811	602 Homestead Rd - FLOODING	EM	CLOSE						192532		
2265789	23321 - FLOODING - 604 HOMESTEAD RD	CM	CLOSE	3							
2322165	23321 - Flooding - Sondej Ave and Homestead Rd	CM	COMP	3	ROLSEN	PW-ST-3609	PW-STS-3609001				

Number of Records: 4

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1402262	4548 Indiana Ave - FLOODING - possible roadside ditch or storm drain blocked	CM	CLOSE			PW-ST-3965	PW-STS-3965001				
1478770	4545 Indiana Ave - flooding - in front of this location	CM	CLOSE		PLAMOREE	PW-ST-3965	PW-STS-3965001		1478506		

Number of Records: 2

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1814579	Airline Blvd & Keaton Way - flooding at this intersection	CM	CLOSE	3	CRIDDICK	PW-ST-2012	PW-STS-2012002				
1972810	23321 - Airline Blvd & Keaton - flooding in the street	CM	CLOSE	3		PW-ST-2012	PW-STS-2012010		1972609		

Number of Records: 2

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
191537	Willow Lake & Lake Shore Dr - FLOODING	EM	CLOSE						192532		
192114	5100 Lake Shore Dr - FLOODING	EM	CLOSE						192532		

Number of Records: 2

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1406620	23321--FLOODING - 4008 Maple Dr - front of location	CM	CLOSE	3	ROLSEN	PW-ST-3084	PW-STS-3084001		1406345		
1814128	23321--4021 MAPLE DR--Flooding-PW-DITCH BLOCKAGE	CM	CLOSE	3		PW-ST-3084	PW-STS-3084001				
206515	4008 Maple - Flooding	EM	CLOSE								

Number of Records: 3

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1640132	23321-- 4428 S Military Hwy - flooding	CM	CLOSE	3		PW-ST-3170	PW-STS-3170022				
1656408	23323-- 4201 S Military Hwy - flooding	CM	CLOSE	1		PW-ST-3170	PW-STS-3170022		1656304		
1779362	23321-- 4418 S Military Hwy - flooding - front of the location	CM	CLOSE	3		PW-ST-3169	PW-STS-3169033		1779189		

Number of Records: 3

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
2059001	23321 - Snowden St & Sondej Ave - road is flooded	CM	CLOSE	3		PW-ST-3607	PW-STS-3607001		2058256		
2322165	23321 - Flooding - Sondej Ave and Homestead Rd	CM	COMP	3	ROLSEN	PW-ST-3609	PW-STS-3609001				

Number of Records: 2

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1478526	23321 - 5200 Willow Lake Rd - floodng at the intersection with Charlton	CM	CLOSE	3	EARMSTRONG	PW-ST-3874	PW-STS-3874002		1478506		
1605893	Willow Lake Rd. - Flooding,INTERSECTION/STREET	CM	CLOSE	3		PW-ST-3874	PW-STS-3874002				
1878656	23321-- 5516 WILLOW LAKE--Flooding-PW	CM	CLOSE	3					1877641		
191537	Willow Lake & Lake Shore Dr - FLOODING	EM	CLOSE						192532		
192485	Willow Lake Rd - FLOODING	EM	CLOSE						192532		
265469	5200 Willow Lake Rd,-Flooding-Stormwater	EM	CLOSE			PW-ST-3874	PW-STS-3874001				

Number of Records: 6

SEP 30 2010

Attachment-6

City of Chesapeake RFP 18010 Final 8/14/2017 Showing Required Qualifications of Consultants on Page 39

Chesapeake
VIRGINIA

REQUEST FOR PROPOSALS (RFP)
PROFESSIONAL SERVICES

ISSUE DATE: August 20, 2017

RFP No. 18010

TITLE: ANNUAL CIVIL ENGINEERING SERVICES
CONTRACT FOR SMALL PROJECTS

COMMODITY CODE: 925-17

ISSUED BY:
City of Chesapeake
Purchasing Division
306 Cedar Road, 5th Floor
Chesapeake, Virginia 23322

USING DEPARTMENT:
City of Chesapeake
Chesapeake Public Works /Engineering Division
306 Cedar Road, 5th Floor
Chesapeake, Virginia 23322

PERIOD OF CONTRACT: ONE (1) YEAR FROM THE DATE OF EXECUTION WITH OPTION OF FOUR (4) ADDITIONAL ONE-YEAR TERMS. THE CONTRACT SHALL RENEW AUTOMATICALLY, UNLESS THE CITY GIVES WRITTEN NOTICE, SIXTY (60) DAYS IN ADVANCE OF THE EXPIRATION FOR EACH OF THE RENEWAL TERMS.

The City of Chesapeake, Virginia will receive sealed proposals for the above named project until 5:00 PM local time on September 21, 2017 at the office of the Procurement Administrator in the Purchasing Department, 5th Floor, City Hall Building, 306 Cedar Road, Chesapeake, Virginia, 23322. Any Bids received after the specified time and date will not be considered. See Section VI and VII for specific instructions for the completion of proposals.

Inquiries For Information Should Be Directed To: Susan Kenney-Lambert, CPPB, **via email only** at: skenneylambert@cityofchesapeake.net. All questions must be submitted via e-mail **before** 5:00 pm, **August 30, 2017**. **Bid Documents may be examined at the offices of Purchasing Division, located on the 5th Floor, City Hall Building, 306 Cedar Road. Electronic copies of bid documents in PDF format are available for download on the Onvia Demandstar web site at www.demandstar.com or eVA's website at https://eva.virginia.gov/.**

Please refer to City of Chesapeake website at http://www.cityofchesapeake.net/government/City-Departments/Departments/Purchasing-and-Procurement/solicitations.htm for more information.

It shall be the responsibility of the prospective bidder to monitor the City's website for published addenda and to have all addenda signed by an authorized representative of the company. All fully executed addenda must be returned to the City along with the signed bid. The City will NOT accept faxed addenda.

IF PROPOSALS ARE MAILED, SEND DIRECTLY TO THE PURCHASING DIVISION AT THE ADDRESS SHOWN ABOVE. IF HAND-DELIVERED, DELIVER TO: City Hall, Purchasing Division, 306 Cedar Road, 5th Floor, Chesapeake, VA.

In Compliance With This Request for Proposal And To All The Conditions Imposed Therein and Hereby Incorporated By Reference, The Undersigned Offers, And Agrees To Furnish Services requested in the solicitation.

THIS SECTION IS TO BE COMPLETED BY OFFEROR'S AUTHORIZED REPRESENTATIVE.

NAME AND ADDRESS OF FIRM:

______________________________ Date: ______________________________

______________________________ By: ______________________________ (Sign in Ink)

______________________________ Name: ______________________________ (Please Print)

__________________ Zip Code: ________ Title: ______________________________

FEI/FINT NO: ______________________ Phone ____________ Fax____________

E-mail: __________________________ Website: ______________________

TABLE OF CONTENTS

REQUEST FOR PROPOSAL NO. 18010
ANNUAL CIVIL ENGINEERING SERVICES FOR SMALL PROJECTS

****This attachment must be fully executed and submitted with the RFP Proposal**

The City of Chesapeake does not discriminate against faith based organizations in accordance with Code of Virginia Section 2.2-4343.1 or against any contractor, bid, or offeror because of race, religion, color, sex, national origin, age, disability or any other basis prohibited by State law relating to discrimination in employment.

I. PURPOSE:

The City of Chesapeake Public Works Department is seeking proposals from consulting engineering firms who wish to be considered to provide professional engineering on an annual basis for the design of various civil engineering projects (roadway, drainage and utility services) on an as needed basis. It is anticipated that award will be made to more than one consultant and contracts will be awarded under the procurement process to cover the requested services. After the discussion stage (oral presentations are generally conducted if two or more Offerors are determined to be fully qualified, responsible, and suitable by the Selection Panel), negotiations shall be conducted as specified in Section XII(D). The successful firms will be required to execute a standard City Architect-Engineer contract. (See Attachment G). **In the event that this contract is awarded to multiple Consultants, task orders will be distributed based on factors other than solely price, such as availability, expertise, and experience.**

II. BACKGROUND:

The selected firms will perform engineering services throughout the year on an "As Needed" basis. **THE CITY OF CHESAPEAKE RESERVES THE RIGHT AT ALL TIMES TO PERFORM WORK IN-HOUSE.** The proposed one-year limited services term contract with optional four (4) one-year renewable terms will not exceed a maximum value of $2,000,000 per contract term and each project will not exceed a maximum value of $100,000. This work is to be accomplished utilizing computerized design and drafting systems compatible with the City of Chesapeake Public Works Department's automated design and drafting systems. The design work will be in 3 dimensions and incorporate Building Information Modeling techniques. Projects will be developed utilizing City of Chesapeake Public Works Department's policies and procedures and incorporate FHWA's guidelines, VDOT specifications, Hampton Roads Regional Construction Standards, and City of Chesapeake's Public Facilities Manual as needed.

This Request for Proposal does not commit the City of Chesapeake Public Works Department to award a contract, to pay any costs incurred in the preparation of a proposal for this request, or to procure or contract for services. The City of Chesapeake Public Works Department reserves the right to award contracts to more than one qualified firm, to accept or reject any or all proposals received as a result of this request, to negotiate with any qualified firm or to modify or cancel in part or in its entirety the Request for Proposal, if it is in the best interest of the City of Chesapeake Public Works Department to do so. Each multiple award contract will be negotiated and awarded sequentially following the same procedures in accordance with Virginia Code §§2.2-4302.2(A)(4) and 2.2-4303.1, Paragraph 3, Procurement of Professional Services; City of Chesapeake Code Section 54-67; and City of Chesapeake Administrative Regulation 4.01.

III. SCOPE OF SERVICES:

The Scope of Services is detailed in an attachment entitled "Attachment C – Detailed Scope of Services".

At any time, the City of Chesapeake Public Works Department may consider projects assigned under this contract to be delivered through a design-build option. If the City of Chesapeake Public Works Department decides to deliver a project through design-build option, the Consultants awarded a contract pursuant to this RFP and any of its team members may not be allowed to participate in ANY subsequent design-build contracts related to that project as determined in the sole discretion of the City. The City of Chesapeake Public Works Department will notify the Consultant(s) awarded a contract pursuant to this RFP if there is a change regarding the City's intended project delivery method in advance of the issuance of an RFP for design-build services. The conflict of interest disqualification determination will be made on a case by case basis at such time.

IV. SCHEDULE OF EVENTS:

The City will make every effort to adhere to the following schedule leading to the award of a contract; however, this schedule is subject to change. Offerors will be notified of significant schedule changes:

Action	Responsibility	Date
Issuance of RFP	Purchasing	August 20, 2017
Submission of Questions	Offerors	August 30, 2017
Submission of Proposal	Offerors	September 21, 2014
Selection of Finalists	Evaluation committee	October, 2017
Finalist Oral Presentations	Eval. Comm./ Potential Offerors	October, 2017
Contract Negotiations	Eval. Comm./ Offeror	November, 2017
Contract Award	City Manager	November, 2017

V. CONFLICTS AND QUESTIONS:

Should there be conflicts between any proposal documents and the final executed contract document; the final executed contract shall take precedence.

Questions regarding this Request for Proposals should be directed in writing to Susan Kenney-Lambert, CPPB, at skenneylambert@cityofchesapeake.net the Purchasing Division. All questions and requests for clarification must be received by the Purchasing Division before 5:00 p.m., **August 30, 2017**.

VI. PROPOSAL PREPARATION AND INSTRUCTIONS:

In order to be considered for selection, offerors must submit a complete response to this solicitation. One (1) original and five (5) copies of the proposal must be submitted to the Purchasing Division. No other distribution of the proposal shall be made by the offeror.

A. Proposals shall be signed by an authorized representative of the offeror. All requested information must be submitted. Failure to submit all information requested may result in the Purchasing Division requiring prompt submission of missing information, giving a lowered evaluation of the proposal, and/or finding the proposal not responsive. Mandatory requirements are those required by law or such that they are determined in the sole discretion of the Procurement Administrator to be formalities that cannot be waived and are not subject to negotiation.

B. Proposals should be prepared simply and economically, providing a straightforward, concise description of capabilities to satisfy the requirements of the RFP. Emphasis should be placed on completeness and clarity of content. Elaborate brochures and excessive promotional materials are not required or desired.

C. Proposals should be organized in the order in which the requirements are presented in the RFP. All pages of the proposal should be numbered. Each paragraph should reference the paragraph number of the corresponding section of the RFP. It is also helpful to cite the paragraph number, sub-number, and repeat the text of the requirement as it appears in the RFP. If a response covers more than one page, the paragraph number and sub-number should be cross repeated at the top of the next page. The proposal should contain a table of contents which cross references the RFP requirements. Information which the Offeror desires to present that does not fall within an area of the requirement of the RFP should be inserted at an appropriate place or be attached at the end of the proposal and designated as additional material. Proposals that are not organized in this manner risk elimination from consideration if the evaluators are unable to find where the RFP requirements are specifically addressed. The Proposal shall be organized in the following order:

1. Transmittal letter.

2. Table of Contents.

3. Understanding of Scope of Work.

4. Response to RFP Items in Section VII, Parts A thru G.

5. Team organization chart.

~~5.~~6. Resume of Key Personnel.

~~6.~~7. Firm Data Sheet.

~~7.~~8. Certification Regarding Debarment forms.

~~8.~~9. Certification of Compliance with Immigration Laws and Regulations.

D. Each copy of the proposal should be bound or contained in a single volume where practical. All documentation submitted with the proposal should be contained in a single volume. The Offeror shall limit the proposal to 30 one-sided typewritten pages. The page limit does not include any tabs or divider sheets. The proposal must be on 8.5 inch by 11 inch paper, and prepared in a 10 to 12 pitch font. Appropriate brochures, photographs or printed materials may be submitted at your option.

E. If more than one firm will participate in the contract, state the type of arrangement between the firms, the names and addresses of all firms, description of the work that each firm will perform, and the percentage of work to be performed by each. Indicate office locations at which the work will be performed. A one page organizational chart showing all firms involved and key personnel assignments and responsibilities is required to be included. It is the intent of this RFP that all services be provided complete in all respects without need for engaging separate technical expertise or professional services.

F. Indicate KEY PERSONNEL ONLY who will be assigned to this project and give the experience record of each. Key personnel are defined as those to whom the project will be assigned and who will be performing the actual design/services. The project manager shall have a minimum of five years' experience in managing similar type and size projects. Indicate the location of the office where the person is currently working if different from where work is to be performed. For part time personnel, personnel not employed on the date of the form, or personnel used on an "as needed basis" must have their status clearly indicated.

G. Furthermore, all individuals identified as key personnel in the proposal shall remain on the Consultant's Team for the duration of the procurement process and, if the Consultant is awarded a contract, the duration of the contract. If extraordinary circumstances require a proposed change, it must be submitted in writing to the City of Chesapeake Public Works Department's Project Manager, who, at his/her sole discretion, will determine whether to authorize a change. Unauthorized changes to the Consultant's Team at any time during the procurement process may result in elimination of the Consultant's Team from further consideration.

H. Give names and detailed addresses of all affiliated and/or subsidiary companies. Indicate which companies are subsidiaries. If uncertain whether another firm is or is not an affiliate, doubt should be resolved in favor of affiliation and the firm should be listed accordingly.

Affiliate - Any business entity which is closely associated to another business entity so that one entity controls or has the power to control the other entity either directly or indirectly; or, when a third party has the power to control or controls both; or where one business entity has been so closely allied with another business entity through an established course of dealings, including but not limited to the lending of financial wherewithal, engaging in joint ventures, etc. as to cause a public perception that the two firms are one entity. Firms which are owned by a holding company or a third party, but otherwise meet the above conditions and do not have interlocking directorships or joint officers serving are not considered affiliates.

VII. SPECIFIC PROPOSAL INSTRUCTIONS:

A. Proposals should be submitted as one (1) bound section, and be as thorough and detailed as possible so that the City may properly evaluate the organization's capabilities to provide required services. Offerors shall submit the following as a complete proposal.

B. In five (5) page(s) or less, discuss the firm's approach for this project.

C. In five (5) page(s) or less, please provide information on your qualifications to perform the required work (evaluation factors 1-4).

D. In two (2) page(s) or less, provide information that will indicate your firm's ability to respond quickly to task assignments, be able to handle multiple tasks concurrently and be able to complete task on accelerated schedules (evaluation factor 5).

E. In addition to the page restrictions listed above, a maximum of 18 additional pages may be included in the proposal. All pages are to be 8 1/2" X 11" and printed on one side with single-spaced type no smaller than 10 font size.

F. Please indicate, by executing and returning the attached Certification Regarding Debarment forms, if your firm, subconsultant, subcontractor, or any person associated therewith in the capacity of owner, partner, director, officer or any position involving the administration of federal or state funds:

1. Is currently under suspension, debarment, voluntary exclusion or determination of ineligibility by any federal agency.
2. Has been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past three years.

3. Has a proposed debarment pending; or has been indicted, convicted, or had a civil judgment rendered against it or them by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

Any of the above conditions will not necessarily result in denial of award, but it will be considered in determining offeror responsibility. For any condition noted, indicate to whom it applies, initiating agency, and dates of action. Providing false information may result in federal criminal prosecution or administrative sanctions.

G. If the Consultant or subconsultant does not have the in-house capability to provide non-professional services, each with an estimated cost of $5,000 or greater, such as diving services, soil drilling, sampling services or laboratory testing, these services must be subcontracted in accordance with state or local procurement procedures (depending on the source of funds for the particular task order and/or project) once a contract is executed, with no DBE or SWaM credit in the selection of the most qualified firm or team. Clearly indicate these services in the proposal.

H. Administrative:

1. The following services marked with an X will NOT be required:

Surveying ___

Bridge and Structure Plans _X__

Permit Drawings _X__

Hydraulic and Hydrologic Analysis ___

Traffic Data ___

Signs and Signals Plans ___

Scour Analysis _X__

Utility Plans ___

Specifications ___

Materials Analysis ___

Environmental _X__

Road Plans ___

Traffic Analysis ___

Lighting Plans ___

Geotechnical Borings and Analysis __X_

Landscape Plans ___

2. All business entities, except for sole proprietorships, are required to register with the Virginia State Corporation Commission (A Business Registration Guide is available on the Internet at http://www.state.va.us/scc/division/clk/brg.htm). Foreign Professional corporations and Foreign Professional Limited Liability Companies must possess a Commonwealth of Virginia Certificate of Authority from the State Corporation Commission to render professional services. Any business entity other than a professional corporation, professional limited liability company or sole proprietorships that do not employ other individuals for which licensing is required must be registered in the Commonwealth of Virginia with the Department of Professional and Occupational Regulation, Virginia Board for Architects, Professional Engineers, Land Surveyors and Landscape Architects (http://www.state.va.us/dpor). Board regulations require that all professional corporations and business entities that have branch offices located in Virginia which offer or render any professional services relating to the professions regulated by the Board be registered with the Board. Registration involves completing the required application and submitting the required registration fee for each and every branch office location in the commonwealth. All branch offices which offer or render any professional service must have at least one full-time resident professional in responsible

charge who is licensed in the profession offered or rendered at each branch. All firms involved that are to provide professional services must meet this criterion prior to submitting a proposal to the City of Chesapeake Public Works Department. Individual engineers shall meet the requirements of Chapter 4, Title 54.1 of the Code of Virginia.

3. The City of Chesapeake Public Works Department will not consider for award any cost proposals submitted by any consultants and will not consent to subcontracting any portions of the contract to any subconsultants in violation of the provisions of the Federal Immigration Reform and Control Act of 1986, which prohibits employment of illegal aliens. Firms must submit the completed the attached certification form with their proposals.

4. The method of payment for this contract will be lump sum. For purpose of determining the lump sum fee, an overhead rate shall be established in compliance with cost principles contained in the Federal Acquisition Regulations (FAR) of Part 31 of Title 48 of the Code of Federal Regulations. The overhead rate shall be established by an audit by a cognizant government agency or independent CPA firm.

5. All firms submitting Proposals (prime consultants, joint ventures and subconsultants) must have internal control systems in place that meet federal requirements for accounting. These systems must comply with requirements of 48CFR31, "Federal Acquisition Regulations, Contract Cost Principles and Procedures," and 23CFR172, "Administration of Negotiated Contracts." All firms selected for a project (prime consultants, joint ventures and subconsultants) must submit their FAR audit data to the City of Chesapeake Public Works Department within ten work days of being notified of their selection. Should any firm on the Consultant' team fail to submit the required audit data within the ten work days, negotiations will be terminated by the City of Chesapeake Public Works Department and the next most qualified team invited to submit a proposal.

6. Ethics in Public Contracting: By submitting a proposal, an Offeror certifies that its proposal is made without collusion or fraud and that it has not offered or received any kickbacks or inducements from any other Offeror, supplier, manufacturer or subcontractor in connection with its proposal, and that it has not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

I. Provide detailed resumes for key personnel including subconsultants.

VIII. DISCLOSURE OF PROPOSAL CONTENTS:

Offerors should be aware that the terms of the contract are public information and can be accessed by the public. Except for the selected proposal, all other proposals will be held in confidence and will not be revealed or discussed with competitors, unless disclosure is required to be made by law or by court ruling. The City may use any ideas presented in any proposal. Selection or rejection of the proposal does not affect this provision.

IX. SUBMITTAL PROCESS AND INFORMATION:

A. One (1) original (specifically marked "Original"), and five (5) copies of the proposal shall be submitted to the Purchasing Division and received no later than 5:00 PM on **September 21,**

2017. Responses received after this time will not be considered. Facsimile copies will not be accepted. **Sealed proposals** should be delivered to:

Susan Kenney-Lambert, CPPB
Procurement Specialist II
City of Chesapeake
306 Cedar Road, 5th Floor
Chesapeake, Virginia 23322
RFP 18010, Annual Civil Engineering Services Contract Small Projects

B. Offerors that submit a response to this RFP may be required to make an oral presentation of their proposal with participation by key personnel pursuant to Section X(B). The City reserves the right to request clarification of information submitted. Failure to provide this additional information within a reasonable time period, as specified by the City, shall be reason for the offeror's proposal to be considered non-responsive.

C. The City of Chesapeake shall not be responsible for any expense incurred by the offeror in preparing and submitting a proposal, for answering any subsequent inquiries, interviews for evaluation, or contract negotiations. All submissions are final.

D. Any Offeror who desires to protest the award of a contract shall submit such protest in writing to the City of Chesapeake Purchasing Division no later than ten days after the announcement of the award. Public announcement of the award shall be posted on the City of Chesapeake's website.

E. The City of Chesapeake Public Works Department assures compliance with Title VI of the Civil Rights Act of 1964, as amended. The consultant and all subconsultants selected for this project may be required to submit a Title VI Evaluation Report (EEO-D2) within ten work days of notification of selection when requested by the City. This requirement applies to all consulting firms when the contract amount equals or exceeds $10,000.

F. Withdrawal of proposal due to error.

A proposal for a public construction contract, other than a contract for construction, or maintenance of public highways, or a proposal for an other than construction contract may withdraw his proposal from consideration if the price in the proposal was substantially lower than the other proposals due solely to a mistake in the proposal, provided the proposal was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of a proposal, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work paper, documents and materials used in the preparation of the proposal sought to be withdrawn. In order to make a valid withdrawal from consideration, the proposer must follow the procedure for withdrawal set forth in the request for proposal (RFP).

The proposer shall give notice in writing of his or her claim of right to withdraw his or her proposal within two business days after the conclusion of the proposal opening procedure, and shall within the following two business days provide the objective evidence described in this section to satisfy the procurement administrator or designee that the grounds for such withdrawal do exist.

The Procurement Administrator shall notify the proposer in writing within five business days of its decision regarding the proposer's request to withdraw its proposal. If the public body denies the withdrawal of a proposal under the provisions of this section, it shall state in such notice the reason or its decision and award the contract to such proposer at the proposal price, provided such proposer is a responsible and responsive bidder. At the same time that the notice is provided, the public body shall return all work papers and copies thereof that have been submitted by the proposer.

G. Ownership of all data, materials and documentation originated and prepared for the City pursuant to the RFP shall belong exclusively to the City and shall be subject to public inspection in accordance with the Virginia Freedom of Information Act and Virginia Public Procurement Act. Data, materials, and documents prepared in furtherance of any contract issued as a result of this RFP shall not be distributed to any third parties without the City's authorization. Any requests for data, materials, and documents by third parties (other than approved sub-consultants) made to a Consultant prepared in furtherance of any contract issued as a result of this RFP should be redirected to the City as the owner and custodian of the records.

Trade secrets or proprietary information submitted by the Offeror shall not be subject to public disclosure under the Virginia Freedom of Information Act, provided that the Offeror invokes the protection of Section 2.2-4342 of the Code of Virginia, in writing, either before or at the time the data is submitted. The written notice must specifically identify the data or materials to be protected and state the reasons why protection is necessary. The proprietary or trade secret material submitted must be identified by some distinct method such as highlighting or underlining and must be indicated on the specific words, figures, or paragraphs that constitute trade secret or proprietary information. The classification of an entire proposal as proprietary or trade secrets is not acceptable and will result in rejection and return of the proposal.

H. The City will only provide information (or access to the same) which is readily available, and does not propose to prepare any further special reports. The City reserves the right to charge its normal fees for materials copied.

I. The right is reserved, as the interests of the City may require, to revise and/or amend the specifications prior to the date set for acceptance of proposals; the acceptance date may be postponed if deemed necessary by the Procurement Administrator. Such revisions and amendments, if any, will be announced by an addendum to this solicitation and posted on the City's website.

J. Late Proposals: To be considered for selection, proposals must be received in the City's Purchasing Office by the designated date and hour. Proposals received in the issuing office after the date and hour designated may be disqualified and may not be considered. The City is not responsible for delays in the delivery of mail by the U.S. Postal Service or private couriers. It is the sole responsibility of the Offeror to insure that its proposal reaches the Purchasing office by the designated date and hour. Receipt of proposals scheduled during a period of suspended City business operations will be rescheduled for processing at the same time on the next business day.

X. SELECTION CRITERIA:

A. Evaluation of proposals will be under the complete jurisdiction of the City of Chesapeake and shall be in accordance with Virginia Code § 2.2-4302.2(A)(4); City of Chesapeake Code Section

54-67(3); and City of Chesapeake Administrative Regulation 4.01. A Selection Committee composed of representatives from the City of Chesapeake will evaluate each proposal received and submit a recommendation to the City Manager. The City will evaluate each proposal pursuant to its standard procurement procedures consistent with the procurement of services through competitive negotiation. Selection will be made on the basis of responsive/responsible determination, qualifications and experience, references, resources and cost of services. All factors will be scored based solely on the City's evaluation.

B. **Evaluation of Proposals and Shortlisted Firms**

The evaluation of the proposals and subsequent interview evaluations of the shortlisted firms will focus on the following:

	Factors		**Point Value**
1.	Firm Qualification & Experience	Specialized experience, expertise and qualifications of the firm and sub-consultant firms to be used on this contract.	25%
2.	Qualifications of Key Personnel	Specialized experience, expertise and qualifications and depth of key project team members who will be assigned to this contract.	25%
3.	Record of the Firm	Record of the firm in accomplishing work on other projects in the required time and within estimated consultant cost and construction cost.	15%
4.	Quality of Work	Quality of work previously performed by the firm for municipalities. If there is no experiences with municipalities, please provide comparable experiences.~~Quality of work previously performed by the firm for the City (Work reviewed by the City for others may also be used.)~~	15%
5.	Use of Resources	Time frame to complete work on typical on-call civil engineering projects (typical design fees ranging from $50,000 to $200,000) and availability of personnel to perform the work within a limited period of time following request for such work.	10%
6	Compliance of RFP	Completeness of the proposal, including whether the proposal is responsive to the outline of services in the RFP.	10%
		Total	100%

C. After the review and rating of proposal(s) by the Selection Committee, the individual scores will be averaged and ranked. Offerors will be ranked in descending order of numerical predominance.

XI. ORAL PRESENTATIONS:

Offerors who submit a proposal in response to this RFP may be required to give an oral presentation of their proposal. This will provide an opportunity for the offeror to clarify or elaborate on the proposal. This is a fact finding and explanation session only and will not include negotiation. The City will schedule the time and location of these presentations. Oral presentations are an option of the issuing agency and may or may not be conducted. Should an Offeror receive a request for an oral presentation, the evaluation criteria relative to the oral presentation will be detailed in a written notice of the request.

XII. AWARD OF CONTRACT:

A. The City Manager shall appoint a Selection Committee in accordance with City Administrative Regulation 4.01. The Selection Committee shall consider proposals that comply with the requirements contained in this RFP. Based on analysis of the proposals submitted by the Offerors, the Committee shall rank the Offerors considered to be the most qualified based on the evaluation factors specified above.

B. Any and all costs associated with the preparation of responses to this Request for Proposals, including site visits, oral presentations and any other costs shall be entirely the responsibility of the offeror and shall not be reimbursable in any manner by the City.

C. The City reserves the right to reject any or all proposals, to waive any technicalities in proposals received, and to negotiate and to accept the proposal which shall be in the City's best interest.

D. The City may cancel this Request for Proposals at any time prior to an award, and is not required to furnish a reason why a particular proposal was not deemed the most advantageous.

E. The Selection Committee shall conduct interviews as follows:

1. The Committee shall hold an individual interview with at least the top two offerors deemed most qualified, responsible, and suitable on the basis of the initial responses to the RFP.
2. The offerors shall be encouraged to elaborate on their qualifications and performance data, or staff expertise pertinent to the proposed project, as well as alternative concepts.
3. The offerors shall also be encouraged to present the methodology for approaching the work specified in the Request for Proposals.
4. At the interview stage, the Selection Committee may discuss with the offerors nonbinding estimates of total project costs, including nonbinding estimates of price of services. Further, the City may discuss all issues related to the qualifications and expectations for the work to be performed. Proprietary information from competing offerors shall not be disclosed to the public or to competitors.
5. At the conclusion of interviews, on the basis of evaluation factors published in the Request for Proposals and all information developed in the selection process, the committee shall select in the order of preference two or more offerors whose professional qualifications and proposed services are deemed most meritorious.

6. Upon a decision of the Selection Committee, the Committee Chairperson shall prepare a report to the committee including a listing of the names of the offerors in the order in which they are recommended for the specific work.

The Selection Panel may elect to interview three or more Offerors. Based on the interviews, the Committee shall rank the Offerors considered to be the most qualified based on the evaluation factors specified above.

Following the interviews (if any), negotiations shall be conducted as follows:

1. Negotiations shall be conducted by the Chairperson, or designee(s), with the offeror ranked first. If a contract satisfactory and advantageous to the City can be negotiated at a price considered fair and reasonable, and which defines precisely the scope of services to be provided, conditions of the professional agreement, work plan and schedule, personnel and method of payment, the award of the contract shall be made to that offeror, otherwise, negotiations with the offeror ranked first shall be formally terminated as set forth below, and negotiation conducted with offeror ranked second, and so on until such a contract (or multiple contracts, if in the City's best interest) can be negotiated at a fair and reasonable price.

2. If negotiations with the offeror ranked first are to be terminated, the Chairperson of the Selection Committee shall forward a notice of intent to terminate negotiations to the Procurement Administrator, with an explanation of the points which cannot be agreed upon, requesting the Procurement Administrator's concurrence in this action. Upon receipt of the Procurement Administrator's concurrence, the Chairperson of the Selection committee shall promptly notify the offeror in writing and then begin negotiations with the offeror chosen second. If the City and any offeror cannot reach agreement, their negotiations shall be terminated in writing.

3. Should the committee determine in writing and in its sole discretion that only one offeror is fully qualified, or that one offeror is clearly more highly qualified and suitable that the others under consideration, a contract may be negotiated and awarded to that offeror.

XIII. CONTRACT LIMITS:

A. One (1) year from the date of execution with option of four (4) additional one-year terms.

ATTACHMENT A

CERTIFICATION OF COMPLIANCE WITH IMMIGRATION LAWS AND REGULATIONS

Section 54-72.2 of the Chesapeake City Code requires that any person or entity doing business with the City of Chesapeake, including its boards and commissions, shall include a sworn certification by the contractor or vendor of compliance with all federal immigration laws and regulations. These laws include the Federal Immigration Reform and Control Act, which makes it unlawful for a person or other entity to hire, recruit or refer for a fee for employment in the United States, an alien knowing the alien is unauthorized, and Section 40.1-11.1 of the Code of Virginia, which makes it unlawful for any employer to knowingly employ an alien who cannot provide documents indicating that he or she is legally eligible for employment in the United States. The state law, in particular, places an affirmative duty on employers to ensure that aliens have proof of eligibility for employment.

Accordingly this certification shall be completed and attached to all contracts and agreements for goods and services made by the City of Chesapeake or any of its boards and commissions. Failure to attach a completed certification shall render the contract or agreement void. A copy of the fully executed certification may be attached if an original certification is on file with Procurement for the current fiscal year.

Type or print legibly when completing this form.

1. Legal Name of Contractor or Vendor:
   (Note: This is your name as reported to the IRS. This should match your Social Security card or Federal ID number.)

2. Type of Business Entity:

   A. Sole proprietorship (Provide full name and address of owner):

   B. Limited Partnership (Provide full name and address of all partners):

   C. General Partnership (Provide full name and address of all partners):

   D. Limited Liability Company (Provide full name and address of all managing members):

   E. Corporation (Provide full name and address of all officers):

3. Doing Business As:
If Applicable (Note: This is the name that appears on your invoices but is not used as your reporting name.)

4. Name and Position of Person Completing this Certificate:

5. Physical Business Address:

6. Primary Correspondence Address (If different from physical address):

7. Number of Employees:

8. Are all Employees Who Work in the United States Eligible for Employment in the United States?

Yes_______

No________

Under penalties of perjury, I declare on behalf of the contractor/vendor listed above that to the best of my knowledge and based upon reasonable inquiry, each and every one of the contractor's/vendor's employees who work in the United States are eligible for employment in the United States as required by the Federal Immigration Reform and Control Act of 1986 and Section 40.1-11.1 of the Code of Virginia. I further declare on behalf of the contractor/vendor that it shall use due care and diligence to ensure that all employees hired in the future who will work in the United States will be eligible for employment in the United States. I affirm that the information provided herein is true, correct, and complete.

Sworn this ____ day of ________________, 201__ on behalf of ___________________ as evidenced by the following signature and seal:

Name of Contractor/Vendor: __________________________________

Printed Name of Signatory: ___________________________________

Signature: ____

Date: _______________

STATE OF ________________________:

CITY / COUNTY OF ____________________________, to-wit:

The foregoing instrument was acknowledged before me this ___ day of ______________, 201_, by _______________________. He/She is personally known to me or has produced ____ as identification.

____
Notary Public

Registration No.:_________________

My commission expires: ___________

ATTACHMENT B

LITIGATION DISCLOSURE FORM

Respond to each of the questions below by checking the appropriate box. Failure to fully and truthfully disclose the information required by this Litigation Disclosure Form may result in the disqualification of your bid or proposal from consideration or termination of the contract, once awarded. For purposes of this disclosure form, "you" means the individual or entity in whose name the bid or proposal is submitted.

1. Have you or any principal, officer or director of your company, or any individual who will be assigned to work under any contract awarded pursuant to this solicitation, been convicted of a felony, or a misdemeanor involving moral turpitude, during the last seven (7) years?

Yes ☐ No ☐

2. Have you or any principal, officer or director of your company, or any individual who will be assigned to work under any contract awarded pursuant to this solicitation, been terminated from any work being performed for the City of Chesapeake or any other governmental entity in the Commonwealth of Virginia during the last seven (7) years?

Yes ☐ No ☐

3. Have you or any principal, officer or director of your company, or any individual who will be assigned to work under any contract awarded pursuant to this solicitation, been involved in any claim or litigation with the City of Chesapeake or any other governmental entity in the Commonwealth of Virginia during the last seven (7) years?

Yes ☐ No ☐

4. Has any parent company or wholly owned subsidiary of your company been involved in any claim or litigation with the City of Chesapeake or any other governmental entity in the Commonwealth of Virginia during the last seven (7)?

Yes ☐ No ☐

If you answered "Yes" to any of the above questions, please state the name(s) of the person(s), the nature, and the status and/or outcome of the conviction, termination, claim or litigation, as applicable. Any such information should be provided on a separate page, attached to this form and submitted with your bid or proposal.

VIRGINIA STATE CORPORATION COMMISSION (SCC)
REGISTRATION INFORMATION FORM

AUTHORIZATION TO CONDUCT BUSINESS IN THE COMMONWEALTH: A contractor organized as a stock or non-stock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia or as otherwise required by law. Any business entity described above that enters into a contract with a public body pursuant to the Virginia Public Procurement Act shall not allow its existence to lapse or its certificate of authority or registration to transact business in the Commonwealth, if so required under Title 13.1 or Title 50, to be revoked or cancelled at any time during the term of the contract. A public body may void any contract with a business entity if the business entity fails to remain in compliance with the provisions of this section.

Pursuant to Code of Virginia,§2.2-4311.2 subsection B, a bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 is required to include in its bid or proposal the identification number issued to it by the State Corporation Commission (SCC). Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law must indicate by selecting one of the following reasons why the bidder or offeror is not required to be so authorized:

☐ is a corporation or other business entity with the following SCC identification number:

____

OR-

• is not a corporation, limited liability company, limited partnership, registered limited liability partnership, or business trust -

OR-

☐ is an out-of-state business entity that does not regularly and continuously maintain as part of its ordinary and customary business any employees, agents, offices, facilities, or inventories in Virginia (not counting any employees or agents in Virginia who merely solicit orders that require acceptance outside Virginia before they become contracts, and not counting any incidental presence of the bidder in Virginia that is needed in order to assemble, maintain, and repair goods in accordance with the contracts by which such goods were sold and shipped into Virginia from bidder's out-of-state location) -

OR-

• is an out-of-state business entity that is including with this bid an opinion of legal counsel which accurately and completely discloses the undersigned bidder's current contacts with Virginia and describes why those contacts do not constitute the transaction of business in Virginia within the meaning of § 13.1-757 or other similar provisions in Titles 13.1 or 50 of the Code of Virginia.

OR-

☐ If the business entity has not completed any of the foregoing options but currently have pending before the SCC an application for authority to transact business in the Commonwealth of Virginia and wish to be considered for a waiver to allow you to submit the SCC identification number after the due date for bids (The City of Chesapeake reserves the right to determine in its sole discretion whether to allow such waiver).

ATTACHMENT C

CITY OF CHESAPEAKE
DETAILED SCOPE OF SERVICES
CIVIL ENGINEERING CONTRACT FOR SMALL PROJECTS

I. SCOPE OF SERVICES

A. Roadway Projects:

The City wishes to improve the transportation network within the City by improving certain existing roadway facilities and constructing new roadway facilities. In order to complete these projects, the City will initiate work orders for engineering and inspection services under this contract.

The Consultant(s) shall provide the City with necessary plans, specifications, contract documents, and final applications for environmental permits in order that the City may solicit competitive bids for the improvements and/or construction of the roadway facilities. Said plans and specifications shall include, but not necessarily be limited to the following items:

1. Earthwork (Excavations/Fill)
2. Roadway Design (Horizontal and Vertical)
3. Pavement Design
4. Storm Water Drainage
5. Utility Designation and Relocation
6. Erosion/Sediment Control
7. Maintenance of Traffic

In addition, the Consultant may be required to perform inspection, analysis, and evaluation of existing roadway structures. The Consultant may be called on to provide personnel, diagrams, plans, and informational materials to assist the City in the preparation and the conduct of public hearings, depending on the particular project.

B. Drainage Projects:

The City wishes to improve the conveyance of storm drainage in selected areas and at specific locations throughout the City of Chesapeake. In order to complete these projects, the City will initiate work orders for engineering services under this contract.

The Consultant(s) shall provide the City with the necessary plans, specifications, contract documents, and final applications for environmental permits in order that the City may solicit competitive bids for construction of the drainage improvements. Said plans and specifications shall include, but not necessarily be limited to the following items:

1. Earthwork
2. Enclosed Storm Sewer Design
3. Open Channel Design
4. Flood Routing
5. Utility Designation and Relocation
6. Erosion/Sediment Control

The Consultant(s) may be called on to provide personnel, diagrams, plans and informational materials to assist the City in the preparation and the conduct of public hearings, depending on the particular project.

The Consultant(s) may be called on to perform various tasks related to stormwater management within the City, these tasks will include the development and / or the update of stormwater management models (SWMM).The watershed modeling will be developed using SWMM program and be GIS based utilizing the latest available digital planimetrics and digital orthophotos in the selected watershed.

The Consultant(s) understanding of the City's Master Drainage Plan with its engineering analysis and financial components are important in the update and development of the watershed models. The Consultant(s) expertise in the GIS field is critical in the incorporation of city provided data into the watershed models and in the update and / or gathering of the City's stormwater inventory / stormwater GIS layer and the delivery of all completed tasks to the city based on current standards.

C. Utility Projects:

The City wishes to improve the sanitary sewer or water distribution systems in selected areas and at specific locations throughout the City of Chesapeake. In order to complete these projects, the City will award contracts for engineering services.

The Consultant(s) shall provide the City with the necessary plans, specifications, contract documents, and final applications for environmental permits in order that the City may solicit competitive bids for construction of the drainage improvements. Said plans and specifications shall include, but not necessarily be limited to the following items:

1. Earthwork
2. Sanitary Sewer Design
3. Water Distribution Piping Design
4. Hydraulic Flow Analyses
5. Utility Designation and Relocation
6. Erosion/Sediment Control

The Consultant(s) may be called on to provide personnel, diagrams, plans, and informational materials to assist the City in the preparation and the conduct of public hearings, depending on the particular project.

II. BASIC SERVICES OF CONSULTANT

A. Basic Services

The Consultant(s) shall perform professional engineering services as hereinafter stated which includes normal civil engineering services, normal surveying services incidental thereto and environmental work necessary to obtain environmental permits required for project construction. The Consultant(s) represents that they will perform all tasks in accordance with generally accepted professional standards and the Consultant(s) further represents that they will provide the City advice and consultation within the Consultant(s) authority and capacity as a professional engineer. The Consultant(s) will comply with the regulations, laws, ordinances, and requirements of all governmental environmental impact statements applicable to the project.

B. Study and Preliminary Design Phase

Prior to issuance of an individual Work Order the Consultant shall:

1. Meet with City personnel to define a scope of services, establish time constraints, and to review available plans and data.

2. After determining a scope of services, and if it is determined that the work can be performed successfully, in a timely manner, and at a total cost negotiated and considered to be fair and reasonable, the Consultant will be assigned the project and an individual work order be issued. If a fee cannot be negotiated with the Consultant, then discussions will be terminated and negotiations conducted with the second consultant, etc. until an agreement can be reached.

3. The specific projects typically include all necessary research, field, and survey work. On most projects, the Consultant will be required to prepare preliminary design documents and/or draft study.

4. Plans will be submitted electronically in Autocad Civil 3D format that can be read and edited with free viewer. Plans will be in 3D format with building information data.

5. Based on the information contained in the preliminary design documents, the Consultant will be expected to submit an opinion of the estimated project cost including, but not limited to design and construction costs and contingencies. The Consultant will be expected to meet with City representatives and review the preliminary design/study.

6. The Consultant shall furnish all such documents, plans and design data as may be required for, and assist City in the preparation of the documents for submittal to the appropriate local, State, or Federal agency. The Consultant shall attend and participate in meetings and hearings as authorized by City.

C. Final Design Phase

Upon completion of the Preliminary Design Phase and notification from the City that the preliminary design documents are acceptable, the Consultant shall:

1. Prepare the final construction plans and specifications using VDOT Specifications, Hampton Roads Regional Standards, the City of Chesapeake PFM right of way/easement plats, and, prepare the Contract Documents (in such form acceptable to the Purchasing Division and City Attorney's Office) and assist in the preparation of associated documents. It is expected that each project will have a 30%, 60%, 90%, and 100% submittal. Plans will be submitted electronically in Autocad format that can be read and edited with free viewer. Plans will be in 3D format with building information data.

2. Furnish all such documents, plans, studies, and design data as may be required and assist in the preparation of any required documents so that City may obtain approval from appropriate local, State, or Federal agencies. The Consultant shall attend and participate in administrative hearings and meetings as authorized by City.

3. Furnish a revised estimate of project costs based on the final plans and specifications and other related documents.

4. Prepare revisions/addendum as required.

D. Bidding Phase

After authorization to proceed with the Bidding Phase the Consultant shall:

1. Assist in obtaining bids (or negotiating proposals) for each project.

2. Consult and advice as to the acceptability of substitute materials and equipment proposed by the contractor.

3. Consult and advice as to the acceptability of prime contractors and other persons and organizations proposed by the prime contractor.

4. Assist in the evaluation of bids or proposals.

5. If necessary, prepare bid tabulations, recommendations for award, and assist in the preparation of the final contract document.

E. Construction Phase

The Consultant may be responsible for providing control staking, easement and right-of-way staking, and general consultation during the construction phase. Control staking may include setting iron pins at property corners (including easements), providing one or more elevation bench marks at the site and providing centerline offset stakes for water and sewer main construction. Detailed daily inspections of the construction work will generally be performed by City. The Consultant's responsibilities during the construction phase may include but not be limited to the following:

1. Furnish City and the contractor with additional sets of plans and specifications as needed.

2. Consult with and advise City on matters relating to the construction activities.

3. Make periodic visits, as authorized, to the job site to observe as an experienced and qualified design professional the progress and quality of the executed work and to determine if the work is proceeding in accordance with the final plans, specifications and contract documents. During such visits and on the basis of on-site observations, the consultant shall keep City informed in writing of the progress of work, shall endeavor to guard against defects and deficiencies in the work of the contractor, shall notify City of any observed defects or deficiencies in the work of the contractor and shall recommend disapproval or rejection of work failing to conform with the final plans, specifications and contract documents.

4. Review and approve shop drawings and samples, the results of test and inspections and other data which the contractor is required to submit, for conformance with the design concept of the project and compliance with the information given in the final plans. Specifications and contract documents; determine the acceptability of substitute materials and equipment proposed by the contactor; and receive and review maintenance and operating instructions. Schedules, guarantees, bonds, and certificates of inspection which

are to be assembled by the contractor in accordance with the final plans, specifications and contract documents.

5. Issue directives of City pertaining to change orders (as authorized). The Consultant may, as City's representative, require special inspection or testing of the work and shall act as an interpreter of the requirements of the final plans, specifications and contract documents.

6. Based on the Consultant's on-site observations as an experienced and qualified design professional and on its review of the contractor's applications for payment and the accompanying data and schedules, the Consultant shall advise as to the amount owing to the contractor and shall indicate whether the amount requested is approved (subject to an evaluation of the work as a functioning project upon substantial completion and to the results of any subsequent tests called for in the final plans, specifications, and contract documents.)

7. Participate in a final inspection to determine if the project has been completed in accordance with the final plans, specifications and contract documents. Provide a written report summarizing the findings.

8. Provide a set of reproducible mylar record drawings to City and electronic file format if required.

APPENDIX A

SECTION I

REQUIRED GENERAL TERMS AND CONDITIONS PROFESSIONAL SERVICES

A. PROCUREMENT ORDINANCE
B. APPLICABLE LAWS AND COURTS
C. ANTI-DISCRIMINATION
D. ETHICS IN PUBLIC CONTRACTING
E. IMMIGRATION REFORM AND CONTROL ACT OF 1986
F. DEBARMENT STATUS
G. ANTITRUST
H. MANDATORY USE OF CITY FORM AND TERMS AND CONDITIONS
I. CLARIFICATION OF TERMS
J. PAYMENT
K. PRECEDENCE OF TERMS
L. QUALIFICATIONS OF OFFERORS
M. TESTING AND INSPECTION
N. ASSIGNMENT OF CONTRACT
O. CHANGES TO THE CONTRACT
P. DEFAULT
Q. TAXES
R. INSURANCE
S. ANNOUNCEMENT OF AWARD
T. DRUG-FREE WORKPLACE
U. NONDISCRIMINATION OF CONSULTANTS
V. AVAILABILITY OF FUNDS
W. PROPOSAL PRICE CURRENCY
X. AUTHORIZATION TO CONDUCT BUSINESS IN THE COMMONWEALTH
Y. TERMINATION OF CONTRACT
Z. DELIVERY OF MATERIALS
AA. COMPENSATION DUE THE CONSULTANT
BB. LITIGATIONS WITH THE CITY
CC. PRIOR DEFAULTED CONTRACTS
DD. CRIMINAL CONVICTIONS
EE. TERM OF CONTRACT

A. **PROCUREMENT ORDINANCE:** This solicitation is subject to the provisions of the City of Chesapeake Procurement Ordinance and applicable provisions of the Virginia Public Procurement Act, including and consistent with Virginia Code Section 2.2-4343(12). A copy of the City's ordinance is available for review at the purchasing office or accessible on the Internet at www.cityofchesapeake.net under "Ordinances."

B. **APPLICABLE LAWS AND COURTS:** This solicitation and any resulting contract shall be governed in all respects by the laws of the Commonwealth of Virginia, and any litigation with respect thereto shall be brought in in the courts of the City of Chesapeake, Virginia, or the United States District Court for the Eastern District of Virginia, if independent federal jurisdiction exists. The Consultant shall comply with all applicable federal, state and local laws, rules and regulations. This solicitation is also governed by provisions of Chapter 54 of the Chesapeake City Code, and any revisions thereto, which are hereby incorporated into this contract by reference. Contact the Purchasing Division at (757) 382-6359, for more information or to review Chapter 54 of the Chesapeake City Code. The City Code may also be read online at http://www.municode.com.

C. **ANTI-DISCRIMINATION:** By submitting their proposals, offerors certify to the City that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With

Disabilities Act and § 2.2-4311 of the *Virginia Public Procurement Act (VPPA).* If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body (*Code of Virginia*, § 2.2-4343.1E).

D. **ETHICS IN PUBLIC CONTRACTING:** By submitting their proposals, offerors certify that their proposals are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other offeror, supplier, manufacturer or subcontractor in connection with their proposal, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

E. **IMMIGRATION REFORM AND CONTROL ACT OF 1986:** By submitting their (bids/proposals), (bidders/offerors) certify that they do not and will not during the performance of this contract employ illegal alien workers or otherwise violate the provisions of the federal Immigration Reform and Control Act of 1986.

F. **DEBARMENT STATUS:** By submitting their proposals, offerors certify that they are not currently debarred by the Commonwealth of Virginia from submitting proposals on contracts for the type of services covered by this solicitation, nor are they an agent of any person or entity that is currently so debarred.

G. **ANTITRUST:** By entering into a contract, the Consultant conveys, sells, assigns, and transfers to the City of Chesapeake all rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular services purchased or acquired by the City of Chesapeake under said contract.

H. **MANDATORY USE OF CITY FORM:** Failure to submit a proposal on the official form provided for that purpose may be a cause for rejection of the proposal. Modification of or additions to the General Terms and Conditions of the solicitation may be cause for rejection of the proposal; however, the City reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such a proposal.

I. **CLARIFICATION OF TERMS:** If any prospective offeror has questions about the specifications or other solicitation documents, the prospective offeror should contact the buyer whose name appears on the face of the solicitation no later than 5 working days before the due date. Any revisions to the solicitation will be made only by addendum issued by the buyer.

J. **PAYMENT:**

1. To Prime Consultant:

   a. Invoices for items ordered, delivered and accepted shall be submitted by the Consultant directly to the payment address shown on the purchase order/contract. All invoices shall show the City contract number and/or purchase order number; social security number (for individual Consultants) or the federal employer identification number (for proprietorships, partnerships, and corporations).

   b. Any payment terms requiring payment in less than 30 days will be regarded as requiring payment 30 days after invoice or delivery, whichever occurs last. This shall not affect offers of discounts for payment in less than 30 days, however.

   c. All services provided under this contract or purchase order, that are to be paid for with public funds, shall be billed by the Consultant at the contract price, regardless of which City department is being billed.

d. The following shall be deemed to be the date of payment: the date of postmark in all cases where payment is made by mail, or the date of offset when offset proceedings have been instituted as authorized under the Virginia Debt Collection Act.

e. **Unreasonable Charges**. Under certain emergency procurements and for most time and material purchases, final job costs cannot be accurately determined at the time orders are placed. In such cases, Consultants should be put on notice that final payment in full is contingent on a determination of reasonableness with respect to all invoiced charges. Charges which appear to be unreasonable will be researched and challenged, and that portion of the invoice held in abeyance until a settlement can be reached. Upon determining that invoiced charges are not reasonable, the City shall promptly notify the Consultant, in writing, as to those charges which it considers unreasonable and the basis for the determination. A Consultant may not institute legal action unless a settlement cannot be reached within 30 days of notification. The provisions of this section do not relieve a department of its prompt payment obligations with respect to those charges which are not in dispute (*Code of Virginia*, § 2.2-4363).

2. To Subcontractors:

a. A Consultant awarded a contract under this solicitation is hereby obligated:

(1) To pay the subcontractor(s) within 7 days of the Consultant's receipt of payment from the City for the proportionate share of the payment received for work performed by the subcontractor(s) under the contract; or

(2) To notify the Purchasing department and the subcontractor(s), in writing, of the Consultant's intention to withhold payment and the reason.

b. The Consultant is obligated to pay the subcontractor(s) interest at the rate of one percent per month (unless otherwise provided under the terms of the contract) on all amounts owed by the Consultant that remain unpaid 7 days following receipt of payment from the City, except for amounts withheld as stated in (2) above. The date of mailing of any payment by U.S. Mail is deemed to be payment to the addressee. These provisions apply to each sub-tier contractor performing under the primary contract. A Consultant's obligation to pay an interest charge to a subcontractor may not be construed to be an obligation of the City.

K. **PRECEDENCE OF TERMS:** Paragraphs A-J of these General Terms and Conditions shall apply in all instances. In the event there is a conflict between any of the other General Terms and Conditions and any Special Terms and Conditions in this solicitation, the Special Terms and Conditions shall apply.

L. **QUALIFICATIONS OF OFFERORS:** The City may make such reasonable investigations as deemed proper and necessary to determine the ability of the offeror to perform the services and the offeror shall furnish to the City all such information and data for this purpose as may be requested. The City reserves the right to inspect offeror's physical facilities prior to award to satisfy questions regarding the offeror's capabilities. The City further reserves the right to reject any proposal if the evidence submitted by, or investigations of, such offeror fails to satisfy the City that such offeror is properly qualified to carry out the obligations of the contract and to provide the services contemplated therein.

M. **TESTING AND INSPECTION:** The City reserves the right to conduct any test or inspection it may deem advisable to assure services conform to the specifications.

N. **ASSIGNMENT OF CONTRACT:** A contract shall not be assignable by the Consultant in whole or in part without the written consent of the City.

O. **CHANGES TO THE CONTRACT:** Changes can be made to the contract in any of the following ways:

1. The parties may agree in writing to modify the terms, conditions, or scope of the contract. Any additional services to be provided shall be of a sort that is ancillary to the contract services, or within the same broad

Attachment-7

Social Vulnerability Map of Goose Creek Watershed

Social Vulnerability Classification

- 🟥 High Social Vulnerability
- 🟧 Moderate Social Vulnerability
- ⬛ Not Socially Vulnerable
- ☒ Not included in the analysis

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- 🟧 Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟥 High Social Vulnerability
- 🟫 Very High Social Vulnerability
- ☒ Not inlcuded in the analysis

April 5, 2022

1:36,112

0 0.2 0.4 0.8 mi

0 0.35 0.7 1.4 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

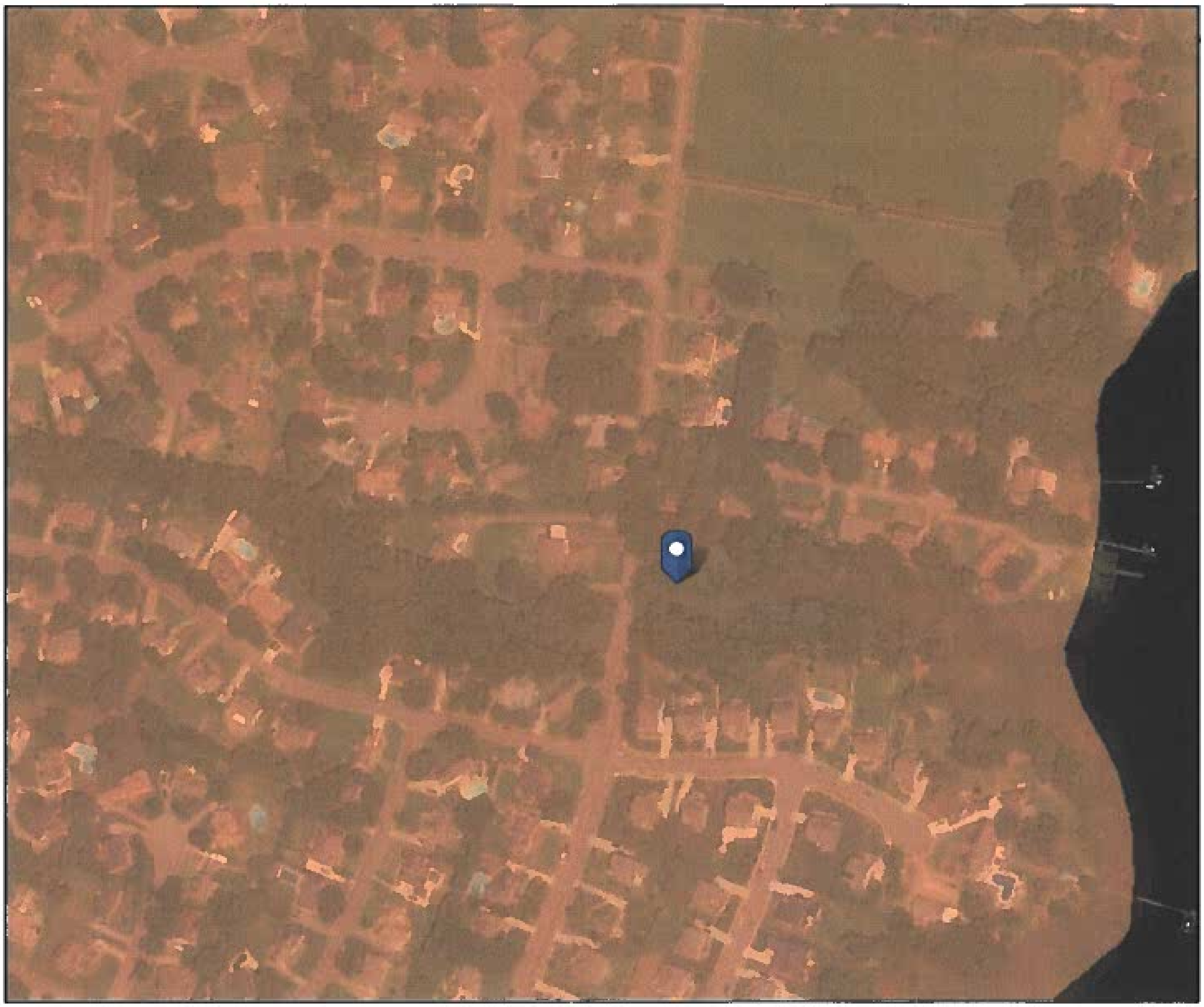
Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPTVA

Attachment-8

Social Vulnerability at Dock Landing Road Map within the Goose Creek Watershed

Dock Landing Rd



April 5, 2022

Social Vulnerability Index Score

🟨 Very Low Social Vulnerability

🟧 Low Social Vulnerability

🟧 Moderate Social Vulnerability

🟥 High Social Vulnerability

🟫 Very High Social Vulnerability

⊠ Not inlcuded in the analysis

1:4,514

0 0.0225 0.045 0.09 mi

0 0.035 0.07 0.14 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPT VA

Attachment-9

Source of Matching Funds

10-150: Stormwater Mapping & Master Drainage Plan III

Department:	**Storm Water Capital Projects**		
Project Type:	Study	Comprehensive Plan Goal Area:	Stormwater Management
Year identified:	2011	Planning Area:	Citywide
Start Date:	7/1/2012	Project Status:	Adopted
Est. Completion Date:	7/30/2023		

Description:

This project will continue the updating of the Stormwater Inventory Mapping and Master Drainage Plan.

Justification:

The updating of the Stormwater Inventory Mapping and Master Drainage Plan is essential in providing quick, accurate information to City staff, consultants, and the general public. This will provide inventory mapping to support emergency responses and GASB 34 accounting.

Comments:

On May 28, 2019, City Council transferred $48,876 from this project to CIP 70-230 "Crestwood Watershed Master Drainage Plan" to provide the local match for a grant award.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022			0
2023	100,000	100,000	0
	100,000	**100,000**	**0**

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Stormwater	601,124		100,000		**701,124**
Total Revenue	**601,124**		**100,000**		**701,124**
Expense					
Design & Engineering	601,124		100,000		**701,124**
Total Expense	**601,124**		**100,000**		**701,124**

Chesapeake VIRGINIA

CH_GL_107

My Expenses by Proj
1101500900 SW MAPPNG&MASTER DRNG PLAN III

2022-04-06

Activity	Total Appropriation	Pre-Enc	Enc	Exp	Remaining	% Spent
0360000000600	-	-	-	23,202.00	(23,202.00)	100.00%
0360000000601	-	-	-	13,452.00	(13,452.00)	100.00%
0360000000620	-	-	-	9,594.00	(9,594.00)	100.00%
0360000000630	-	-	-	28,331.00	(28,331.00)	100.00%
ENG/DESIGN	601,124.00	-	46,258.39	351,781.59	203,084.02	66.22%
Total Expenditures	**$ 601,124.00**	**$ -**	**$ 46,258.39**	**$ 426,360.59**	**$ 128,505.02**	**78.62%**

*Note: All amounts reflect transactions currently budget checked against commitment control definitions.

Attachment-10

Letter of Matching Fund Authorization

Chesapeake
VIRGINIA
PUBLIC WORKS

MEMORANDUM

TO: Crystal Bloom, P.E., Assistant City Engineer

FROM: Deva Borah, PhD, P.E., Senior Project Engineer

DATE: April 7, 2022

SUBJECT: **AUTHORIZATION TO REQUEST FUNDING THROUGH COMMUNITY FLOOD PREPAREDNESS FUND (CFPF) GRANT PROGRAM FOR GOOSE CREEK WATERSHED STUDY**

The City of Chesapeake requests funding through the Community Flood Preparedness Fund (CFPF) grant program for the above-referenced study in accordance with the grant program requirements as provided in the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund.

The City has dedicated funding for this specific type of study in the Capital Improvement Budget (CIB) that will be used to provide the required local match, see Project #10-150 Stormwater Mapping & Master Drainage Plan III. The CIB Project Summary page and documentation to verify the availability of adequate funding to cover the local match amount are provided for your records.

The total project cost is $185,000. The amount of funding requested through the CFPF is 50% of the project cost or $92,500. The remaining cost of $92,500 will be a local match funded through Project #10-150 Stormwater Mapping & Master Drainage Plan III.

Should you have any questions or need additional information, please contact me at extension 6472.

Crystal Bloom, P.E., Assistant City Engineer
(Approval of Request)

4/8/22
Date

DB

Attachments

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510034_ChesapeakeCity_CFPF-3: CFPF 2022 Grant Application on the Goose Creek Watershed STUDY

1 message

Deva K. Borah <dborah@cityofchesapeake.net> Fri, Apr 8, 2022 at 3:32 PM
To: Virginia Department of Conservation & Recreation <cfpf@dcr.virginia.gov>
Cc: Sam Sawan <sawan@cityofchesapeake.net>, "Crystal V. Bloom" <cbloom@cityofchesapeake.net>

Dear DCR CFPF Program Manager,

Attached please find the City of Chesapeake's Grant Application **CID510034_ChesapeakeCity_CFPF-3** on the Goose Creek watershed **STUDY** for 2022 CFPF Grant Funding.

We look forward to hearing from you with an acknowledgement of receipt of this application.

Sincerely,

Deva

Deva K. Borah, Ph.D., P.E., F.ASCE

Senior Engineer

City of Chesapeake – Department of Public Works

306 Cedar Road,, Chesapeake, Virginia 23322

Main: (757) 382-6101; Direct: (757) 382-6472

Cellular: (757) 705-6341
Email: dborah@cityofchesapeake.net
www.cityofchesapeake.net

CID510034.ChesapeakeCity_CFPF-3.pdf
2549K

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Chesapeake

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

✓ **Project**

____**Study**

NFIP/DCR Community Identification Number (CID) 510034

If a state or federally recognized Indian tribe, Name of tribe ____________

Name of Authorized Official: Crystal Bloom, PE, LEED GA

Signature of Authorized Official: ____________

Mailing Address (1): City of Chesapeake – Department of Public Works

Mailing Address (2): 306 Cedar Road

City: Chesapeake **State:** VA **Zip:** 23322

Telephone Number: (757) 382-6101 **Cell Phone Number:** ( )

Email Address: cbloom@cityofchesapeake.net

Contact Person (If different from authorized official): Deva K. Borah, Ph.D., P.E., F.ASCE

Mailing Address (1): City of Chesapeake – Department of Public Works

Mailing Address (2): 306 Cedar Road

City: Chesapeake **State:** VA **Zip:** 23322

Telephone Number: (757) 382-6101 **Cell Phone Number:** ( )

Email Address: dborah@cityofchesapeake.net

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No ✓

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ✓ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ✓ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Greenbrier business corridor, Indian River City Watershed, Eastern Branch Elizabeth River, James River Basin

NFIP Community Identification Number (CID#):(See appendix F 510034

Is Project Located in an NFIP Participating Community? ✓ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ✓ No

Flood Zone(s) (If Applicable): majority X (Shaded) and Zone X (0.2% chance) at towards outfall along length of improvements

Flood Insurance Rate Map Number(s) (If Applicable): 5100340016D, 5100340017D, 5100340018D, 5100340025D. 5100340026D, 5100340027D

Total Cost of Project: $1,975,398

Total Amount Requested $1,185,238

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**City of Chesapeake**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	**Submitted for approval**
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		✓ **Yes** ☐ **No**
Applicant Name:	**City of Chesapeake**	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	35
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	X ¼ = 2
Low Social Vulnerability (-1.0 to 0.0)	**0**	X ¾ = 0
Very Low Social Vulnerability (Less than -1.0)	**0**	

8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		**57**

Appendix D: Checklist All Categories

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	✓ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	✓ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	✓ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	✓ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	✓ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	✓ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	✓ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	✓ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ✓ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	✓ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	✓ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ✓ N/A

A. Scope of Work Narrative – Projects

All applications must include a Scope of Work Narrative that clearly describes the proposed project or study, including supporting documentation as necessary. It may be helpful to review the checklist in Appendix C to ensure that the application includes all the required elements. The Scope of Work narrative for all applications should address the following elements.

1. ***Project Information***: Describe in detail the area to be studied or protected including the following. _Note that information should be provided on the local government(s) in which the project is taking place, even if that local government it is not the grant applicant_. Projects undertaken by municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these, must be consistent with resilience plans and efforts in the local government where the project takes place. Letters of support from affected local governments must be included with the application.

This application is for the project known as Greenbrier Outfall Resiliency Improvements Phase I & II. This project was included in the Chesapeake Preliminary Resilience Plan submitted for approval concurrent with this application. The City of Chesapeake has engaged a consultant, GKY & Associated, to study this area and identify improvements to alleviate flooding during extreme storm events. GKY performed hydrologic and hydraulic analysis and developed the Greenbrier Resiliency Plan in late 2020. The Plan has been included as *Attachment 1*.

***Attachment 1* provides a detailed description of the project, background, site, analysis, and recommended improvements. Detailed map of the project area including drainage area and area to be protected by this project can be found in the Figures section starting on page 34 of this document.**

- Population
  - Provide population data for the local government in which the project is taking place, including identification of any low-income geographic area and the estimated number of residents that will be impacted by this project.

Population data for Chesapeake – 249,422 as of 2020 Census

Identification of any low-income geographic area that will be impacted by the project: none

The estimate number of residents impacted by the project: 10,620

- Historic flooding data and hydrologic studies projecting flood frequency
  - Provide information on the flood risk of the project area, including whether the project is in a mapped floodplain, what flood zone it is in, and when it was last mapped. If the property or area around it has been flooded before, share information on the dates of past flood events and the amount of damage sustained.

Flood risk of the project area: The majority of the drainage area is in flood zone X (Shaded) with the most downstream portion in Flood Zone X (0.2% chance) where the two (2) improvements will be made. The area was last mapped in 2014. See *Attachment 2* for the FIRMette of the project area.

Information on the dates of past flood events and the amount of damage sustained: The GKY study used flooding data from Hurricane Matthew in October 2016 for calibration. That documentation is provided on pages 20 & 21 of *Attachment 1*.

Other flooding data has been packaged and provided as *Attachment 3*. These include a map of known flooding locations where high water signs have been installed as well as records of work orders that have been generated based on flooding complaints.

- The ability of the local government to provide its share of the cost
  - This must include an estimate of the total project cost, a description of the source of the funds being used, evidence of the local government's ability to pay for the project in full or quarterly prior to reimbursement, and a signed pledge agreement from each contributing organization.

Estimate of total project cost: $1,975,398

Source of the funds being used: Capital Improvement Budget funds encumbered to CIB 29-230

Evidence of Ability to Pay: See Budget Narrative and referenced Attachments

Signed Pledge Agreement: N/A

- The administration of local floodplain management regulations
  - The Department will determine if the community is in good standing with the NFIP. If applicable, provide the Department with a link to the current floodplain ordinance, or attach a PDF or Word document of the ordinance.

Link to a copy of the current floodplain ordinance:

ADOPTED+Floodplain+Ordinance--7-16-2013.pdf (cityofchesapeake.net)

- Other necessary information to establish project or study priority
  - Repetitive Loss and/or Severe Repetitive Loss Properties
    - Do not provide the addresses for these properties, but include an exact number of repetitive loss and/or severe repetitive loss structures within the project area. Work with the local floodplain administrator or emergency manager to find this information. If they do not have a list of repetitive loss/severe repetitive loss structures, the Department can assist them in accessing these lists.

Exact number of repetitive loss /severe repetitive loss structures within the project area: 0

  - Residential and/or Commercial Structures
    - Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of residential structures and commercial structures in the project area.

Description of the Area: The majority of the area impacted by the project is commercial in nature. It is one of the City's major business corridors. However, there are some residential properties within the drainage area as well.

Exact number of residential structures and commercial structures within the project area: There are 3,848 residential structures and 700 commercial structures in the project area. There are also 32 government buildings.

- Critical Facilities
  - If there are critical facilities within the project area, describe each facility. Critical facilities are those that provide services and functions essential to the community, including hospitals, fire stations, police stations, storage facilities for critical records, power plants, and wastewater treatment plants, among others.

There are 7 critical facility in the project area:

1. **Station – 5th Precinct - Greenbrier, police station**
2. **Childrens Health Systems Inc, medical**
3. **Southeastern Virginia Training Center, special needs**
4. **Public Works Operations Center**
5. **Davita Ches Dialysis Center, medical**
6. **Indian River High School, shelter**
7. **Station 14, fire station**

2. ***Need for Assistance***: Identify and describe any relevant issues or problems that will be addressed by the project.

   - Explain the local government's financial and staff resources. How many relevant staff members (floodplain administrators, planners, emergency managers, building officials, engineers) does the local government have? To what relevant software does the local government have access? What are the local government's capabilities?

The majority of City infrastructure improvements are funded through the Capital Improvement Budget. The approved FY22 CIB is available at: Adopted+CIP+Document+FY+22-26+update.pdf (cityofchesapeake.net)

Number of relevant staff members:

- **1 Floodplain Administrator**
- **1 additional Certified Floodplain Manager**
- **7 Stormwater Engineers**
- **1 Plan Review & Codes Administrator**
- **1 Permit Services Administrator**
- **1 Principal Planner**
- **2 Senior Planners**
- **1 Deputy Coordinator of Emergency Management**

Relevant Software: Accela for plan review, numerous stormwater modeling programs (SWMM, Autodesk Hydraflow, Autodesk Storm & Sewer Analysis, Bentley Civil Storm, Culvert Master, etc.), Microsoft Office Suite, ArcGIS

Capabilities: The City has several teams within Public Works to manage the study, design and construction work performed by consultants and contractors. One of the teams also takes on in-house design for small projects that can be accomplished using on-call contractors. There is a team that focuses solely on managing construction and includes engineers as well as inspectors.

- The Department will prioritize low-income geographic areas for funding. Low-income geographic area means any locality or geographic area within a locality that may cross municipal or county boundaries, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service.

This project DOES NOT impact low-income geographic areas.

- The Department will consider the project area's social vulnerability index score when reviewing grant applications. The Social Vulnerability Index, available through ADAPT Virginia's Virginia Vulnerability Viewer, will be used for this review.
- This index is based on census tract data; the index score for the census tract that contains the project area should be used. If the project area falls within multiple census tracts, please provide the scores for all census tracts. The average score for the project area will be used for scoring the application.
  - For more information on social vulnerability, please see ADAPT Virginia's fact sheet.

This map has been provided as *Attachment 4.* The project area spans several census tracts, three (3) of which have a low social vulnerability score while one (1) scores as medium.

2. ***Alternatives***: If the project proposed does not employ a nature-based or hybrid solution and the total project cost is greater than $3 million, describe at least one alternative that could reasonably address the issue identified. Please also consider the No Action Option as a third alternative as part of the analysis. Explain these alternatives and the reason the proposed project was selected.

Not applicable since the total project cost is less than $3M dollars.

3. ***Goals and Objectives:*** Identify and describe the goals and objectives of the project. Include a description of the expected results of the completed project and explain the expected benefits of the project. This may include financial benefits, increased awareness, decreased risk, etc.

Lower Indian River High School lake weir and upsize existing poor-condition box culvert under S. Military Hwy to lower upstream hydraulic grade line and provide additional flood storage in Greenbrier business corridor.

Goal 1. Reduce the frequency and severity of flooding impacts to the project area during extreme storm events. A combination of these improvements along with an additional future phase provide protection equivalent to a 1000-yr storm event. Details of the analysis can be found in *Attachment 1.*

- **Objective 1.1 Increase water storage by lowering the weir at Indian River High School.**
- **Objective 1.2 Increase water storage capacity by upsizing the existing box culvert under S. Military Highway.**

The expected results and benefits of the project are in line with the project goals to decrease flooding risk. Additional benefits include decreased financial burden and loss associated with flooding as well as increased circulation in the business district leading to reduced loss of business.

4. ***Approach, Milestones, and Deliverables*****:** Outline a plan of action laying out the scope and detail of how the proposed work will be accomplished with a timeline identifying expected completion dates. Determine milestones for the project that will be used to track progress. Explain what deliverables can be expected at each milestone, and what the final project deliverables will be. Identify other potential project partners.
    - If assistance is sought for a project that will be carried out in concert with a federal agency, provide evidence of an agreement with the federal agency endorsing the project.

The design has not yet started for this project.

Once the grant has been awarded, the City will engage one of their on-call consultants to develop a scope of work to design the project. The following is the anticipated schedule including milestones – used to track progress – and dates through construction of the project.

Milestone	**Period Of Performance**	**Delivery After Grant Award**
Design Consultant NTP	**3 months**	**3 months**
Development of Construction Docs	**15 months**	**18 months**
Environmental Permitting	**N/A**	**Concurrent with design**
Advertise for Bid	**2 Months**	**20 months**
Construction NTP	**4 months**	**24 months**
Construction Completion	**9 months**	**33 months**

5. ***Relationship to Other Projects*:** Where applicable, briefly describe the relationship between this project and other past, current, or future resilience projects. If the applicant has received or applied for any other grants or loans, please identify those projects, and, if applicable, describe any problems that arose with meeting the obligations of the grant and how the obligations of this project will be met.

This project has been identified in the City of Chesapeake Preliminary Resilience Plan that was submitted concurrent with this application. There is another phase of this project planned. It has also been included in the City Resilience Plan but the work for Phases I & II will be done prior to the future Phase III project. This project is not currently under consideration for any other grants or loans.

6. ***Maintenance Plan:*** For ongoing projects or projects that will require future maintenance, such as infrastructure, flood warning and response systems, signs, websites, or flood risk applications, a maintenance and management plan for the projects must be provided demonstrating how they will be maintained after the lifespan of this grant for a minimum of five years. Ongoing operation and maintenance will be the financial responsibility of the grantee and will not be eligible for monies from the Fund.

Annual inspection and maintenance for this project shall be performed by City staff as is required by the City of Chesapeake Phase I MS4 permit. The City follows standard operating & maintenance procedures established internally and by state organizations including DEQ and VDOT for O&M of stormwater infrastructure. See *Attachment 5* for the following documents:

- **Drainage Infrastructure Management (Storm Pipe/Cave-In/Ditch) - see attached PW Regulation 755.**
- **Stormwater Operation Plan (BMP) - see attached PW Regulation 756, which references the PFM that refers to the DEQ BMP Design Specifications.**
- **Weir structures - see excerpt for the Principal Spillway from DEQ BMP Design Specs**
- **Box Culvert - see excerpt from VDOT Maintenance Best Practices .**

The total project cost as identified in the application is for design and construction only. Funding for maintenance is non-fund financed.

7. ***Criteria:*** Describe how the project meets each of the applicable scoring criteria contained in Appendix B, and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application. Appendix B must be completed and submitted with the application.

   For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

   1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by

the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

The applicant, the City of Chesapeake, is a local government.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

The applicant received grant funding in a previous CFPF grant round to develop a Resilience Plan. The Preliminary Resilience Plan developed under that scope of Word has been submitted for approval along with this project grant application and has been included as *Attachment 6.*

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

N/A.

4. Has the applicant provided evidence of an ability to provide the required match funds?

Yes, see Budget Narrative and referenced Attachments.

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

Yes, see Scope of Work Narrative A.3. Goals and Objectives and reference Attachments.

<u>**Additional Supporting Documentation**</u>

- A link to or a copy of the current hazard mitigation plan

  Hampton Roads Hazard Mitigation Plan | Emergency Management | Departments | Departments | Emergency Management | Departments | Departments | Hampton Roads Planning District Commission (hrpdcva.gov)
- A link to or a copy of the current comprehensive plan

  Comprehensive Plan 2035 (cityofchesapeake.net)

- Completed Scoring Criteria Sheet

  The Completed Appendix B: Scoring Criteria for Flood Prevention and Protection Projects follows the Appendix A: Application Form.

B. Budget Narrative- Required for All Grant Categories

Each application must include a detailed Budget Narrative explaining all proposed expenditures. A budget narrative is applicable to requests from any category of grants in this manual. The following items must be included in the Budget Narrative:

● *Estimated total project cost*: **$1,975,398**

> **This amount represents the estimated total project cost including engineering ($355,702) and construction ($1,619,696). See pages 50 and 51 of *Attachment 1* for a detailed breakdown of the estimated total project cost. A 20% increase was applied to these values to account for present day costs as well as observed increases in the construction industry.**

● *Amount of funds requested from the Fund*: **$1,185,238**

> **This is the total amount of any grant assistance sought from the Fund. It represents 60% of the estimated total project cost.**
>
> **Estimated Funding Request Breakdown**
> - **Salaries, 0**
> - **Fringe Benefits, 0**
> - **Travel, 0**
> - **Equipment, 0**
> - **Supplies, 0**
> - **Construction, $971,818**
> - **Contracts, $213,420**
> - **Other Direct Costs, 0**

● *Amount of cash funds available*: **$790,160**

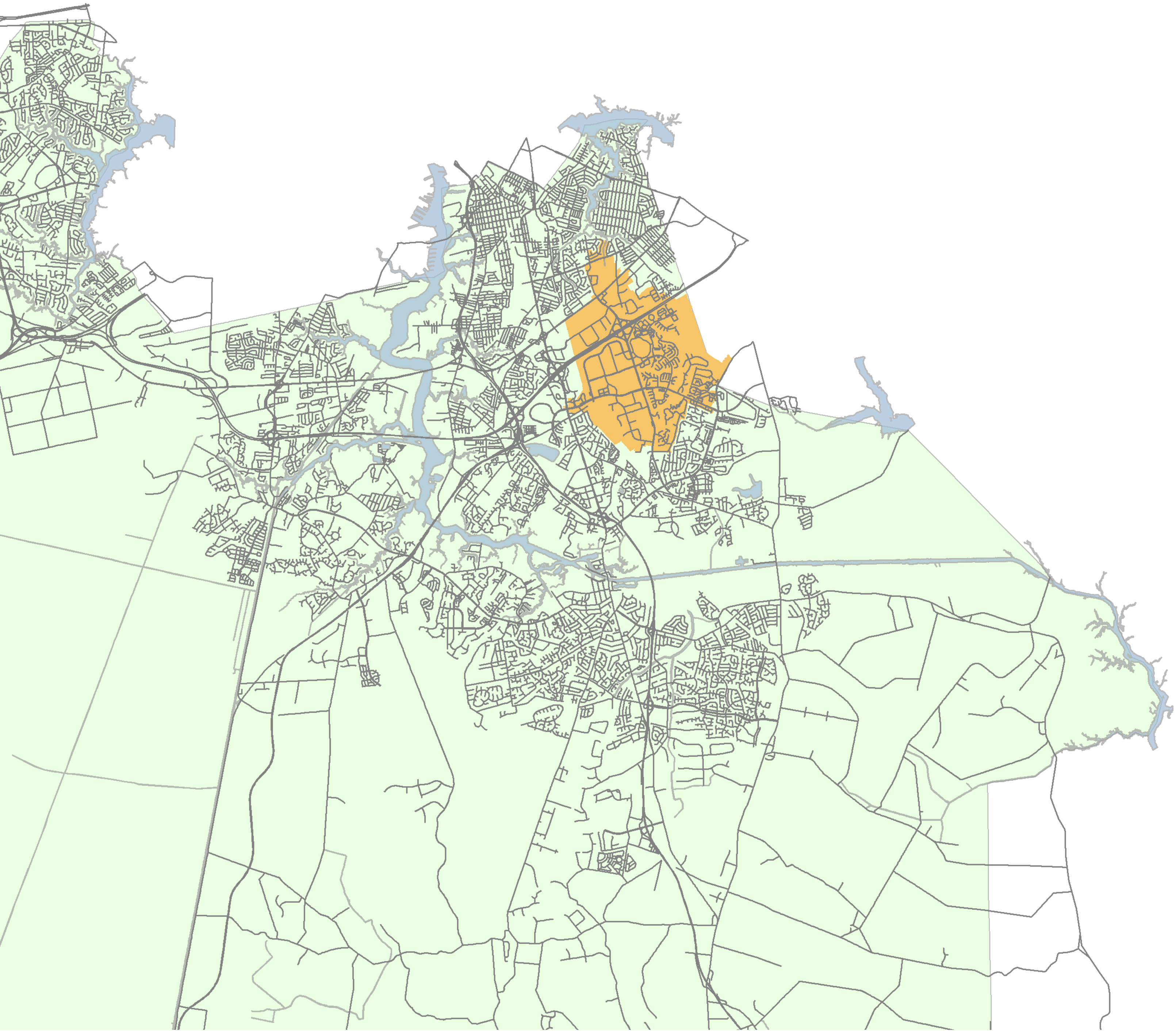
> **The source of these funds is CIB 29-230.**
>
> **See *Attachment 7* for a letter indicating the availability of and ability to obtain funding for the local match including a description of the fund allowable expenditures and funding plan as well as a financial statement indicating sufficient funds to cover the match requirement for this grant application.**

● *Authorization to request for funding: Local governments seeking funding shall also attach signed documentation authorizing the request for funding.* (**Supporting Documentation**.)

> **See *Attachment 7* for a letter authorizing a request for funding through the program.**

GREENBRIER RESILIENCY PLAN

November 2020



GREENBRIER RESILIENCY PLAN

November 2020

11/2/2020
JOHN N. PAINE
Lic. No. 020688

Prepared For:

City of Chesapeake
Department of Public Works
306 Cedar Road
Chesapeake, VA 23322

Prepared By:

GKY & Associates, Inc.
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Newport News, VA 23606

GKY No. 2017-018 TO#12

Digital Document Note: Printing these types of reports can add well over $1,000 to the delivery cost and creates the need for additional handling and filing. To avoid wasteful spending and maximize efficient use, this report is formatted for delivery as a digital document. Fonts and details are preserved for tight zooming. Users may find it convenient to make a second digital copy of this report (with a different filename) and read each on separate monitors. For example, the left monitor can display figures and tables while reading text on the right monitor.

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APPENDIX

Acronyms & Definitions

The following acronyms apply to this document and ancillary material:

BRIC	Building Resilient Infrastructure and Communities (a FEMA grant program)
CIP	Capital Improvement Program
City	unless specifically stated otherwise, the City of Chesapeake, Virginia
CLOMR	Conditional Letter of Map Revision
CWA	Clean Water Act
CRS	Community Rating System
DCR	Virginia Department of Conservation and Recreation
DEM	Digital Elevation Model
DEQ	Virginia Department of Environmental Quality
DSFPPAF	Dam Safety, Flood Prevention and Protection Assistance Fund (administered by DCR)
EPA	U.S. Environmental Protection Agency
ESA	Engdangered Species Act
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FHWA	U.S. Federal Highway Administration
FMA	Flood Mitigation Assitance (a FEMA grant program)
GKY	GKY & Associates, Inc. (see www.gky.com)
JPA	Joint Permit Application
LOMR	Letter of Map Revision
MDP	Master Drainage Plan
MDPU	Master Drainage Plan Update
MS4	Municipal Separate Storm Sewer System
MTD	Manufactured Treatment Devices
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGVD29	National Geodetic Vertical Datum of 1929
NHPA	National Historical Preservation Act of 1966
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
PCSWMM	an enhanced graphical user interface to the SWMM engine produced and marketed by Computational Hydraulics International. PCSWMM runs the EPA SWMM engine and provides a wide assortment of add-on utilities and tools.
PDF	Portable Document Format—the Adobe Acrobat file format used for this (and many other) electronic documents
ROG	Rain-on-Grid
SLAF	Stormwater Local Assistance Fund (administered by DEQ)
SWCB	Virginia State Water Control Board
SWMM	Storm Water Management Model, originally developed (and currently authorized) by EPA.
TMDL	Total Maximum Daily Load
VDOT	Virginia Department of Transportation
VERTCON	datum conversion tool produced by NOAA (https://www.ngs.noaa.gov/cgi-bin/VERTCON/vert_con.prl)
VMRC	Virginia Marine Resoucres Comission
VPDES	Virginia Pollutant Discharge Elimination System
VRA	Virginia Resources Authority
VRRM	Virginia Runoff Reduction Method, administered by DEQ
VSMP	Virginia Stormwater Management Program
WOTUS	Waters of the United States

The following rainfall event definitions apply to this document:

D6	Six inches of effective rainfall applied to the watershed in the shape of a 24-hour, NOAA Type C hyetograph. This event is analogous to a 100-year storm event.
D9	Nine inches of effective rainfall applied to the watershed in the shape of a 24-hour, NOAA Type C hyetograph. This event is analogous to a 1,000-year storm event.
D12	Twelve inches of effective rainfall applied to the watershed in the shape of a 24-hour, NOAA Type C hyetograph. This event is analogous to an event that is much more severe than a 1,000-year storm event.
Matthew	Effective rainfall constructed from rain gage data collected at City Hall on October 8 and 9, 2016.

GREENBRIER RESILIENCY PLAN

November 2020

1. Executive Summary

Engineers from the City of Chesapeake, Department of Public Works, and GKY & Associates, Inc. have completed a Resiliency Plan for the Greenbrier Drainage Area, within the Indian River Creek Watershed.

The need for this plan was demonstrated during Hurricane Matthew[1]. Although the existing drainage system functions reasonably well during heavy rainfall events, key roadway intersections experience prolonged flooding during extraordinary storms. Eden Way North, Executive Boulevard, Greenbrier Parkway, Volvo Parkway, and other streets became impassible during Matthew, and the floodwaters were slow to recede.

The goal of this study is to identify potential projects to lower flood elevations and reduce the duration of flooding during an extreme storm event. The engineering approach is different from routine master drainage plans and stormwater management designs because the scale of the problem is so much larger. This study evaluated rainfall events having average recurrence intervals on the order of 100 to well over 1,000 years.[2]

GKY engineers created computer models of existing watershed conditions and incorporated potential projects to evaluate their resilience potential. The models were built using recent 3D LiDAR-derived terrain data, so flood depths and overland flows are much more reliably computed than using simpler methods.

Aerial photographs were taken during Hurricane Matthew at 7:00 a.m. on October 9, 2016 showing flooding on the ground at that time. Rainfall was reliably recorded at Chesapeake City Hall, 3½ miles from the center of the drainage area. GKY used the rainfall record and aerial photographs to calibrate the computer model, which was then used to configure and evaluate the benefits of potential flood improvement projects.

The modeling highlights the challenges of making cost-effective improvements to reduce flood levels and durations in an urbanized watershed. The results are useful not only for showing what would work, but also for avoiding projects that would not provide any appreciable benefits.

After analyzing existing problems in this watershed, the engineering team has identified three potential improvement projects (indicated with green shading in Figure 9) that can alleviate future flooding, including:

1. **Indian River High School Lake Weir:** Lower the existing weir at Indian River High School Lake from a crest elevation of 8.1 to 6.1 feet—which will lower hydraulic grade lines and provide additional flood storage;
2. **South Military Highway Culvert Replacement:** Replace the existing 6'Hx10'W box culvert under South Military Highway with a double 8'x8' box culvert, which will lower hydraulic grade lines; and
3. **I-64 Additional Culvert:** Add a 60" circular culvert under I-64, just to the east of the existing triple 9'x9' box culvert—which will lower the permanent pool elevations of upstream impoundments to create 350 acre-feet or so of new flood storage.

These three potential projects are documented below and in the report figures that follow. The projects may be implemented with some assurance that the impacts on the watershed have been adequately considered.

---

[1] Hurricane Matthew dropped over 11 inches of rain on October 8 and 9, 2016.

[2] Drainage and stormwater management designs typically accommodate storms that have an average recurrence interval of 10 to 100 years.

Some of the conceptual designs may need to be modified—as wetlands regulations, development sequencing, flooding issues, soil properties, risk tolerance, and economic considerations come into play.

Virginia has undertaken several initiatives in recent years to improve flood resiliency and incorporated them into a comprehensive 2020 guidance document entitled *Virginia Coastal Resilience Master Planning Framework*[3]. The projects identified in this Greenbrier Resiliency Plan should fit nicely within the goals and objectives laid out in the State's framework and should qualify for grant funding to some degree.

Appendix A provides conceptual cost opinions for all three projects, and potential grant opportunities are noted in Section 9 and Table 4. Project costs can be refined when preliminary engineering plans are prepared. The cost of the most expensive project, the I-64 Additional Culvert, is dependent upon two factors that are currently unknown. First, the additional culvert is priced for installation by microtunneling, which works better in poor soil conditions and is less likely to cause subsidence problems under I-64 than a jack-and-bore installation. If geotechnical engineering can demonstrate that jack-and-bore construction would be acceptable to the City and VDOT, the cost of the project could be reduced by as much as $1,000,000. Secondly, the modeling conducted for this study shows that one 60" circular culvert would significantly improve the resilience of the Greenbrier system, but the City may choose to use a larger culvert, or add a second new barrel, to reduce the risk of blockages and to shorten the drawdown time in the upstream drainage system. Section 8, below, describes the potential benefit of increased discharge capacity under I-64.

There are many combinations of drainage improvements that can be evaluated in any watershed. While a substantial effort has been applied to develop this study, it is by no means exhaustive. The intent of this undertaking was not only to develop sound alternatives for resilience improvements but also to leave the underlying data files and computer models so that they can be used in the future.

The maximum computed water surface elevations for existing and future conditions at key locations are presented in Table 2 and shown for the D9 design storm in Figures 10 through 12. Table 2 quantifies the reduced flood elevations that can be achieved through construction of the three improvement projects for three specific design scenarios (i.e., the D6, D8, D12 storms, described in Section 4, below).

FEMA flood insurance studies and rate maps are the definitive sources of floodplain limits and elevations in all cases. The models developed for this plan are specific design scenarios—THESE RESULTS ARE NOT TO BE CONSTRUED AS INDICATIVE OF EXPECTED WATER SURFACE ELEVATIONS FOR THE PURPOSES OF FLOODPLAIN MANAGEMENT AND/OR INSURANCE REQUIREMENTS. The models developed for this plan could be adapted for use in the National Flood Insurance Program and submitted to FEMA for approval, but until they are vetted and approved through that process, the published flood insurance studies and rate maps remain fully in effect.

2. Background

The purpose of this study is to identify specific potential improvement projects that could be constructed to improve flood resilience. The Greenbrier Drainage Area was selected because the drainage and stormwater management systems generally work well for storms up to approximately the 100-year level, but extraordinary storms, such as Hurricane Matthew, flood roadway intersections that can take many hours to become passible.

URS Corporation prepared a master drainage plan update for the Indian River Watershed (which includes the Greenbrier Drainage Area) in 2011. The underlying modeling was completed using 1D SWMM methodology and focused on design rainfall events having average recurrence intervals from 10 to 100 years. City crews performed field surveying to support the 2011 update, documenting major culvert crossing geometry and invert elevations. GKY has used the modeling and surveying data from that effort to build the models for the

---

[3] See https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/pdf/Virginia-Coastal-Resilience-Master-Planning-Framework-October-2020.pdf.

current study. Although the focus of this 2020 study is on extreme storm events, and the technical modeling approach is very different, the results of the two studies are consistent. In context, both studies show that increasing the conveyance of the Greenbrier backbone drainage system by increasing culvert capacity at strategic locations will lower future flood levels. The 2020 study further shows that lowering the permanent pool elevations of the Greenbrier impoundments will provide substantial volumes of new, useful flood storage that will improve the resiliency of the watershed for extreme storm events.

The City is actively engaged in the NFIP and CRS programs and complies with laws and regulatory initiatives, such as the Chesapeake Bay Act, the Chesapeake Bay TMDL, the Virginia Stormwater Management Act, the Virginia Erosion and Sediment Control Law, and the Virginia Stormwater Management Program. These and other regulatory programs require considerable non-structural approaches to reduce flooding—such as requiring runoff reduction for development and redevelopment, setting minimum standards for structure locations and elevations, and educating citizens and soliciting their input and participation in programs to reduce the generation of stormwater runoff and minimize exposure to flooding.

These initiatives are invaluable and extremely cost-effective, particularly concerning future development. However, where older infrastructure meets sea level rise and climate change, structural improvements are a vital part of the City's overall approach to flood mitigation. This study focuses on identifying specific potential improvement projects and opportunities.

Significant climate change has occurred since the drainage systems in this watershed were originally constructed. Sea level rise and higher annual rainfall volumes, coupled with increases in impervious cover (that lead to increased runoff), have contributed to increases in the magnitude and frequency of flooding over the past 60 years. These issues were not well understood in the past and were not fully addressed in drainage design and stormwater management planning. Modern engineering tools, a better understanding of climate processes, and higher design standards—all of which the City now employs—were not available when many of the Greenbrier drainage systems were designed and built. As a result, some of the pipe and channel systems are undersized for current conditions.

3. Technical Approach

GKY used the U.S. Army Corps of Engineers HEC-RAS software to perform the ROG modeling. This software is free to the public and can be readily downloaded and used by City engineers without paying any fees. The software is available to download from https://www.hec.usace.army.mil/software/hec-ras/download.aspx, and manuals and reference documents—including 2D references—are at https://www.hec.usace.army.mil/software/hec-ras/documentation.aspx.

Construction of the models required careful terrain processing and data entry of approximately 50 significant culvert crossings. Secondary underground drainage system components were not included in the modeling. This type of ROG approach offers appreciable advantages over 1D SWMM modeling because surface flooding and flow routing are computed using a 3D surface model. The substantial assumptions required in 1D SWMM modeling when hydraulic grade lines rise above the ground are eliminated in ROG modeling. Likewise, flows are computed over the entire terrain, not merely along assumed 1D flow paths.

2013 Digital Elevation Model (DEM) data served by the Virginia Geographic Information Network (VGIN) division of the Virginia Information Technologies Agency was used to create a 3D surface model of the subject watershed. GKY refined this surface model to incorporate grading changes that have occurred since the 2013 data was flown and that could affect flood mapping—such as the Dollar Tree development between Volvo Parkway and Eden Way North. Figures 1 and 4 depict the modified terrain.

GKY constructed finite element mesh components on the modified terrain and input major culverts (plotted as maroon lines in Figure 5) along the backbone drainage system. Existing culvert geometry was taken from the 2011 MDPU SWMM model. Different modeling scenarios had different culvert configurations; the configuration shown in Figure 5 includes a new culvert crossing under I-64 just to the east of the triple 9'x9' box culverts.

It is neither cost-effective nor prudent to model underground drainage pipes for this type of analysis—because flows in smaller drainage pipes are insignificant when the system is overwhelmed or completely submerged by extremely heavy rainfall. Likewise, FEMA does not typically model smaller pipe systems in producing flood insurance rate maps.

HEC-RAS does not, as of fall 2020, address infiltration and other losses from rainfall. Instead, the rainfall applied in the model is the 'effective' rainfall—i.e., that portion of rainfall that is not lost to infiltration, evaporation, transpiration, and abstractions. The approach used to develop effective rainfall for these models is described in the following section.

For this analysis, the rain-on-grid models will use 6-, 9-, and 12-inches of effective rainfall in the form of a NOAA 24-hour, Type C hyetograph. GKY also used rainfall and anecdotal water depth information for Hurricane Matthew to check the ROG, existing condition model, as described in the following section.

Methodology, data sources, and approaches used in this modeling include:

- NRCS Type C design storm hyetographs;
- Hurricane Matthew rainfall (provided by the City) and anecdotal information on flooding locations and levels (most helpfully in the form of aerial photographs taken at 7:00 a.m., October 9, 2016)
- FHWA culvert methodology for all culverts included in the models;
- Full momentum equation solutions for overland flow routing on the 2D mesh surfaces;
- A three-second computational time step;
- "No-Rain" models to generate restart (*.rst) files with initial water surface elevations in the drainage system at the start of each simulation;
- Simulation times up to 144 hours (to evaluate drawdowns of the impoundments);
- GIS data served through ArcGIS online and the City's Open GIS Data Portal; and
- HEC-RAS Version 5.07 software.

4. Effective Rainfall

Most drainage and stormwater management studies and designs employ some estimate of average recurrence interval as the basis for calculations. For example, engineers use a rainfall depth deemed statistically to have an average recurrence interval of 10- or 100-years to compute flood elevations and flows. Many assumptions and intermediate calculations are involved, but the resulting product is said to be a 10- or 100-year design. The expectation is that these designs can accommodate storm events that will be exceeded, on average, only once every 10 or 100 years.

The Rational Formula, developed over 130 years ago, is still the most widely used and trusted method to compute design flows in drainage pipes. It's longevity and popularity derive from its simplicity and the fact that designs built using the Rational Formula seem to have worked well. A simple 'C' coefficient converts the applied rainfall into surface runoff. Hydrologic processes in the watershed—such as infiltration, abstractions, evapotranspiration, and interception—are lumped into the C coefficient.

As engineering capabilities progressed, new formulas and methods were developed to compute surface runoff from applied rainfall. Soil equations, overland flow and culvert hydraulics, and design rainfall hyetographs were developed to increasing levels of complexity—all requiring additional levels of input data. The onset of computer modeling tools and geographic information systems made it possible to carry the computations and methods to deeper levels. As the complexity grew, so did the assumptions in the computational processes.

However, with climate change and increased impervious cover from development activities, what has worked in the past does not necessarily work well today. Assigning average recurrence intervals to designs can give citizens and policy makers a false sense of security and create a great deal of confusion with the public—who mistakenly assume that they will almost never be affected by such events. When heavy rainfalls happen, municipal engineers and officials must deal with unmet public expectations.

HEC-RAS does not currently compute losses from rainfall. The rainfall applied in the model is the 'effective' rainfall—i.e., that portion of rainfall that is not lost to infiltration, abstractions, evapotranspiration, and interception. What is simplified in terms of hydrology is more than made up for in surface hydraulics capabilities. Soils can be modeled for infiltration effects using other software, but soil modeling involves assumptions about physical soil properties and antecedent conditions that are difficult to justify in highly developed areas like Greenbrier where the native soils have been covered and compacted with imported topsoil.

GKY recommends basing resiliency modeling on design storm events that are specified as *inches of effective rainfall*, without specifying the return period. For example, 6-, 9-, and 12-inch, 24-hour NOAA Type C effective rainfall design storms can be used for resiliency analyses and the results reported without return periods. GKY uses this approach with other clients who are working on resiliency modeling.

To give some perspective, Hurricane Matthew produced 11.96 inches of rainfall over 27.5 hours (recorded at City Hall and plotted in Figure 3). A 6-inch effective rainfall would be on the order of a 100-year event, a 9-inch effective rainfall would be on the order of a 1,000-year event, and a 12-inch effective rainfall would have an average recurrence interval well in excess of 1,000 years. However, GKY believes it is best not attempt to link effective rainfall depths to average recurrence intervals.

For this analysis, the ROG models used 6-, 9-, and 12-inches of effective rainfall in the form of a NOAA 24-hour, Type C hyetograph. Anecdotal flood depth information for Hurricane Matthew provided by the City, as listed in Table 1, was used to check the validity of the ROG existing condition model. This validity check involved adjusting the recorded rainfall and HEC-RAS modeling parameters until a good match was achieved between the model results and anecdotal data. Figures 6, 7, and 8 show very close agreement between the aerial photographs (taken at 7:00 a.m. on October 9, 2016) and the ROG model results. Trial-and-error modeling showed that a conversion factor of 81% (i.e., assuming that 81% of the recorded rainfall contributed to runoff) produced the best match.

5. Vertical Datum

The **National Vertical Datum of 1988 (NAVD88)** was used throughout this study. All elevations used in the modeling and improvement alternatives are referenced to the NAVD88 datum.

6. Modeling Configurations (Scenarios)

GKY created three groups of HEC-RAS modeling scenarios for this analysis:

- Hurricane Matthew,
- Unimproved (Existing Conditions for D6, D9, and D12 rainfalls), and
- Improved (Proposed Conditions for D6, D9, and D12 rainfalls).

Due to differing geometry files, each scenario required a "no-rain" model run to set initial heads and flows in the Greenbrier drainage system. The results of the no-rain runs were used as initial conditions in the subsequent modeling.

As described elsewhere in this report, scores of runs were made during the resiliency analysis. HEC-RAS automatically assigns file extensions, and after multiple runs the file extensions can become somewhat random looking. Given the complexity of relationships between the different files, and that many of them occur in more than one scenario, best practice is to track the filenames carefully and not rename them. Starting over to create a clean slate of file names is not practical because the run times involved are so long—and because files occur in multiple scenarios, HEC-RAS will not name them consistently anyway. You may or may not, for example, end up with a run that has file extensions g06, p06, u06, etc. because geometry, terrain, roughness, unsteady flow, and restart files are often shared between scenarios.

Table 2 lists the computed high water elevations for the three design storm events (D6, D9, and D12) for the unimproved and improved scenarios. Table 5 documents the HEC-RAS files used in each scenario with the modeler's log notes.

When Hurricane Matthew occurred in October 2016, two of the three culvert barrels under Greenbrier Parkway were blocked with sediment and debris—a condition reflected in the Hurricane Matthew run geometry[4]. These barrels were subsequently cleaned by the City and were modeled as clean and unobstructed for both design scenarios (unimproved and improved).

7. Modeling Results

Whereas 1D SWMM models typically run in a few minutes, ROG models take several hours. Depending on the length of the simulation and the computational capability of the computer used, run times for this project ranged from 3 to 22 hours. Run times must be considered carefully when investigating alternative scenarios.

The models and data files prepared for this study are very large. Each scenario has a combination of underlying linked data files, and scenarios share common files. The total storage capacity required for all the archived HEC-RAS runs exceeds 14 GB.

Stable modeling runs were obtained for all modeling scenarios. Continuity errors were low and Courant-condition and high-velocity checks consistently indicated numerically stable results. GKY engineers used HEC-RAS' RAS Mapper module to review the results, checking the hydraulic routing for potential stability problems or any type of flow anomaly.

After scores of trial-and-error model runs, two engineering conclusions can be supported using the profile plots in Figures 10 through 12. First, most of the existing culvert crossings have small head losses, even for very large storms. The head losses are small because the velocities through the backbone drainage system are low—typically less than 3 feet per second. The drainage profiles are very flat and the major culvert crossings occur in series, so they "hold back" the flows. Culvert improvements at these locations are unnecessary because the existing barrel capacity is sufficient to avoid causing a significant rise in the hydraulic grade line.

Secondly, as indicated in Table 6 and Figure 10, the culvert invert at I-64 sets the permanent pool elevation for 130.5 acres of upstream impoundments. If a new low-flow culvert could be installed under I-64, the permanent pool elevations in these lakes and canals would be lowered accordingly. The trial-and-error model runs demonstrated that this single improvement would generate the greatest resilience benefits, due to the additional flood storage that would be created. That additional volume is significant and would make a difference.

The ROG models produced for this study have exceptional capabilities for computing flood elevations and flows through culverts, but they are not like other urban drainage models that include flows in smaller pipes. However, profiles can be generated precisely, as plotted in Figures 10 through 12. The real benefit of these profiles is the graphical depiction of the effects of each scenario. GKY engineers focused on culvert crossings where the profiles show the largest head loss. Improving culvert crossings by adding conveyance capacity (in the form of additional culvert barrels or replacing the old barrels with a larger cross section) is unnecessary

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[4] Collins Engineers, Inc. prepared an inspection report, dated December 15, 2016, of selected structures in the Greenbrier Drainage system. GKY used information from this report to prepare the Hurricane Matthew scenario.

where the existing culverts have relatively minor head losses. In this respect, the City can avoid wasting money on costly resilience projects that would produce little hydraulic improvement.

As with all models of this size and complexity, a great amount of detailed input data is required. Because it is not feasible to collect all the required data in the field, it becomes necessary to make educated guesses about inverts and pipe and channel dimensions and geometries in some locations. GKY used data from the City's 2011 Indian River MDPU, which had surveying data for many of the significant culvert crossings. Where future designs and studies will be based on these models, engineers are strongly encouraged to field-verify all items that may critically impact their designs.

The maximum computed water surface elevations at the reference nodes (shown in Figure 1) are listed in Table 2, with the peak 100-year design storm elevations computed using the SWMM model in the 2011 Indian River MDPU. The table lists D6, D9, and D12 peak water surface elevations for improved and unimproved conditions.

The improved-condition modeling results presented in this report assume that the drainage and stormwater systems will be well maintained. If debris builds up to block drainage structures, or channels fill with silt, flooding will likely be more severe than computed and represented in this report. Debris can be a significant problem in natural channel outfall systems and should be monitored carefully to ensure that these systems function properly. Likewise, dense vegetation growth can significantly worsen local flooding. Channels that are relatively free from vegetation problems in the winter months can have significantly less conveyance capacity in the summer months. Depending on the type of plant growth, the change in conditions can be dramatic.

Table 5 documents the HEC-RAS scenario files and run log for this project.

8. Potential Improvement Projects

GKY and the City have identified the following potential improvement projects, indicated by the green polygons in Figure 9, to reduce street and parcel flooding in the Greenbrier Drainage Area:

1. **Indian River High School Lake Weir:** Lower the existing weir at Indian River High School Lake from a crest elevation of 8.1 to 6.1 feet;
2. **South Military Highway Culvert Replacement:** Replace the existing 6'Hx10'W box culvert under South Military Highway with a double 8'x8' box culvert at new invert elevations 6.20 (upstream) to 6.00 (downstream); and
3. **I-64 Additional Culvert:** Add a 60" circular culvert under I-64, just to the east of the existing triple 9'x9' box culvert, from invert 6.39 (upstream) to 5.0 (downstream).

Table 3 contains a brief synopsis of each project with comments and construction and implementation issues. Appendix A contains the cost opinions in 2020 dollars.

The existing South Military Highway culvert is nearing the end of its useful life and has been identified as a hydraulic bottleneck in previous studies, including the 2011 Indian River Master Drainage Plan Update. The unimproved scenario profile in Figure 10 clearly indicates this location is a chokepoint.

The modeling results demonstrate that a new 60" circular culvert under I-64 will produce the resiliency improvements sought by the City. These three improvement projects can drop peak flood elevations versus existing conditions by more than 1.5 feet in upstream areas (Table 2) and reduce the time that roadways and intersections are flooded and impassable by more than 33 hours (Figure 14). These results are obtainable because more than 350 acre-feet of usable flood storage can be created by lowering the permanent pool elevations of the Greenbrier impoundments. A 60" diameter was used in the modeling because it is the upper limit, according to VDOT, for jack-and-bore construction.[5] This HEC-RAS modeling indicates that six days after the peak of the D9 design storm event, the water surface elevation just upstream from I-64 would be 8.96 feet. Table 6 computes the drawdown from 8.96 to 7.42 feet at an additional five days, albeit along a flat, asymptotic curve. As water surface elevations drop, the controlling inverts shift from location to location. Figure 10 shows existing culverts with dark gray shading. 7.42 feet—at the north Greenbrier Mall entrance—would be the new controlling invert for most the Greenbrier impoundment system when the proposed new barrel is added under I-64.

The 60” culvert provides the resilience required by this project. However, if the culvert were to become blocked before the upstream impoundments drop to their new permanent pool elevations, the 350 acre-feet of new flood storage could be compromised. Adding a second, parallel culvert would provide redundancy for maintenance purposes, and would reduce the drawdown time computed in Table 6 (as would using a larger diameter culvert). However, the likelihood of encountering back-to-back D9 or higher storm events is very small, and the key would be for City maintenance crews to ensure that impoundment levels are reasonably low during the dry-weather days before a forecast major storm event. If upstream impoundment levels are elevated and the new culvert is not flowing, maintenance should be performed promptly. The construction of a parallel culvert is a matter of redundancy and risk reduction. The desired results can be achieved with a single, 60” barrel.

GKY and City engineers considered many alternatives to reduce the elevation and duration of flooding in the Greenbrier Drainage Area. Some were discussed and removed from consideration for anticipated feasibility issues (such as re-routing and diverting runoff to adjacent watersheds), some were investigated in more detail but not modeled (such as using portable pumps to lower lake levels ahead of forecast storms), and many were modeled to investigate their effectiveness. The list of alternatives identified in this report is not exhaustive, however, they do constitute potential projects that offer reasonable potential to meet resilience objectives. Lots of potential projects were dropped from further consideration because the simply would not produce enough improvement to warrant their likely expense.

Pumping lake levels ahead of forecast storms is one example of a non-modeled alternative that was ruled out from further consideration. The City currently uses trailer pumps to draw impoundment water levels down ahead of forecast major storm events in the Forest Lake and Elmwood Landing drainage systems. GKY investigated options to pump the Greenbrier impoundments using a Godwin Dri-Prime CD225M Pump (the same pump used elsewhere by the City). The Greenbrier Lake and canal system has a 130.54 acres of surface area upstream from I-64 with permanent pool elevations set by the I-64 culvert invert. The Godwin pump has a maximum capacity of 3,240 gpm. Assuming the average delivery in the field would be around 2,500 gpm, it would take 8 pumps to achieve a 72-hour drawdown of 2 feet. A manifold system would have to be constructed for the force mains, which would significantly affect the pump curves. Fuel consumption for 8 pumps for 72 hours would be almost 3,400 gallons. A 24- or 30-inch force main (or equivalent), a parking area for pumping operations, and debris-resistant inlet and outlet structures would have to be constructed. The cost to build the force main and intake station(s) could be nearly as great, if not greater, than the cost of a culvert crossing improvement—particularly if the $330,000 or so cost to purchase the pumps, hoses, and supporting equipment is added. Figure 13 shows the drawdown rates and pump specifications involved in this approximation.

Other improvement project concepts that GKY discarded included:

- Installing a new culvert under I-64 from Greenbrier Lake using a new outfall northeast of Montauk Lane—which would be much more expensive than the 60” culvert described above; and

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[5] VDOT generally consider two types of construction for the installation of a new culvert under an existing highway: jack-and-bore or microtunneling. If soils are suitable (having suitable water table, strength, and cohesive properties) jack and-bore installation may be allowed. However, microtunneling is more accurate, produces less problems with roadway subsidence, and works far better in poor soil and high water table conditions.

- Enlarging the culverts under Eden Way North just east of the intersection with Greenbrier Parkway—which would lower upstream water levels by approximately 0.3 feet but would cost over $1,000,000 and would not be needed given the other three recommended improvements.

9. Grant Opportunities

The potential projects identified in this study could improve flood protection by reducing the elevation and duration of street and parcel flooding in the Greenbrier Drainage Area. Some enhancements could be made to provide water quality benefits, as described in Section 11, below. However, the conceptual configurations and cost opinions in this study are focused to provide flood protection and resilience benefits. Adding water quality enhancements would increase costs but may be worthwhile to obtain grant funding.

Under normal circumstances, these projects could qualify for grant funding, like those listed in Table 4. However, at the time this write-up is being prepared[6], an unusual degree of uncertainty surrounds grant funding for public works projects in Virginia. The Covid-19 pandemic has led to high rates of unemployment and business closings, and tax revenues have been directly impacted. The Virginia State Legislature was called into special session to deal with a $2.7 billion projected budget shortfall. Line items in the State's budget that were previously approved have been held up, deleted, or otherwise scrutinized. For example, DEQ pulled its intended, annual solicitation for SLAF grant applications. Likewise, the federal government is struggling with unprecedented deficits during the final stages of presidential, senatorial, and congressional elections. At the federal level, pandemic relief thus far has focused on business and individual payouts—not on public works projects.

Two new grant opportunities merit careful monitoring. First, FEMA's BRIC grants (https://www.fema.gov/bric) incentivize state agencies and local governments to undertake hazard mitigation projects to reduce risks from disasters and natural hazards. BRIC replaces FEMA's Pre-Disaster Mitigation program and is aggressively funded by a 6% set-aside tied to federal post-disaster grants. The BRIC program has the potential to fund large-scale resilience projects, such as those identified in this Greenbrier Resilience Plan. On August 7, 2020, VDEM announced that it was opening the application period for FY2020 BRIC and FMA grants, both of which are nationally competitive[7]. In FY2019, FEMA identified $34 million in projects for further review in Virginia. Award announcements were expected to begin in the fall of 2020. Information on FY2020 BRIC and FMA grants can be reviewed at https://www.fema.gov/sites/default/files/2020-09/fema_nofo-overview-webinar_presentation_August_2020.pdf. Nationally, $500 million and $160 million have been budgeted for FY2020.

Secondly, the Commonwealth of Virginia recently continued the Virginia Shoreline Resiliency Fund as the Virginia Community Flood Preparedness Fund[8], to be administered by VRA and DCR. The fund is intended to mitigate future flood damage, with priority given to projects that implement community-scale mitigation activities or use nature-based solutions. Details remain to be worked out, but this fund is expected to have $40 to $50 Million annually for grants and loans focused on flood resilience projects. Funding will be generated from Virginia's Regional Greenhouse Gas Initiative carbon auctions, with 45% of those proceeds going to CFPF. The enabling legislation requires that 25% of the CFPF awards be used to help low-income communities—which could make the Greenbrier improvement projects less competitive because the drainage area is mostly commercial and not low-income.

It will take the City some time to vet these potential flood resilience projects in sufficient detail to schedule them for construction—most likely as capital improvement projects. Design and permitting issues must be worked through, and projects involving VDOT or private property impacts require additional coordination. The

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[6] Fall, 2020.

[7] The application period for BRIC and FMA grants was set to close on November 10, 2020. Generally, these grants are expected to cycle in the late summer or fall.

[8] See https://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+SB320 for legislative summary information.

combination of design, permitting, budgeting, right-of-way acquisition, utility conflict resolution, public involvement, matching requirement approval by City Council, and other processes may take several years. When the City decides to fully commit to building a project, grants should be considered. Some grants can be used for design and planning work, in which cases the City may consider offsetting those expenses with grants. Sometimes, once local governments anticipate that a project is going forward, and that grants can be applied for, the application deadlines may help move these processes along. Given the size and complexity of the potential projects identified in this study, and the pandemic budget impacts, it may be that currently-authorized-and-available grants will not be available for use. Nevertheless, certain opportunities can be monitored so that, at the right time, the City can submit grant applications.

A well-developed benefit-cost analysis will be crucial for grant applications. Because Virginia has a mandated emphasis on social justice criteria in grant awards, these Greenbrier grant applications will compete against proposals for projects that will undoubtedly be more attractive from a social justice perspective. Greenbrier is a thriving commercial district with housing pockets that would be unlikely to qualify for social justice points. Doing a good job with benefit-cost analyses should make the Greenbrier projects more competitive and time and effort must be allotted accordingly.

Table 4 identifies the types of grant funding opportunities that may be applicable to the projects identified in this study. These sources include both federal and state grant funds, and most have some history as recurring offerings (or are new vehicles for retired opportunities). The funding source programs focus on flood mitigation and prevention, flood resilience, water quality improvement, and creating innovative flood solutions.

Other agencies were evaluated for applicable source funding and the list in Table 4 is not exhaustive. Some agencies reviewed do not provide grants to support the specific flood improvement and water quality projects identified in this report, and grant opportunities expected to pay less than $100,000 were generally omitted—because the cost of pursuing and complying with the terms of small grants is typically too high for the benefits received.

10. Potential Permitting Issues

Permitting for these projects should be straightforward. For culvert crossing and structural improvements, the permitting requirements should be the same as for similar projects undertaken by the City in recent years. Permitting processes typically involve JPAs; agency coordination through a pre-application meeting; field delineation and regulatory confirmation of jurisdictional wetlands, streams, and WOTUS; interaction with VMRC, DEQ, and the Corps of Engineers; preparation of Erosion and Sediment Control and Storm Water Pollution Prevention Plans to apply for a VSMP permit; and payment of applicable fees.

If federal funds are involved—for example if federal grant money is used for a project—additional permitting requirements would be applicable, potentially involving cultural resources surveys, heightened NHPA and ESA investigations, and enhanced environmental investigations (such as those required under NEPA).

The City often uses in-house staff to obtain permits for these types of projects, with outside support for surveying of wetland markers and preparation of exhibits. City staff has developed a good rapport with regulators and is fully capable of handling the permit applications for these projects.

Depending on the project scale, lowering permanent pool elevations of the impoundments could be accomplished using a general or nationwide permit. Regional Permit 16-RP-05[9] authorizes all aspects of pond construction, such as mechanized land clearing, dam construction, placement of water control structures and spillways, and flooding. The impacted area of WOTUS includes the wetlands, streams, and other waters of the United States that are permanently (and/or temporarily) filled, flooded, cleared, ***or drained*** as a result of the regulated activity. 16-RP-05 is restricted to projects that will not cause the loss of greater than one-half

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[9] 16-RP-05 expires on June 9, 2022, which may affect how and when the City pursues these projects. Re-authorization of this permit may or may not occur.

acre of non-tidal waters, including the loss of no more than 1,000 linear feet of stream bed. The District Engineer (of the Norfolk District Corps of Engineers) may grant waivers to the 1,000-foot limit if the proposed activity will result in no more than minimal adverse direct and indirect effects. The potential projects identified in this Greenbrier Resiliency Plan report are unlikely to create a significant reduction of non-tidal waters—subject to regulatory interpretation and agreement. Permitting under 16-RP-05 would significantly shorten the regulatory approval process compared to options involving any type of general permit.

If projects involve mitigation to offset wetland impacts, five years of monitoring will be required, including spraying for invasive species—which should be considered when developing budgets. However, depending on the amount and type of planting, these projects could increase wetland coverage in the watershed.

Generally, regulators react favorably to these types of projects, particularly where environmental benefits result—such as from benching and planting new wetland cover. Increased public safety, through flood reduction, will provide a basis for the purpose and need justifications. Involving regulators early in the planning and engineering processes leads to better regulatory outcomes.

Work at the Indian River High School Lake may best be approached as a BMP retrofit rather than for other uses, such as recreation or habitat creation. This lake has been in the City's BMP inventory since the 1980s, and modifications should not be approached as entirely new construction.

Much of the impoundment shoreline in the Greenbrier Drainage Area is located along roadways and in commercial districts. Where residences abut the impoundments, the City may offer shoreline enhancements, such as the creation of benches and plant treatments to avoid the appearance of bare soil at the water's edge. Rational citizens should be supportive of these projects, given the additional flood protection benefits they will receive. Eventually, flood insurance premiums should be lower as a result of these projects.

The City's Flood Insurance Rate Maps (effective 12/16/2014) do not have mapped flood zones in the Greenbrier Drainage Area south of I-64. Between I-64 and the outfall from Indian River High School Lake to the north, the main drainageway is mapped as Zone X[10]. Between the outfall from Indian River High School Lake and Indian River the floodplain is mapped as Zone AE[11]. There is no regulatory floodway in any of these areas. However, strictly speaking and according to NFIP requirements, whenever a proposed project will cause a vertical or horizontal shift in the floodplain, a CLOMR application to FEMA is required. CLOMR and LOMR processes can be expensive and take many months to complete. The City's floodplain administrator will have to decide whether a CLOMR application should be filed. If so, the implementation schedule and budget for each project should be adjusted accordingly.

11. Water Quality Credit Potential

The potential improvement projects identified in this study could enhance flooding resiliency in the Greenbrier watershed—by lowering permanent pool elevations in the backbone system of lakes and canals, and increasing the conveyance capacity of the culvert crossings at hydraulic choke points (such as the South Military Highway culvert). Because the projects involve replacing or modifying existing culverts and control structures—rather than creating new impoundments—they will not directly generate water quality benefits themselves. However, there are opportunities to generate water quality benefits.

Lowering the weir crest, and permanent pool, at Indian River High School Lake (from 8.2 to 6.2 feet) creates an opportunity to retrofit the lake to meet DEQ's design criteria for a Level 1 or Level 2 wet pond—which would provide substantial nutrient reduction credits towards the City's required Chesapeake Bay TMDL reductions. The area draining to the lake is approximately 3,800 acres with an imperviousness of approximately 48 percent. DEQ's VRRM spreadsheet indicates the treatment volume required to convert the

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[10] Zone X is sometimes casually referred to as the 500-year floodplain. It includes the 0.2% annual chance event, areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile.

[11] Zone AE is commonly called the "100-year floodplain." It includes a base flood elevation for the 1% annual chance flood.

lake to a Level 1 pond is 174 acre-feet. Using hydrographic survey information provided by the City, the lake volume at elevation 6.2 is approximately 209 acre-feet. The lake would require the construction of a sediment forebay with a volume of approximately 26 acre-feet at the south end, and the creation of aquatic benches. City staff indicated in prior discussions that cutting trees on the edge of the lake and excavating out from the normal pool to create benches was not an option. Dredge material from the forebay creation could be used along the lake edge to create aquatic benches, but without lowering the elevation of the lake, some type of containment wall—possibly made using sheet piles, gabions, or placed riprap—would likely be required to contain the fill and create the benches, adding significant cost to the retrofit. Lowering the lake would expose the bottom around the edge of the lake that could be excavated or graded and planted to create an aquatic bench.

Preliminary calculations show that as a Level 1 wet pond, Indian River High School Lake would provide nitrogen and phosphorus reductions in excess of 5,600 and 1,800 pounds respectively, and almost 900,000 pounds of sediment using DEQ's established removal efficiencies of 20%, 45%, and 60% for nitrogen, phosphorus and total suspended solids. However, it is unlikely that the City would be allowed to take full credit for the nutrient reductions as if the retrofitted lake were a new BMP, despite it not being reported to DEQ as an existing stormwater BMP. Based on the experience of other localities that have retrofitted large water bodies for nutrient reduction credit, DEQ will require the existing lake efficiencies to be computed, and the City would be allowed to take credit for the difference between the reductions provided as a Level 1 wet pond, and the calculated reductions in its existing state. Using the methodology outlined in DEQ's Chesapeake Bay TMDL Action Plan Guidance Memorandum No. 15-2005 dated May 18, 2015, a case could be made for a 40-percent reduction in nutrient removal efficiencies for the existing pond due to the age of the lake, and missing water quality features such as a sediment forebay and aquatic benches. Even with the reduced credits allowed by DEQ, a Level 1 retrofit of the lake would provide enough nitrogen and phosphorus credits to meet half of the City's Chesapeake Bay TMDL reductions required during its second VSWMP permit cycle.

If the City considers retrofitting this lake, it should first meet with DEQ to discuss the project and the nutrient reductions the City expects to receive from the project. While DEQ's guidance document is straightforward concerning the nutrient credits allowed through BMP retrofits, given the size of the upstream watershed and the significant nutrient credits the City could claim, getting DEQ's blessing on the project will be a very important first step.

There are dozens of large impoundments linked to the backbone drainage system in this watershed. As indicated in Figure 10, the culvert crossing under I-64 is sufficiently elevated to establish minimum permanent pool elevations above 9.63 feet in the upstream lakes and canals. If a new culvert crossing can be built under I-64 at lower invert elevations, the permanent pool elevations would be lowered in the upstream impoundments. This lowering would provide increased flood storage capacity that could significantly reduce flood impacts from extreme events.

Where permanent pool elevations are lowered, there can be opportunities to establish aquatic benching and potentially generate water quality credits. However, the degree to which credits could be generated would depend upon detailed subaqueous surveys and soils testing and engineering yet to be performed. Given the potential impact of retrofitting Indian River High School Lake to a Level I wet pond and the potential straightforward nature of that project, constructing benches elsewhere in the watershed would be more expensive and problematic. Still, as planning moves forward for resilience projects, such potential can be considered.

Given the relatively steep side slopes of the lakes, canals, and roadway embankments along the backbone system, it may not be feasible to create aquatic benches in locations with narrow rights-of-way. The opportunity for water quality credits is therefore limited by the side slopes of the lakes. Aquatic benching along the perimeters would be difficult without major excavation along the banks or placing sheet pile walls and backfilling behind them, and because the lakes tend to be narrow, creating sediment forebays could restrict flood flows and have negative impacts upstream. For example, creating a sediment forebay in the Indian

River High School Lake may require the construction of a weir between 500 and 700 feet long that could pass large flows with minimal impacts upstream.

The lowering of the I-64 culvert crossing could also impact wetland BMPs within VDOT's right-of-way. Because the City and VDOT have interconnected MS4 service areas, they are encouraged to collaborate on water quality BMPs and can share the costs and nutrient credits from water quality BMP projects.

12. Caveats

The modeling produced for this study is built on limited data and was prepared for a specific purpose (to identify potential flood reduction improvements for a resiliency plan). Some input data was estimated using engineering judgment for modeling purposes. These models should not be used for other engineering or planning purposes without first verifying any data that may affect the outcome.

The HEC-RAS software used for this study is not an urban drainage model. While it can compute—very handily—flows in channels, ditches, creeks, and rivers, it does not perform pipe network calculations. GKY has adapted it for urban modeling by constructing culverts (using FHWA methodology) to link low spots in the terrain, but HEC-RAS cannot process flows through pipe *networks*. It is, however, extremely good at computing 2D overland flow on a 3D terrain—something 1D models like SWMM cannot do at all. While it is possible to perform combined 1D/2D modeling, that work is quite involved and expensive. HEC-RAS produced very good results for this study, but engineers must appreciate certain limits to interpret them correctly.

- Flood depths and water surface elevations in locations that **are** hydraulically connected to the outfall—such as the backbone system of canal-sized ditches and impoundments along Greenbrier Parkway and Eden Way North—should be interpreted just as with 1D models. They have been computed using robust engineering equations based on the input data.
- Flood depths and water surface elevations in locations that **are not** hydraulically connected to the outfall—such as low spots in roadway gutter lines or along unmodeled, upstream drainage systems—are the result of ponding (or puddling) after the rainfall has been applied and overland flow equations have been solved. These results could be expected if the drainage pipes were blocked. For extreme events, such as the design storms modeled for resiliency planning in this study, the smaller pipe systems do not have a significant effect on the outcome. Incorporating them would require switching to a combined 1D/2D model at considerable added expense.

The goal of this type of study is not to relieve all flooding, but rather to identify potential improvements that can be feasibly constructed. Areas such as wetlands, woodlands, deep ravines, large open spaces, ball fields and parks, and along elevated railroad or highway embankments often do not require improvements unless there is a specific reason to construct them. Neighborhood and commercial parcel drainage and stormwater systems are neither required nor designed to accommodate flooding from extreme events such as the 50-year storm.

Grant funding opportunities are in constant flux and should be monitored continually—particularly those that have significant funding potential. CIP projects typically take years to progress from conception to construction, and lead times for grant applications should be accommodated in the project schedule.

The backbone drainage system, as modeled for this study, assumes a well-maintained system. Debris, sediment, pipe collapses, and other maintenance issues can cause very real flooding that must be addressed. In this respect, this study highlights capacity issues rather than maintenance issues (which are best resolved from inspection or citizen reports). There is good reason to create the models in this manner. If poor maintenance conditions are modeled, the capacity problems could easily be masked to the extent that public funds could be spent unnecessarily.

GKY is providing the models completed for this study to the City in the hope that future engineering efforts will build upon this effort. The responsibility for appropriate use of these models rests with the engineers who modify and adapt the data for specific uses. HEC-RAS ROG models are not like 1D SWMM models, because smaller drainage pipes are generally omitted in 2D resiliency models. Anyone adapting these models must be aware of the limitations and assumptions and make changes appropriately.

Where improvements identified in this study occur in series, such projects must be constructed in the correct sequence. Generally, downstream improvements must be made before upstream improvements are constructed to prevent flooding that could result if conveyance is improved upstream before increased flows can be accommodated in the downstream system.

The potential improvements identified in this study will need further investigation before they can be carried forward as feasible projects. While (seemingly) reasonable assumptions have been used to estimate the expense of each project, there is significant budget uncertainty due to the degree and complexity of the required construction. There can be substantial utility conflicts to resolve, and the data required to develop accurate improvement plans and cost estimates is not yet available.

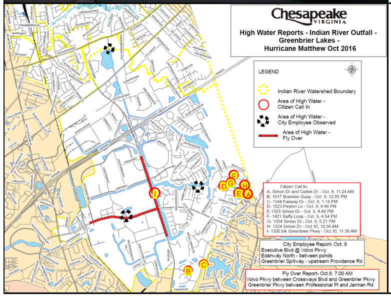
FEMA flood insurance studies and rate maps are the definitive sources of floodplain limits and elevations in all cases. The models developed for this plan are specific design scenarios—THESE RESULTS ARE NOT TO BE CONSTRUED AS INDICATIVE OF EXPECTED WATER SURFACE ELEVATIONS FOR THE PURPOSES OF FLOODPLAIN MANAGEMENT AND/OR INSURANCE REQUIREMENTS. The models developed for this plan could be adapted for use in the National Flood Insurance Program and submitted to FEMA for approval, but until they are vetted and approved through that process, the published flood insurance studies and rate maps remain fully in effect.

13. Contact Information

Liz Scheessele, PE, CFM, ENV SP and Crystal Bloom, PE, LEED GA (757.382.6393) managed this project for the City, and Jake Lewis, PE, Chad Brittle, EIT, and Olive Morrill provided engineering support. Sean Bradberry, ENV SP served as the project engineer, and John Paine, PE, PH, CFM (757.346.4422) served as the project manager for GKY.

Table 1. Hurricane Matthew Calibration Data

Item Thumbnail	Description	Use In Calibration	Source Filename (as provided by City)	Comments
	Greenbrier Parkway. 07:00 on 10/9/2016.	Edge of water at 07:00 on 10/9/2016 should match edge of water in the calibrated model.	Oct 9 2016 7AM.jpg	Note one-space difference in file name vs. "Oct 9 2016 7 AM.jpg" (although this is a completely different photo).
	Eden Way North and Stephanie Way Intersection. 07:00 on 10/9/2016.	Edge of water at 07:00 on 10/9/2016 should match edge of water in the calibrated model.	Oct 9 2016 7 AM.jpg	This is probably the second-most useful piece of calibration data.
	Volvo Parkway. Approximately 07:00 on 10/9/2016.	Edge of water at 07:00 on 10/9/2016 should match edge of water in the calibrated model.	IMG_4390.JPG	Exact time is uncertain.
	Executive Boulevard looking north across Eden Way North. No timestamp on photo.	Using flooded car at intersection as a reference, should have approximately two feet of flooding in this intersection (at the gutter line).	eden way and executive Oct 9 2016 7AM.docx	Eden Way North is crowned, and flooded car is at the gutter line.
	Executive Boulevard looking north over Eden Way North Intersection. No timestamp on photo.	Maximum water surface elevation should be greater than or equal to edge of water in the photo.	Chesapeake and Flood Control Measures Next Steps 11-30-16.pptx	This photo is redundant and not as useful as the photo of the same intersection, above. It appears to have been taken after the above photo.
	Downstream of South Military Highway, looking upstream (south). No timestamp on photo.	Maximum water surface elevation should be greater than or equal to edge of water in the photo.	Outfall upstream Military.docx	Velocity appears to be moderate.

Item Thumbnail	Description	Use In Calibration	Source Filename (as provided by City)	Comments
	Greenbrier Parkway looking south towards Volvo Parkway. No timestamp on photo.	Maximum water surface elevation should be greater than or equal to edge of water in the photo.	Chesapeake and Flood Control Measures Next Steps 11-30-16.pptx	It is difficult to pinpoint the location of this photo, but it appears to be in front of the Wells Fargo branch on Greenbrier Parkway.
	High-Water Reports.	Calibrated model should show maximum water surface elevations reaching these locations.	greenbrier resiliency hurricane matthew map.pdf	No elevations listed.

NOTES

1) This table is a summary of data provided by the City. GKY used this data to calibrate the Hurricane Matthew HEC-RAS model.
2) The City provided other data, such as maps with point locations of flooding, that do not contain specific information that can be used for model calibration.
3) The information listed above was helpful in producing a calibrated model that matches reported conditions on the ground.
4) See source files for full-size items.

Table 2. Maximum Computed Water Surface Elevations from Design Storms

		MAXIMUM COMPUTED WATER SURFACE ELEVATIONS (NAVD88)										
		2011 SWMM Model*2	Unimproved Condition			Improved Condition			Difference*3	Difference (Improved - Unimproved)		
	Column Number:	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Reference Node*1	Location	100-Year Existing*4 (ft)	D6 (ft)	D9 (ft)	D12 (ft)	D6 (ft)	D9 (ft)	D12 (ft)	D6$_{unimproved}$ minus SWMM$_{100}$ [2] - [1] (ft)	D6 [5] - [2] (ft)	D9 [6] - [3] (ft)	D12 [7] - [4] (ft)
Backbone Drainageway												
121	Upstream of Yupo Ct	15.38	13.64	16.40	18.29	11.95	14.77	17.02	-1.74	-1.69	-1.63	-1.27
129	Upstream of Executive Blvd	15.38	13.64	16.40	18.41	11.96	14.77	17.26	-1.74	-1.68	-1.63	-1.15
145	Upstream of Greenbrier Pkwy	15.37	13.64	16.40	18.42	11.95	14.77	17.28	-1.73	-1.69	-1.63	-1.14
159	Upstream of Volvo Pkwy	15.33	13.63	16.39	18.41	11.95	14.76	17.28	-1.70	-1.68	-1.63	-1.13
323	Upstream of Eden Way N	15.31	13.62	16.37	18.39	11.95	14.74	17.25	-1.69	-1.67	-1.63	-1.14
324	Upstream of Greenbrier Mall Access (S)	14.96	13.32	15.65	17.93	11.79	14.04	16.21	-1.64	-1.53	-1.61	-1.72
336	Upstream of Greenbrier Mall Access (N)	14.90	13.17	15.31	17.43	11.63	13.70	15.85	-1.73	-1.54	-1.61	-1.58
357	Upstream of I-64 Eastbound Ramp	14.85	12.99	14.99	17.03	11.42	13.36	15.39	-1.86	-1.57	-1.63	-1.64
373	Upstream of Greenbrier Pkwy NB Loop	14.82	12.92	14.88	16.85	11.32	13.23	15.21	-1.90	-1.60	-1.65	-1.64
375	Upstream of I-64	14.79	12.73	14.70	16.64	11.06	13.00	14.93	-2.06	-1.67	-1.70	-1.71
377	Upstream of I-64 Westbound Loop	14.76	12.49	14.56	16.55	10.71	12.83	14.79	-2.27	-1.78	-1.73	-1.76
379	Upstream of Greenbrier Pkwy NB Ramp	14.74	12.37	14.44	16.35	10.47	12.65	14.56	-2.37	-1.90	-1.79	-1.79
412	Downstream of Greenbrier Pkwy NB Ramp	14.72	12.26	14.34	16.19	10.38	12.51	14.38	-2.46	-1.88	-1.83	-1.81
422	Upstream of Woodlake Dr	14.72	12.25	14.32	16.18	10.36	12.47	14.35	-2.47	-1.89	-1.85	-1.83
430	Downstream of Woodlake Dr	14.68	12.19	14.20	15.99	10.28	12.30	14.02	-2.49	-1.91	-1.90	-1.97
460	Upstream of S Military Hwy	14.52	12.13	14.12	15.93	10.16	12.11	13.80	-2.39	-1.97	-2.01	-2.13
464	Downstream of S Military Hwy*5	13.58	9.46	10.35	11.43	8.74	10.28	12.06	-4.12	-0.72	-0.07	0.63
468	Indian River High School Lake	11.99	9.22	9.97	11.01	8.21	9.72	11.63	-2.77	-1.01	-0.25	0.62
471	Upstream of Providence Rd*6	5.96	5.41	6.03	6.44	5.29	6.08	6.63	-0.55	-0.12	0.05	0.19
480	Indian River Outfall*6	4.42	1.86	2.38	2.80	1.69	2.28	2.76	-2.56	-0.17	-0.10	-0.04
Impoundments Loop Behind Greenbrier Mall												
180	West of Shepherds Gate	15.34	13.70	16.62	18.62	12.00	14.98	17.69	-1.64	-1.70	-1.64	-0.93
241	Upstream of Eden Way N	15.34	13.70	16.62	18.62	12.00	14.98	17.69	-1.64	-1.70	-1.64	-0.93
244	South of Cypress Pl	15.31	13.62	16.37	18.39	11.95	14.75	17.25	-1.69	-1.67	-1.62	-1.14
Impoundments Loop Behind Joe's Crab Shack												
341	North of Crossways Blvd	17.59	13.25	15.51	17.93	11.73	14.20	16.79	-4.34	-1.52	-1.31	-1.14
346	West of Greenbrier Pkwy	15.76	13.24	15.45	17.78	11.72	14.10	16.62	-2.52	-1.52	-1.35	-1.16
Impoundments Along Eden Way N												
266	West of Crossways Blvd	16.46	13.91	16.59	18.46	12.30	15.03	17.70	-2.55	-1.61	-1.56	-0.76
311	West of Stephanie Way	16.56	13.89	16.56	18.46	12.29	15.01	17.68	-2.67	-1.60	-1.55	-0.78
322	West of Greenbrier Pkwy	16.53	13.88	16.53	18.47	12.26	14.98	17.67	-2.65	-1.62	-1.55	-0.80
Other Locations												
197	Inside Simon Dr Loop	18.16	14.58	19.58	20.02	13.56	17.26	19.95	-3.58	-1.02	-2.32	-0.07

Listed in downstream order

		MAXIMUM COMPUTED WATER SURFACE ELEVATIONS (NAVD88)										
		2011 SWMM Model*2	Unimproved Condition			Improved Condition			Difference*3	Difference (Improved - Unimproved)		
	Column Number:	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Reference Node*1	**Location**	**100-Year Existing*4 (ft)**	**D6 (ft)**	**D9 (ft)**	**D12 (ft)**	**D6 (ft)**	**D9 (ft)**	**D12 (ft)**	**D6$_{\text{unimproved}}$ minus SWMM$_{100}$ [2] - [1] (ft)**	**D6 [5] - [2] (ft)**	**D9 [6] - [3] (ft)**	**D12 [7] - [4] (ft)**
360	East of Bostwyck Pl	17.78	17.44	18.31	19.98	17.44	18.30	19.96	-0.34	0.00	-0.01	-0.02
385	West of Woodlake Cir	15.64	13.36	14.98	16.37	13.17	14.84	16.23	-2.28	-0.19	-0.14	-0.14

NOTES

1) See Figure 1 for reference node locations.
2) This watershed has undergone changes in its drainage infrastructure since the 2011 SWMM models were created.
3) Methodology differences between HEC-RAS Rain-on-Grid and SWMM modeling are described in the report text, and are significant. Comparisons are for information purposes only.
4) The 100-yr existing condition 2011 SWMM model produced 5.2 inches of runoff, and indicated widespread surface flooding.
5) The channel downstream from S Military Highway is steep and wider than the existing roadway culvert; HEC-RAS computes the 2D flow spread that is otherwise ignored in 1D SWMM.
6) The 2011 SWMM models used a constant downstream tailwater elevation as a boundary condition. The HEC-RAS runs use a friction slope boundary (because event durations were as long as 6 days and elevations below Providence Road do not affect the results upstream from the Indian River High School Lake outfall.

Table 3. Potential Improvement Projects

Potential Improvement	Comments	Implementation and Feasibility Notes
1. Indian River High School Lake Weir (Lower the existing Indian River High School weir crest approximately 2 feet from elevation 8.1 to 6.1)	Lowering the weir approximately 2 feet reduces the lake volume by approximately 50 Acre-feet which could be used for flood storage. Lowering the weir would make the creation of aquatic benches easier if the lake were to be retrofitted to meet DEQ's design criteria for a Level 1 wet pond, and does not reduce the total volume below the required treatment volume for a Level 1 wet pond. Modeling assumes the weir crest is lowered to 6.1 with the six existing 48" culvert pipes in place.	The exact construction of the existing spillway structure is unknown, but it appears to be an approximately 50-foot long, 1-foot wide concrete weir between concrete wingwalls at either end. The top of weir elevation is 8.1 and is located approximately 6 to 8 feet upstream from a headwall with six 48" culvert pipes. There is an approximate 2-foot drop from the top of the weir to a concrete apron sloping down to the culvert openings. Culvert inverts range from 4.24 to 5.55. Some dredging of the lake will be needed upstream of the weir where the lake has silted in. Dredging from a barge shouldn't be necessary as the dredging could be performed from land with a long-reach excavator or crane.
2. South Military Highway Culvert Replacement (Replace the existing 6’Hx10’W box culvert under South Military Highway with a double 8’x8’ box culvert at new invert elevations 6.20 to 6.00)	The existing culvert is nearing the end of its service life. The existing upstream and downstream culvert invert elevations are 7.08 and 6.13, respectively. The replacement culvert was modeled with invert elevations of 6.20 upstream and 6.00 downstream. Inverts were lowered to minimize conflicts with utilities above the culvert.	The downstream channel was widened recently as recommended in the 2011 Indian River MDPU. The downstream channel is approximately 22 to 27 feet wide between bulkheads which should accommodate a culvert with an outside-to-outside width of approximately 18 feet. Wingwalls may not be needed at the downstream end due to the existing bulkheads along the channel. Traffic control will be a major issue due to the high volume on South Military Highway.
3. I-64 Additional Culvert (Add a 60” circular culvert under I-64, just to the east of the existing triple 9’x9’ box culvert, from invert 6.39 to 5.0)	The existing triple 9'x9' box culvert under I-64 was installed 2.2 feet higher than upstream culvert inverts (see Figure 10). This 'perched' culvert crossing creates approximately 350 acre-feet of dead storage in the upstream impoundments. Installing a lower culvert will draw down permanent pool levels and create approximately 350 acre-feet of new, usable flood storage.	VDOT owns the intersection right-of-way, and will have to approve the construction of the new culvert crossing. If jack-and-bore installation can be used instead of microtunneling, the project cost could be significantly reduced. The City will have to coordinate with parcel owners regarding the lowering of permanent pool levels, but rational citizens should appreciate the flood risk reduction resulting from this project. Most of the impoundment shorelines are in a commercial district and along roadways.

NOTES

1) Invert elevations in this table and report refer to the NAVD88 vertical datum.

2) Conceptual design and construction cost opinions are documented in Appendix A.

Table 4. Grant Opportunities

Information updated as of **10/30/2020**

Funding Agency ***Grant Name***	**Description**	**Prior Grant Cycle FY**	**Availability**	**Minimum Amount**	**Maximum Amount**	**Match Percentage**	**Type**	**Eligibility**		**Restrictions**	**Potential Burdens**	**Expected Application Timeline**	**Contact (Webpage)**	**Comments**
							FR = Flood Resilience WQ = Water Quality	**SE= Social Economic TW = Target Waterheds**	**Other**					
Federal Emergency Management Agency *Building Resilient Infrastructure and Communities (BRIC)*	Federal funds are made available to states, local communities, tribes and territories for pre-disaster mitigation activities.	N/A	Open. Closes 11/10/2020	Not listed	$500 million (entire program)	75% federal, 25% non-federal cost share	FR	Neither	Research supported proactive investments in community resilience.	Must have a current FEMA-approved Hazard Mitigation Plan. Period of Performance start date: date of recipients federal award - End date: 36 months from start date for all other sub applications.	Must use the new FEMA Grants Outcome (FEMA GO) system.	Annually	https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities	BRIC is funded by a 6% set-aside from Federal post-disaster grant funding. Pre-Award Selection Notice: 06/2021.
Virginia Department of Conservation and Recreation *Virginia Community Flood Preparedness Fund*	New fund intended to mitigate future flood damage, with priority given to projects that implement community-scale mitigation activities or use nature-based solutions.	N/A	2021	TBD	~$50 million (entire program)	TBD	FR	SE	TBD	TBD	TBD	Annually	https://www.pewtrusts.org/en/about/news-room/opinion/2020/07/07/virginias-new-flood-preparedness-program-is-a-statewide-win	This is a new fund with revenue coming from Virginia's RGGI carbon auctions. The State is preparing to administer this program, but has not yet worked out details.
National Fish and Wildlife Foundation *National Coastal Resilience Fund*	The National Coastal Resilience Fund invests in conservation projects that restore or expand natural features such as coastal marshes and wetlands, dune and beach systems, oyster and coral reefs forests, coastal rivers and floodplains, and barrier islands that minimize the impacts of storms and other naturally occurring events on nearby communities.	2020	Closed. Next grant slate will open in Spring 2021	Funding levels are described in the RFP; not less than $125,000	Funding levels are described in the RFP; no maximum award size.	Required 1:1 non-federal match	FR	Neither	Based on Community Capacity Building and Planning focus area.	This fund is investing to restore and strengthen natural systems so they can protect coastal communities from the impacts of storms, floods, and other natural hazards and enable them to recover more quickly, and enhance habitats for fish and wildlife.	Projects are expected to be completed within 24 months of the start of the grant.	Annually	https://www.nfwf.org/programs/national-coastal-resilience-fund?activeTab=tab-2	Four focus areas: Community Capacity Building and Planning, Project Site Assessment and Preliminary Design, Project Final Design and Permitting, and Restoration and Monitoring.
Virginia Department of Conservation and Recreation *Dam Safety, Flood Prevention and Protection Assistance Fund*	The fund was established to provide grants to public and private dam owners whose dams are under state regulation and also to help local governments improve methods for flood prevention and protection.	2020	Open	Determined based on amounts requested from eligible projects, application scores and available funds.	Determined based on amounts requested from eligible projects, application scores and available funds. Depending on State budgeting, the award amounts can be small.	50%	FR	SE	Flood prevention and protection.	If applicant conducts hydrologic and hydraulic studies of floodplains and create new maps, they must apply for a letter of Map Revision or a Physical Map Revision through FEMA. Grant scores can be weighted based on prior awards, as Chesapeake received in 2019.	Grant funds will be disbursed on a reimbursement basis and only after the completion of the approved project.	11/1/2020 through 2/26/2021	https://www.dcr.virginia.gov/dam-safety-and-floodplains/dsfpm-grants	Fund is managed by the Virginia Resources Authority on behalf of the Virginia Department of Conservation and Recreation. Grants are awarded through a competitive application process. Awards are approved by the Virginia Soil and Water Conservation Board. Director of DCR will determine the type and amounts of funding available prior to each funding period and will specify the categories that will be considered for grant assistance.
Federal Emergency Management Agency *Flood Mitigation Assistance Grant (FMA)*	The intent of FMA is to take action to reduce the risk of future flooding to structures that are insured through the National Flood Insurance Program (NFIP).	2020	Open. VDEM closes 1/29/2020 for FEMA's deadline of 1/29/2021.	Not listed	$160 million (entire program)	75% federal, 25% non-federal cost share	FR	Neither	This grant is for structures that are insured through NFIP and are at risk for repetitive flood damage.	Must have a current FEMA-approved Hazard Mitigation Plan. Project must be identified in the mitigation strategy; structural projects must be cost effective and comply with program regulations in the Hazard Mitigation Assistance Guidance.	Cost effective structural projects must be demonstrated through a benefit cost analysis (BCA).	Application start 09/30/2020 - application submission deadline 01/29/2021	https://www.vaemergency.gov/job/flood-mitigation-assistance-grant/	FEMA Hazard Mitigation Assistance has 5 grant programs, including Hazard Mitigation Grant Program; Flood Mitigation Assistance Program and Building Resilient Infrastructure & Communities (BRIC). Virginia is preparing to administer these grants (as of 10/30/2020).
Federal Emergency Management Agency *Hazard Mitigation Grant Program (HMGP)*	The intent of HMGP is to provide funding for state, local, tribal and territorial governments so they can rebuild in a way that reduces or mitigates disaster losses.	2020	Depends on disaster declaration	Up to 15% of the first $2 billion	Up to 20% for amounts not to exceed $35.333 billion (entire program)	75% federal, 25% non-federal cost share	FR	Neither	This grant provides funding after a presidentially declared disaster.	Grant recipients have 36 months or three years from the close of the application period to complete the project.	Submit a letter of intent to FEMA within 30 days after a disaster declaration.	Depends on disaster declaration	https://www.fema.gov/grants/mitigation/hazard-mitigation	Funding is based on the estimated total cost of disaster assistance.
RISE Resilience Innovation (Non-profit organization) *Flood Management Resilience Challenge*	Funds are for areas in need of innovative solutions identified by entities operating in Hampton Roads.	2020	Closed	Not listed	250000	Non-equity funding	FR, WQ	TW	Must focus on a Hampton Roads need while demonstrating the ability to scale to other communities.	Must be either small businesses or non-profit entities.	Particularly interested in innovative solutions for cost-effective management of ground, storm, or tidal water.	TBD	https://riseresilience.org/current-challenges/	RIF awards come in two forms: 1) loans (revenue based or 0 interest fixed payment) and 2) reimbursement grants.
Virginia Department of Environmental Quality *Stormwater Local Assistance Fund (SLAF)*	Provides matching grants to help localities install efficient and effective pollution-control measures.	2019	On hold pending review of Commonwealth debt capacity.	50000	Disbursements shall be held at 95% of the total grant amount to ensure satisfactory completion of the project.	Grant will be awarded and the grantee may begin requesting monthly reimbursement for 50% of eligible costs incurred.	WQ	TW	Reduce non-point source pollution from stormwater runoff.	Must complete the program requirements, advertise for construction bids and develop and receive approval of a final grant budget based on as-bid construction and contractual engineering costs.	Several submittal packages must be reviewed and approved by DEQ CWFAP staff.	Annually	https://www.deq.virginia.gov/Programs/Water/CleanWaterFinancingAssistance/StormwaterLoan.aspx	SLAF projects are awarded primarily on the basis of cost efficiency and pollutant removal benefit.

Information updated as of **10/30/2020**

Funding Agency ***Grant Name***	**Description**	**Prior Grant Cycle FY**	**Availability**	**Minimum Amount**	**Maximum Amount**	**Match Percentage**	**Type**	**Eligibility**		**Restrictions**	**Potential Burdens**	**Expected Application Timeline**	**Contact (Webpage)**	**Comments**
							FR = Flood Resilience WQ = Water Quality	**SE= Social Economic TW = Target Waterheds**	**Other**					
United State Environmental Protection Agency *Multipurpose Grants to States and Tribes*	Funds are intended to be used at state and tribal discretion, for high-priority activities to complement activities funded under established environmental statutes.	2020	Closed	25000	Minimum grant amount plus supplemental amount based on FY2019 funding.	None	WQ	Neither	Eligible recipients are generally state agencies that carry out federally funded environmental programs.	Funds may be used to support several activities associated with categorical grant programs such as water pollution control, nonpoint source management, pollution prevention, Wetlands development - which are eligible for inclusion in a Performance Partnership Grant.	May accept funds through an existing PPG, by establishing a new PPG, or through a standalone grant. Steps may be required to decide which grant vehicle is most appropriate.	Summer 2021?	https://www.epa.gov/grants/specific-epa-grant-programs	Grant funding is authorized by the Further Consolidated Appropriations Act, 2020 (P.L. 116-94); Recipients have flexibility to direct funds to priority areas.
Grant Opportunities Reviewed But Not Applicable														
Natural Resources Conservation Service/United States Department of Agriculture *Agricultural Management Assistance, Conservation Stewardship Program, Environmental Quality Incentives Program, Water Bank Program*	Grant funding specifically for agricultural producers or grant funding only available in certain states.													
Virginia Department of Forestry *Economic Development, Fire Prevention and Urban and Community Forestry Grants*	Grant funding specifically for agriculture and forestry development projects, potential threats from wildfires or fire-related assistance, and specific forestry projects.													
Virginia Department of Conservation and Recreation *Virginial Land Conservation Foundation/Land and Water Conservation Fund State and Local Assistance Program*	Grant funding specifically for the acquisition and development of public outdoor recreation areas.													
Virginia Department of Environmental Quality *Stormwater Loan Program*	Provides a long term source of low interest financing for constructing facilities or structures or implementing best management practices that reduce stormwater runoff.													

NOTES

1) Grant opportunities are in constant flux. These grant sources should be monitored and updated as the Greenbrier Resiliency Plan projects move forward.
2) Small grants, having anticipated awards less than $100,000, are not detailed here (unless they have potential for increased funding) because application and administration costs tend to be high compared to the value of the grant.
3) The large grant amounts listed are for the total program, not individual projects (because individual project funding is not specifically limited).

Table 5. HEC-RAS Scenario Files and Run Log

November 2020

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HEC-RAS Project File: **Greenbrier_Resilien.PRJ**

			Plan Files Summary						FILENAMES										
Date	Plan Name	Plan Description	Plan	Geometry	Unsteady Flow	Run By	Rainfall	Changes Tried	Geometry File	Terrain File	Roughness File	Plan File	Unsteady Flow File	Restart File	Hydrograph Output Interval (mins)	Detailed Output Interval (mins)	Mapping Output Interval (mins)	Time Step (Sec)	Run Time (hh:mm)
Hurricane Matthew																			
8/14/2020	Plan 16	Run to get starting water surface elevations	**p12**	**g10**	**u10**	SMB	No Rainfall		Geometry_4	GB_Terrain_6	GB_Mannings_N	Greenbrier_Resilien.p12	NoRain_Plan_16 (Greenbrier_Resilen.u10)	Greenbrier_Resilien.p12.01JAN2020 2400.rst	240	240	120	5	1:00
8/15/2020	Hurricane Matthew	Calibrated Matthew Run	**p02**	**g01**	**u11**	JNP	Matthew 81%	Using new geometry incorporating Greenbrier mall drainage and drainage from Simon Drive lake at eastern side of watershed. Blocking 3.8 of 4-foot diameter of two culverts under Greenbrier Pkwy (per 2016 Collins report).	Geometry_5_Blocked Culverts (Greenbrier_Resilien.g01)	GB_Terrain_6	GB_Mannings_N	Greenbrier_Resilien.p02	Matthew81 (Greenbrier_Resilien.u11)	Greenbrier_Resilien.p12.01JAN2020 2400.rst	5	5	5	3	8:51
Unimproved Scenarios (Existing Conditions)																			
8/25/2020	Plan_18_No_Rain_Geom_7	No Rain to create restart file.	**p08**	**g04**	**u12**	SMB	No Rain		Geom_7_Imp_A	GB_Terrain_6	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p08	NoRain_Plan_18 (Greenbrier_Resilien.u12)	None	240	240	120	5	1:03
8/26/2020	D9_Rain_Event	D9 rainfall. Existing geometry.	**p03**	**g08**	**u13**	SMB	D9	Refined 2D mesh north of S. Military.	Geometry_7_Existing	GB_Terrain_6	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p03	D9_Rainfall_Geometry_7 (Greenbrier_Resilien.u13)	Greenbrier_Resilien.p08.01JAN2020 2400.rst	5	5	5	3	3:33
9/20/2020	72_Hour_D9_Rain_Event	Same scenario as D9_Rain_Event (p.03) except it is a 72 hour run.	**p18**	**g08**	**u21**	SMB	D9		Geometry_7_Existing	GB_Terrain_6	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p18	72_Hour_D9_Rainfall_Geometry_7 (Greenbrier_Resilien.u21)	Greenbrier_Resilien.p08.01JAN2020 2400.rst	15	15	15	3	9:08
10/21/2020	D12_Rain_Event_Unimproved	62 rainfall. Existing geometry.	**p05**	**g08**	**u01**	SMB	D6		Geometry_7_Existing	GB_Terrain_6	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p05	D6_Rainfall_Unimproved	Greenbrier_Resilien.p08.01JAN2020 2400.rst	5	5	5	3	3:09
10/21/2020	D12_Rain_Event_Unimproved	D12 rainfall. Existing geometry.	**p06**	**g08**	**u02**	SMB	D12		Geometry_7_Existing	GB_Terrain_6	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p06	D12_Rainfall_Unimproved	Greenbrier_Resilien.p08.01JAN2020 2400.rst	5	5	5	3	3:12

HEC-RAS Project File: **Greenbrier_Resilien.PRJ**

			Plan Files Summary						**FILENAMES**										
Date	**Plan Name**	**Plan Description**	**Plan**	**Geometry**	**Unsteady Flow**	**Run By**	**Rainfall**	**Changes Tried**	**Geometry File**	**Terrain File**	**Roughness File**	**Plan File**	**Unsteady Flow File**	**Restart File**	**Hydrograph Output Interval (mins)**	**Detailed Output Interval (mins)**	**Mapping Output Interval (mins)**	**Time Step (Sec)**	**Run Time (hh:mm)**
Improved Scenarios (Proposed Conditions)																			
10/12/2020	Plan_22_No_Rain_Geom_9_Imp_B	No rain. Starting WSEL = 7.5 for restart file for Geometry 9B	**p20**	**g12**	**u23**	SMB	D9		Geom_9_Imp_B	I64Culv_JackBore_Terrain	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p20	NoRain_Plan_22_Scenario_9B (Greenbrier_Resilien.u23)	None	120	240	240	5	1:23
10/13/2020	144_Hour_Run_D9_Rain_Event_Geom_9_Imp_B	D9 rainfall event. (9 inches of applied rainfall, existing conditions.) No improvement at Eden Way. 6Hx10W box culvert at S. Military Hwy Replaced with double 8x8 box. Upstream invert lowered from 7.08 to 6.2. Geometry adjusted by adding a break line down the channel north of S. Military Highway. Mesh refined north of S. Mil HWY. IRHS lake weir lowered from 8.1 to 6.1. S. Mil culvert losses changed to .2 entrance, .3 exit. 60" culvert under I-64 added just east of existing triple 9x9. 72 hour run.	**p19**	**g12**	**u22**	SMB	D9	60" culvert added under I-64 near existing triple 9x9 box culvert.	Geom_9_Imp_B	I64Culv_JackBore_Terrain	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p19	144_Hour_D9_Rainfall_Geometry_9B (Greenbrier_Resilien.u22)	Greenbrier_Resilien.p20.02JAN20200600.rst	5	5	5	3	20:57
10/21/2020	24_Hour_D6_Rain_Event_Geom_9_Imp_B	Improved conditions. Same as p19. D6 rainfall used.	**p01**	**g12**	**u08**	SMB	D6	60" culvert added under I-64 near existing triple 9x9 box culvert.	Geom_9_Imp_B	I64Culv_JackBore_Terrain	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p01	24_Hour_D6_Rainfall_Geometry_9B (Greenbrier_Resilien.u08)	Greenbrier_Resilien.p20.02JAN20200600.rst	5	5	5	3	3:11
10/21/2020	24_Hour_D12_Rain_Event_Geom_9_Imp_B	Improved conditions. Same as p19. D6 rainfall used.	**p04**	**g12**	**u14**	SMB	D12	60" culvert added under I-64 near existing triple 9x9 box culvert.	Geom_9_Imp_B	I64Culv_JackBore_Terrain	GB_Mannings_N (Manning n override added to geometry file)	Greenbrier_Resilien.p01	24_Hour_D12_Rainfall_Geometry_9B (Greenbrier_Resilien.u14)	Greenbrier_Resilien.p20.02JAN20200600.rst	5	5	5	3	2:54

NOTES

1) Many other runs were made during the course of this project. This table summarizes those runs that are described in the report.
2) These HEC-RAS file sizes are very large, totaling over 10.8 GB.
3) HEC-RAS automatically assigns the plan file summary (file extensions) for each run, and maps extension numbers to multiple scenarios as applicable. Likewise, it shortens and abbreviates descriptions. Modelers are cautioned not to rename these files.
4) Model run times vary significantly between computers.

Table 6. Impoundment System Extended Drawdown

Start Time (hrs)	144	
Time Increment (hrs)	1	
Starting Surface Area (ac)	130.54	(does not include lake system along Joe's Crab Shack because there is a controlling structure there.)
Starting Surface Elevation (ft)	8.96	(at end of HEC-RAS simulation)
Drawdown Limit Elevation (ft)	7.42	(invert elevation at Greenbrier Mall entrance)
Assumed Bottom Area (ac)	124.01	(bathymetric survey required to determine this number; we are estimating a 5% reduction from the top surface area.)

Initial Conic Values

A_{top} = 5,686,322 ft2 D_{top} = 2690.73

A_{bot} = 5,402,006 ft2 D_{bot} = 2622.60

h_0 = 1.54 ft

z = 22.12 hor/vert (side slope of equivalent cone; this is not the 'bank' side slope, it accounts for unsurveyed sediment)

Culvert Headwater Curve Coefficients

$= C5x^5 + C4x^4 + C3x^3 + C2x^2 + C1x$

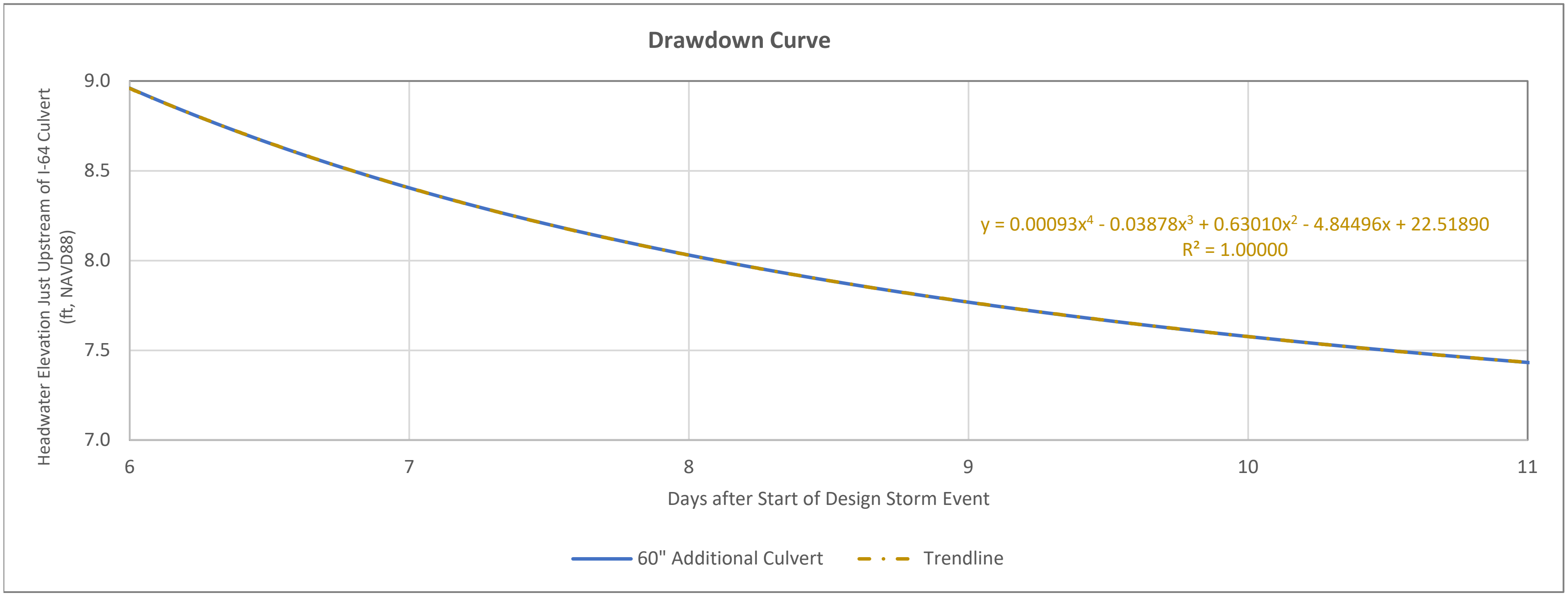
C5	0.0378020
C4	-1.3785580
C3	18.861380
C2	-111.982910
C1	242.085527

Eqn. 1

$$z = \frac{1}{2\Delta h}(D_{Top} - D_{Bot}) \Rightarrow \boxed{\frac{(D_{Top} - D_{Bot})}{2z} - \Delta h = 0}$$

Eqn. 2

$$V = \frac{\pi\,\Delta h\,(D_{Bot}^2 + D_{Bot}D_{Top} + D_{Top}^2)}{12} \Rightarrow \boxed{\frac{12V}{\pi\,(D_{Bot}^2 + D_{Bot}D_{Top} + D_{Top}^2)} - \Delta h = 0}$$



							Use Excel Solver add-in to solve 2 equations for 2 unknowns (Δh & D_{Bot})				
Time (hrs after start of design storm)	Time (Days)	Headwater Elevation @ Beginning of Time Increment (ft)	Volume in Relevant Portion of Impoundment System (ft3)	Culvert Discharge (cfs)	Volume Discharged During Time Increment (ft3)	D_{Top} (ft2)	Δh (ft)	D_{Bot} (ft2)	Eqn 1	Eqn 2	Headwater Elevation @ End of Time Increment (ft)
144	6.00	8.960	8,537,077	44.36	159,692	2,690.73	0.0281	2,689.5	0.00	0.00	8.932
145	6.04	8.932	8,377,386	43.53	156,696	2,689.49	0.0276	2,688.3	0.00	0.00	8.904
146	6.08	8.904	8,220,690	42.71	153,770	2,688.27	0.0271	2,687.1	0.00	0.00	8.877
147	6.13	8.877	8,066,920	41.92	150,912	2,687.07	0.0266	2,685.9	0.00	0.00	8.851
148	6.17	8.851	7,916,008	41.14	148,119	2,685.89	0.0262	2,684.7	0.00	0.00	8.824
149	6.21	8.824	7,767,888	40.39	145,391	2,684.74	0.0257	2,683.6	0.00	0.00	8.799
150	6.25	8.799	7,622,497	39.65	142,725	2,683.60	0.0252	2,682.5	0.00	0.00	8.773
151	6.29	8.773	7,479,772	38.92	140,120	2,682.48	0.0248	2,681.4	0.00	0.00	8.749
152	6.33	8.749	7,339,652	38.21	137,574	2,681.39	0.0244	2,680.3	0.00	0.00	8.724
153	6.38	8.724	7,202,078	37.52	135,085	2,680.31	0.0240	2,679.2	0.00	0.00	8.700
154	6.42	8.700	7,066,993	36.85	132,653	2,679.25	0.0235	2,678.2	0.00	0.00	8.677
155	6.46	8.677	6,934,340	36.19	130,275	2,678.21	0.0231	2,677.2	0.00	0.00	8.654
156	6.50	8.654	6,804,064	35.54	127,951	2,677.18	0.0227	2,676.2	0.00	0.00	8.631
157	6.54	8.631	6,676,113	34.91	125,679	2,676.18	0.0224	2,675.2	0.00	0.00	8.609
158	6.58	8.609	6,550,435	34.29	123,457	2,675.19	0.0220	2,674.2	0.00	0.00	8.587
159	6.63	8.587	6,426,978	33.69	121,284	2,674.22	0.0216	2,673.3	0.00	0.00	8.565
160	6.67	8.565	6,305,694	33.10	119,160	2,673.26	0.0212	2,672.3	0.00	0.00	8.544
161	6.71	8.544	6,186,535	32.52	117,082	2,672.32	0.0209	2,671.4	0.00	0.00	8.523
162	6.75	8.523	6,069,453	31.96	115,050	2,671.40	0.0205	2,670.5	0.00	0.00	8.502
163	6.79	8.502	5,954,403	31.41	113,063	2,670.49	0.0202	2,669.6	0.00	0.00	8.482
164	6.83	8.482	5,841,340	30.87	111,119	2,669.60	0.0199	2,668.7	0.00	0.00	8.462
165	6.88	8.462	5,730,222	30.34	109,217	2,668.72	0.0195	2,667.9	0.00	0.00	8.443
166	6.92	8.443	5,621,005	29.82	107,357	2,667.85	0.0192	2,667.0	0.00	0.00	8.424
167	6.96	8.424	5,513,648	29.32	105,537	2,667.00	0.0189	2,666.2	0.00	0.00	8.405
168	7.00	8.405	5,408,111	28.82	103,756	2,666.17	0.0186	2,665.3	0.00	0.00	8.386
169	7.04	8.386	5,304,355	28.34	102,014	2,665.34	0.0183	2,664.5	0.00	0.00	8.368
170	7.08	8.368	5,202,341	27.86	100,309	2,664.53	0.0180	2,663.7	0.00	0.00	8.350
171	7.13	8.350	5,102,032	27.40	98,640	2,663.74	0.0177	2,663.0	0.00	0.00	8.332
172	7.17	8.332	5,003,392	26.95	97,008	2,662.96	0.0174	2,662.2	0.00	0.00	8.315
173	7.21	8.315	4,906,384	26.50	95,409	2,662.18	0.0171	2,661.4	0.00	0.00	8.298
174	7.25	8.298	4,810,975	26.07	93,845	2,661.43	0.0169	2,660.7	0.00	0.00	8.281
175	7.29	8.281	4,717,129	25.64	92,314	2,660.68	0.0166	2,659.9	0.00	0.00	8.264
176	7.33	8.264	4,624,815	25.23	90,815	2,659.94	0.0163	2,659.2	0.00	0.00	8.248
177	7.38	8.248	4,534,000	24.82	89,348	2,659.22	0.0161	2,658.5	0.00	0.00	8.232

							Use Excel Solver add-in to solve 2 equations for 2 unknowns (Δh & D_{Bot})				
Time (hrs after start of design storm)	Time (Days)	Headwater Elevation @ Beginning of Time Increment (ft)	Volume in Relevant Portion of Impoundment System (ft3)	Culvert Discharge (cfs)	Volume Discharged During Time Increment (ft3)	D_{Top} (ft2)	Δh (ft)	D_{Bot} (ft2)	Eqn 1	Eqn 2	Headwater Elevation @ End of Time Increment (ft)
178	7.42	8.232	4,444,653	24.42	87,911	2,658.51	0.0158	2,657.8	0.00	0.00	8.216
179	7.46	8.216	4,356,742	24.03	86,504	2,657.81	0.0156	2,657.1	0.00	0.00	8.200
180	7.50	8.200	4,270,238	23.65	85,126	2,657.12	0.0154	2,656.4	0.00	0.00	8.185
181	7.54	8.185	4,185,111	23.27	83,777	2,656.44	0.0151	2,655.8	0.00	0.00	8.170
182	7.58	8.170	4,101,334	22.90	82,456	2,655.77	0.0149	2,655.1	0.00	0.00	8.155
183	7.63	8.155	4,018,878	22.55	81,162	2,655.11	0.0147	2,654.5	0.00	0.00	8.140
184	7.67	8.140	3,937,715	22.19	79,895	2,654.46	0.0144	2,653.8	0.00	0.00	8.126
185	7.71	8.126	3,857,821	21.85	78,653	2,653.82	0.0142	2,653.2	0.00	0.00	8.111
186	7.75	8.111	3,779,167	21.51	77,437	2,653.20	0.0140	2,652.6	0.00	0.00	8.097
187	7.79	8.097	3,701,730	21.18	76,246	2,652.58	0.0138	2,652.0	0.00	0.00	8.084
188	7.83	8.084	3,625,484	20.86	75,078	2,651.96	0.0136	2,651.4	0.00	0.00	8.070
189	7.88	8.070	3,550,406	20.54	73,934	2,651.36	0.0134	2,650.8	0.00	0.00	8.057
190	7.92	8.057	3,476,472	20.23	72,813	2,650.77	0.0132	2,650.2	0.00	0.00	8.043
191	7.96	8.043	3,403,659	19.92	71,715	2,650.19	0.0130	2,649.6	0.00	0.00	8.030
192	8.00	8.030	3,331,944	19.62	70,638	2,649.61	0.0128	2,649.0	0.00	0.00	8.018
193	8.04	8.018	3,261,306	19.33	69,583	2,649.04	0.0126	2,648.5	0.00	0.00	8.005
194	8.08	8.005	3,191,723	19.04	68,549	2,648.49	0.0124	2,647.9	0.00	0.00	7.993
195	8.13	7.993	3,123,174	18.76	67,535	2,647.94	0.0123	2,647.4	0.00	0.00	7.980
196	8.17	7.980	3,055,639	18.48	66,541	2,647.39	0.0121	2,646.9	0.00	0.00	7.968
197	8.21	7.968	2,989,098	18.21	65,566	2,646.86	0.0119	2,646.3	0.00	0.00	7.956
198	8.25	7.956	2,923,532	17.95	64,611	2,646.33	0.0117	2,645.8	0.00	0.00	7.945
199	8.29	7.945	2,858,922	17.69	63,674	2,645.81	0.0116	2,645.3	0.00	0.00	7.933
200	8.33	7.933	2,795,248	17.43	62,755	2,645.30	0.0114	2,644.8	0.00	0.00	7.922
201	8.38	7.922	2,732,493	17.18	61,854	2,644.79	0.0113	2,644.3	0.00	0.00	7.910
202	8.42	7.910	2,670,639	16.94	60,970	2,644.30	0.0111	2,643.8	0.00	0.00	7.899
203	8.46	7.899	2,609,669	16.70	60,103	2,643.80	0.0110	2,643.3	0.00	0.00	7.888
204	8.50	7.888	2,549,566	16.46	59,253	2,643.32	0.0108	2,642.8	0.00	0.00	7.877
205	8.54	7.877	2,490,313	16.23	58,419	2,642.84	0.0107	2,642.4	0.00	0.00	7.867
206	8.58	7.867	2,431,894	16.00	57,600	2,642.37	0.0105	2,641.9	0.00	0.00	7.856
207	8.63	7.856	2,374,294	15.78	56,797	2,641.91	0.0104	2,641.4	0.00	0.00	7.846
208	8.67	7.846	2,317,497	15.56	56,009	2,641.45	0.0102	2,641.0	0.00	0.00	7.836
209	8.71	7.836	2,261,487	15.34	55,236	2,640.99	0.0101	2,640.5	0.00	0.00	7.826
210	8.75	7.826	2,206,251	15.13	54,477	2,640.55	0.0099	2,640.1	0.00	0.00	7.816
211	8.79	7.816	2,151,773	14.93	53,733	2,640.11	0.0098	2,639.7	0.00	0.00	7.806

							Use Excel Solver add-in to solve 2 equations for 2 unknowns (Δh & D_{Bot})				
Time (hrs after start of design storm)	Time (Days)	Headwater Elevation @ Beginning of Time Increment (ft)	Volume in Relevant Portion of Impoundment System (ft3)	Culvert Discharge (cfs)	Volume Discharged During Time Increment (ft3)	D_{Top} (ft2)	Δh (ft)	D_{Bot} (ft2)	Eqn 1	Eqn 2	Headwater Elevation @ End of Time Increment (ft)
212	8.83	7.806	2,098,041	14.72	53,002	2,639.67	0.0097	2,639.2	0.00	0.00	7.796
213	8.88	7.796	2,045,039	14.52	52,284	2,639.25	0.0096	2,638.8	0.00	0.00	7.787
214	8.92	7.787	1,992,754	14.33	51,580	2,638.82	0.0094	2,638.4	0.00	0.00	7.777
215	8.96	7.777	1,941,174	14.14	50,889	2,638.41	0.0093	2,638.0	0.00	0.00	7.768
216	9.00	7.768	1,890,286	13.95	50,210	2,637.99	0.0092	2,637.6	0.00	0.00	7.759
217	9.04	7.759	1,840,076	13.76	49,543	2,637.59	0.0091	2,637.2	0.00	0.00	7.750
218	9.08	7.750	1,790,533	13.58	48,889	2,637.19	0.0090	2,636.8	0.00	0.00	7.741
219	9.13	7.741	1,741,644	13.40	48,246	2,636.79	0.0088	2,636.4	0.00	0.00	7.732
220	9.17	7.732	1,693,398	13.23	47,615	2,636.40	0.0087	2,636.0	0.00	0.00	7.723
221	9.21	7.723	1,645,783	13.05	46,995	2,636.01	0.0086	2,635.6	0.00	0.00	7.714
222	9.25	7.714	1,598,788	12.88	46,386	2,635.63	0.0085	2,635.3	0.00	0.00	7.706
223	9.29	7.706	1,552,403	12.72	45,788	2,635.26	0.0084	2,634.9	0.00	0.00	7.698
224	9.33	7.698	1,506,615	12.56	45,200	2,634.88	0.0083	2,634.5	0.00	0.00	7.689
225	9.38	7.689	1,461,415	12.40	44,623	2,634.52	0.0082	2,634.2	0.00	0.00	7.681
226	9.42	7.681	1,416,792	12.24	44,055	2,634.16	0.0081	2,633.8	0.00	0.00	7.673
227	9.46	7.673	1,372,737	12.08	43,498	2,633.80	0.0080	2,633.4	0.00	0.00	7.665
228	9.50	7.665	1,329,239	11.93	42,950	2,633.44	0.0079	2,633.1	0.00	0.00	7.657
229	9.54	7.657	1,286,289	11.78	42,412	2,633.10	0.0078	2,632.8	0.00	0.00	7.649
230	9.58	7.649	1,243,877	11.63	41,883	2,632.75	0.0077	2,632.4	0.00	0.00	7.642
231	9.63	7.642	1,201,994	11.49	41,363	2,632.41	0.0076	2,632.1	0.00	0.00	7.634
232	9.67	7.634	1,160,631	11.35	40,852	2,632.07	0.0075	2,631.7	0.00	0.00	7.627
233	9.71	7.627	1,119,778	11.21	40,350	2,631.74	0.0074	2,631.4	0.00	0.00	7.619
234	9.75	7.619	1,079,429	11.07	39,856	2,631.41	0.0073	2,631.1	0.00	0.00	7.612
235	9.79	7.612	1,039,573	10.94	39,370	2,631.09	0.0072	2,630.8	0.00	0.00	7.605
236	9.83	7.605	1,000,202	10.80	38,893	2,630.77	0.0072	2,630.5	0.00	0.00	7.597
237	9.88	7.597	961,310	10.67	38,424	2,630.45	0.0071	2,630.1	0.00	0.00	7.590
238	9.92	7.590	922,886	10.55	37,962	2,630.14	0.0070	2,629.8	0.00	0.00	7.583
239	9.96	7.583	884,924	10.42	37,508	2,629.83	0.0069	2,629.5	0.00	0.00	7.576
240	10.00	7.576	847,416	10.29	37,062	2,629.53	0.0068	2,629.2	0.00	0.00	7.570
241	10.04	7.570	810,354	10.17	36,623	2,629.22	0.0067	2,628.9	0.00	0.00	7.563
242	10.08	7.563	773,732	10.05	36,191	2,628.92	0.0067	2,628.6	0.00	0.00	7.556
243	10.13	7.556	737,541	9.93	35,766	2,628.63	0.0066	2,628.3	0.00	0.00	7.550
244	10.17	7.550	701,775	9.82	35,348	2,628.34	0.0065	2,628.0	0.00	0.00	7.543
245	10.21	7.543	666,427	9.70	34,937	2,628.05	0.0064	2,627.8	0.00	0.00	7.537

							Use Excel Solver add-in to solve 2 equations for 2 unknowns (Δh & D_{Bot})				
Time (hrs after start of design storm)	Time (Days)	Headwater Elevation @ Beginning of Time Increment (ft)	Volume in Relevant Portion of Impoundment System (ft3)	Culvert Discharge (cfs)	Volume Discharged During Time Increment (ft3)	D_{Top} (ft2)	Δh (ft)	D_{Bot} (ft2)	Eqn 1	Eqn 2	Headwater Elevation @ End of Time Increment (ft)
246	10.25	7.537	631,490	9.59	34,532	2,627.76	0.0064	2,627.5	0.00	0.00	7.530
247	10.29	7.530	596,958	9.48	34,134	2,627.48	0.0063	2,627.2	0.00	0.00	7.524
248	10.33	7.524	562,823	9.37	33,743	2,627.20	0.0062	2,626.9	0.00	0.00	7.518
249	10.38	7.518	529,080	9.27	33,357	2,626.93	0.0062	2,626.7	0.00	0.00	7.512
250	10.42	7.512	495,723	9.16	32,978	2,626.66	0.0061	2,626.4	0.00	0.00	7.506
251	10.46	7.506	462,745	9.06	32,605	2,626.39	0.0060	2,626.1	0.00	0.00	7.500
252	10.50	7.500	430,140	8.95	32,237	2,626.12	0.0060	2,625.9	0.00	0.00	7.494
253	10.54	7.494	397,903	8.85	31,876	2,625.86	0.0059	2,625.6	0.00	0.00	7.488
254	10.58	7.488	366,027	8.76	31,520	2,625.60	0.0058	2,625.3	0.00	0.00	7.482
255	10.63	7.482	334,508	8.66	31,169	2,625.34	0.0058	2,625.1	0.00	0.00	7.476
256	10.67	7.476	303,338	8.56	30,824	2,625.09	0.0057	2,624.8	0.00	0.00	7.470
257	10.71	7.470	272,514	8.47	30,485	2,624.83	0.0056	2,624.6	0.00	0.00	7.465
258	10.75	7.465	242,029	8.38	30,150	2,624.58	0.0056	2,624.3	0.00	0.00	7.459
259	10.79	7.459	211,879	8.28	29,821	2,624.34	0.0055	2,624.1	0.00	0.00	7.454
260	10.83	7.454	182,059	8.19	29,496	2,624.09	0.0055	2,623.9	0.00	0.00	7.448
261	10.88	7.448	152,562	8.10	29,177	2,623.85	0.0054	2,623.6	0.00	0.00	7.443
262	10.92	7.443	123,385	8.02	28,863	2,623.61	0.0053	2,623.4	0.00	0.00	7.437
263	10.96	7.437	94,522	7.93	28,553	2,623.38	0.0053	2,623.1	0.00	0.00	7.432
264	11.00	7.432	65,970	7.85	28,248	2,623.14	0.0052	2,622.9	0.00	0.00	7.427
265	11.04	7.427	37,722	7.76	27,947	2,622.91	0.0052	2,622.7	0.00	0.00	7.422
266	11.08	7.422	9,775	7.68	27,651	2,622.68	0.0051	2,622.5	0.00	0.00	7.417
											7.42 = Drawdown Limit

Figure 1. Greenbrier Drainage Area with Reference Nodes

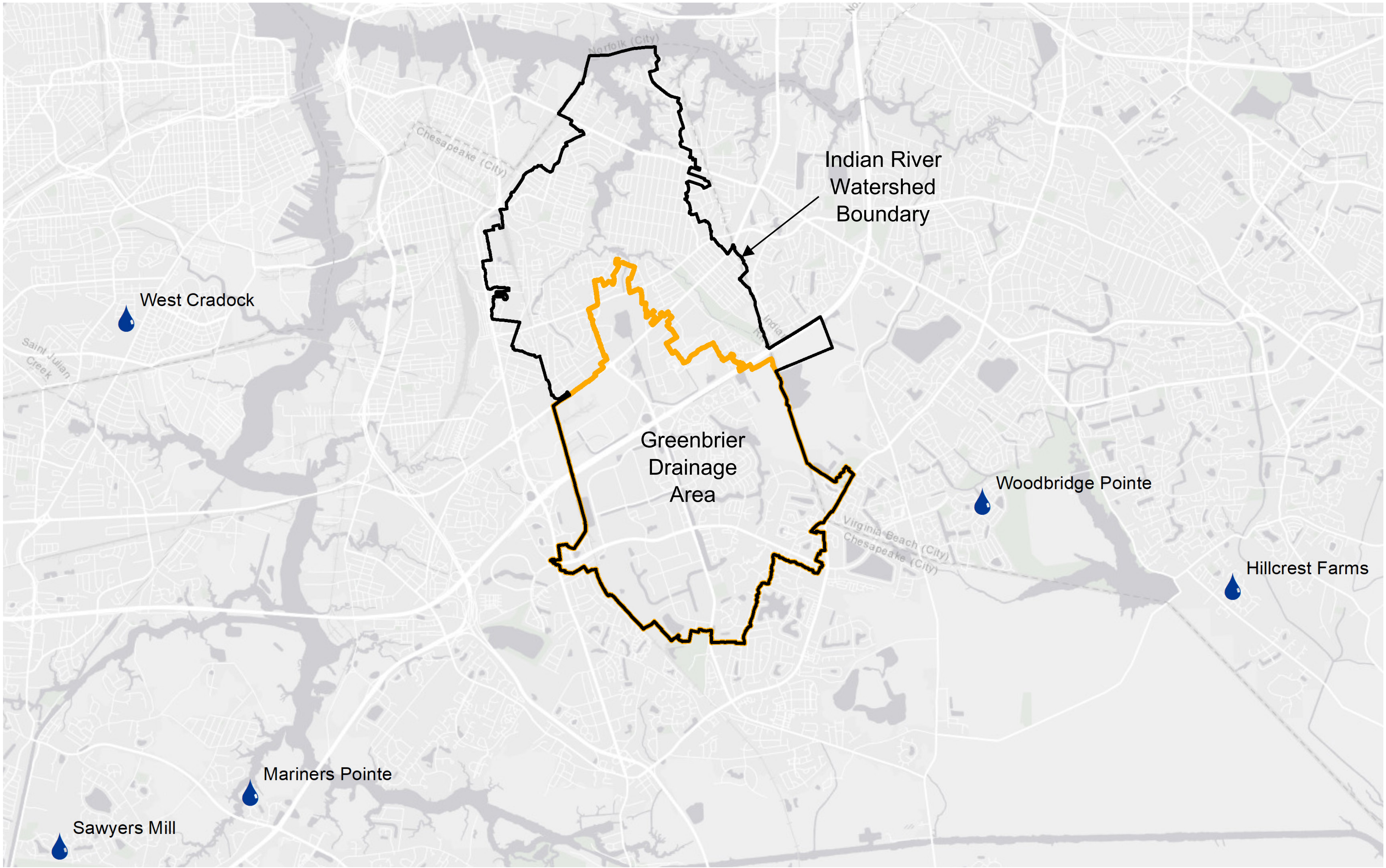
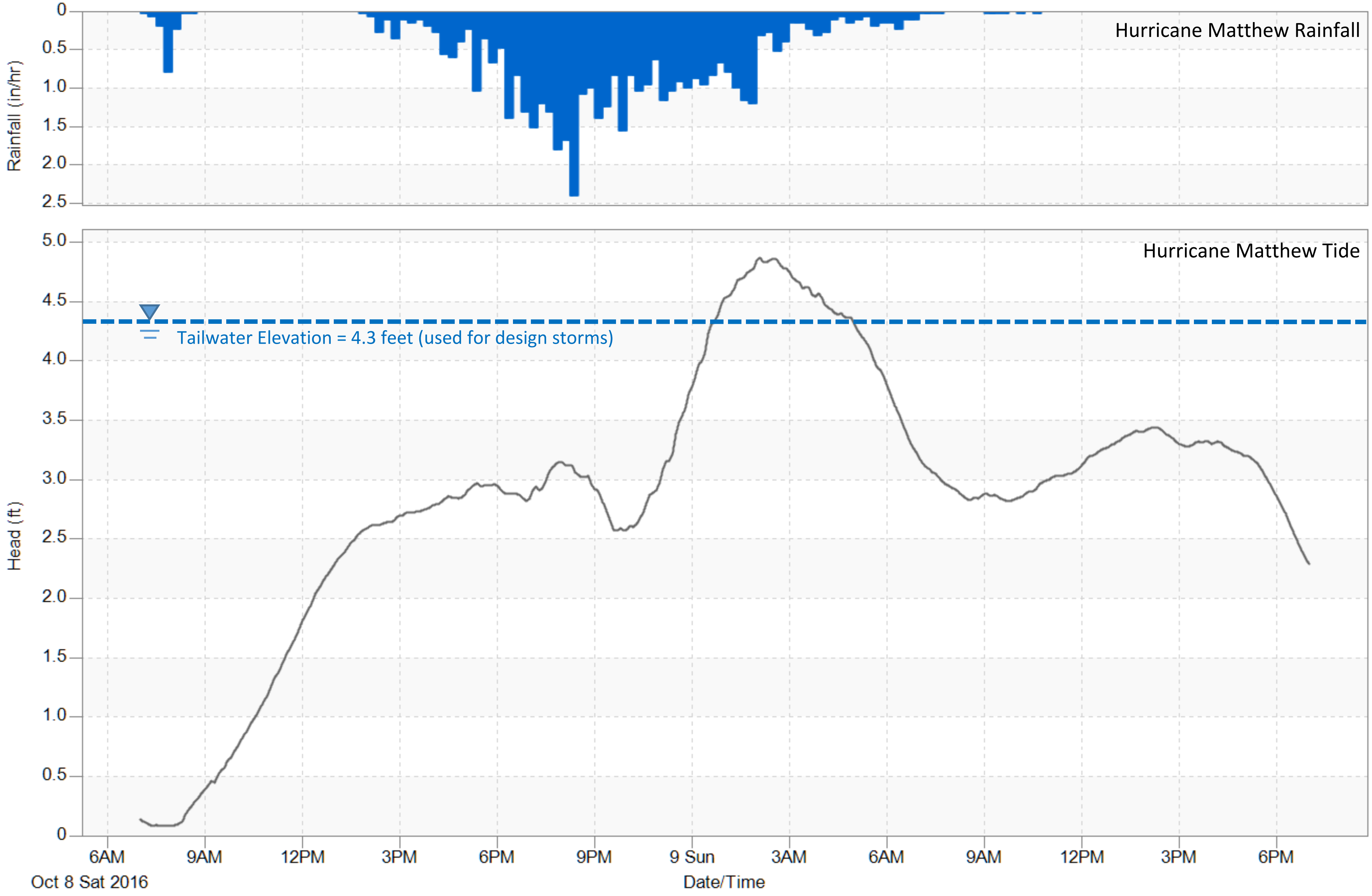


Figure 2. Hurricane Matthew Precipitation Sources



Rainfall was recorded at City Hall.
Tide was recorded at Money Point, shown for general reference.
Vertical Datum = NAVD88

Figure 3. Hurricane Matthew Rainfall and Tide

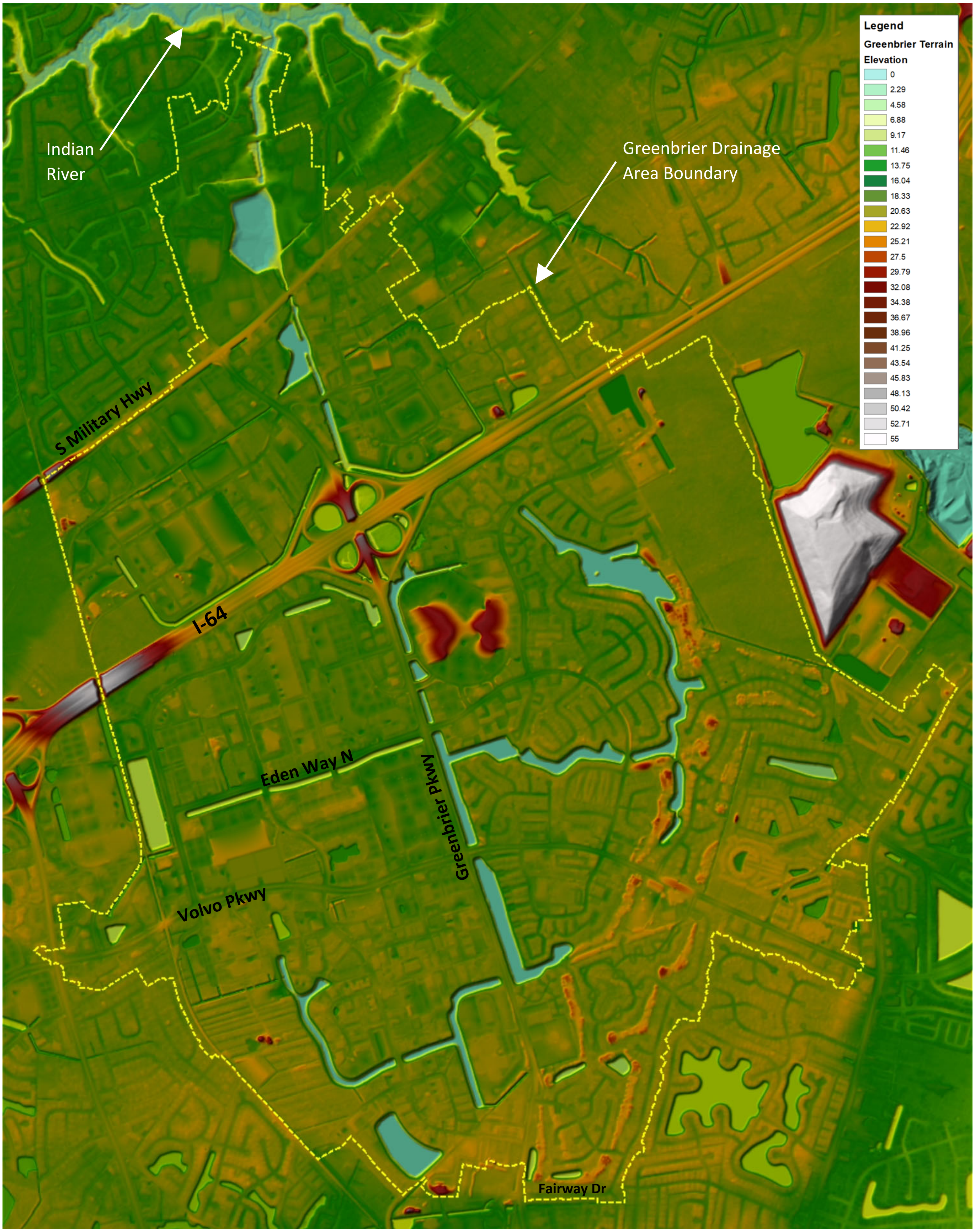
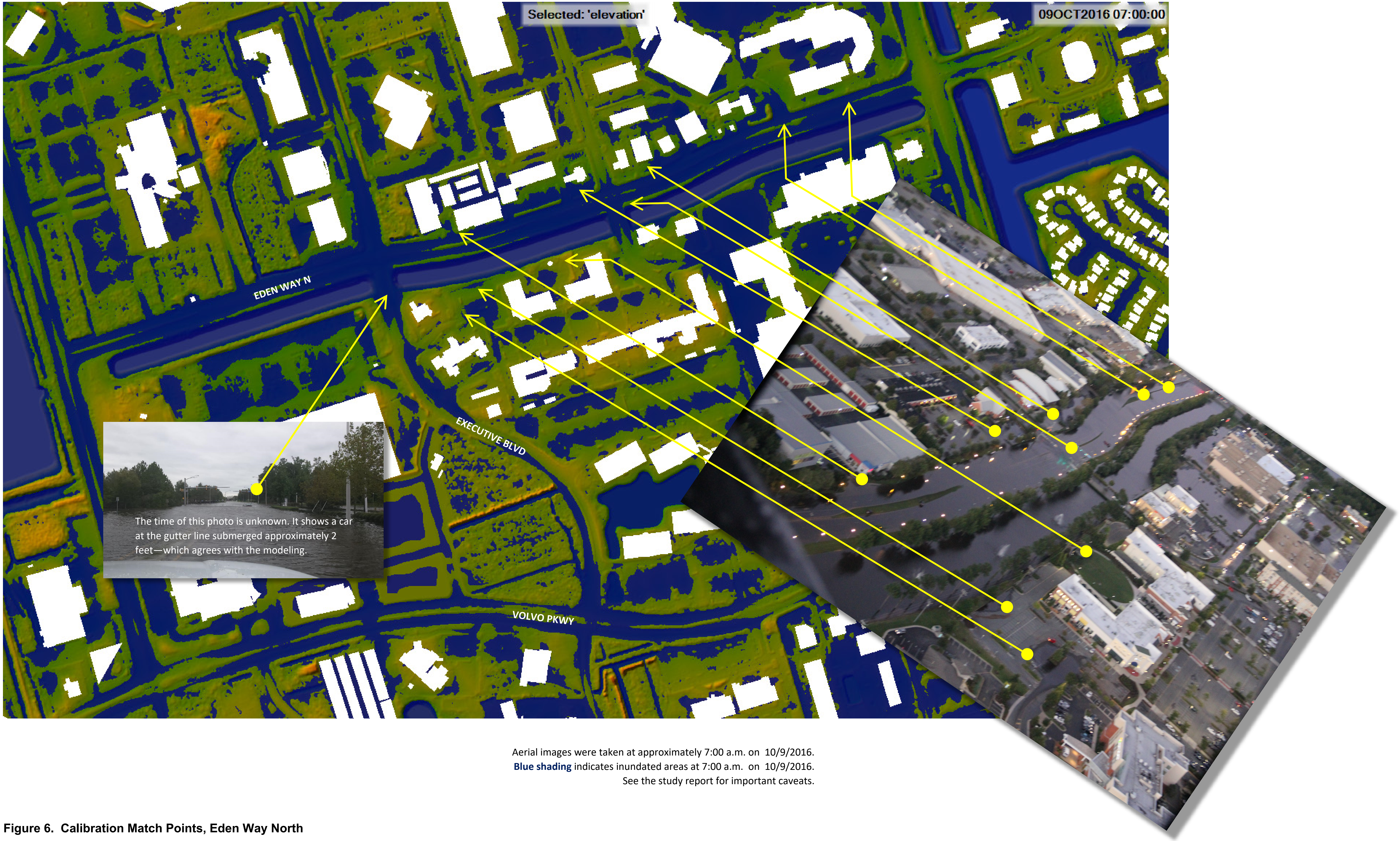


Figure 4. Rain-on-Grid Model Construction, Terrain

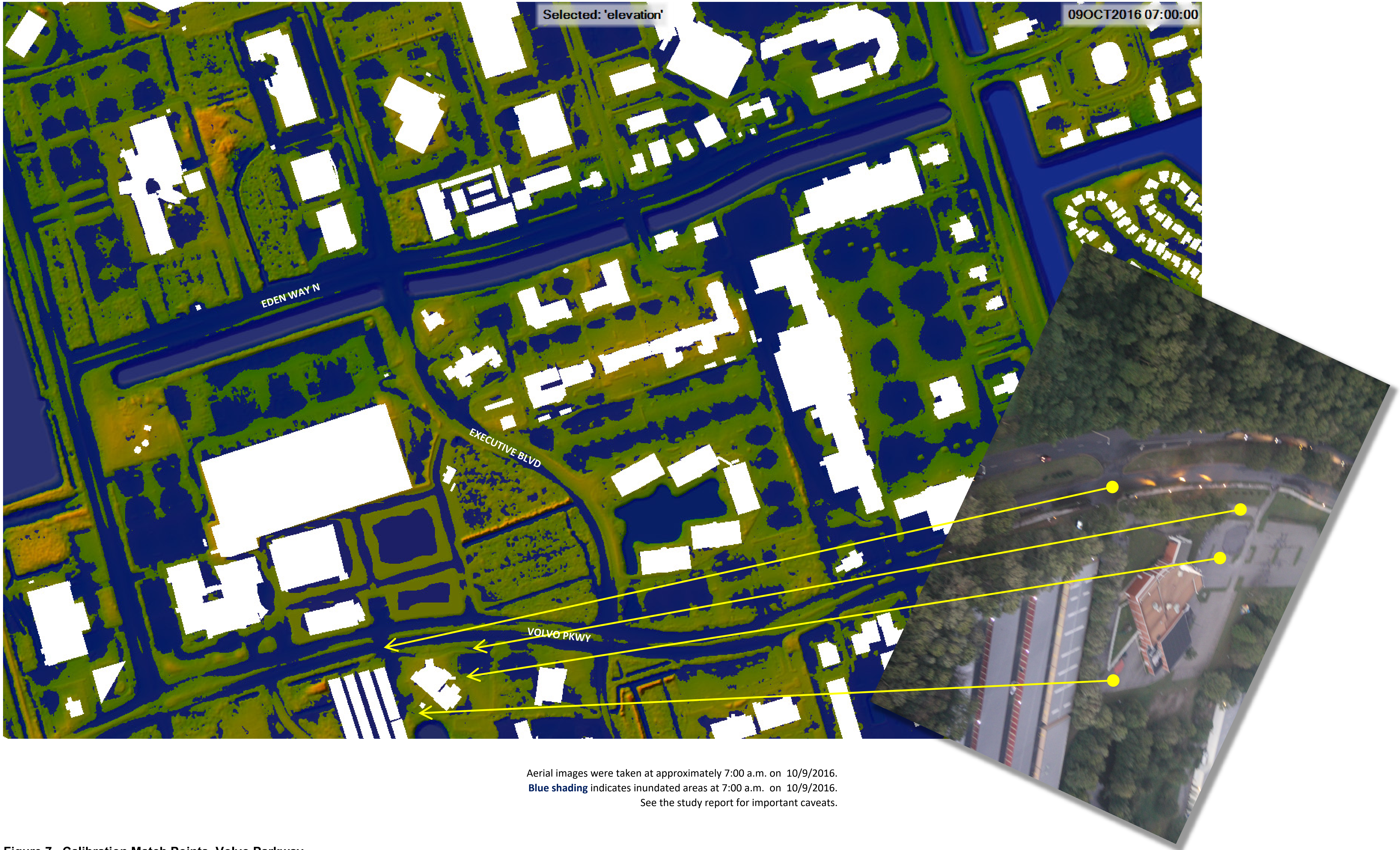
Note: This figure shows mesh geometry for the improved scenario with an added culvert under I-64. Buildings are removed for clarity.

Figure 5. Rain-on-Grid Model Construction, 2D Mesh Geometry



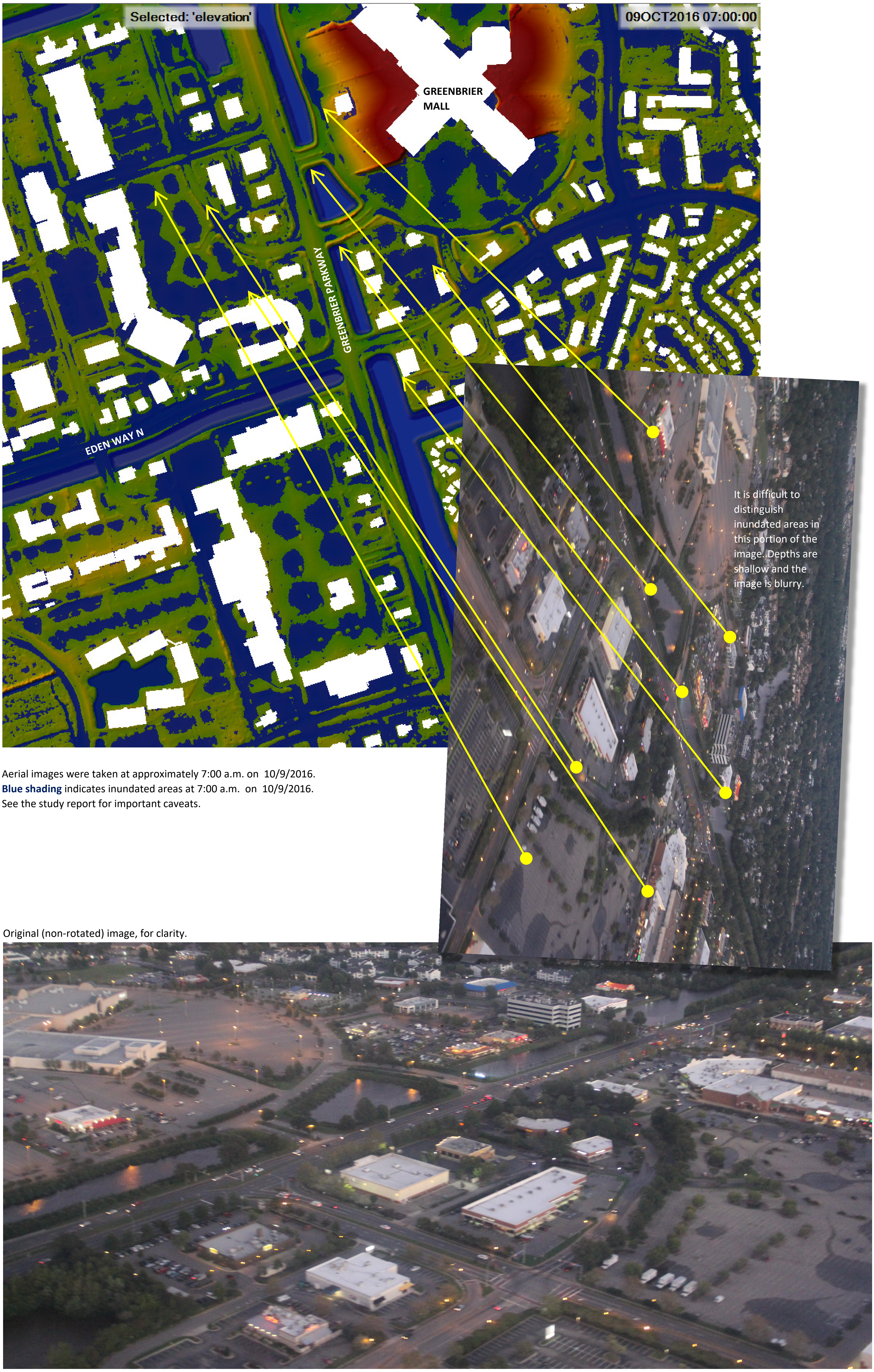
Aerial images were taken at approximately 7:00 a.m. on 10/9/2016.
Blue shading indicates inundated areas at 7:00 a.m. on 10/9/2016.
See the study report for important caveats.

Figure 6. Calibration Match Points, Eden Way North



Aerial images were taken at approximately 7:00 a.m. on 10/9/2016.
Blue shading indicates inundated areas at 7:00 a.m. on 10/9/2016.
See the study report for important caveats.

Figure 7. Calibration Match Points, Volvo Parkway

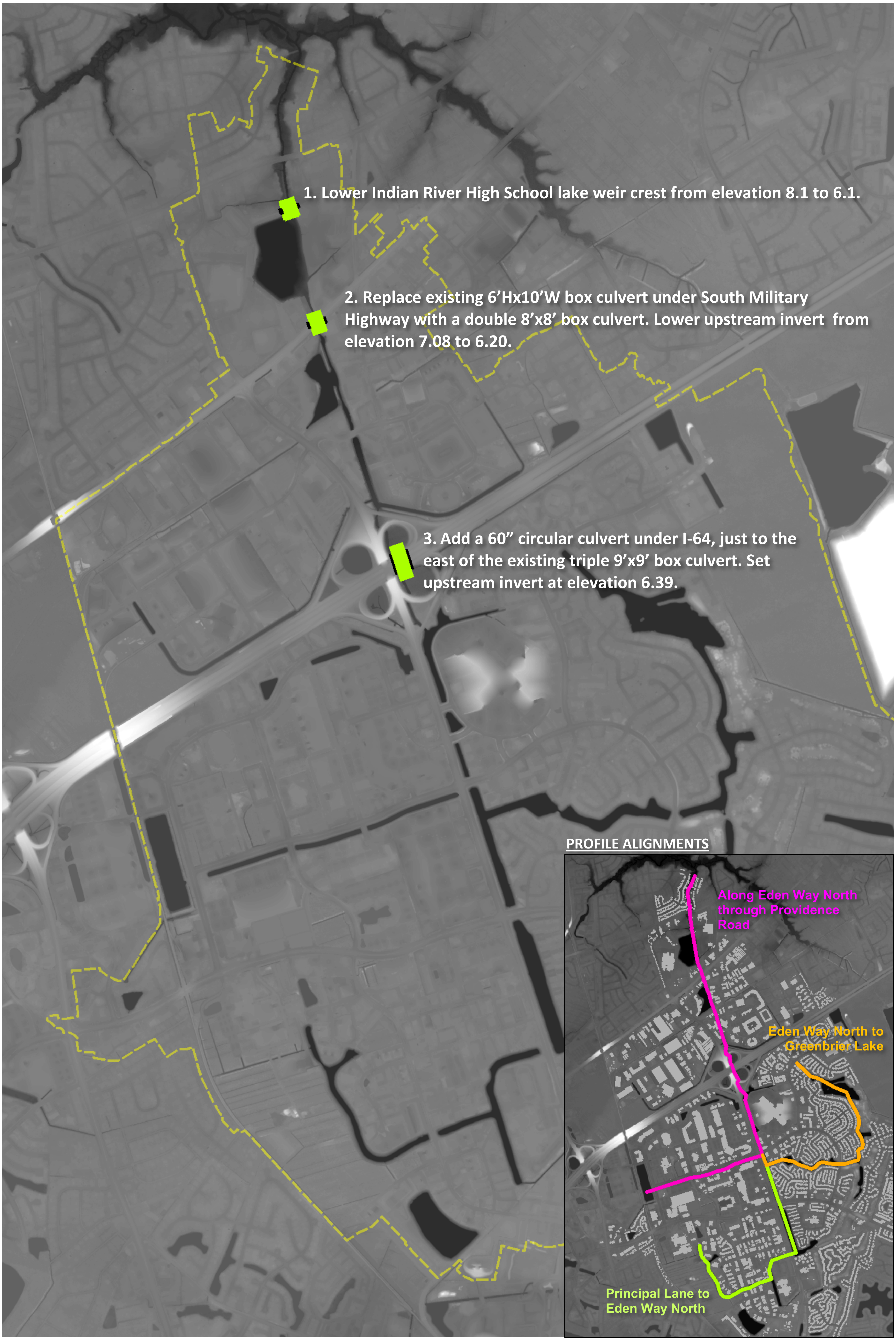


It is difficult to distinguish inundated areas in this portion of the image. Depths are shallow and the image is blurry.

Aerial images were taken at approximately 7:00 a.m. on 10/9/2016.
Blue shading indicates inundated areas at 7:00 a.m. on 10/9/2016.
See the study report for important caveats.

Original (non-rotated) image, for clarity.

Figure 8. Calibration Match Points, Greenbrier Parkway

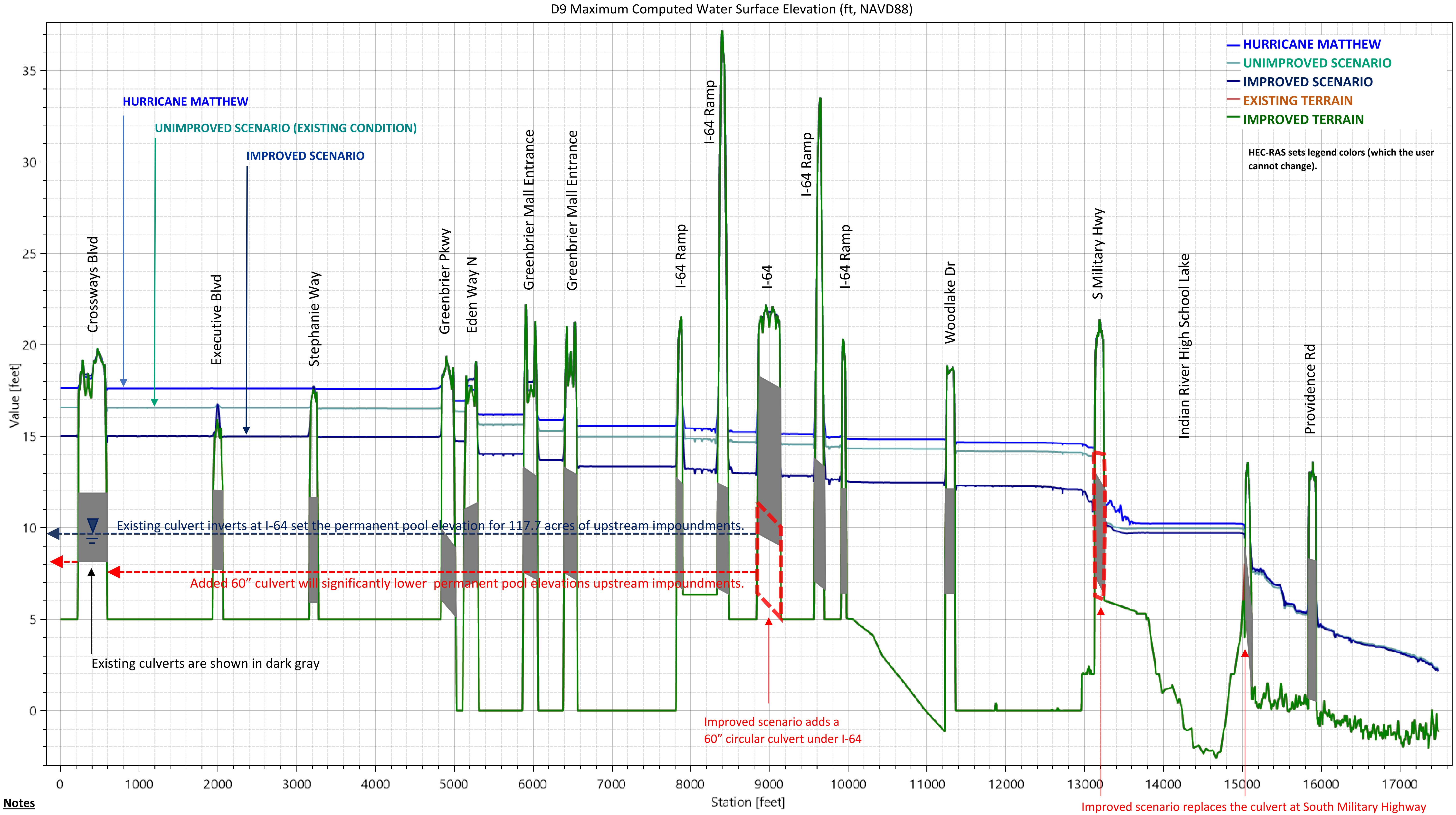


1. Lower Indian River High School lake weir crest from elevation 8.1 to 6.1.

2. Replace existing 6’Hx10’W box culvert under South Military Highway with a double 8’x8’ box culvert. Lower upstream invert from elevation 7.08 to 6.20.

3. Add a 60” circular culvert under I-64, just to the east of the existing triple 9’x9’ box culvert. Set upstream invert at elevation 6.39.

Figure 9. Potential Improvement Projects



Improved scenario replaces the culvert at South Military Highway and lowers the Indian River High School lake weir crest

Notes

The unimproved and improved scenarios use 9 inches of applied, excess rainfall (designated '**D9**').

The unimproved and improved scenarios have the blockages removed from the pipes under Eden Way N.

All culverts are assumed to be clean in the unimproved and improved scenarios.

The existing and improved terrains are coincident lines along this profile, except for the lowering of the weir at Indian River High School lake.

Figure 10. Maximum Hydraulic Grade Lines, Along Eden Way North through Providence Road

Notes

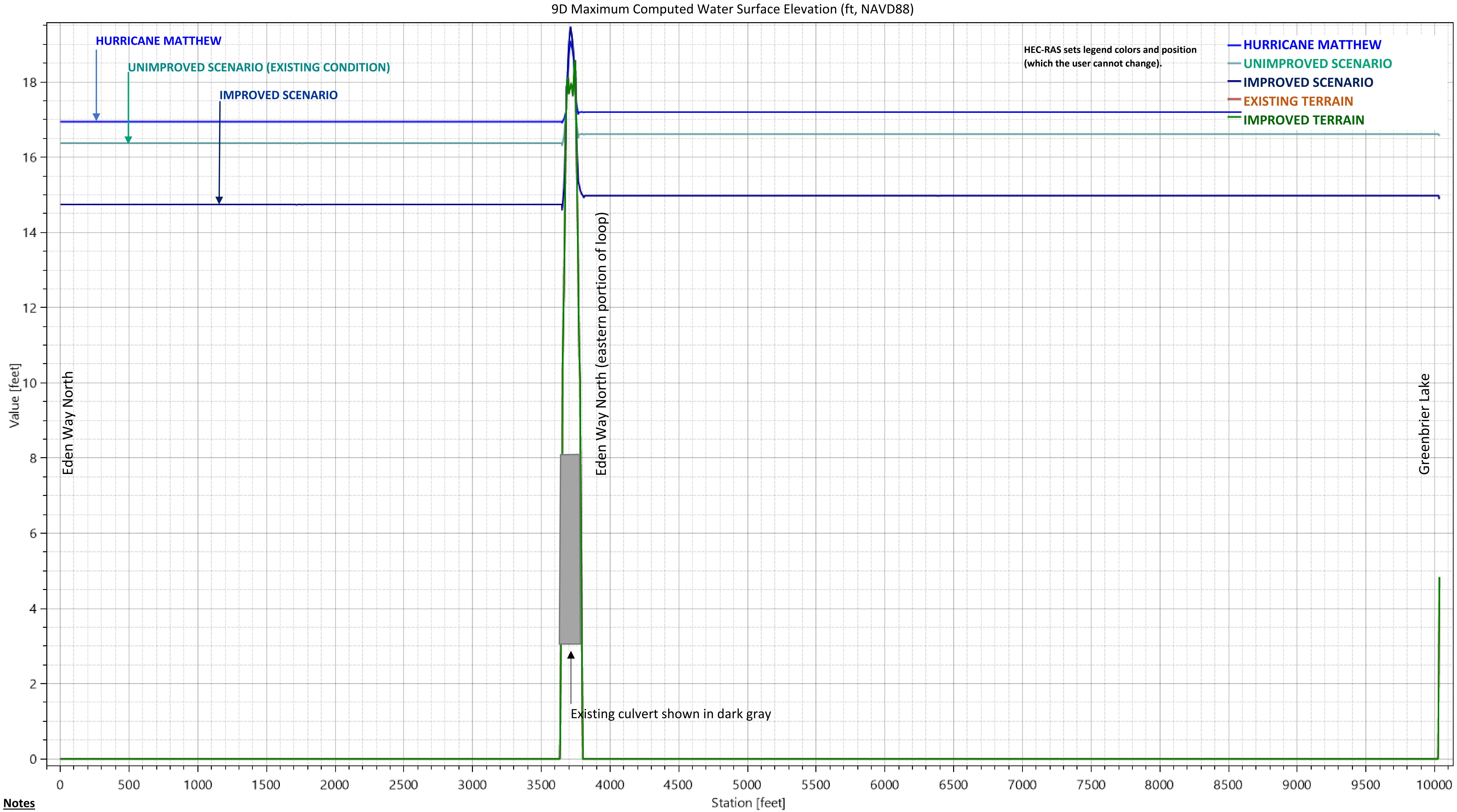
The unimproved and improved scenarios use 9 inches of applied, excess rainfall (designated ‘**D9**’).

The unimproved and improved scenarios have the blockages removed from the pipes under Eden Way N.

All culverts are assumed to be clean in the unimproved and improved scenarios.

The existing and improved terrains are coincident lines along this profile.

Figure 11. Maximum Hydraulic Grade Lines, Principal Lane to Eden Way North



Notes

The unimproved and improved scenarios use 9 inches of applied, excess rainfall (designated '**D9**').

The unimproved and improved scenarios have the blockages removed from the pipes under Eden Way N.

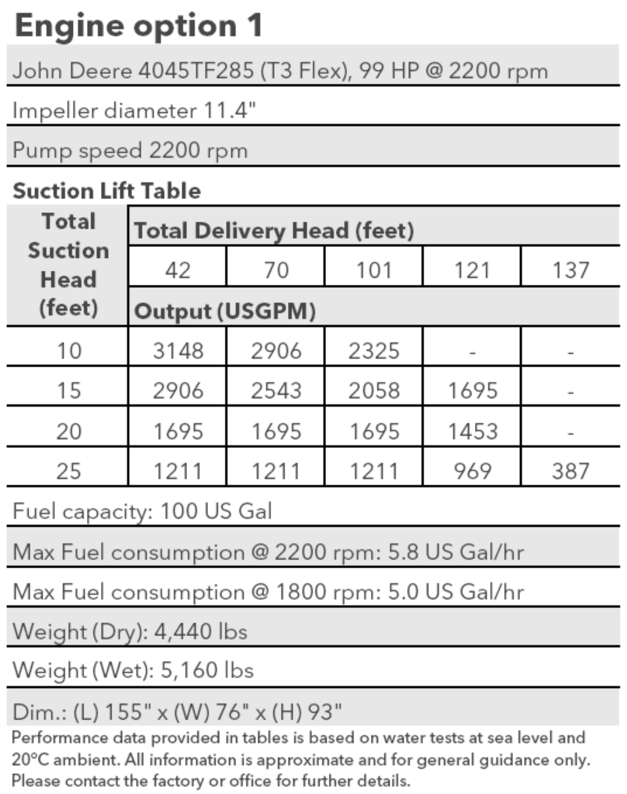
All culverts are assumed to be clean in the unimproved and improved scenarios.

The existing and improved terrains are coincident lines along this profile.

Figure 12. Maximum Hydraulic Grade Lines, Eden Way North to Greenbrier Lake

Godwin Dri-Prime CD225M Pump

Assume average output would be 2,500 gpm = 5.6 cfs



Engine option 1

John Deere 4045TF285 (T3 Flex), 99 HP @ 2200 rpm

Impeller diameter 11.4"

Pump speed 2200 rpm

Suction Lift Table

Total Suction Head (feet)	Total Delivery Head (feet)				
	42	70	101	121	137
	Output (USGPM)				
10	3148	2906	2325	-	-
15	2906	2543	2058	1695	-
20	1695	1695	1695	1453	-
25	1211	1211	1211	969	387

Fuel capacity: 100 US Gal

Max Fuel consumption @ 2200 rpm: 5.8 US Gal/hr

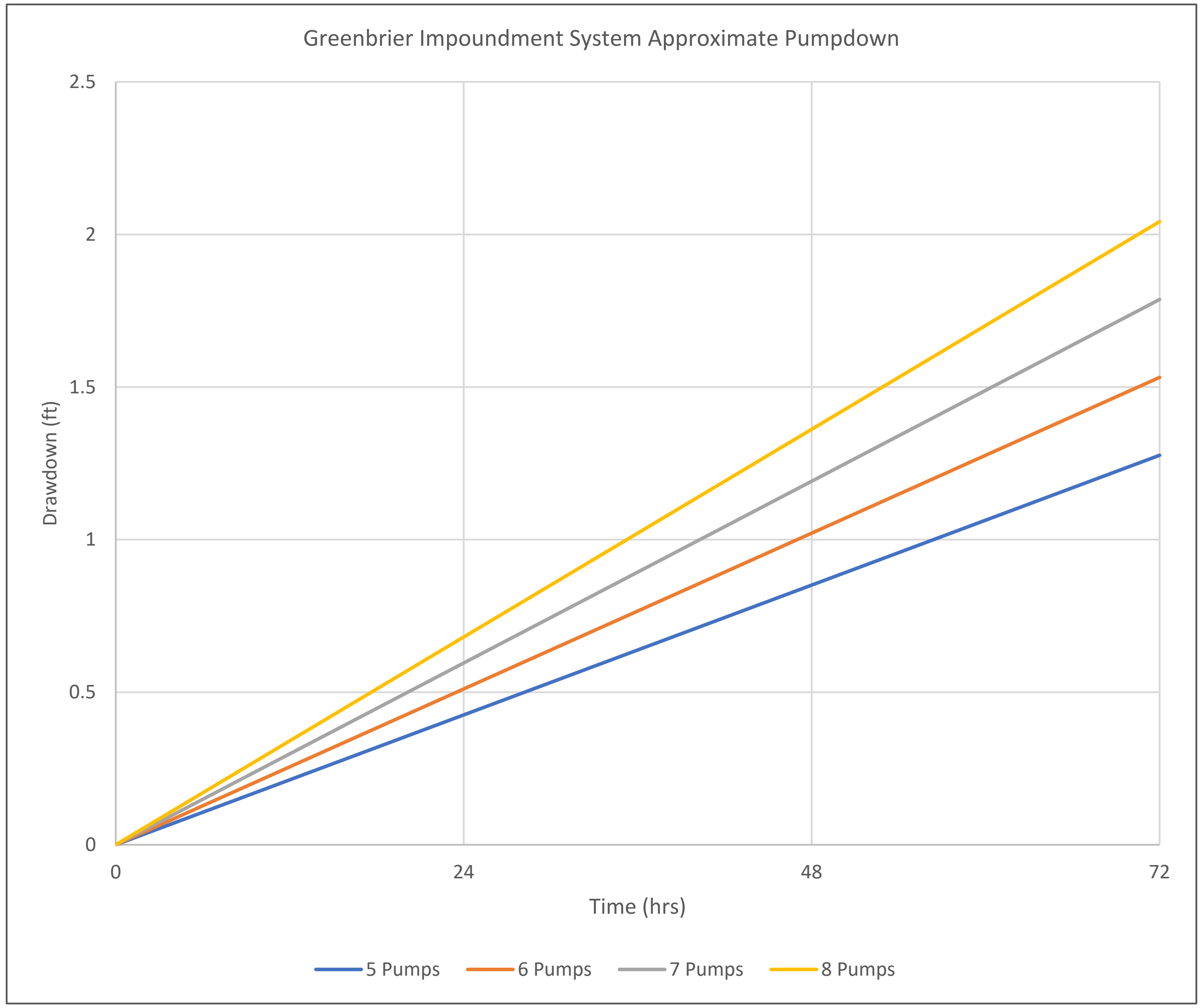
Max Fuel consumption @ 1800 rpm: 5.0 US Gal/hr

Weight (Dry): 4,440 lbs

Weight (Wet): 5,160 lbs

Dim.: (L) 155" x (W) 76" x (H) 93"

Performance data provided in tables is based on water tests at sea level and 20ºC ambient. All information is approximate and for general guidance only. Please contact the factory or office for further details.



Notes

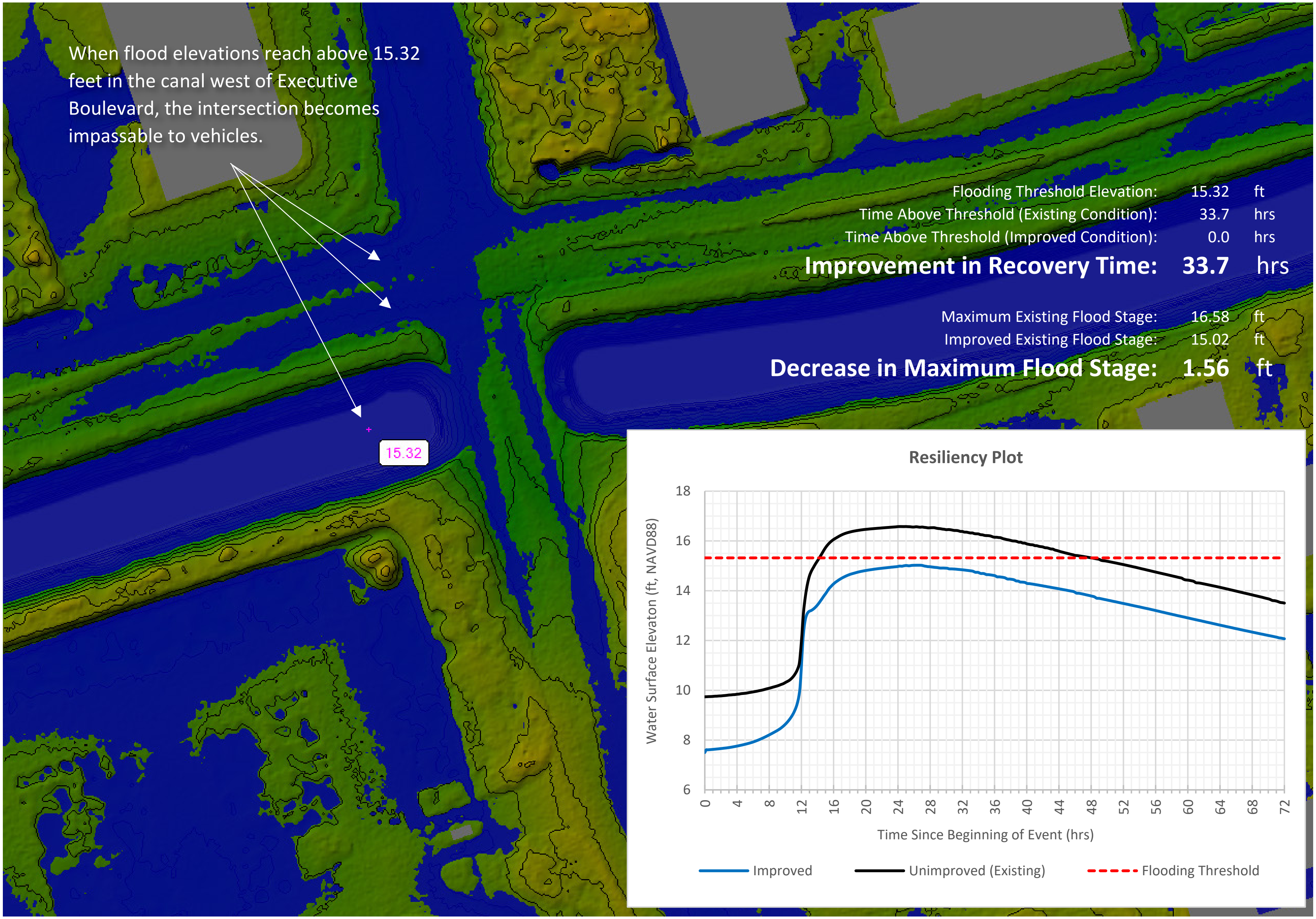
These pumps would require a manifold force main system, the details of which would significantly affect the pump performance curves. These are approximate calculations, only for feasibility consideration purposes.

Greenbrier Impoundment System Approximate Pumpdown Times

Lake System Surface Area (ac):	130.54
Lake System Surface Area (ft2):	5,686,322
Assumed Single Pump Average Capacity (cfs):	5.6

Number of Pumps	Time (hrs)	Pumped Volume (ft3)	Lake System Drawdown (ft)
1	24	483,840	0.09
2	24	967,680	0.17
3	24	1,451,520	0.26
4	24	1,935,360	0.34
5	24	2,419,200	0.43
6	24	2,903,040	0.51
7	24	3,386,880	0.60
8	24	3,870,720	0.68
9	24	4,354,560	0.77
10	24	4,838,400	0.85
1	48	967,680	0.17
2	48	1,935,360	0.34
3	48	2,903,040	0.51
4	48	3,870,720	0.68
5	48	4,838,400	0.85
6	48	5,806,080	1.02
7	48	6,773,760	1.19
8	48	7,741,440	1.36
9	48	8,709,120	1.53
10	48	9,676,800	1.70
1	72	1,451,520	0.26
2	72	2,903,040	0.51
3	72	4,354,560	0.77
4	72	5,806,080	1.02
5	72	7,257,600	1.28
6	72	8,709,120	1.53
7	72	10,160,640	1.79
8	72	11,612,160	2.04
9	72	13,063,680	2.30
10	72	14,515,200	2.55

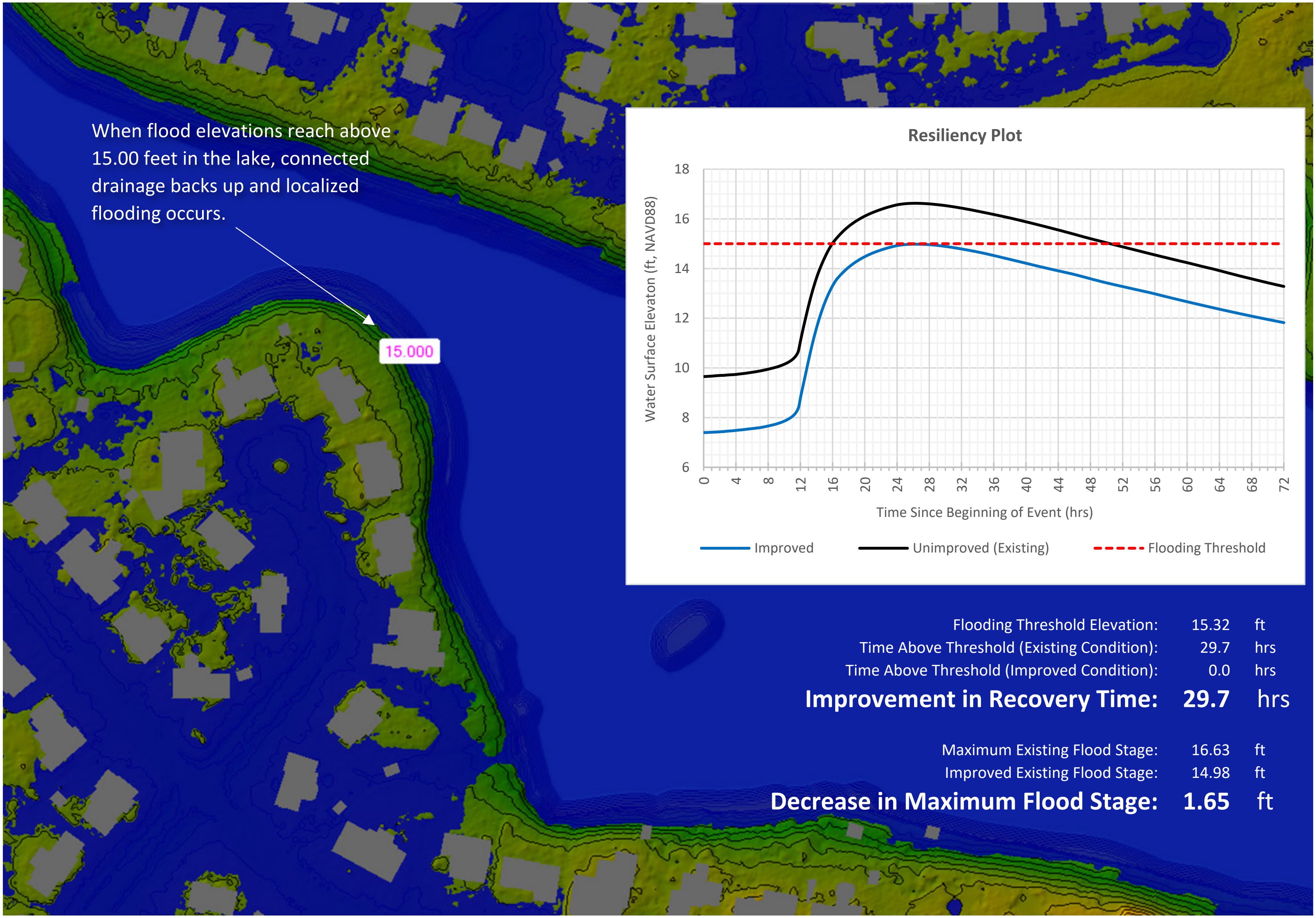
Figure 13. Greenbrier Impoundment System Pumpdown Options



When flood elevations reach above 15.32 feet in the canal west of Executive Boulevard, the intersection becomes impassable to vehicles.

Flooding Threshold Elevation:	15.32	ft
Time Above Threshold (Existing Condition):	33.7	hrs
Time Above Threshold (Improved Condition):	0.0	hrs
Improvement in Recovery Time:	**33.7**	**hrs**
Maximum Existing Flood Stage:	16.58	ft
Improved Existing Flood Stage:	15.02	ft
Decrease in Maximum Flood Stage:	**1.56**	**ft**

Figure 14. Resilience Improvements, Eden Way and Executive Boulevard (D9 Event)



When flood elevations reach above 15.00 feet in the lake, connected drainage backs up and localized flooding occurs.

Flooding Threshold Elevation:	15.32	ft
Time Above Threshold (Existing Condition):	29.7	hrs
Time Above Threshold (Improved Condition):	0.0	hrs
Improvement in Recovery Time:	**29.7**	hrs
Maximum Existing Flood Stage:	16.63	ft
Improved Existing Flood Stage:	14.98	ft
Decrease in Maximum Flood Stage:	**1.65**	ft

Figure 15. Resilience Improvements, Greenbrier Lake (D9 Event)

APPENDIX A

Cost Opinions

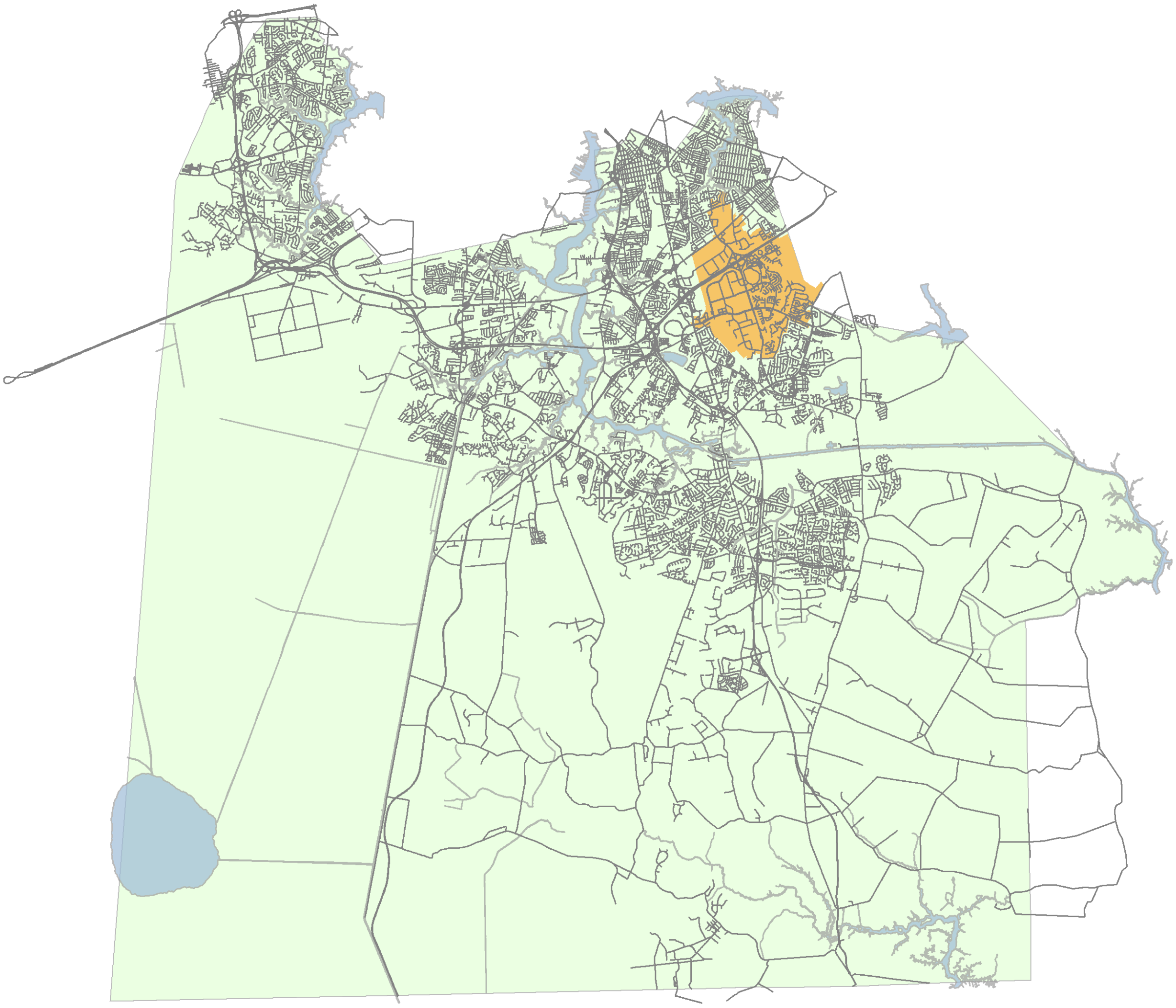


Table A-1. Cost Opinion, Indian River High School Lake Weir

Pricing in 2020 Dollars

Number	Item	Unit	Quantity	Unit Price	Extended Price
1	Mobilization/Demobilization	LS	1	$ 8,000.00	$ 8,000
2	Maintaining Traffic	LS	1	$ 10,000.00	$ 10,000
3	Erosion and Sediment Control to Include Maintenance	LS	1	$ 10,850.00	$ 10,850
4	Sediment Excavation Upstream from Weir	CY	200	$ 70.00	$ 14,000
5	Dewatering/Lake Drawdown	LS	1	$ 24,500.00	$ 24,500
6	Install Temporary Coffer Dam	LS	1	$ 7,500.00	$ 7,500
7	Demolition of Existing Weir and Concrete Apron	LS	1	$ 10,000.00	$ 10,000
8	Construct New Concrete Weir and Spillway Apron	CY	14	$ 1,000.00	$ 14,000
9	#57 Stone for Weir and Apron Bedding	CY	61	$ 150.00	$ 9,150
				Total of All Prices (Base Bid):	**$ 108,000**

	Engineering and Design Services	LS	1	$ 70,000.00	$ 70,000
	Survey/Utility Location	LS	1	$ 15,000.00	$ 15,000
				Project Subtotal	**$ 193,000**
				20% Contingency	$ 38,600
				PROJECT TOTAL	**$ 231,600**

Table A-2. Cost Opinion, South Military Highway Culvert Replacement

Pricing in 2020 Dollars

Number	Item	Unit	Quantity	Unit Price	Extended Price
1	Mobilization/Demobilization	LS	1	$ 57,554.10	$ 57,554
2	Maintaining Traffic	LS	1	$ 100,000.00	$ 100,000
3	Erosion and Sediment Control to Include Maintenance	LS	1	$ 16,000.00	$ 16,000
4	Undercut Excavation and Dispose Offsite	CY	260	$ 60.00	$ 15,600
5	Backfill of Undercut Excavation	CY	260	$ 130.00	$ 33,800
6	Regular Excavation	CY	1250	$ 50.00	$ 62,500
7	VDOT CG-6 Curb and Gutter	LF	70	$ 30.00	$ 2,100
8	VDOT MC-1 Median Curb	LF	45	$ 20.00	$ 900
9	VDOT Double 8'x8' Box Culvert	LF	121	$ 4,500.00	$ 544,500
10	VDOT BCW-21 Wingwall, Precast	EA	2	$ 11,000.00	$ 22,000
11	VDOT BCW-22 Wingwall, Precast	EA	2	$ 14,000.00	$ 28,000
12	Culvert Backfill - Select Material, Type I (Min. CBR=20)	CY	363	$ 35.00	$ 12,705
13	Culvert Backfill - Regular Fill	CY	300	$ 25.00	$ 7,500
14	VDOT Riprap EC-1, Class I, 24" Thick w/ Geotextile Fabric	TONS	60	$ 100.00	$ 6,000
15	Existing Curb and Gutter Demolition	LF	70	$ 10.00	$ 700
16	Existing Median Curb Demolition	LF	45	$ 10.00	$ 450
17	Remove/Reinstall Guardrail	LS	1	$ 4,500.00	$ 4,500
18	Remove/Reinstall Existing Wooden Bulkhead	LS	1	$ 12,000.00	$ 12,000
19	Relocating or Modifying Existing Miscellaneous Items	LS	1	$ 8,000.00	$ 8,000
20	Offset/Relocate Existing Utilities	LS	1	$ 50,000.00	$ 50,000
21	Existing Pavement Demolition	SY	260	$ 14.00	$ 3,640
22	Aggregate Base Material (8" VDOT 21A or 21B)	SY	260	$ 19.00	$ 4,940
23	Asphalt Concrete - 2" SM-2A Surface Course	SY	260	$ 15.00	$ 3,900
24	Asphalt Concrete - 2" IM-1A Intermediate Course	SY	260	$ 15.00	$ 3,900
25	Asphalt Concrete - 8" BM-2 Base Course	SY	260	$ 60.00	$ 15,600
				Total of All Prices (Base Bid):	**$ 1,016,789**

	Engineering and Design Services	LS	1	$ 122,014.69	$ 122,015
	Survey/Utility Location	LS	1	$ 40,000.00	$ 40,000
				Project Subtotal	**$ 1,178,804**
				20% Contingency	$ 235,761
				PROJECT TOTAL	**$ 1,414,565**

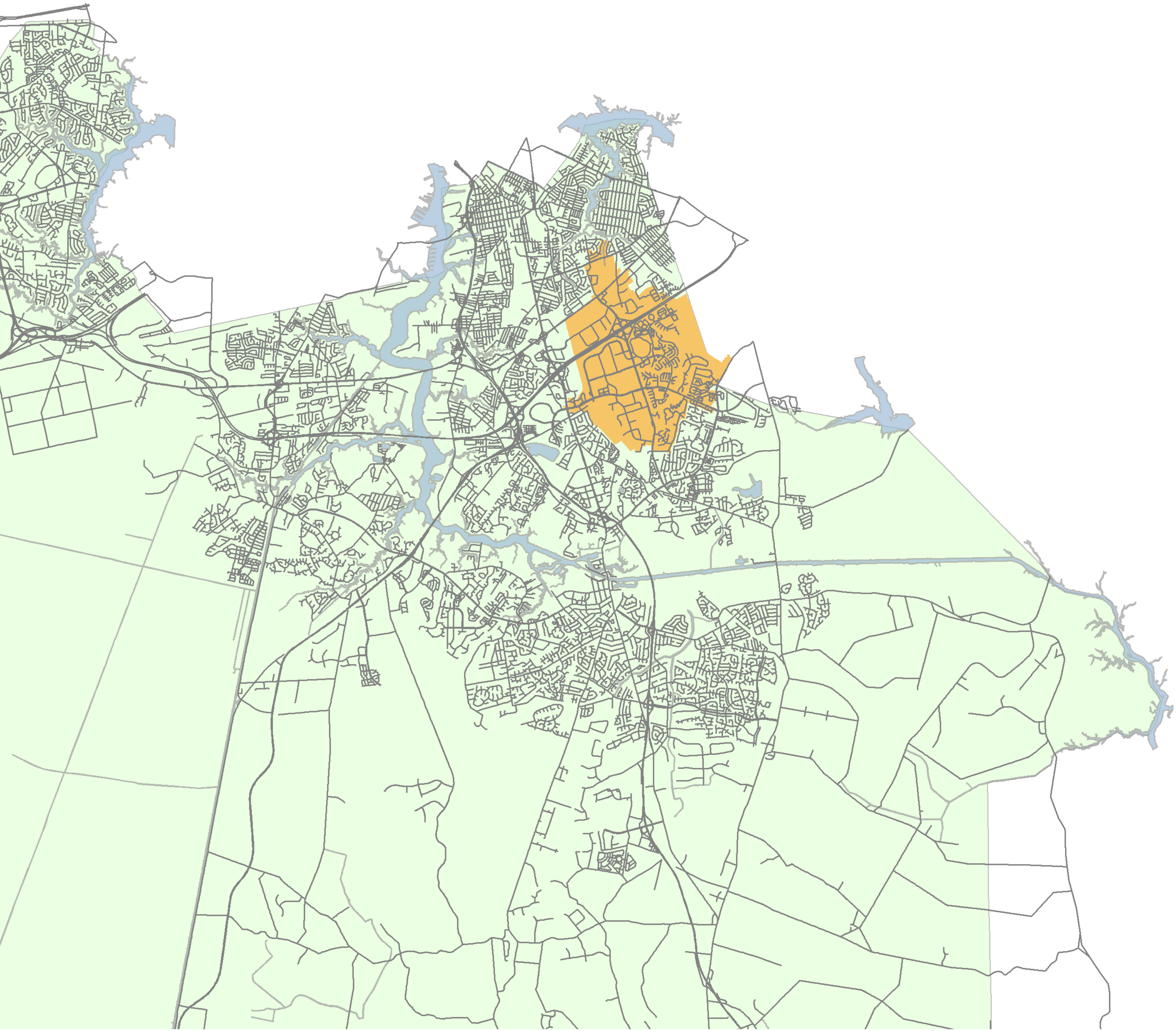
Table A-3. Cost Opinion, I-64 Additional Culvert

Pricing in 2020 Dollars

Number	Item	Unit	Quantity	Unit Price	Extended Price
1	Mobilization/Demobilization	LS	1	$ 119,314.80	$ 119,315
2	Maintaining Traffic	LS	1	$ 100,000.00	$ 100,000
3	Clearing and Grubbing	AC	1.5	$ 40,000.00	$ 60,000
4	Erosion and Sediment Control to Include Maintenance	LS	1	$ 105,000.00	$ 105,000
5	Undercut Excavation for EW-2 Endwalls and Dispose Offsite	CY	32	$ 60.00	$ 1,920
6	Backfill of Undercut Excavation for EW-2 Endwalls.	CY	32	$ 130.00	$ 4,160
6	Regular Excavation	CY	3,500	$ 50.00	$ 175,000
7	Regular Fill	CY	975	$ 20.00	$ 19,500
8	Microtunnel 60" Outfall Pipe	LF	348	$ 4,000.00	$ 1,392,000
9	VDOT EW-2 Endwall for 60" RCP	EA	2	$ 10,000.00	$ 20,000
10	VDOT Riprap EC-1, Class I, 24" Thick w/ Geotextile Fabric	TONS	110	$ 100.00	$ 11,000
11	Upstream Impoundment Bank Treatments	LS	1	$ 100,000.00	$ 100,000
				Total of All Prices (Base Bid):	**$ 2,107,895**

	Engineering and Design Services	LS	1	$ 150,000.00	$ 150,000
	Geotechnical Engineering	LS	1	$ 50,000.00	$ 50,000
	Survey/Utility Location	LS	1	$ 40,000.00	$ 40,000
				Project Subtotal	**$ 2,347,895**
				20% Contingency	$ 469,579
				PROJECT TOTAL	**$ 2,817,474**

Note: If 60" culvert could be jack-and-bored, project cost could drop by as much as $1,000,000. If multiple culverts are installed, price could increase.



National Flood Hazard Layer FIRMette

FEMA

76°14'34"W 36°48'3"N

76°13'56"W 36°47'34"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	– — –	Channel, Culvert, or Storm Sewer
	┃┃┃┃┃┃┃	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	━	Limit of Study
	━	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	– —	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	⬚	No Digital Data Available
	☒	Unmapped

N

📍 The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

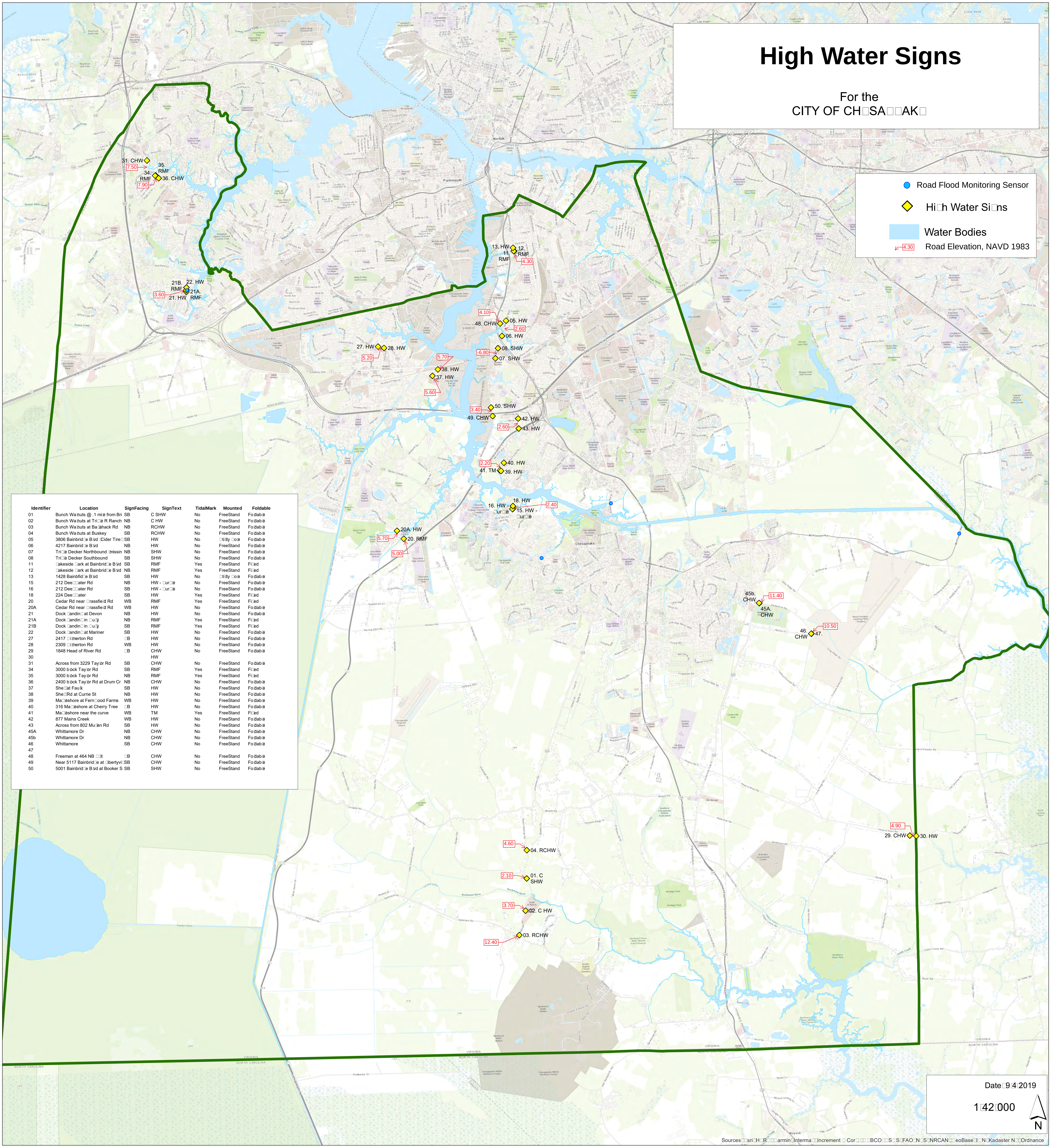
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2022 at 5:57 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

High Water Signs

For the
CITY OF CHESAPEAKE



● Road Flood Monitoring Sensor

◇ High Water Signs

🟦 Water Bodies

4.30 Road Elevation, NAVD 1983

Identifier	Location	SignFacing	SignText	TidalMark	Mounted	Foldable
01	Bunch Walnuts @ .1 mile from Bri	SB	C SHW	No	FreeStand	Foldable
02	Bunch Walnuts at Triple R Ranch	NB	C HW	No	FreeStand	Foldable
03	Bunch Walnuts at Ballahack Rd	NB	RCHW	No	FreeStand	Foldable
04	Bunch Walnuts at Buskey	SB	RCHW	No	FreeStand	Foldable
05	3806 Bainbridge Blvd (Cider Tire)	SB	HW	No	Utility Pole	Foldable
06	4217 Bainbridge Blvd	NB	HW	No	FreeStand	Foldable
07	Triple Decker Northbound (missin	NB	SHW	No	FreeStand	Foldable
08	Triple Decker Southbound	SB	SHW	No	FreeStand	Foldable
11	Lakeside Park at Bainbridge Blvd	SB	RMF	Yes	FreeStand	Fixed
12	Lakeside Park at Bainbridge Blvd	NB	RMF	Yes	FreeStand	Fixed
13	1428 Bainbfidge Blvd	SB	HW	No	Utility Pole	Foldable
15	212 Deepwater Rd	NB	HW - Curve	No	FreeStand	Foldable
16	212 Deepwater Rd	SB	HW - Curve	No	FreeStand	Foldable
18	224 Deepwater	SB	HW	Yes	FreeStand	Fixed
20	Cedar Rd near Grassfield Rd	WB	RMF	Yes	FreeStand	Fixed
20A	Cedar Rd near Grassfield Rd	WB	HW	No	FreeStand	Foldable
21	Dock Landing at Devon	NB	HW	No	FreeStand	Foldable
21A	Dock Landing in Gully	NB	RMF	Yes	FreeStand	Fixed
21B	Dock Landing in Gully	SB	RMF	Yes	FreeStand	Fixed
22	Dock Landing at Mariner	SB	HW	No	FreeStand	Foldable
27	2417 Gilmerton Rd	EB	HW	No	FreeStand	Foldable
28	2309 Gilmerton Rd	WB	HW	No	FreeStand	Foldable
29	1848 Head of River Rd	EB	CHW	No	FreeStand	Foldable
30			HW			
31	Across from 3229 Taylor Rd	SB	CHW	No	FreeStand	Foldable
34	3000 block Taylor Rd	SB	RMF	Yes	FreeStand	Fixed
35	3000 block Taylor Rd	NB	RMF	Yes	FreeStand	Fixed
36	2400 block Taylor Rd at Drum Cr	NB	CHW	No	FreeStand	Foldable
37	Shell at Faulk	SB	HW	No	FreeStand	Foldable
38	Shell Rd at Currie St	NB	HW	No	FreeStand	Foldable
39	Mapleshore at Fernwood Farms	WB	HW	No	FreeStand	Foldable
40	316 Mapleshore at Cherry Tree	EB	HW	No	FreeStand	Foldable
41	Mapleshore near the curve	WB	TM	Yes	FreeStand	Fixed
42	877 Mains Creek	WB	HW	No	FreeStand	Foldable
43	Across from 802 Mullen Rd	SB	HW	No	FreeStand	Foldable
45A	Whittamore Dr	NB	CHW	No	FreeStand	Foldable
45b	Whittamore Dr	NB	CHW	No	FreeStand	Foldable
46	Whittamore	SB	CHW	No	FreeStand	Foldable
47						
48	Freeman at 464 NB Exit	EB	CHW	No	FreeStand	Foldable
49	Near 5117 Bainbridge at Libertyvil	SB	CHW	No	FreeStand	Foldable
50	5001 Bainbridge Blvd at Booker S	SB	SHW	No	FreeStand	Foldable

Date: 9/4/2019

1:42,000

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1401157	Volvo Pkwy & Crossways Blvd - FLOODING - possible roadside ditch or storm drain blocked	CM	CLOSE			PW-ST-3787	PW-STS-3787124				
1903952	CROSSWAYS BLVD & EDEN WAY N--INTERSECTION/STREET	CM	CLOSE	3	ROLSEN	PW-ST-4443	PW-STS-4443001				

Number of Records: 2

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
2067054	VOLVO PKWY & EDEN WAY N--ROAD IMPASSABLE	CM	CLOSE	6							
2067059	VOLVO PKWY & EDEN WAY N--ROAD IMPASSABLE	CM	CLOSE	6							
2067060	VOLVO PKWY & EDEN WAY S--ROAD IMPASSABLE	CM	CLOSE	6							
2067075	VOLVO PKWY & EDEN WAY S--ROAD IMPASSABLE	CM	CLOSE	6							
2067085	145 eden way--Flooding	CM	CLOSE	6							
2067086	GREENBRIER PKWY & EDEN WAY N--Flooding	CM	CLOSE	6							
2067090	GREENBRIER PKWY & EDEN WAY N-23320-Flooding	CM	CLOSE	6							
2067091	GREENBRIER PKWY & EDEN WAY N--Flooding	CM	CLOSE	6							
2067095	GREENBRIER PKWY & EDEN WAY N--Flooding	CM	CLOSE	6							
2361101	Greenbrier @ Eden Way Flooding	CM	WAPPR	3	MDIONNE	PW-ST-2750	PW-STS-2750036				
2362448	23320 - Flooding - 713 Eden Way N	CM	FIELDCOMP	3	ROLSEN	PW-ST-2553	PW-STS-2553016				
543345	800 Eden Way N - flooding	EM	CLOSE			PW-ST-2553	PW-STS-2553017		542707		
543682	Eden Way & Greenbrier at Town Bank - Trash Rack - Flooding	EM	CLOSE						542707		

Number of Records: 13

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1884844	23320-- 1150 FAIRWAY--Flooding	CM	CLOSE	6		PW-ST-4372	PW-STS-4372003		1884775		
1884859	23320-- 1144 FAIRWAY--INTERSECTION/STREET	CM	CLOSE	3		PW-ST-4372	PW-STS-4372003		1884775		

Number of Records: 2

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1478860	23325-- 2250 Old Greenbrier Rd - flooding in front of this location	CM	CLOSE	3	RLSYKES	PW-ST-3262	PW-STS-3262004		1478506		
1616226	Jubilee site - Greenbrier Pkwy - flooding due to heavy rain	CM	CLOSE			PW-ST-2750	PW-STS-2750027		1616164		
1616259	Greenbrier Pkwy & Volvo Pkwy -- flooding - INTERSECTION/STREET	CM	CLOSE	3		PW-ST-2750	PW-STS-2750027		1616164		
1616394	23325-- 2250 Old Greenbrier Rd - flooding - flush two storm drains	CM	CLOSE	3		PW-ST-3262	PW-STS-3262004		1616164		
1632945	Greenbrier Pkwy (near Fazolis) - flush a blocked catch basin - flooding	CM	CLOSE			PW-ST-2750	PW-STS-2750027		1632757		
2022761	23320 - 1515 S Military Hwy - flooding on Old Greenbrier side - street	CM	CLOSE	3	ROLSEN	PW-ST-3170	PW-STS-3170027		2022644		
2067086	GREENBRIER PKWY & EDEN WAY N--Flooding	CM	CLOSE	6							
2067089	GREENBRIER PKWY & S MILITARY HWY--Flooding	CM	CLOSE	6							
2067090	GREENBRIER PKWY & EDEN WAY N-23320-Flooding	CM	CLOSE	6							
2067091	GREENBRIER PKWY & EDEN WAY N--Flooding	CM	CLOSE	6							
2067095	GREENBRIER PKWY & EDEN WAY N--Flooding	CM	CLOSE	6							
2361101	Greenbrier @ Eden Way Flooding	CM	WAPPR	3	MDIONNE	PW-ST-2750	PW-STS-2750036				
543682	Eden Way & Greenbrier at Town Bank - Trash Rack - Flooding	EM	CLOSE						542707		
970582	FLOODING - Woodlake Dr & Greenbrier Pkwy - street flooded	CM	CLOSE		PLAMOREE	PW-ST-3909	PW-STS-3909005	PW-SWCRW04		5/19/11	

Number of Records: 14

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
2022761	23320 - 1515 S Military Hwy - flooding on Old Greenbrier side - street	CM	CLOSE	3	ROLSEN	PW-ST-3170	PW-STS-3170027		2022644		

Number of Records: 1

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1884834	23320-- Simon Dr & Corbin - flooding at this intersection	CM	CLOSE	3		PW-ST-5910	PW-STS-5910002		1884775		
1884835	----SIMON DR & CORBIN DR--INTERSECTION/STREET	CM	CLOSE	3							
1884911	----PEYTON LN & SIMON DR--INTERSECTION/STREET	CM	CLOSE	3		PW-ST-5911	PW-STS-5911003		1884775		
1884913	23320-- 1356 SIMON--INTERSECTION/STREET	CM	CLOSE	3		PW-ST-5910	PW-STS-5910002		1884775		
1884934	23320-- 1304 SIMON--INTERSECTION/STREET	CM	CLOSE	3		PW-ST-5910	PW-STS-5910001		1884775		
1885043	23320-- 1324 SIMON--Flooding-PW	CM	CLOSE	3		PW-ST-5910	PW-STS-5910001		1884775		

Number of Records: 6

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1885153	23320-- 217 THRASHER--Flooding-PW	CM	CLOSE	3		PW-ST-3717	PW-STS-3717004		1884775		

Number of Records: 1

4/4/22 11:05 AM

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1546140	23320-- 600 Volvo Pkwy - flooding within the street	CM	CLOSE	3	WDGOODMAN	PW-ST-3787	PW-STS-3787055		1546136		
1616259	Greenbrier Pkwy & Volvo Pkwy -- flooding - INTERSECTION/STREET	CM	CLOSE	3		PW-ST-2750	PW-STS-2750027		1616164		
206157	Professional & Volvo - FLOODING	EM	CLOSE								
2067054	VOLVO PKWY & EDEN WAY N--ROAD IMPASSABLE	CM	CLOSE	6							
2067059	VOLVO PKWY & EDEN WAY N--ROAD IMPASSABLE	CM	CLOSE	6							
2067060	VOLVO PKWY & EDEN WAY S--ROAD IMPASSABLE	CM	CLOSE	6							
2067061	VOLVO PKWY & EDEN WAY N--ROAD IMPASSABLE	CM	CLOSE	6							
2067065	VOLVO PKWY & BATTLEFIELD BLVD N--ROAD IMPASSABLE	CM	CLOSE	6							
2067075	VOLVO PKWY & EDEN WAY S--ROAD IMPASSABLE	CM	CLOSE	6							
2246334	23320- 517 Volvo Pkwy (FLOODING) 2020	CM	CLOSE		ROLSEN						
2265686	23320- Summit Pointe Dr/ Volvo Pkwy (flooding) 2020	CM	CLOSE		ROLSEN						
2361100	Volvo @ Executive Flooding	CM	APPR	3	MDIONNE	PW-ST-3787	PW-STS-3787042				
543349	1200 Volvo Pkwy - flooding	EM	CLOSE			PW-ST-3787	PW-STS-3787084		542707		

Number of Records: 13

Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
543737	1420 Waterside Dr S - flooding	EM	CLOSE			PW-ST-3809	PW-STS-3809001		542707		

Number of Records: 1

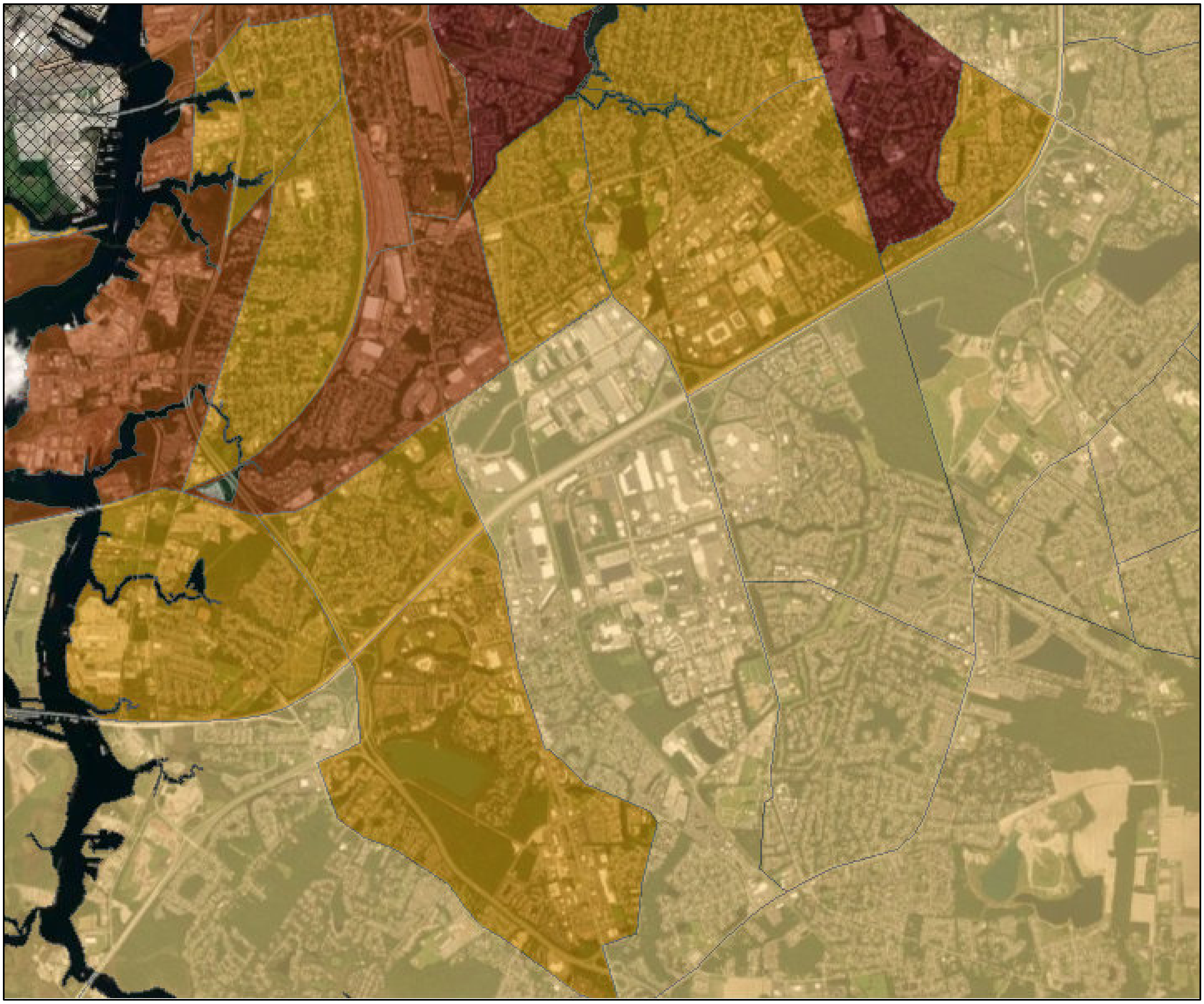
Work Order List

Site: COC

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1873921	23328- Greenbrier Pkwy @ 716 Woodlake Dr- City Manager's ofc-street flooding	CM	CLOSE		ROLSEN	PW-ST-2750	PW-STS-2750074				
1879008	----GREENBRIER CIR & WOODLAKE DR--INTERSECTION/ STREET	CM	CLOSE	3		PW-ST-2749	PW-STS-2749001		1877641		
206102	701 Woodlake Dr - FLOODING	EM	CLOSE								
970582	FLOODING - Woodlake Dr & Greenbrier Pkwy - street flooded	CM	CLOSE		PLAMOREE	PW-ST-3909	PW-STS-3909005	PW-SWCRW04		5/19/11	

Number of Records: 4

Greenbrier



April 5, 2022

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- 🟧 Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟫 High Social Vulnerability
- 🟥 Very High Social Vulnerability
- ▨ Not inlcuded in the analysis

1:72,224

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPT VA

Department of Public Works	Chesapeake VIRGINIA	
Directive: Departmental Regulation	Number: 755	
Subject: **Drainage Infrastructure Management**	Supersedes: 10/15/14	Next Review: 10/30/20
Approved: Director of Public Works	Effective Date: 10/30/18 Initiator: Ali Asgharpour	

I. Purpose

The purpose of this Departmental Regulation is to establish policy and procedures to manage the City's street drainage infrastructure.

II. Policy

A. Public Works shall maintain the open and closed drainage systems within the City's rights of way and easements to provide for the original design capacity to the extent possible.

B. Open systems are defined as roadside ditches, lead or perimeter ditches within rights of way or existing easements. Closed systems include inlet structures, manholes, catch basins, pipes, and culverts.

C. Public lakes and ponds that serve as holding facilities to temporarily store and gradually release stormwater shall be maintained to provide for positive flow. The maintenance activities shall be limited to the outfall structures. All other maintenance work such as mowing and bank restoration shall be the property owner's responsibility. Public Works is not responsible for dredging of recreational or navigational purposes.

D. The placement of new driveway culverts or the extension of existing driveway culverts is the responsibility of the property owner. The property owner must obtain a permit from the Department of Development and Permits, prior to installing new culverts or extending existing culverts.

E. All non-emergency repairs shall be coordinated within Planning/Scheduling team to ensure resources are adequately estimated in advance.

Related Regulations: City of Chesapeake City Code Chapter 26, Article VIII.

III. Procedures

Cave Ins or Structural Repairs

The Planner Scheduler Group handles securing safety issues for cave ins or structures and investigating the location to determine whether the repairs will be performed by city crews or an outside contractor.

Securing and/or filling cave ins or structures, when necessary, shall be performed by a cave in crew assigned to the Planner Scheduler Group within twenty-four (24) hours of receiving the report. Securing may consist of placing cones, barrels, safety signs, safety fencing or filling the location with dirt and/or crush & run.

The Planner Scheduler Group cave in crew will fill out a Maximo Log Entry Form for each cave in and/or structure noting the pipe or structure material, pipe diameter, invert depth, number of cave ins, type of structure, number of pictures taken (there should at least be two showing the structure & street view), location of the cave in, and whether asphalt, concrete, curb & gutter or driveway apron repairs will be needed. The estimated amount of and material for asphalt, concrete, curb & gutter, and driveway apron repairs will also be provided.

If the cave in, damaged section of pipe or structure is not easily visible or if further investigation is needed, the Planner Scheduler Group will coordinate with the Stormwater Superintendent or the General Supervisor (in charge of the job) to have either a pole camera or CCTV truck used.

If flushing is needed to assist with determining the amount of damage or the location is flooded due to the damaged pipe and/or cave in, the Planner Scheduler Group will coordinate with the Stormwater Superintendent or the General Supervisor (in charge of the job) to have the pipes flushed or cleared of water.

The Planner Scheduler Group Cave In Coordinator shall estimate the schedule for cave in repairs by coordinating with the Stormwater Superintendent or the General Supervisor (in charge of the job). The Planner Scheduler Group shall evaluate the severity of the cave in and determine whether the repair shall be performed by city crews or given to a contractor.

Any structure that needs to be immediately repaired (broken basin tops, broken brickwork, etc.) because it is a danger to the public and/or vehicles shall be scheduled by the Planner Scheduler Group. If a specially sized structure cover is needed, the Planner Scheduler Group will coordinate the ordering and purchase of the item with the Public Works Storeroom.

Cave Ins – To Be Repaired by City Crews

If the damaged pipe section is less than six (6) feet deep (measured from the ground surface to the invert), and pipe access does not pose an undue risk for city crews, a Stormwater crew shall excavate around the damaged pipe section and assess whether the section needs to be replaced or repaired.

If the cave in is caused by a separation of less than four (4) inches between pipe joints, a brick collar will be placed around the pipe, filter fabric shall be placed around the separated joint and the area will be backfilled. Separations greater than four (4) inches shall require that the separated pipe joints be re-laid or replaced.

If the pipe is large enough to crawl into, Stormwater may choose to perform the repair by placing mortar on the damaged section from inside the pipe. Confined space entry procedures MUST be followed for this type of repair. The Public Work Safety Office shall be consulted BEFORE the work begins.

If the pipe or culvert repair requires pavement to be removed, Stormwater shall backfill and compact the repair area with select fill and/or crusher run in compacted six (6) inch lifts so that the final grade is between one (1) and one and half (1 ½) below the adjacent pavement edges. The Stormwater Superintendent or the General Supervisor (in charge of the job) shall coordinate with the Planner Scheduler Group to ensure that Streets & Highways has been scheduled to perform the replacement of asphalt, curb & gutter, etc.

It shall be the responsibility of the Stormwater Superintendent or the General Supervisor (in charge of the job) to provide the size of the repair in length, width and depth and the Maximo work order number used for the job. This will assist the Planner Scheduler Group with the creation of a child work order for Streets & Highways.

If the pipe or culvert repair is made in an unpaved area, Stormwater shall restore the area by compacting the sub-grade fill in six (6) inch lifts and placing at least two (2) inches of topsoil. The topsoil shall be seeded and stabilized with straw, jute mesh, or other landscaping measures to reduce the likelihood of erosion, while the grass seed germinates and becomes established.

It will NOT be the responsibility of city crews to replace illegally placed fencing, sprinkler systems, or other landscape features located in the city drainage easement or right-of-way. The Stormwater Superintendent or the General Supervisor (in charge of the job) shall leave a door hanger advising the citizen that the item (fence, bush, etc.) will be removed and not replaced. If there are multiple items or further notification to residents is needed, the Planner Scheduler Group will send letters to those residents affected by the repair.

Updating Inventory & GIS – Stormwater Structures

Discrepancies in inventory information noted during repair work shall be provided to the Operations GIS analyst for updating the system.

As part of a continual updating of the Stormwater structures and information in Arc GIS, the structures throughout the city (catch basins, manholes, drop inlets, junction boxes, pipes, etc.) shall be inspected (by either pole camera or CCTV truck) every six (6) to eight (8) years.

During the investigation, the crew shall annotate the pipe size, depth, structural material, any conflicts, flow direction, etc. A still picture and/or video shall be taken to capture the condition of the structure and pipe.

Any cave ins or defects in the structure shall be noted and the information provided to the Planner Scheduler Group for review and/or to have a work order created.

Cave Ins – To Be Repaired By A Contractor

If the cave in and/or structure repair work will be given to an outside contractor, the Planner Scheduler Group will update the Maximo work order, assign it to Contractual Services and add the information to the contractor's spreadsheet located in Sharepoint.

The following conditions must be met in order to assign the work to a contractor:

1. Excavation required is greater than six (6) feet deep and/or exceeds the pipe diameter of forty-eight (48) inches.
2. Extensive or complicated confined space entry will be needed.
3. Major reconstruction of structure walls or basin is needed.
4. A long stretch of pipe, more than one hundred (100) feet, with a diameter greater than twelve (12) inches, will need to be slip-lined.
5. There are multiple cave ins along a stretch of pipe.
6. Cave in(s) are located under a high volume roadway (i.e. Battlefield Blvd, Greenbrier Parkway, etc.).

7. The existing workload is such that service level agreements cannot be met by city forces.

Plans or Requests for New Pipes or Structures

Any plans and/or requests for new pipes and/or structures requested through the Drainage Engineer's Office or other city department shall be reviewed by the Planner Scheduler Group.

The Planner Scheduler Group shall determine whether the work will be performed by city crews or given to a contractor to handle.

Pipe washing Requests

When a report of a clogged structure (catch basin, drop inlet, driveway pipe, etc.) is received, the Planner Scheduler Group will schedule a pipe washer to respond.

If there is a flooding situation due to a heavy rain event, and a structure is suspected of being blocked, a pipe washer will be dispatched immediately.

Pipe washers may be scheduled at the request of the CCTVing crew to flush a pipe thereby allowing them to TV the pipe and/or structure, or at the cave in crew to flush a basin or pipe to assist with cave in repairs. These instances will be scheduled through the Planner Scheduler Group.

Ditches

Ditch requests are broken into two categories for investigation. Roadside ditch requests are divided amongst the General Supervisors for investigation and recommendation of work (cleaning, regrading, etc.). Side, lead and rear ditch requests are investigated by the Planner Scheduler Group. The Planner Scheduler Group will provide pertinent information – if the ditch private or public, or if there are any easements, access issues, or other special instructions (wetlands, if permits are needed, railroad approval, etc.).

Once the investigation is completed, the work order is assigned to a General Supervisor. The Planner Scheduler Group Ditch Coordinator will work closely with the Stormwater Superintendent and the General Supervisor (in charge of the job) and schedule the work.

There are various types of ditch work that can take place – cleaning & clearing (blockage removal), regrading (small area or large area), and erosion repairs. The location – concrete or earthen ditch, wetlands area, stretch of road needing traffic control – will have an impact on what type of work may be performed and when it should be scheduled (eg. - some ditch cleaning has to be scheduled when school is out).

The Planner Scheduler Group will review any plans or requests that are submitted by the Drainage Engineer's Office or any other city department to determine if the work will be performed by city crews or given to a contractor to handle.

City crews are not responsible for removing leaf and lawn debris that is placed or has fallen into the ditches, unless there is a blockage causing flooding or the ditch is over three (3) feet deep. Citizens shall be responsible for removing leaves and other debris (lawn clippings, etc.) that may be blocking ditches that are three (3) feet and under.

Lead ditch cleaning will be performed in compliance with the MS-4 permit. The Planner Scheduler Group Ditch Coordinator will maintain a list of the lead ditches that have been cleaned, the date, and the date of the next cleaning. A map showing the ditch to be cleaned, along with any pertinent information (easements, wetlands, etc.) shall be attached to the Maximo work order.

Roadside ditches on a preventive maintenance schedule will be cleaned in compliance with the MS-4 permit, depending on the backlog of work orders.

Citizen Requests – Driveway Pipes & Piping In Ditches

A property owner wishing to install a new driveway pipe or extend an existing driveway pipe within the city right-of-way or drainage easement abutting their property, shall be responsible for obtaining a permit from the Department of Development & Permits (382-6304) and for purchasing and installing the pipe in accordance with the permit.

Any public or private utility work required for, or resulting from the pipe or culvert work shall be paid for by the property owner. Replacement pipes must be the same material, sized equal to, or greater than, the existing culvert.

A property owner wishing to pipe a ditch that carries public water shall obtain a permit from the Department of Development & Permits. The design for the piping and structures shall conform to the City's Public Facilities Manual and be approved by the Public Works Engineering Division. The property owner shall be responsible for purchasing and installing the piping and structures, in accordance with the approved design. Any public or private utility work required for, or resulting from, the pipe or culvert work shall be paid for by the property owner.

Department of Public Works

Chesapeake
VIRGINIA

Directive: Departmental Regulation	Number: 756	
Subject: **Stormwater Operation Plan**	Supersedes: 10/15/14	Next Review: 10/30/20
Approved: Director of Public Works	Effective Date: 10/30/18 Initiator: Ali Asgharpour	

I. Purpose

The purpose of this Departmental Regulation is to establish a policy for the maintenance of Stormwater and flood control facilities.

II. Policy

All Stormwater infrastructures in the City of Chesapeake shall be maintained following the standards in Chapter 5 of the City's most recent Public Facilities Manual.

Related Regulations: City of Chesapeake, City Code, Chapter 26

SECTION B-12: OPERATION AND MAINTENANCE

This section presents general operation, maintenance and inspection guidelines for principal spillways and components. However, these guidelines are not intended to be all-inclusive. Specific structures may require special measures not discussed here. The engineer is responsible for determining what, if any, additional items are necessary.

1. Spillway structures should be cleared of debris periodically and after any significant rainfall event where inspection reveals a significant blockage.

2. During low water conditions, concrete spillway structures should be inspected to decide if water is passing through any joints or other structure contacts and to identify any cracks, spalling, broken or loose sections. Any cracked, spalled, broken or loose sections should be cleaned and refilled with an appropriate concrete patching material. A professional engineer should be consulted to repair extensive leakage, spalls or fractures.

3. Outlet protection (stilling basins) and discharge channels should be cleared of brush at least once per year.

4. Trash racks and locking mechanisms should be inspected and tested periodically to make sure they are intact and operative.

5. All sluice gates (or other types of gates or valves used to drain an impoundment) should be operated periodically to insure proper function. The gate and stem should be periodically lubricated and all exposed metal should be painted to protect it from corrosion.

6. Any repairs made to the principal spillway (riser or barrel) should be reviewed by a professional engineer. Vertical trenching to expose the barrel should not be allowed under any circumstances. The trench side slopes should be stepped back at a 2:1 slope, minimum.

SECTION B-13: REFERENCES

American Society of Civil Engineers. *Stormwater Detention Outlet Control Structures*. Task Commission On the Design of Outlet Control Structures, ASCE. New York, NY: 1985.

Brater, E.F., and H.W. King. *Handbook of Hydraulics*. 6th ed. New York: McGraw Hill Book Company, 1976.

Debo, T.N., and A.J. Reese. *Municipal Stormwater Management*. 1995.

Federal Highway Administration. *Debris-Control Structures*. Hydraulic Engineering Circular No. 9, 1971.

Virginia Department of Transportation

Maintenance Best Practices

Maintenance Division
1401 East Broad Street
Richmond, VA 23219
June 10, 2021

5. ROADWAY DRAINAGE

Asset Type: **ROADWAY DRAINAGE**

Policy: *The Department shall maintain drainage facilities to; 1) Provide safety and protection to the traveling motorist; and 2) Provide reasonably adequate drainage of the roadway surfaces, shoulders, and other drainage items; and 3) Preserve the structural integrity of the roadway.*

5.1 Cleaning and Flushing of Pipes and Culverts (Machine or Hand Cleaning)

5.1.1 Activity Description: The inspection and machine or hand cleaning of all drainage structures. May include water jetting of drainage structures, using a water pump to flush out debris.

5.1.2 Purpose of Activity: To identify and promptly remove sediment deposits or obstructions in order to keep culverts and other drainage structures clean and unimpeded. Critical areas should be patrolled during periods of severe storms and any evidence of drainage problems should be corrected immediately.

5.1.3 General Guidelines:

A. Patrol, identify, and evaluate evidence of blockage of drainage structures during routine maintenance activities, especially after rain events.

B. Patrol critical areas during or after periods of severe rain events, particularly those where backed up water would cause property damage.

C. Any evidence of drainage problems should be corrected as soon as feasible.

5.1.4 Procedure to Conduct Maintenance Activity:

A. Identify and adhere to applicable environmental requirements and regulations.

B. Verify the limits of state right of way (R.O.W.) and drainage easements.

C. Determine the need for and type of Erosion and Sedimentation (E & S) controls prior to starting work.

D. Check that all required permits, tools, and materials have been loaded prior to leaving area headquarters.

E. Place traffic control devices in accordance with current Virginia Work Area Protection Manual.

F. Install E & S Controls where necessary.

G. Clean drainage structure using machine cleaning, hand cleaning, or pressure washer as appropriate.

H. After pipe is clean, inspect for rust, deterioration, bituminous coating, and structural integrity, and report any deficiencies to Area HQ Manager.

I. Remove and dispose of any accumulated debris in accordance with current Department guidelines.

   1. Do not place debris on private property.

   2. Avoid placing debris upslope from drainage structures.

   3. Any abnormal oil sheen odors or water colors shall be investigated and reported as necessary. Refer to best management practices for Illicit Discharge Detection and Elimination (IDEE).

J. Recover traffic control devices.

K. Remove E & S Controls when appropriate.

<u>Type of Staffing</u>	<u>Suggested Equipment</u>	<u>Materials</u>
• 1 Lead Crewperson • 2 Operators • 1-2 Laborers	• 1 Dump Truck • 1 Gradall/Backhoe • 1 Water Tank and Pump	• Appropriate Personal Protective Equipment(PPE) • Water • Hand tools
<u>Include as required</u>: • 2 Flaggers	<u>Include as required</u>: • 1 MicroTrax Machine • Truck Mounted Attenuator (TMA)	<u>Include as required</u>: • E & S Controls

Note: Staffing, equipment, and materials are based on general guidelines. Terrain, vegetation and other factors may create a need for modification to the information above. Appropriate VDOT staff is expected to make logical informed decisions on the needs of the maintenance activity being performed.

5.2 Sweeping of Curbs and Gutters

5.2.1 <u>Activity Description</u>: The inspection and removal of sediment deposits or obstructions from curbs, gutters, and shoulders. May also include intersections or other surfaces.

5.2.2 <u>Purpose of Activity</u>: To clean curb and gutter, paved ditches, drop inlets, and drainage elements constructed along shoulders, sidewalks or trails in order to remove collected debris which impedes the flow of water.

10. STRUCTURES

Asset Type: **STRUCTURES**

Policy: The Department shall maintain all structures to the level of service they were initially constructed to or better by subsequent improvements. This objective will be achieved by performing regular preventive maintenance activities, providing regularly scheduled inspections to determine structural deficiencies, and performing restorative maintenance and repair activities as needed.

10.1 Preventative Maintenance

10.1.1 Activity Description: Preventive maintenance (PM) includes any planned cyclical activity performed in advance of a critical need for repair, to reduce or arrest the rate of future deterioration. Preventive maintenance activities consist of the following characteristics: planned and cyclical; proactive (not reactive); and activities that are condition based as determined in safety inspections.

10.1.2 Purpose of Activity: The purpose of preventive maintenance is to extend the useful life of VDOT's assets and to preserve their related public investment. The activities may correct minor defects as a secondary benefit, but are not typically initiated based upon an observed deterioration.

10.1.3 General Guidelines for Preventative Maintenance:

A. Responsibility for Correction of Structure Defects

1. Structure defects and their correction can be classified as major or minor.

   a. Minor repairs may be made by field maintenance forces through routine ordinary maintenance or preventative maintenance activities, which typically do not require plan development and thus does not need a review by the S&B Engineer. Minor repairs should be made upon discovery of defects, subject to compliance with all appropriate environmental regulations, and the work may be performed by the State Forces or Contractors.

   b. Major repairs require the review by the State Structure and Bridge Engineer and usually require the development of engineering plans, and specialized equipment, or a specific allocation.

B. Guidelines for Minor Repair

1. Keeping bridges cleared of debris is an important routine maintenance item in preventing or curtailing structural repairs.

    - a. Abrasives and chemicals used in snow removal should be flushed from the bridge after each storm, if possible.
    - b. The bridge should receive a thorough cleaning at the end of the winter season.
    - c. Bridge seats, bearing assemblies, all joints and the lower chord of trusses shall be kept clean.
    - d. All scuppers and down drains should receive frequent attention to ensure proper functioning at all times.
    - e. Environmental considerations shall be addressed before bridge washings.
  - 2. Brush should be kept cut under all bridges over land to reduce the fire hazard, and all debris accumulated against piers and abutments shall be removed as soon as possible.
  - 3. Debris and vegetation build-up should be removed from culverts and channels to ensure the proper hydraulic opening is maintained.

- C. Guidelines for Defects Requiring Major Repairs
  - 1. Examples of defects requiring major repairs
    - a. Large spalls/potholes in concrete deck,
    - b. Complete replacement of timber decks,
    - c. Extensive washouts of approaches,
    - d. Damaged beams, girders or truss members,
    - e. Corroded steel members, and
    - f. Settlement of piers and abutments.
  - 2. In emergencies, the District S&B Engineer should be contacted immediately to determine the procedure to follow to restore the structure to a practical and safe level of service as soon as possible.

D. Recommended Frequency for Various Maintenance Tasks

Maintenance Tasks for all Systems by recommended yearly frequency

TASK	**Recommended Frequency***
Bridge Deck Washing	Every year
Deck Sweeping	Every year
Seat and Beam Ends Washing	Every 2 years
Cutting and Removing Vegetation	Every 2 years
Routine Maintenance of Timber Structures	Every 2 years
Lubricate Bearing Devices	Every 4 years
Removing Debris from Culverts	Every 5 years
Scheduled Replacement of Pourable Joints	Every 6 years
Scheduled Replacement of Compression Seal Joints	Every 10 years
Beam Ends Painting	Every 10 years (At years 10 and 20. Replace paint system at year 30)
Scheduled Installation of Thin Epoxy Concrete Overlay	Every 15 years

*Or as necessary and determined from recommendations in the specific structure's safety inspection report

10.1.4 <u>Procedure to Conduct Preventative Maintenance Activities</u>:

A. Bridge Deck Washing

1. Include the removal and disposal of debris and pressure washing of the bridge roadway surface, joints, sidewalks, curbs, parapet walls, drainage grates, scuppers, and drain pipes.

2. All concrete decks and slabs without asphalt overlay.

3. Environmental Operating Procedures shall apply to State Forces and contractors during bridge washing procedures.

        a. Primary Requirements

            i. Wash-water must not be allowed to discharge directly to the underlying waterbody. Discharges of this sort require an environmental permit from the Virginia Department of Environmental Quality (VDEQ).

            ii. Sediments and debris accumulated during the bridge washing procedures must not be disposed of in the underlying water body or on adjacent wetlands, if they exist.

        b. Environmental Protection Procedures

            i. Utilize water from the underlying water body as wash water, whenever possible, unless there are drought conditions or your withdrawal would “dry” the water body.

            ii. Accumulated sediments or other debris must not be disposed within the underlying water body or adjacent wetlands. Sediments that have been swept or shoveled off the bridge deck may be placed along the right-of-way in a vegetated area along the bridge approach.

            iii. Wash-water shall be prevented from directly discharging to the underlying water body. All deck drains, scuppers, inlets and flumes on the structure shall be blocked during washing operations. For open-sided bridges such as corral-style (Kansas-style) bridges, berms must be placed along the sides to prevent wash-water from flowing over the sides and into the underlying water body. Wash-water may be directed to a vegetated area within the right-of-way, along the bridge approach; however, it must not be discharged to wetlands.

            iv. Painted surfaces must not be power-washed; however they may be “rinsed” at water pressures that will not cause paint chips to flake off.

B. Deck Sweeping

    1. Include the removal and disposal of debris and sweeping of the bridge roadway surface, joints, sidewalks, and curbs.

    2. All concrete decks and slabs with asphalt, metal decks, and timber decks and slabs.

C. Seat and Beam Ends Washing

   1. Include the removal and disposal of debris and pressure washing of the bridge seat and bearing areas. Bridge seat and bearing areas to be cleaned include abutment seats, pier seats, bearing devices, the end five feet of beams and girders, and end diaphragms.

D. Cutting and Removing Vegetation

   1. Include cutting, removing and disposing of vegetation, brush and trees that are on, adjacent to, or under bridges that cross over waterways.

E. Routine Maintenance of Timber Structures

   1. Include tightening and/or replacing fasteners such as those used on timber decks, railing systems, and other miscellaneous connections. Sealing end sections of timber elements, such as deck boards, bent caps, railings, posts, etc.

F. Lubricate Bearing Devices

   1. Include removal and disposal of debris, and lubricating moveable type of bearings.

G. Removing Debris From Culverts

   1. Include the removal and disposal of debris that is collected inside and/or at inlets or outlets of box and pipe culverts.

H. Scheduled Replacement of Pourable Joints

   1. Include removal of existing joint material, prepare and install new joint material.

   2. For planning and budgeting purposes for this type of joints in the PM program, only joints that are in good condition will be considered. Joints that are not in good condition will be accounted for and addressed in Pontis (BMS).

I. Scheduled Replacement of Compression Seal Joints

   1. Include removal of existing joint material, prepare and install new joint material.

2. For planning and budgeting purposes for this type of joints in the PM program, only joints that are in good condition will be considered. Joints that are not in good condition will be accounted for and addressed in Pontis (BMS).

J. Beam Ends Painting

1. Include preparing and over coating the end 5 feet of painted steel beams or girders that are located under open joints, except for bridges with timber decks.

2. For planning and budgeting purposes in this program, only steel members that are in overall good condition will be considered. Steel members that are not in good condition will be accounted for and addressed in Pontis (BMS).

K. Scheduled Installation of Thin Epoxy Concrete Overlay

1. Include the installation of new overlay system and or replacement of existing overlay systems.

2. Only bridge decks that are in overall good condition are considered in this program.

10.1.5 Maintenance Responsibility for Structures within Towns, Cities, and Counties: Where the Interstate, Arterial, or Toll Road system provides an interchange within a municipality charged with the responsibility for maintenance of its street systems, the Department will be responsible for the maintenance of the complete highway facility within the interchange. Under this provision, maintenance payment will not be paid to any municipality for street or road mileage maintained by VDOT. Municipalities desiring to maintain municipal streets passing through Interstate, Arterial, or toll interchanges may maintain such streets in accordance with following Bridge Maintenance Reasonability Table.

The maintenance of interchanges and grade separation bridges at all intersections of Interstate and Primary routes, including Arlington and Henrico counties, will be the responsibility of VDOT.

PRELIMINARY RESILIENCE PLAN

CITY OF CHESAPEAKE, VIRGINIA

April 2022

PREPARED FOR:

THE CITY OF CHESAPEAKE

PREPARED BY:

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

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Virginia Beach, Virginia 23452
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Table of Contents

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Executive Summary

The City of Chesapeake has developed this Preliminary Resilience Plan (Plan) to meet the requirements of the Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF) grant program. The Plan was developed using funding awarded during the inaugural round of the CFPF program. The Plan was crafted to incorporate all Resilience Plan requirements and criteria as provided in the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund.

In addition to the overarching five (5) requirements for the Plan as provided below, the Plan incorporates all elements of Resilience Plans (as provided in Appendix B of the Grant Manual), hereafter referred to as criteria. A guide those criteria and associated reference documents can be found in Appendix A, while Plan content that addresses corresponding criteria is referenced throughout the Plan as (C#) at the end of applicable statements.

- It is project-based with projects focused on flood control and resilience
- It incorporates nature-based infrastructure to the maximum extent possible
- It includes considerations of all parts of a local government regardless of socioeconomics or race
- It includes coordination with other local and interjurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation
- Is based on the best available science, and incorporates climate change, SLR, storm surge (where appropriate), and current flood maps

This Plan was developed by combining a wide range of existing City of Chesapeake and regional documents and was done in collaboration with multiple City departments, though sponsored by the Department of Public Works. The Plan provides narrative on the requirements defined in the CFPF Grant Manual and has been organized into four (4) main sections:

Section 1: Introduction, provides a description of the plan development process and a brief history of Chesapeake with respect to flooding.

Section 2: Natural Hazards & Vulnerabilities, describes those hazards that threaten the City as well as where socially vulnerable populations intersect with those hazards.

Section 3: Current Efforts to Reduce Flooding & Develop Resilience, details the various efforts already undertaken or underway by the City and regional partners that relate to flooding and resilience.

Section 4: A Plan for Resilience, provides information on ongoing coordination efforts, the current science guiding resilience efforts, and those study, program, and project opportunities that the City of Chesapeake plans to explore looking forward. At this time, the City has identified twenty-six (26) projects representing planned improvements to improve flooding resilience. These projects vary in scope, cost, funding availability, and anticipated implementation.

Ultimately, the City of Chesapeake seeks continued participation in the CFPF program through identification and application for funding assistance for opportunities as they are identified and vetted.

1.0 Introduction

As a coastal community, the City of Chesapeake has the benefit of enjoying the habitat associated with shore access. Unfortunately, life in coastal regions also comes at a cost. Flooding vulnerabilities not only threaten the safety of residents, but also have the potential to damage or destroy property and disrupt the local economy and overall quality of life. While impending natural hazards are impossible to prevent, designing for resilience can minimize the damage done and prepare the City to bounce back better.

1.1 Plan Development Process

The City of Chesapeake intends to participate in the CFPF grant program. This funding program was established to provide support for Virginia's localities efforts in reducing impacts of flooding, including flooding driven by climate change. The CFPF program intends to prioritize projects coinciding with local, state, and federal floodplain management standards, local resilience plans, and the Virginia Coastal Resilience Master Plan. This Fund will empower communities to complete studies and implement programs to bolster flood preparedness and resilience.

According to the CFPF program, a Resilience Plan describes the entire local government's approach to flooding and addresses the following five (5) requirements:

- It is project-based with projects focused on flood control and resilience
- It incorporates nature-based infrastructure to the maximum extent possible
- It includes considerations of all parts of a local government regardless of socioeconomics or race
- It includes coordination with other local and interjurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation
- Is based on the best available science, and incorporates climate change, SLR, storm surge (where appropriate), and current flood maps

Intended to elaborate on the City's intentions to establish a resilient community, this plan identifies the vulnerabilities (physical, natural, and social) due to flooding, reviews the previous and ongoing efforts, and provides information related to future opportunities to combat flooding and develop resilience. The aim of the proposed projects included in the plan is to strengthen flood management systems to reduce damage caused by flooding. These projects identify opportunities to address weaknesses or provide additional hazard reduction in the City of Chesapeake.

To assist in the development of this plan, a document review process was undertaken to identify documents or portions thereof that could be combined to meet the requirements of a resilience plan as presented in the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund. The list of documents reviewed can be found in Appendix B.

In addition to addressing the overarching five (5) requirements for the plan as listed above, the plan incorporates all fifteen (15) elements of Resilience Plans (as provided in Appendix □ of the Grant Manual), hereafter referred to as criteria. A guide those criteria and associated reference documents can be found in Appendix A, while plan content that addresses corresponding criteria is referenced throughout the plan as (c□) at the end of applicable statements.

Development of the Plan was sponsored by the Department of Publics Works. However, other City departments (including Planning, Development and Permits, and Emergency Management) were invited to participate and had the opportunity to provide input and review and comment on the Plan. Supporting documents were sourced from departments throughout the City as well as from regional partners including the Hampton Roads Planning District Commission.

1.2 Chesapeake's History

The banks of the Elizabeth River were first settled by the British around 1620 beginning Chesapeake's history (c14). In the early 1900's, the northern sector of the Chesapeake region began to develop as a Southern Norfolk suburb outside the growing City of Norfolk. By 1900, South Suffolk had independent waterworks, public schools, and post office. Today's Chesapeake grew from residential and commercial development of community crossroads, some still referred to with established names such as Deep Creek, Fentress, Great Bridge, Hickory, Indian River, Oak Grove, Pleasant Grove, South Norfolk, Portlock, and Western Branch. In June of 1962, the citizens voted to select the name of the new city, Chesapeake, as both Norfolk County and Southern Norfolk agreed to merge. The present City of Chesapeake was established in 1963 through the consolidation of the City of South Norfolk and Norfolk County[1].

The City of Chesapeake is a diverse and growing community with a heritage deeply rooted in the history of our developing nation. Chesapeake's landmarks and communities have a long and diverse history, stretching back to the early days of the Colony of Virginia. Over the last fifty (50) years, the City of Chesapeake has experienced unprecedented changes in population and land use, the majority of new housing units being single-family units. In 2017 the 224,640-acre community had a population of around 222,000 individuals, or approximately 1 person per acre of land area (c14). Although the growth rate has declined in recent years, the City continues to grow at a rate of approximately 1% each year. An increase in flooding and natural hazards has accompanied growth experienced by the City[2]. Chesapeake is located partially in the Elizabeth River Watershed, a tributary of the James River Watershed, which can be seen in Figure 1, along with the Southern Watershed. Approximately 58,880 acres of the City (or 26%) drains to the Chesapeake Bay, primarily through the Elizabeth River. Approximately 167,040 acres (or 74%) of the City lies within the Southern Watershed area.

For decades, the City has been committed to stormwater management. Chesapeake was one of the first in Hampton Roads to become a Municipal Separate Storm Sewer System (MS4) in 1996 through the Virginia Pollutant Discharge Elimination System (VPDES) Program as well as abiding by their Virginia Stormwater Management Program (VSMP) in place since 1991 (c11). The City's Master Drainage Plans for specified regions and MS4 documents address the quality and quantity of our stormwater runoff while meeting state and federal regulations[3].

Upon observing tide elevation data for the last 100-years, it is evident the City is facing escalating danger from SLR[4]. The Code of Virginia mandates localities to plan for and address flooding and SLR. Flooding, SLR, coastal storms, and shoreline erosion are considered the most significant hazards that threaten Hampton Roads Region[5] (c3). Floodplain management plans which cover floodplains and City studies that cover broad areas of the City combine

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[1] (Hampton Roads Planning District Commission, 2017)
[2] (Hampton Roads Planning District Commission, 2017)
[3] (Whitman Requardt and Associates, LLC, 2018)
[4] (Hampton Roads Planning District Comission, 2017)
[5] (Hampton Roads Planning District Comission, 2017)

together to create a unified pattern of identified hazards beyond those just identified in the National Flood Insurance Program (NFIP). These examine issues such as causations of localized flooding, identify vulnerabilities due to flooding, analyze the locality flood management practices, and provide feasible solutions to strengthen the flood management system, reducing damages caused by flooding[6].

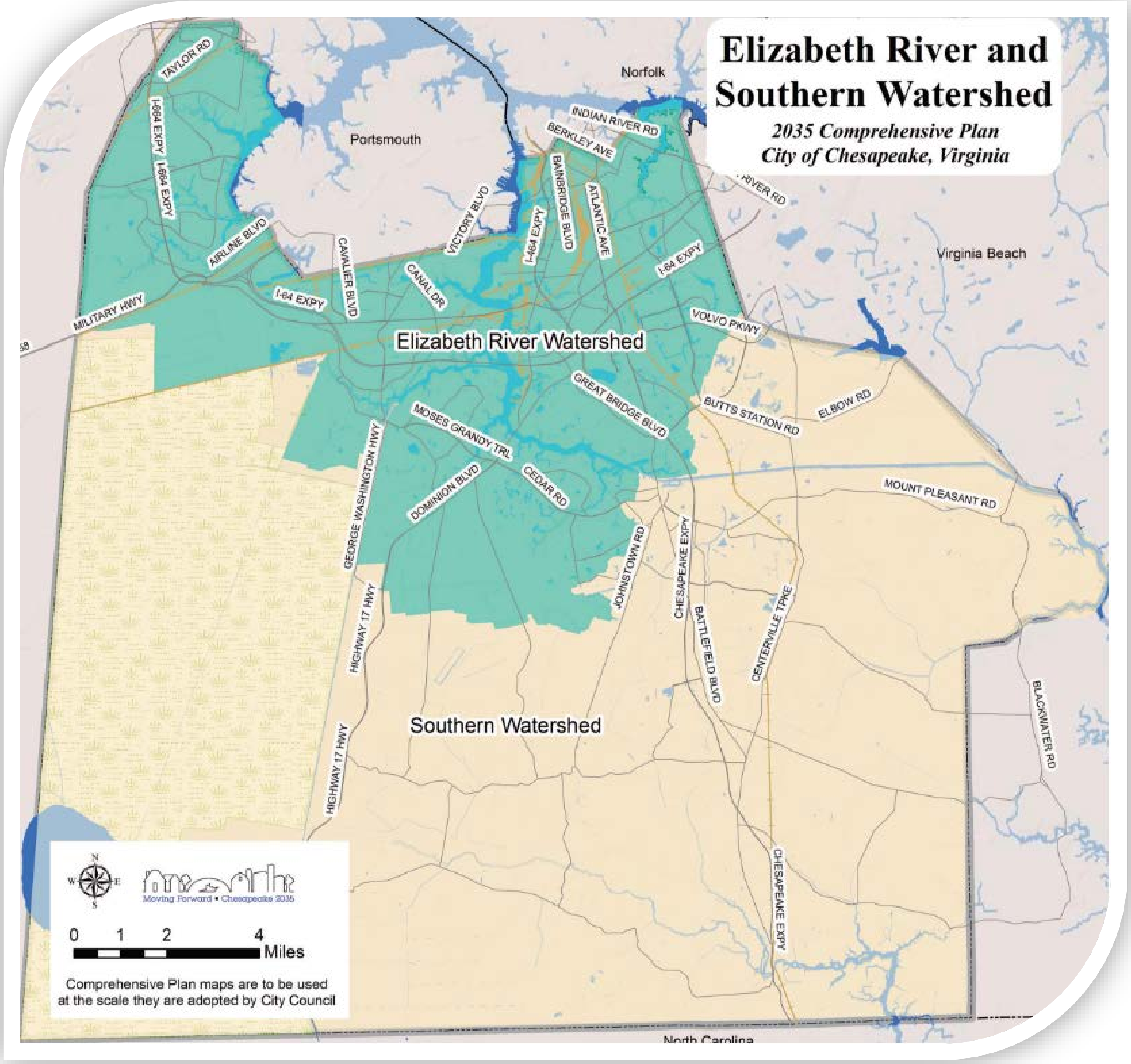

Figure 1: Elizabeth and Southern Watershed

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[6] (Hampton Roads Planning District Comission, 2017)

2.0 Natural Hazards & Vulnerabilities

While natural hazards can be unavoidable, projects can be implemented to minimize the damage felt by the communities disturbed. Unfortunately, living in a coastal region means the likelihood of flooding events is elevated. Where communities most vulnerable to natural hazards coincide with societally vulnerable populations, addressing flooding in an equitable manner is essential. (c1)

2.1 Flooding & Related Hazards

Flooding is a major concern for a coastal city and has the potential to exacerbate other hazards and vulnerabilities. The City of Chesapeake experiences precipitation and tidal flooding, as well as the two in concert. The frequency and intensity of storms and consequently flooding events are increasing as a result of climate change, including sea level rise (SLR). In coastal areas, flood zones established by FEMA represent both riverine and coastal flooding hazards. However, what is often missing from these established data are localized areas of inland flooding. Chesapeake's floodplain can be seen in Figure 2[7]. (c3, c14)

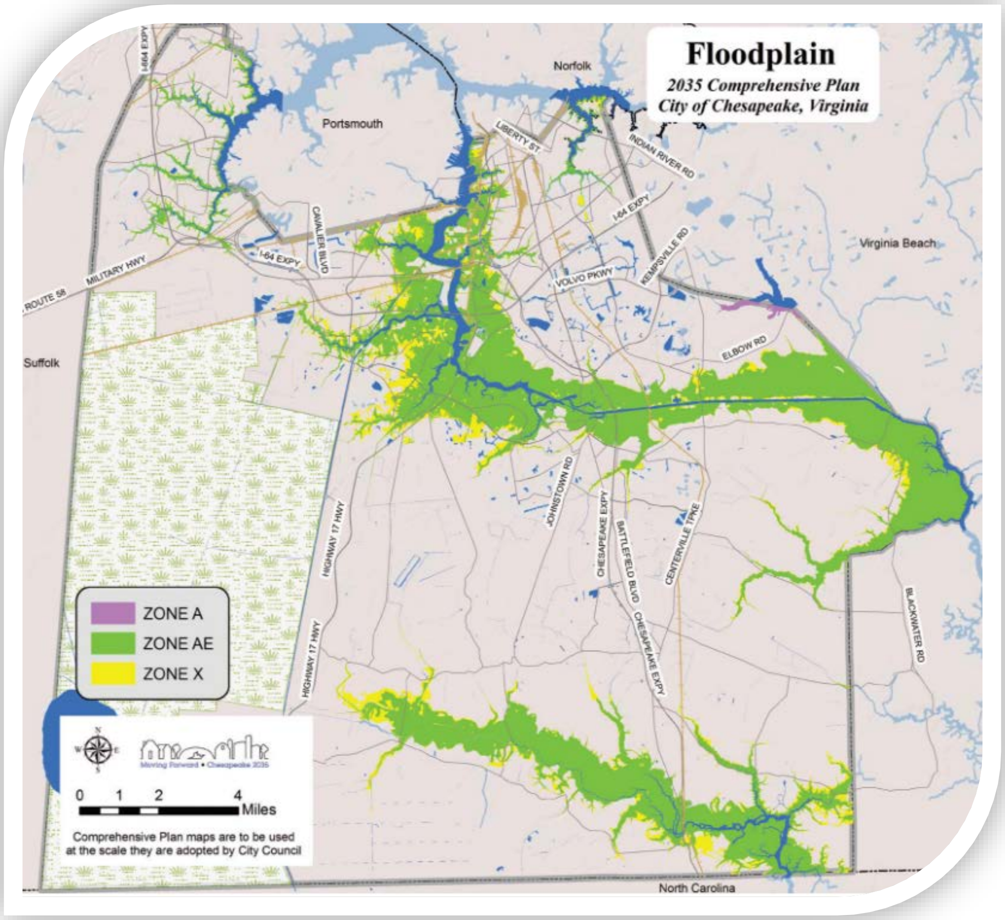

Figure 2: Floodplains in the City of Chesapeake

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[7] (City of Chesapeake Planning Department, 2016)

- Zones A and AE shown are high flood risk areas, referred to as a 100-year (1%) chance floodplain
- Zone X (shaded) regions pose a moderate flood risk and is referred to as a 500-year (0.2%) chance floodplain.

Additionally, the city sees negative impacts of beavers and dams restricting flow in major outfall systems that results in flooding.

2.1.1 Precipitation Flooding

Old, undersized, stormwater infrastructure or lack thereof is a leading contributor to flooding issues, the capacity to which infrastructure is designed to convey relative quantities of water is essential to managing flooding. Policies and regulations pertaining to stormwater management requirements have changed over time. Depending on when a neighborhood or other development was established, the formal drainage system could be nonexistent or undersized compared to today's design standards. Systems designed to convey smaller storms will experience flooding more frequently. Since the 1990s, the City of Chesapeake has worked to develop and update studies throughout the City to identify and recommend improvements for undersized infrastructure. [c1] These studies will be discussed in greater detail in Section 3.3.4.

2.1.2 Tidal Flooding

Flat terrain, low ground elevation and minimal slope aid in the impact of flooding, including on sunny days, where there is no rain event, but water is backed up in the system due to high tides, storm events, or as a result of SLR. Downstream portions of drainage systems that connect to tidal water bodies often experience water backups due to tidal influence.

Wind-driven can impact non-coastal areas. In the Southern Watershed of Chesapeake, southerly winds influence water levels and can lead to flooding of inland areas.

2.1.3 Storm Events

Coastal regions, like Chesapeake, are especially vulnerable to flooding from extreme weather events including hurricanes and nor'easters. Between 1851 and 2005, 78 storms have passed within 75-miles of the region. Of these, two were Category 3 hurricanes, eight were Category 2 hurricanes, 16 were Category 1 hurricanes and 49 were tropical storms. The remainder were tropical or extratropical depressions. An image of storm paths since 2005 within 75 miles of Hampton Roads can be seen in Figure 3 on the following page. These various tropical cyclones have caused approximately 230 deaths and cost the Commonwealth more than one billion dollars in damages[8].

The main destructive elements of these storms are high-level sustained winds, heavy precipitation, and tornadoes. Coastal regions are specifically prone to storm surge, wind-driven waves, and tidal flooding that could prove more damaging than cyclone wind[9]. A storm surge is a large dome of water often 50 to 100-miles wide and rising anywhere from 4 to 20-feet. A storm surge arrives in advance of the storm's landfall, the greater the storm is, the earlier the surge arrives. Water rise is extremely rapid, posing severe hazard to those who have not evacuated flood-prone areas. Such a surge of high water topped by waves driven by storm force winds are devastating to coastal regions, inflicting extreme beach erosion and property damage[10].

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[8] (Hampton Roads Planning District Commission, 2017)
[9] (Hampton Roads Planning District Commission, 2017)
[10] (Hampton Roads Planning District Commission, 2017)

2035 Comprehensive Plan

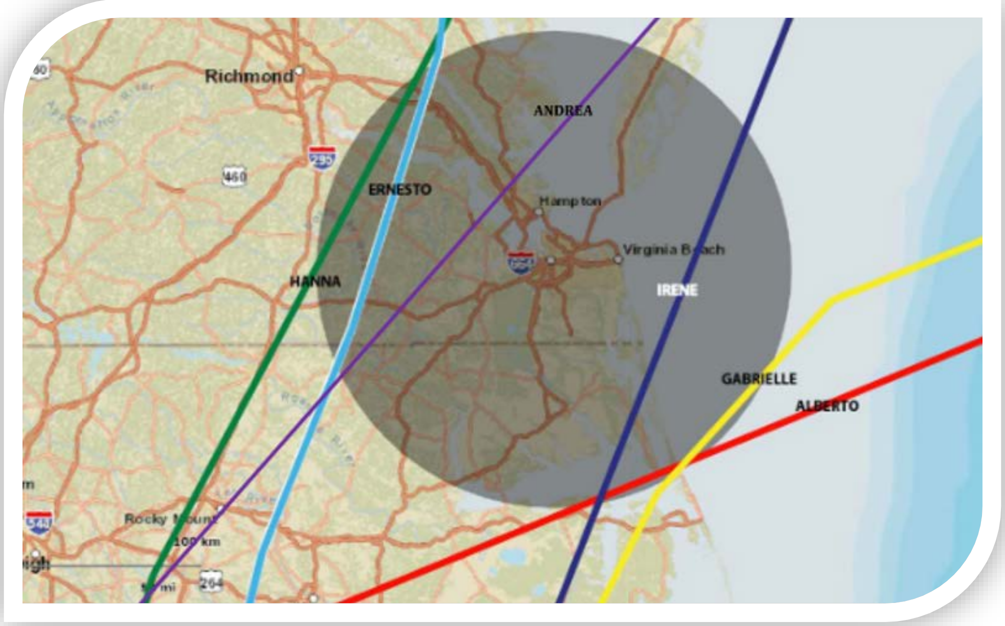

Figure 3: Storm Tracks in 75 miles of Hampton Roads since 2005

Wind damage in the area from events, in most recent accounts, have been marked by a wide variety of downed trees, damage to roofs, siding and signs, power outages due to downed power lines and trees across lines, and wind-blown debris accumulation. Since wind and flood events generally occur simultaneously, the combined effects are greater in flood-inclined regions. Roof damage from wind can also result in rain damage to structures as well. Combined storm surge and wind affects to shorefront regions make some homes and businesses uninhabitable for days to weeks at a time[11].

The probability of Chesapeake experiencing a hurricane or tropical storm in the future is high. The Atlantic hurricane season typically runs from August 15th to Nov 30, peaking in mid-September. In Hampton Roads, it is uncommon to experience the direct affects from hurricanes category 3 and 4. This is a result of historical tracks remaining offshore or impacting land earlier than arriving in the Hampton Roads. Additionally, cooler Atlantic Ocean water temperatures north of Cape Hatteras decrease a storm's capacity to maintain intensity. A Category 5 hurricane is considered unlikely in Hampton Roads because of the cooler water temperatures mentioned above. The effects of smaller hurricanes and tropical storms will be frequent, as storms making landfall along the North Carolina and Virginia coastlines could impact the region in any given year[12].

Nor'easters are also a primary cause of coastal flooding as the wind's direction pushes water up into smaller creeks and tributaries, overwhelming their capacity for rainwater.

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[11] (Hampton Roads Planning District Commission, 2017)
[12] (Hampton Roads Planning District Commission, 2017)

2.1.4 Shoreline Erosion

Shoreline erosion along the banks of the Elizabeth River is a concerning natural hazard pressing Chesapeake's community. Shoreline erosion is often correlated with extreme storm events and the impacts are expected to increase as sea level rises. Human activities can worsen erosion as well. While it is ideal to avoid sensitive regions entirely, it is imperative designs for land disturbing activities along the shore incorporate resilience[13].

2.2 Other Hazards

There are other natural and manmade hazards that could cause, affect, or result from flooding events. Strategies to address these hazards can be found in the Hampton Roads Hazard Mitigation Plan.[14] (c15)

2.2.1 Earthquakes & Landslides

An earthquake is the trembling of the ground produced by sudden displacement of rock in the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides or the collapse of caverns. Hampton Roads is in an area which could feel effects of earthquakes in the Central Virginia Seismic Zone, an area of frequent, yet very weak earthquake activity. Since 1774, there have been only three earthquake epicenters within 65 miles of Hampton Roads, two in the Hampton Roads area and one on the Delmarva Peninsula. Earthquakes of significant magnitude are unlikely occurrences for Hampton Roads, though the proximity of the region to the Charleston Fault could increase the possibility of feeling some impact of a large earthquake if it were to occur along that fault line[15] .

Only minor structural damage as a result of these earthquakes has been reported in the region. If a significant earthquake were to occur, damage to local structures would likely be severe because buildings in the region are not typically designed to withstand high magnitude quakes. Underground infrastructure damage is also expected to be severe and could cause long-term power, water, and sewer service interruptions in the region. Likewise, damage to bridges, tunnels and roads could disrupt transportation routes for much of the population[16].

2.2.2 Wildfires

With the exception of fire under prescription, a wildfire is any fire occurring in a wildland area. Wildfires are part of the natural management of the Earth's ecosystems; they may be caused by natural or human factors. Over 80% of forest fires are started by negligent human behavior such as improperly extinguishing campfires or smoking in wooded areas. The second most common cause for wildfire is lightning. Fire probability depends on local weather conditions, outdoor activities, debris burning, construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural disasters (such as hurricanes, tornadoes, and lightning) increase the probability of wildfires by producing fuel in both urban and rural settings.

Great Dismal Swamp National Wildlife Refuge was struck by lightning on August 4, 2011 that hit land primed for wildfire due to drought. The Lateral West fire has burned a minimum of 2,000

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[13] (Hampton Roads Planning District Commission, 2017)
[14] (Hampton Roads Planning District Commission, 2017)
[15] (Hampton Roads Planning District Commission, 2017)
[16] (Hampton Roads Planning District Commission, 2017)

acres. Forest damage from hurricanes and tornadoes may block interior access roads and fire breaks, pull down overhead power lines, or damage pavement and underground utilities[17].

The impacts of wildfire in the Hampton Roads region are both economic and environmental. From an economic perspective, fires destroy homes, businesses and infrastructure; communities in the region spend significant capital funds fighting wildfires, training staff, and preparing equipment to fight wildfire. Loss of life is a possible impact of severe wildfire in the region, although the lack of mountainous terrain makes escape somewhat easier. Environmentally, wildfires raise the temperature of forest soils, potentially eliminating organic value of the soil. Although soils eventually recover, impacts on watersheds in the interim can be detrimental to water bodies of the region. Burned soils may negatively affect infiltration and percolation, making soil surfaces water repellant; infiltration to groundwater decreases and runoff quantity increases. Both factors may negatively impact water quality downstream. Wildfires remain a highly likely occurrence for the region, though most will likely continue to occur in less urban areas and be small in size before being contained and suppressed[18].

2.2.3 Hazardous Material Incidents

Chesapeake's Code of Ordinances Sec. 26-606 prohibits storage or deposit of contaminants or hazardous, radioactive, nuclear or industrial waste in watershed areas[19]. (c15) Hazardous Material (HAZMAT) incidents can apply to fixed facilities as well as mobile, transportation-related accidents in the air, by rail, on the Nation's highways, and on the water. HAZMAT incidents can happen anywhere at any time. Per the Federal Emergency Management Agency (FEMA), approximately seven thousand HAZMAT events occur each year, 81% of those are highway incidents. In the Hampton Roads Region from 1988-2015, 454 documented HAZMAT events occurred, 73% of these HAZMAT incidents were in Chesapeake. HAZMAT incidents consist of solid, liquid, and/or gaseous contaminants released from their proper vessel. These events can have far reaching effects on the surrounding communities. In tandem with an extreme storm, the severity of the situation can escalate even further. A HAZMAT incident can last hours to days, while some chemicals can be corrosive or otherwise damaging over longer periods of time. In addition to the primary release, explosions and/or fires can result from a release and contaminants can be extended beyond the initial area by persons, vehicles, water, wind, and wildlife[20].

HAZMAT incidents can also occur as a result of or in tandem with natural hazard events which can also hinder response efforts. HAZMAT incidents can include the spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous material, but exclude:

- Any release which results in exposure to poisons solely within the workplace
- Emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine
- Release of source, byproduct, or special nuclear material from a nuclear incident
- The proper application of fertilizer

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[17] (Hampton Roads Planning District Commission, 2017)
[18] (Hampton Roads Planning District Commission, 2017)
[19] (Chesapeake, Code of Ordinances IV, VII, IX, X, and XI, 2013)
[20] (Hampton Roads Planning District Commission, 2017)

Negative impacts of hazardous materials incidents are dependent on the nature of the materials involved. While each chemical transported has unique qualities, there are generally three types of impacts:

1. Economic
2. Environmental
3. Safety of residents and first responders

In cases where evacuations are necessary to protect human life and safety, lost wages can be significant. Environmental impacts of highest concern in Hampton Roads include spills of petroleum products into the region's waterways. The region's emergency managers have contingency plans in place with the U.S. Coast Guard and others. However, a spill could still impact water quality, aquatic life, and valuable wetlands along the shoreline. Future occurrences of HAZMAT incidents, accidents, or issues within Hampton Roads are considered highly likely[21].

2.3 Critical Facilities

Impacts from flooding and other hazards can reduce or block access to emergency response activities, effects on roadways can prevent personnel from traveling and limit access to critical facilities (c3). Critical facilities can be considered as those essential for delivery of critical services and crisis management, those identified by Chesapeake can be seen in the map provided in Appendix C. (c8)

Critical facilities can be broken into 6 categories, seen below in Figure 4[22] (c8).

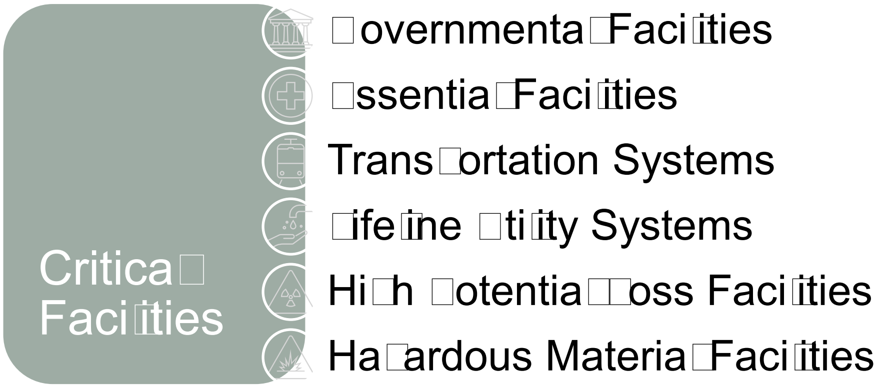

Figure 4: Critical Facilities

These facilities include data and communication centers, key government complexes, and similar facilities as determined by the floodplain administrator and emergency management department staff, those vital to health and welfare of entire populations, including hospitals and other medical facilities, retirement homes, police and fire facilities, emergency operations centers, prisons, evacuation shelters, schools, and any other facilities such as:

- Systems necessary for transport of people and resources
- Facilities vital to public health and safety, including potable water, wastewater, oil, natural gas, electric power, communication systems, and similar facilities

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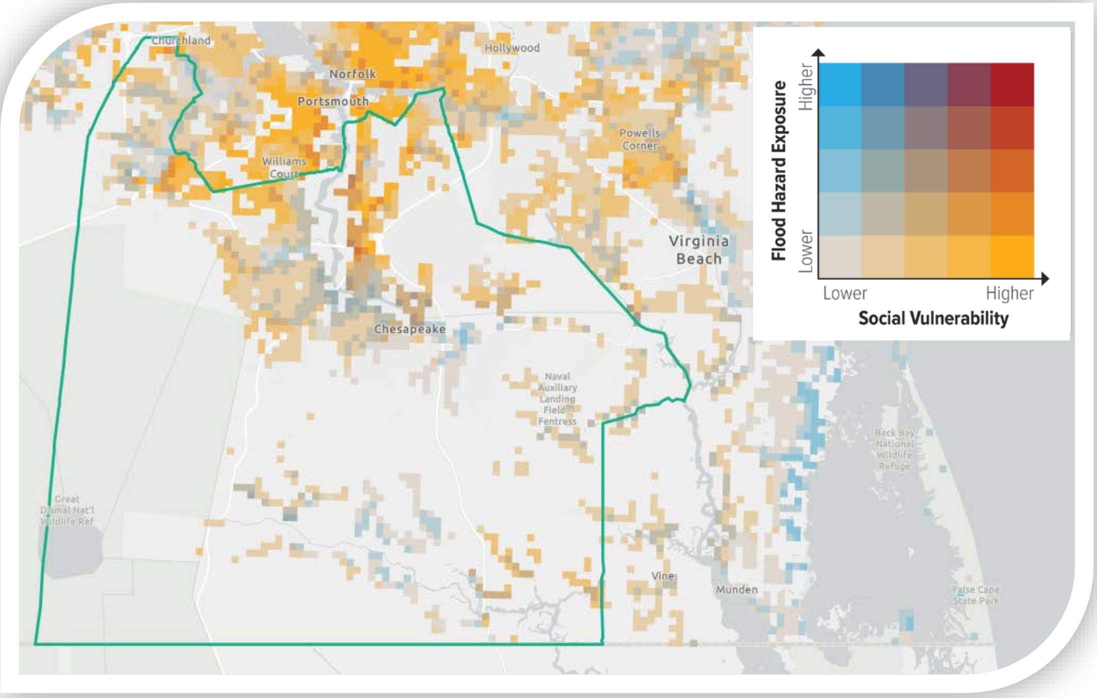
[21] (Hampton Roads Planning District Commission, 2017)
[22] (Hampton Roads Planning District Commission, 2021)

- Facilities whose disruption may significantly impact neighboring communities, including nuclear power plants, high hazard dams, and military installations
- Facilities involved in production, storage, and/or transport of hazardous materials

2.4 Vulnerable Populations

Flood damage and harm are more likely to occur in communities where many residents share economic and social traits that hinder their ability to prepare for and recover from flooding catastrophes. Disadvantaged groups and those with lesser incomes suffer the most from the physical and economic consequences of disasters, making recovery even more difficult. Flood-prone residents are more likely to suffer the direct consequences of coastal flooding, such as compromised health and safety, flooded highways, and school and business closures. Flooded properties may become hazardous or inconvenient to live in, making it impossible for residents to stay. Flooding that is severe or regular may force residents and businesses to relocate. (c4)

When addressing natural hazards, the communities facing the largest impending threats should be a focal point. Flood-affected citizens in Hampton Roads are more likely to be urban dwellers, economically pressured families, and individuals of color. The following graphic, borrowed from the Virginia Coastal Resilience Web Explorer, depicts the interaction of community socioeconomic vulnerability and coastal flood hazard exposure. Neighborhoods in red have a high level of social vulnerability (based on 2020 demographics) as well as a high level of exposure to coastal flood threats (based on a modeled 2080 flood scenarios).[23] (c3)



(https://experience.arcgis.com/experience/9e32e928ed304fa98518b71905e43085/page/Community-Context/)

Figure 5: Social Vulnerability and Flood Hazard Exposure in Chesapeake

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[23] (Commonwealth of Virginia Department of Conservation and Recreation, 2021)

3.0 Current Efforts to Reduce Flooding & Develop Resilience

The City of Chesapeake has already established a myriad of processes, programs, and plans that address flooding and resilience.

3.1 Community Involvement, Outreach, and Notification

The City of Chesapeake strives to ensure that resilience efforts are all-inclusive of the locality regardless of socioeconomics or race. Individual citizen involvement provides the City with a greater understanding of local concerns and increases the success of resilient efforts by developing an invested community and by involving those directly affected by public policy and future development.

3.1.1 Involvement

The City intends to continue encouraging its citizens to become more involved in decisions that affect their life and safety. Knowledge of the natural hazards present in their community will aid in the process of the community taking personal steps to reduce hazard impacts. Public awareness is a key component of an overall mitigation strategy aimed at making a home, neighborhood, school, business, or city safer from the effects of natural hazards[24]. (c12)

The City currently sponsors several committees or working groups that engage residents and create community leaders (c11, c12).

- Chesapeake Environmental Improvement Council (CEIC), comprised of 18 volunteers appointed by the Mayor to promote interest in improving the environment of Chesapeake, Virginia thereby making Chesapeake a greener, cleaner, and healthier city in which to live, work, and visit. The CEIC will accomplish its purpose through outreach, education, and volunteer efforts to include litter and pollution prevention, waste reduction and recycling, beautification, conservation, landscaping, and other environmental and conservation issues.

- Chesapeake Stormwater Committee – comprised of 11 City Council appointed representatives and 3 Ex-Officio members from City staff, their duties include:
  - Reviewing the status of City-wide drainage projects, study areas, maintenance operations and issues of wetlands permitting
  - Reviewing rates and providing utility rate recommendations to the City Manager
  - Preparing drainage and stormwater utility-rated recommendations for the City Manager
  - Serving as a sounding board for citizens concerned about drainage in neighborhoods and subdivisions
  - Reviewing recommendations from Public Works to improve drainage and maintenance operations
  - Providing recommendations on changes to the Stormwater Utility Fee, Capital Improvement Projects, and Level of Services

- Natural Event Mitigation Advisory Committee (NEMAC), the committee monitors the efficiency and effectiveness of various natural hazard mitigation strategies and makes recommendations to city council for additional improvements.

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[24] (Hampton Roads Planning District Commission, 2017)

3.1.2 Outreach

The City currently implements public education and outreach programs to help educate the community, focusing on impacts of stormwater discharge to surrounding water bodies[25]. The program provides information on how the community can help reduce these impacts and protect the waters quality. In order to promote public reporting of illicit discharges, the City provides stormwater education to the public through multiple media outlets such as web sites, radio, cable television, local television, publications, and a Customer Service Center.

Through a partnership with the HRPDC, the City participates in askHRgreen.org, a public awareness campaign administered by HRPDC. The website is a resource for environmental stewardship, including green landscaping practices and other topics related to stormwater quality and the MS4 permit. Beginning in 2011, HRPDC environmental programs were combined into a single public awareness program and central resource for environmental education in Hampton Roads known as askHRgreen.org; this and other resources are provided below[26] (c11, c12).

http://askhrgreen.org/

http://www.cityofchesapeake.net/government/City-Departments/Departments/Public-Works-Department/stormwatermanagement-publiceducation.htm

http://www.cityofchesapeake.net/online-Services.htm

3.1.3 Notification

Chesapeake Alert was developed to establish a combine policy for the authorized use, administration, and support for the City of Chesapeake's Emergency notification/Citizen Information/Employee Notification System. The system has three designated purposes, as follows[27] (c12):

- Citizen Information
- Emergency Notification
- Employee Notification

Utilizing a variety of telecommunications paths, Chesapeake Alert provides information to targeted recipients rapidly. Messaging may be in voice or text-data forms, depending upon the situation, capabilities of the receiving device(s), and choice(s) of the recipient[28].

3.2 Participation in State and Federal Programs

Regulations differ from a state and federal level. Localities must be sure to fall within both state and federal limits. Participation in both forms of programs is an active mode of ensuring this result.

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[25] (City of Chesapeake, 2017)
[26] (Southern Rivers TMDL Action Plan, 2018)
[27] (City of Chesapeake, 2011)
[28] (City of Chesapeake, 2011)

3.2.1 FEMA

The City assists residents with acquiring federally funded hazard mitigation grants, including but not limited to FEMA's Hazard Mitigation Grant to acquire repetitive loss properties through the OEM Property Buyout Program City assistance. (c5, c7)

3.2.2 Community Rating System (CRS)

City of Chesapeake participates in the CRS and recently graduated to a class 7 rating. This incentive program encourages communities to undertake defined flood mitigation activities that go above and beyond the minimum requirements of the NFIP, adding extra local measures to provide protection from flooding. The CRS mitigation activities are assigned a range of point values. As these points are accumulated and thresholds are reached, communities can apply for an improved CRS class rating. Class ratings, which run from 10 to 1, are tied to flood insurance premium reductions[29]. Currently, the City has been successful in acquiring points in the following activities: (c5)

- 310 Elevation Certificates
- 330 Outreach Projects
- 350 Flood Protection Information
- 420 Open Space Preservation
- 430 Higher Regulatory Standards
- 440 Flood Data Maintenance
- 450 Stormwater Management
- 510 Floodplain Management Planning
- 520 Acquisition and Relocation
- Flood Damage Reduction
- Mapping & Regulations

3.2.3 MS4

The City of Chesapeake is a Phase I MS4 and was first permitted in 1996 under the VPDES program administered by DEQ. As it relates to flooding, the City must manage construction site runoff as well as quantity and quality of post-construction site runoff. Chesapeake also manages various public outreach and education campaigns through the MS4 program. Through the HRPDC, the Regional Stormwater Management Program coordinates actions and leverages funding for technical and advisory assistance to help localities meet the requirements of state-issued stormwater permits. The program includes cooperative initiatives in the following areas[30]:

- Construction runoff control
- Environmental education
- Illicit discharge detection & elimination
- Post-construction impacts management
- Monitoring of regulatory changes
- Municipal pollution prevention
- Regional cooperative data tracking
- Regional cooperative monitoring

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[29] (Hampton Roads Planning District Commission, 2017)
[30] (City of Chesapeake, 2017)

3.3 City Planning Policies and Guidance

Planning and regulatory capabilities are based on implementation of plans, ordinances, and programs which demonstrate the City's commitment to guiding and managing growth, including:

- Capital improvements planning
- Comprehensive land use planning
- Emergency response
- Enforcement of zoning or subdivision ordinances and building codes
- Mitigation and recovery planning
- Reconstruction after disaster
- Transportation planning

These planning initiatives present significant opportunities to integrate hazard mitigation principles and practices into local decision-making processes. Conservation efforts have far reaching benefits to affected ecosystems as well as surrounding populations. Abiding by and maintaining resilient goals and objectives is crucial to ensuring the success of the City's existing and future effort. Types of action can be interrelated and broken down into the categories seen in Figure 6 (4).

Figure 6: Chesapeake's Action Efforts

The focus of parking strategies includes improving parking utilization and connectivity, managed properly including internal and external installations. Parking lots create ample impervious space; runoff increases with percentage of impervious groundcover. Multimodal strategies highlight an expanded and improved transit and improving cyclist/pedestrian access; flood mitigation strategies identify approaches to combat flooding along critical corridors for accessing installations and providing important network functionality. Improving accessibility enables ease of access during emergency situations. Controlling land use and development targets using recommended joint use planning efforts to manage responsible growth, reuse, and redevelopment considering both local and federal lands. Responsible growth is critical to a resilient community. Access strategies focus on improving installation access points and enhancing directional signage and information to assist commuters and visitors. Access is beneficial in everyday life and especially under emergency circumstances. Utility strategies focus on improving resiliency for installations and local economic development opportunities. Resilience is the way to ensure longevity in a community.

Chesapeake has multiple policies and programs in place to benefit the community, as follows[31]:

- Building and Fire Code
- Capital Improvements Plan
- Comprehensive Land Use Plan
- Continuity of Operations Plan
- Disaster Recovery Plan
- Economic Development Program
- Emergency Operations Plan
- Evacuation Plan
- Flood Damage
- Hazard Mitigation Plan
- Historic Preservation Plan
- National Flood Insurance Program
- NFIP Community Rating System
- Open Space Management Plan
- Prevention Ordinance
- Radiological Emergency Plan
- SARA Title III Plan
- Storm Water Management Program
- Subdivision Ordinance
- Zoning Ordinance

3.3.1 Comprehensive Plan

The City's current growth management system has evolved during the past two decades or so since adoption of the 1990 Comprehensive Plan. It is now firmly rooted in a three-pronged approach addressing timing, form, and funding of new development. City Council recognized that all three factors have to be integrated and be in relative harmony to create and sustain a community that is resilient, viable, healthy, and livable now and into the future[32].

The central component of the City's system is the process of controlling the approval of new development projects (rezoning applications) based upon the levels of service (LOS) available for major public facilities. The LOS policies were adopted in 1995 and subsequently amended in 1997, 2001, 2004 and 2009. Current City LOS standards address three areas of adequate public facilities: school capacity, road capacity and sewer utility capacity. Responsible land development is a major component in creating a resilient community. In terms of growth management, Chesapeake puts forth good effort – particularly with its use of a LOS approach for managing growth. LOS standards focus on the two most critical aspects of growth management: timing and funding of new development[33].

Responsible timing can be seen through the City's ability to plan density and intensity of land development generally to be highest in areas with utilities. These include public water and sewer service, as well as good roads and transit access; in this regard, the City will design and locate its future utility and transportation facilities in an effort to guide location, pattern, character and timing of growth (c5). Targeted funding is the City's objective. Chesapeake plans to enact this through coordination and balance of policy for funding and construction of public facilities. This includes maintaining a reasonable, moderate tax rate to support an optimum level of City services[34] (c1).

The City will achieve an economic development base that is both flexible and resilient by supporting a diverse work force that takes advantage of Chesapeake's economic and physical assets. The City will educate residents and business owners concerning environmental contamination and will investigate and prosecute environmental crimes. Chesapeake will enhance citizen preparedness through expanded public outreach and education programs[35].

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[31] (Hampton Roads Planning District Commission, 2017)
[32] (City of Chesapeake Planning Department, 2016)
[33] (City of Chesapeake Planning Department, 2016)
[34] (City of Chesapeake Planning Department, 2016)
[35] (City of Chesapeake Planning Department, 2016)

The City will protect, maintain, and improve the quality of the natural environmental systems – air, water, natural habitats, and wetlands. (c9, c10) In order to fulfill its resource conservation goals and objectives set forth in the Comprehensive Plan, the City must continue to work toward implementing a comprehensive environmental program; suggested action strategies and recommendations from the City of Chesapeake Sustainability Plan should be incorporated into this program. To properly gauge the success in fulfilling these goals and objectives, a primary component of this program should include a periodic update of the natural resource inventory, as well as a report to be issued to City Council on the status of the health of the City's natural resources. The Chesapeake City Council generated a list to contribute to ecological stewardship; that list is as follows[36] (c11, c12):

1. Provides for renewal of the environment through reducing, reusing, and recycling
2. Encourages energy conservation and green initiatives through incentives, awareness, education, and community involvement
3. Ensures preservation of green and open spaces, protects its natural resources, and safeguards its agricultural lands
4. Develops, regulates, and maintains a clean and orderly community
5. Mitigates factors which impact the environmental quality of its water and air

The City will continue to promote water quality protection by implementing its existing protection program as well as seeking new solutions as additional information and technology become available. Although the City currently implements a variety of water quality protection programs, surface water quality in the City continues to show signs of impairment, potentially threatening human and environmental health[37].

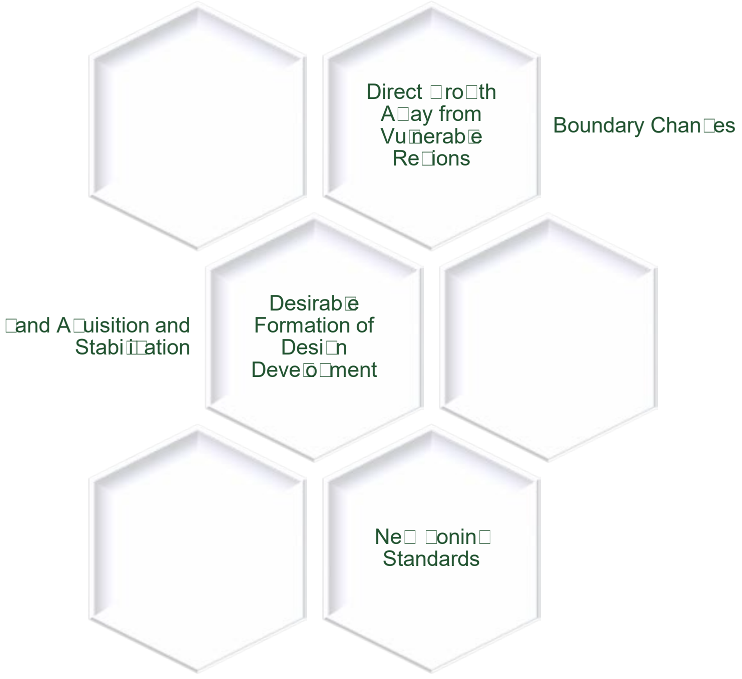

Figure 7: 2035 Action Strategies

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[36] (City of Chesapeake Planning Department, 2016)

[37] (City of Chesapeake Planning Department, 2016)

Chesapeake has 6 Action Strategies seen above in Figure 7. The City will direct growth to areas as designated on the 2035 Land Use Plan (c5). Orderly expansions of utilities will be encouraged to avoid scattered or leapfrog development. Changes to the boundaries of either the Suburban Overlay District or the Public Utilities Franchise Area, approved by City Council, shall be co-terminus; impacts of the extension of both shall be considered in the decision. The City will amend its Zoning Ordinance provisions to reflect necessary changes in the Overlay District standards to be consistent with this Plan. The City will implement a land acquisition and stabilization (purchase, or lease of conservation easements such as OSA). (c6) Design of development (clustered housing development with residual open space and "conservation design" for rural subdivisions) should be used as a tool to develop a desirable form for the City[38]. (c5)

Provided there is capacity for such development, infill development complementing existing communities will be encouraged in developed areas to maximize the use of existing public facilities, utilities, buildings, and services. Planning for density and intensity of land development to be aligned with areas having existing public water and sewer service, good roads, and transit access – thus the City will use the design and location of its future utility and transport to guide local pattern, character, and timing of growth. Implementation of proper infrastructure and a revitalization of established neighborhoods in conjunction with preservation and creation of open space places a focus on balanced growth[39].

3.3.2 Code of Ordinances

Land disturbance activities provide opportunities for compromised water bodies. The city council has determined natural ground cover, especially woody vegetation, to be most effective in preventing site erosion and holding soil in place. Natural vegetation, with its adaptability to local conditions and without the use of harmful fertilizers or pesticides, serves the important function of filtering stormwater runoff. Additionally, minimizing impervious cover enhances rainwater infiltration and effectively reduces stormwater runoff[40].

The Chesapeake Code of Ordinances has 9 sections relating to creating open space and flood mitigation seen in Table 1[41]. (c6)(c9)

Table 1: Code of Ordinances Relating to Flooding

Sec. 19-600	Zoning and landscaping throughout Chesapeake
Sec. 19-701	Properly zoned recreational space in subdivisions
Sec. 19-702	Standard for determining zoning percentages
Sec. 19-704	Characteristics of recreational land a part of subdivision
Sec. 26-513	Creation of the CBPA District
Sec. 26-517	Interpretation of CBPA boundaries

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[38] (City of Chesapeake Planning Department, 2016)
[39] (City of Chesapeake Planning Department, 2016)
[40] (Chesapeake, Code of Ordinances IV, VII, IX, X, and XI, 2013)
[41] (Chesapeake, Code of Ordinances IV, VII, IX, X, and XI, 2013)

Sec. 26-519	Permitted development in the RPA
Sec. 26-520	General Performance standards for the RPA, RMA, and IDA
Sec. 26-522-2	Relationship of CBPA standards to other ordinances

The Chesapeake Bay Preservation Area District (CBPA) of the city was created and then adopted by city council on January 21, 1992 as part of the city zoning ordinance. Any person contemplating development or land-disturbing activities within the city should consult the CBPA map prior to engaging in the proposed activity. All land disturbance, uses, development and redevelopment in the CBPA District are required to retain an undisturbed vegetated 100-foot buffer area around resource protection area (RPA) features, such as wetlands, shorelines and along waterbodies with perennial flow (c10). The following figure presents the City CBPA.

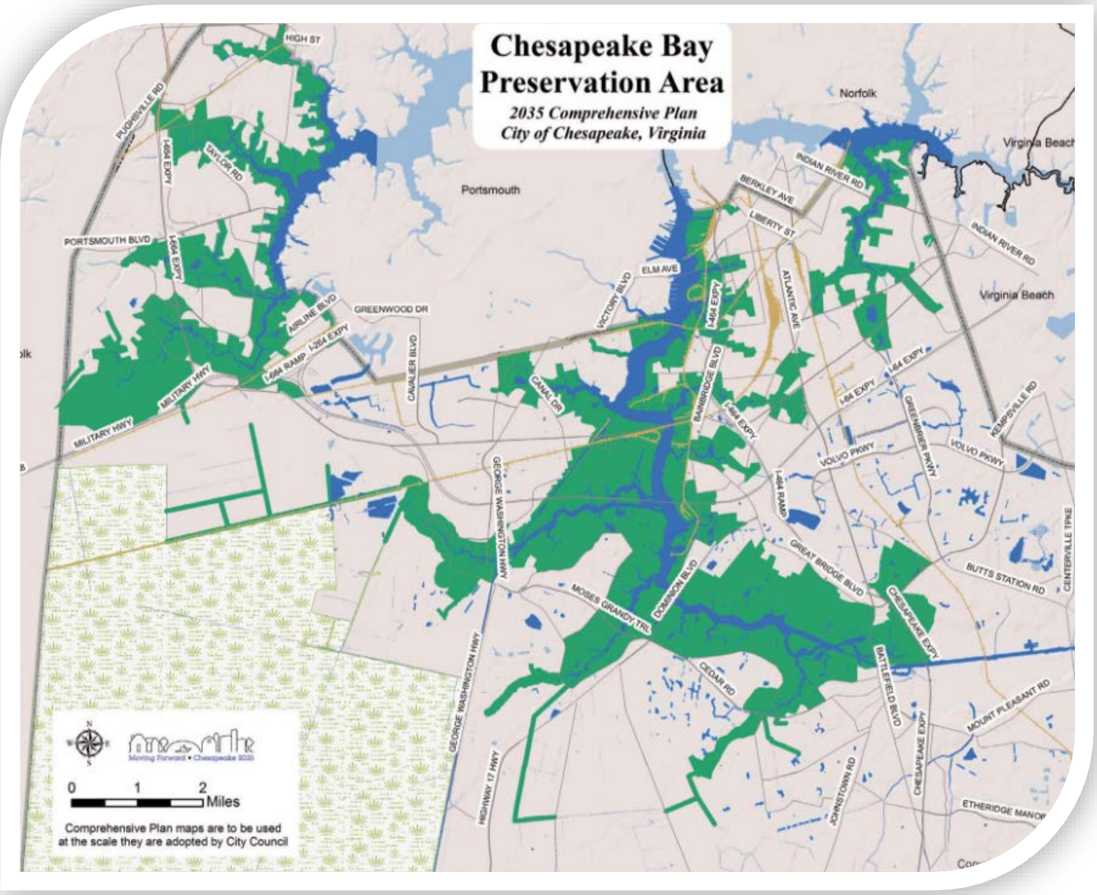

Figure 8: Chesapeake CBPA

The City of Chesapeake also offers owners of non-residential property an opportunity to qualify for a credit on their utility fee by utilizing BMPs. BMPs are practices used for on-site control of stormwater runoff and to provide water quality improvements. These BMPs include, but are not limited to, detention lakes, retention ponds, vegetated buffer strips, and grassed swales. The

City of Chesapeake has established a Stormwater Utility Credit Criteria in accordance with City Code. (c10)

3.3.3 City Public Facilities Manual (PFM)

Chapter 5 in the PFM references stormwater design standards and requirements. Current City standards meet or are more stringent than State requirements or industry standards and require the use of a downstream tailwater elevation that is variable depending on location. The design storm for system capacity also increases with increased contributory drainage area.

The City is able to fund some stormwater infrastructure improvements through the Pro Rata Program which is defined in the City PFM as responsibility of cost in development of suitable stormwater infrastructure is shared by the City and developers. The City accepts portions of improvements required by existing developments and areas to remain undisturbed; the developer is required to pay their share of improvements based on rate of runoff generated by given development. The developer has an option to pay into a fund in lieu of making improvements and the City must use that funding to benefit the area local to the development.

3.3.4 City-wide Master Drainage Plans and Other Focused Studies

Much of Chesapeake has been studied as part of a Master Drainage Plan (MDP) or other focused study. The goal of the MDPs is to identify capacity improvements for the City's major drainage facilities. The City started preparing MDPs in the 1980s and subsequent updates (or MDPUs) have been developed in the 2000s and more recently in the past decade. Appendix C contains a map depicting the status of MDP development as of late 2021. The map also shows the progress of implementation of some of the resulting improvement projects. The City considerations of all parts of the locality regardless of socioeconomics or race. (c4)

In addition to the MDPs, the City has also developed dozens of more detailed, localized studies to look at chronic flooding issues that cannot be adequately assessed at the coarser watershed-scale of the MDPs.

The full list of MDPs, MDPUs, and other studies undertaken by the City can be found in the list of documents reviewed prior to developing this plan, included as Appendix B.

Studies are beneficial in providing the science to back sound programs and projects to combat flooding. Most of the projects listed in Section 4 come from these MDPUs and studies.

3.3.5 Total Maximum Daily Load (TMDL) Action Plans

A TMDL Action Plan is a plan that is developed to identify projects and programs that should be undertaken to reduce the loading of a pollutant of concern into a waterbody. The City of Chesapeake has developed several TMDL Action Plans as follows:

- Chesapeake Bay TMDL Action Plan (2021)
- Southern Rivers TMDL Action Plan (2018)
- Southern Rivers TMDL Action Plan Conceptual Water Quality Projects (2018)
- Elizabeth River Bacteria TMDL Action Plan (2018)

Though all projects identified in TMDL Action Plans address water quality, some may also have a flood reduction benefit. Many are also nature-based. Those multiple benefit, nature-based projects are more advantageous to move through the CFPF program. Several of the projects presented in Section 4 were recommended in City TMDL Action Plans.

The City also partners with the Elizabeth River Project, an independent non-profit environmental group that is dedicated to improving water quality in the Elizabeth River through public education and outreach. The Elizabeth River Project recruits residents into a pledge program to encourage environmental stewardship and facilitates implementation of water quality BMPs on individual residential lots. The City's stormwater utility fee helps fund the design and construction of these BMPs recommended in the Chesapeake Bay TMDL Action Plan[42]. (c11)

3.4 Regional Efforts

3.4.1 Joint Land Use Study (JLUS)

The Portsmouth and Chesapeake JLUS focuses on reducing flood impacts to the transportation network, expanding access opportunities for getting to installations, reducing impacts on neighborhoods related to congestion and parking, promoting compatible and managed growth and redevelopment that also benefits the local tax base, and fostering improved coordination among JLUS partners to advance regional priorities..

3.4.2 Hampton Roads Hazard Mitigation Plan

Execution of hazard mitigation activities involves a broad range of professions. Stakeholders may include local planners, public works officials, economic development specialists, and others. Concurrent local planning efforts complement hazard mitigation goals even though they may not be designed as such. Balanced growth is a large component of establishing resilience within the community and providing proper infrastructure is essential for good quality of life. Restricting growth in sensitive regions is ideal, while incentivizing growth in non-sensitive regions is ideal from a quality-of-life standpoint and an environmental one[43]. (c5)

The City will continue to devote available and applicable resources to implementing the identified Hazard Mitigation Actions. Chesapeake Mitigation Action Items 2, 3, 13, and 14 involve efforts to mitigate flooding damage; these are elaborated on in the following[44] (c15):

1. Maintain participation in NFIP and Community Rating System. Continue enforcement of standards in existing ordinance that meet and exceed NFIP minimum requirements.
2. Actions which may include Climate Resilient Mitigation Activities (CRMA) such as Mitigation Reconstruction projects, minor localized flood reduction projects. These may include activities such as relocating, and retrofitting floodproof structures in flood prone areas.
3. Cross referencing of homes and parks correlated with repetitive flood loss areas and new FEMA 100-year floodplains. (c8) This is done by reviewing their vulnerability to flood and wind hazards. Solutions include implementation of measures to retrofit, relocate, or acquire vulnerable properties. (c15) This action may include Mitigation Reconstruction projects. The Emergency Management Department, with support from the Geographic Information System (GIS) and Engineering Division, are responsible for this action.

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[42] (AECOM, 2021)

[43] (Hampton Roads Planning District Commission, 2017)

[44] (City of Chesapeake Planning Department, 2016)

4. Replace structures or implement retrofits, which may include but are not limited to: installation of emergency backup power, elevation of structure or components, relocation or retrofit of building components. (c5)

5. Flow test and inspect existing City-owned and grant-funded dry hydrants annually to help maintain operability.

6. Seek and use additional revenue sources and local matching funds for mitigation planning and projects.

7. Develop and implement a Pre-Disaster Homeowner Tree Preventative Maintenance and Hazard Awareness Program.

8. Improving stormwater management infrastructure, preparing, and implementing preventive maintenance schedule, and providing a replacement schedule for stormwater management and inspection equipment and vehicles. It also aims to implement updates on older stormwater infrastructure that was repaired previously and should be examined to ensure it is up to current standards.

9. Part I: Maximize training and educational opportunities for the National Event Management Advisory Committee (NEMAC), City staff, elected officials, Central Emergency Response Team (CERT) members and citizen neighborhood leaders regarding hazard mitigation, disaster preparedness and the relationship of mitigation to reduced recovery needs. Part II: Accommodate training and related support for at least two staff in the Department of Department and Permits to receive and maintain Certified Floodplain Manager (CFM) certification through the ASFPM.

10. Conduct Hazardous Environmental Action Team (HEAT) program to industrial facilities, particularly hazardous facilities, to discuss hazards and mitigation alternatives.

11. Support and maintain City's new Reverse-911 system. Prepare messages to release to citizens before and after a natural hazard event.

12. Prevent sanitary sewer inflows to the system during flood events. Smoke test public and private sanitary sewer infrastructure to determine priorities.

13. Continuation of the lease and maintenance of facilities along the Dismal Swamp Canal Trail. This is a high priority action. Parks and Recreation is the department responsible.

14. Continue outreach efforts through a strategically developed Plan for Public Information (PPI) using the 7 actions seen below:
    a) Create a PPI Committee
    b) Assess public information needs
    c) Formulate multi-hazard messages
    d) Identify outreach projects
    e) Examine public information initiatives
    f) Prepare PPI document
    g) Implement, monitor, and evaluate program

15. Acquire open space sites capable of providing multi-objective management. Some objectives of this action are flood control, water quality, public access to waterways, preserving or creating tree canopy, and preserving diverse ecological and cultural heritage sites (c10). CRMA may be included in this action.

16. Identify/create database and plan uses for data regarding vulnerable populations. Uses may include target outreach, emergency notification and specialized evacuation planning.

Flooding, SLR, coastal storms, and winter storms are some of the hazards addressed by these actions. There are approximately 400 properties and 2,000 structures identified as being within repetitive loss areas[45] (C7).

3.4.3 Other HRPDC Efforts

Resilience related participation from the City on other Hampton Roads Planning District Commission (HRPDC) items include:

- Coastal Resilience Committee and Working Group
- Floodfluent Program
- Hampton Roads All-Hazards Advisory Committee (AHAC)
- Regional Environmental Committee
- Stormwater Committee
- Watershed Technical Workgroup
- Coastal Resiliency Committee and Working Group
- Regional Stormwater Management Workgroup

3.5 Preparation for Severe Weather Events

3.5.1 Public Works Emergency Operations Center (PWEOC) Hurricane Preparation

The City has a policy and procedures in place to assure an efficient and coordinated response pre-, during, and post-emergencies. The PWEOC defines tasks and responsibilities of the Department of Public Works (DPW) and designated Mosquito Control and Parks, Recreation and Tourism crews to assist in restoring essential City services as quickly and safely as possible. DPW maintains traffic flow, streets and drainage clearance, public infrastructure, and debris removal. Staff conduct an annual mock emergency condition drill and maintain a manual. (c15)

3.5.2 Emergency Management Disaster Training

Emergency Management staff both initiate and take part in regular training and exercises on disasters. The City has a robust Training & Exercise Program which is managed through the Office of Emergency Management (OEM). The training is developed to coincide with hazards that are recognized at both the federal and state level. OEM staff routinely attend training on flooding, natural and manmade disasters (hurricanes, and tropical storms) as well as city preparedness activities to ready city response and recovery operations before the start of the season. Staff also take part in webinars, meetings, and training courses geared around flood and mitigation efforts, that tie into the Community Rating System, Sea Level Rise/Resiliency, and City related projects that have a mitigation focus or nexus to them. Training and meetings are attended by all staff within the department. (c11)

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[45] (Hampton Roads Planning District Commission, 2017)

3.5.3 Power Franchisees

The City will work with power franchisees to improve the safety, efficiency, dependability, and aesthetic impact of power utilities. The traditional method of providing electrical service has been via a network of poles to support power lines. The conventional method of supplying electrical service has been through a network of poles to support power lines. These are affected by extreme weather, car accidents and interference from growing trees. Minor storms can cause inconvenient power outages while more major storms can cause an extensive amount of damage and loss of power for days at a time. For these reasons, it is preferable to have utilities located underground whenever possible[46]. (c15)

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[46] (City of Chesapeake Planning Department, 2016)

4.0 A Plan for Resilience

The City of Chesapeake is committed to continuing those efforts already underway to improve resilience as descried in the previous section. Additionally, there are programs, studies, and projects that the City is considering to further advance efforts towards developing resilience for the entire locality.

Successful projects grow out of scientifically sound studies derived from firmly rooted programs. The following subsections will discuss Chesapeake's efforts to contribute quality projects, programs, and studies in order to fight flooding and increase the resiliency of the City.

4.1 Continued Coordination with other Entities

Partnership with neighboring localities and other entities is essential for a successful resilient community. As seen in Figure 9, watersheds cross locality borders. Therefore, it is impossible to address their vulnerabilities without collaboration. To be resilient, we all must work together.

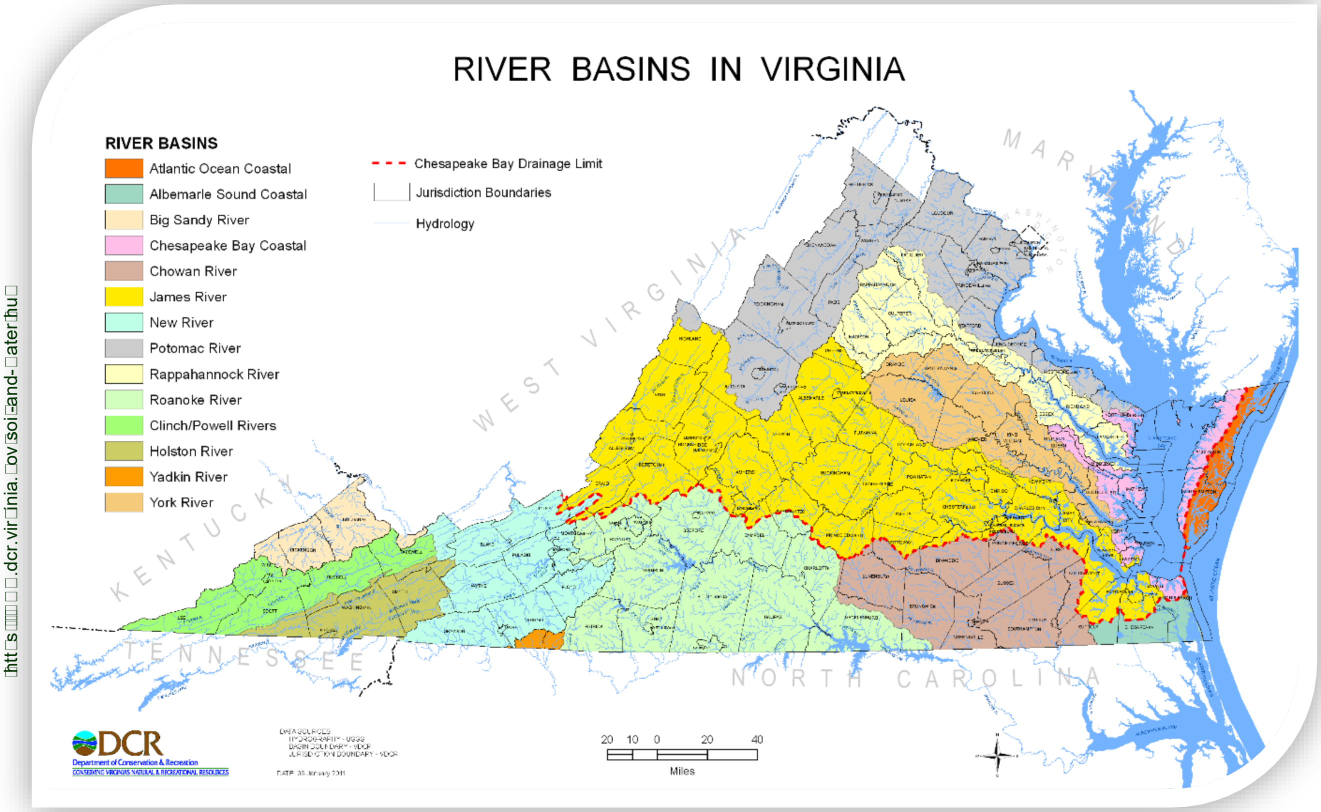


Figure 9: River Basins in Virginia

The City has and will continue to coordinate with adjacent localities when watershed boundaries overlap governmental boundaries.

The City also plans to continue its participation on several regional workgroups and committees hosted by the HRPDC, discussed in Section 3.1.

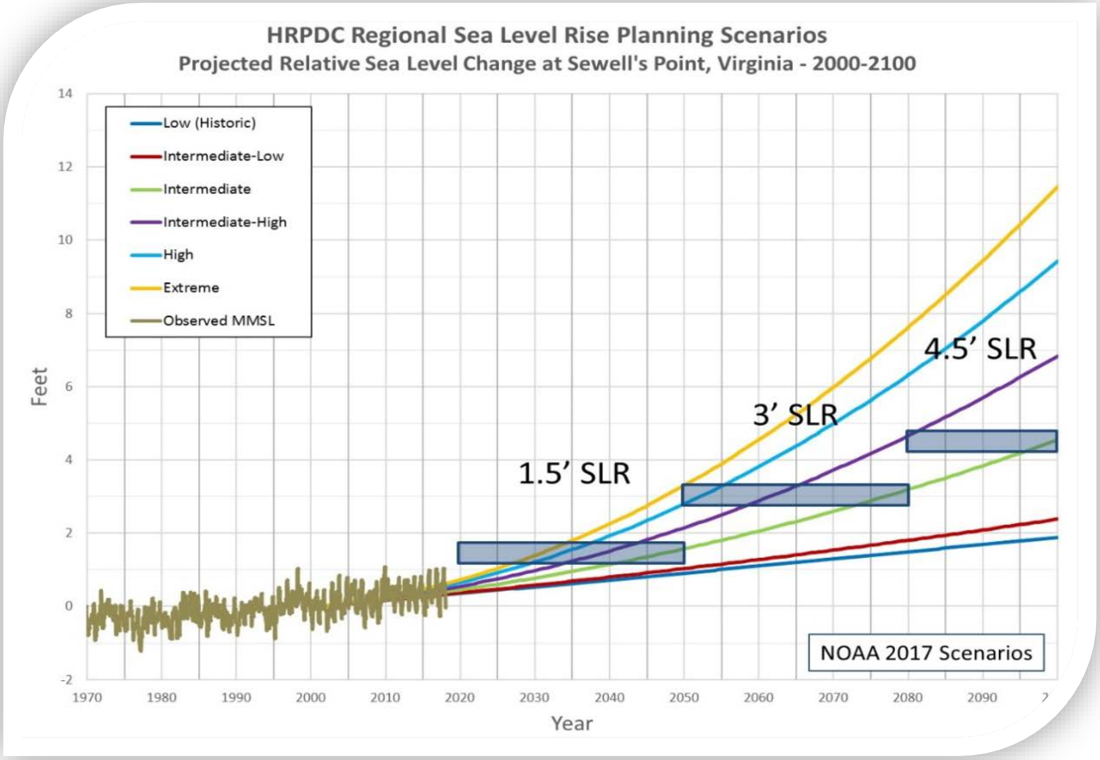
The City of Chesapeake is committing to building, maintaining, and strengthening its relationships with other entities as it works toward greater community resilience.

4.2 The Science

One of the guiding principles of the CFPF program is to acknowledge climate change and its consequences, and base decision making on the best available science.[47] To that end, the City will endeavor to use current flood maps and incorporate climate change (SLR) and storm surge, where appropriate, into proposed initiatives.

Projections of SLR are available from various sources, based on varying underlying assumptions and climate models. An October 18, 2018, resolution by the HRPDC localities recommended three different SLR scenario values for planning purpose. Each had an associated future planning horizon, summarized below and shown in Figure 10. The □□□S utilized the near- and mid-term SLR values consistent with the HRPDC guidance[48].

- 1.5-feet of SLR for near-term planning, represented by the timeframe 2018–2050
- 3.0-feet of SLR for medium-term planning, represented by the timeframe 2050–2080
- 4.5-feet of SLR for long-term planning relevant to timeframes beyond year 2080



(https://www.hrpdcva.gov/departments/water-resources/policy-guidance-)

Figure 10: Projected SLR

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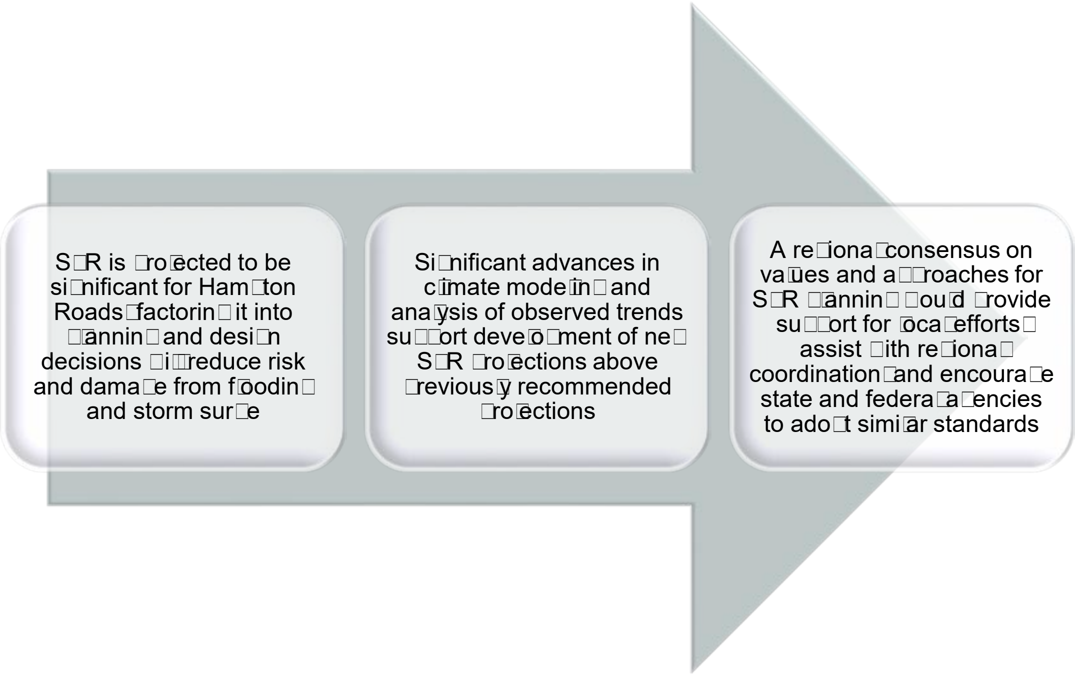
[47] (Commonwealth of Virginia Department of Conservation and Recreation, 2022)
[48] (Hampton Roads Planning District Commission, 2021)

Figure 2: Rationale Behind HRPDC SLR

Rationale behind this study can be seen in Figure 11. Recommendations from the HRPDC SLR are as follows:

- Localities should plan for SLR using 1.5-feet of relative SLR above current mean higher high water (MHHW) for near-term planning, 3-feet of relative SLR above current MHHW for medium-term planning, and 4.5-feet of relative SLR above current MHHW for long-term planning.
- For engineering and design, localities should calculate project-appropriate SLR scenarios by using a tool such as the U.S. Army Corps of Engineers (USACE) Sea Level Change Calculator and conduct a benefit-cost analysis of various adaptation strategies to determine an appropriate amount of SLR for a specific project.
- These scenarios should be reevaluated as appropriate based upon new information developed by the NOAA, USACE, or Virginia Institute of Marine Science (VIMS).



SLR is projected to be significant for Hampton Roads, factoring it into planning and design decisions will reduce risk and damage from flooding and storm surge

Significant advances in climate modeling and analysis of observed trends support development of new SLR projections above previously recommended projections

A regional consensus on values and approaches for SLR planning would provide support for local efforts, assist with regional coordination and encourage state and federal agencies to adopt similar standards

Figure 11: Rationale Behind HRPDC SLR

In January 2017, NOAA partnered with the U.S. Geological Survey, the U.S. Environmental Protection Agency (USEPA), and Rutgers University, and published a report updating regional and global SLR scenarios for the United States. This report takes advantage of additional observations of sea level change and ongoing research into global and regional drivers of SLR including rapid ice melt, ice sheet instability, shifts in ocean circulation patterns, changes in the Earth's gravitational field, and vertical land movement[49].

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[49] (City of Chesapeake, 2017)

The overall result is that the upper bound of plausible global SLR is higher than considered in the NOAA's 2012 report. In addition, regional drivers (such as vertical land movement, ocean circulation, and shifts in the gravitational field) account for a significant amount of projected SLR in Hampton Roads. Overall, the report projects between 1.9-feet of SLR in Hampton Roads between 2000 and 2100 at best and 11.5-feet of SLR at worst. According to the report's most statistically probably assessment, the predicted outcome is approximately 4.5-feet of SLR by 2100[50].

Sea level trends are continuously being monitored and updated by both federal (NOAA, USACE) and state (VIMS) entities. In addition, research, and analysis into the dynamics of sea level and how it responds to changing climatic conditions are also ongoing. The HRPDC recommends that the HRPDC staff and localities reevaluate and consider updating these scenarios as appropriate based upon new information developed by NOAA, USACE, or VIMS[51].

4.3 Studies

The CFPF defines a flood prevention or protection study as any hydraulic or hydrologic study of a floodplain with historical and predicted floods, the assessment of flood risk, and the development of strategies to prevent or mitigate damage from coastal or riverine flooding. Utilizing the most recent flood maps, engineering software, and ensuring minimal human error when collecting and recording data are just a few components to producing a scientifically sound study.

Some studies may be the result of a recommendation from large-scale MDPs. Others include opportunities for coordination with other entities in Hampton Roads or as a result of citizen input.

The City will continue to look for opportunities to identify and conduct additional studies. Future studies may:

- Conducting large-scale master plans of areas of the City that have not been previously covered
- Updating existing studies and large-scale master plans to incorporate additional resilience/equity features
- Look at community scale flooding issues not addressed by large-scale studies

There may be an opportunity to modify the scope of these planned studies to incorporate flooding and resilience:

- Greenbrier Redevelopment Study
- Industrial Waterfront Study
- Western Branch Redevelopment Study
- Joint planning study of St. Juliens Creek corridor and/or Blows Creek corridor to explore options for expanded public recreation access to the water around St. Juliens Creek Annex
- Study options for interconnecting water service to St. Juliens Creek Annex and evaluate alternatives for extending water and sewer service eastward towards the Elizabeth River to support future development

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[50] (City of Chesapeake, 2017)

[51] (City of Chesapeake, 2017)

As opportunities are identified and vetted, the City plans to seek grant funding though the CFPF program.

4.4 Programs

The CFPF program defines capacity building programs as improving the ability of a local government through training of existing staff, hiring personnel, contracting with expert consultants or advisors, and other related actions that allow a local government to identify and mitigate risk and flood impacts[52]. A program could be considered essential to a sustainable community that is economically, socially, and environmentally based.

A possible program is a modification to the OSAP program. This project would supplement the existing, city-wide competitive OSAP program. This program allows the City to purchase development rights from willing landowners in exchange for preservation easement on their property. In addition to capacity building, programs can also be considered preparation for the future. The City will review opportunities to be involved in planning programs. For example, the City will look into and identify types of staff support that may be helping in planning future needs such as staff capacity, on-call contracts, and training.

The City will seek to ensure an equitable and proportionate share of public facility and infrastructure improvements attributable, in whole or part, to a proposed development project which will be financed by the owners, developers, users or beneficiaries. Development and redevelopment will be designed in such a way as to mitigate for the potential impacts from flooding and SLR[53]. (c1)

The City continues to explore different strategies of flood mitigation, including tidal flooding, such as removing structures and preserving properties subject to repetitive losses from flooding, in part by exploring funding mechanisms for purchasing such properties. New development, redevelopment, and critical infrastructure will be directed towards higher ground to the greatest extent practicable (c9). Chesapeake will continue to work with businesses and community organizations, such as civic leagues, potentially affected by SLR to proactively adapt to future conditions (c4, c12).

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions (c10). Natural areas could include floodplains, wetlands, streams, steep slopes, barrier islands and sand dunes. Parks, recreation or conservation agencies and organizations often implement these measures, examples include[54]:

- Beach and dune preservation
- Erosion and sediment control
- Floodplain protection
- Forest and vegetation management
  - i.e., fire resistant landscaping, fuel breaks
- Habitat preservation
- Historic properties and archaeological site preservation

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[52] (Commonwealth of Virginia Department of Conservation and Recreation, 2022)

[53] (City of Chesapeake Planning Department, 2016)

[54] (Hampton Roads Planning District Commission, 2017)

- Land acquisition
- Riparian buffers
- Slope stabilization
- Watershed management
- Wetland preservation and restoration

Chesapeake is also considering establishing forested buffers on conserved properties, providing stormwater filtering to receiving waters. The City currently plants trees as a part of municipal projects and based on expert panel recommendations, tree plantings can reduce the total phosphorous load by 24% for tree canopy over lawn and 11% for canopy over impervious surfaces. In 2018, the City planted 2,000 loblolly pine seedlings in the TMDL watersheds[55].

Moving residential living away from sensitive regions does not mean their beauty cannot be appreciated. By creating public access, people can visit and live more [illegible]in other regions. Thus, acquisition of new public waterfront access sites, such as those identified in the City's 2026 Comprehensive Plan and the Private and Public Waterfront Access Study, will be pursued including:

- Continue efforts to expand and enhance multi-purpose trail along Dismal Swamp Canal;
- Increase shoreline pedestrian and boating access to the Albemarle and Chesapeake Canal by means of a proposed hiking trail on the northeast side of the Canal;
- Pocaty Creek and St. Julian Creek
- The abandoned Route-168 bridge over the Northwest River could be used to provide an additional boat ramp, as could a portion of Northwest Preserve No. 1
- The Eastern Branch of the Elizabeth River and the Indian River should also be further explored for future public waterfront access points
- The Western Branch area of the City should be further explored for future access points; possible sites include Western Branch Park and former Lake Ahoy site

Land deemed probable for acquisition include properties which are currently leased for agricultural use; however, City policy allows the City to prioritize these lands for recreational use, BMPs, or debris sites during storm events. Specifically, the City will evaluate converting the following leased properties from agriculture to forest in future permit terms[56] (c6,7):

- 1564 Mount Pleasant Road, 8-acres, North Landing River (AS12)
- 1653 Mt Pleasant Road, 16-acres, North Landing River (AS12)
- 1736 Mount Pleasant Road, 17-acres, North Landing River (AS12)
- 1102 Centerville Turnpike South, 15-acres, Pocaty River (AS15)
- 2500 Land of Promise Road, 133-acres, Pocaty River (AS15)
- Ballahack Road, 404-acres, Northwest River (AS09)

As opportunities are identified and vetted, the City plans to seek grant funding though the CFPF program.

4.5 Projects

Projects can be defined, for the CFPF program, as activities which include the development of flood protection facilities, acquisition of land, restoration of natural features or other activities

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[55] "Southern Rivers TMDL Action Plan," 2018.
[56] "Southern Rivers TMDL Action Plan," 2018.

that involve design, construction, or installation of facilities[57]. As opportunities are identified and vetted, the City plans to seek grant funding though the CFPF program.

The City of Chesapeake is blessed with ample water access, this critical resource needs to be protected from anthropomorphic pollutants. Proper utilization of land, identifying incentives for restoring riparian and wetland vegetation, and incorporation of nature-based infrastructure are some of the key factors in deeming a project as resilient. Forward-looking projects designed for resilience are critical to mitigating impacts of climate change on infrastructure, specifically in coastal regions.

As has been presented in Section 3, the City of Chesapeake has developed Master Drainage Plans and, in some instances, more detailed neighborhood studies for the majority of the locality. Through a review of approximately 40 of these studies and other documents, approximately 200 discrete projects were identified. The City has selected the following 26 projects to include in the Preliminary Resilience Plan, listed in order implementation status and anticipated construction start. Project details can be found in Appendix D.

- Under Design
    1. Oakdale Area BMP and Drainage Improvements
    2. Norfolk Highlands Drainage Improvements
    3. Welch Ln Drainage Improvements – Phase I – II
    4. Cooper's Ditch – Phase II
    5. Washington Manor Outfall Improvements
    6. Hickory Ridge Outfall Improvements
    7. Herring Ditch Outfall Improvements
    8. Royce Dr Drainage Outfall Improvements – Phase II
    9. Lamberts Trail Area Drainage Improvements – Phase II
    10. Pughsville Area Outfall Improvements

- Design Scoping Underway
    11. Elmwood Landing Area Drainage Improvements – Phase I – II
    12. Providence Rd Crossing Replacement
    13. Mount Pleasant Rd Crossing Replacement
    14. Shell Rd Drainage Improvements

- Not Yet Under Design
    15. Greenbrier Outfall Resiliency Improvements – Phase I – II
    16. Greenbrier Outfall Resiliency Improvements – Phase III
    17. Drum Creek Farms Drainage Improvements – Phase II
    18. Poplar Branch Ditch Regrading
    19. Buskey Rd Crossing Replacement
    20. Carawan Ln Drainage Improvements
    21. Weiss Lane Outfall Improvements
    22. Pleasant View Drainage Improvements
    23. Mount Pleasant Rd Outfall Improvements
    24. Homemont Outfall Improvements
    25. Forest Lakes Outfall Improvements – Phase II
    26. Scenic Blvd Drainage Improvements

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[57] Commonwealth of Virginia Department of Conservation and Recreation (2022)

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Appendices

Appendix A – Plan Criteria Matrix

Appendix B – Plan and Program Inventory

Appendix C – Critical Facilities Map

Appendix D – Resilience Plan Project Table

Appendix A

Plan Criteria Matrix

Resilience Plan **Criteria Matrix**

Criterion	Document Name	Hampton Roads Hazard Mitigation Plan	2035 Chesapeake Comprehensive Plan	HRPDC Sea Level Rise Planning Policy and Approach	HRPDC Integrating Coastal Resilience into Local Plans, Policies, and Ordinances	Norfolk Highlands Master Plan (Timmons job)	Chesapeake, Code of Ordinances IV, VII, IX, X, and XI	Portsmouth & Chesapeake Joint Land Use Study
	URL	https://www.hrpdcva.gov/uploads/docs/2017%20Hampton%20Roads%20Hazard%20Mitigation%20Plan%20Update%20FINAL.pdf	https://resources.cityofchesapeake.net/comp-plan-2035/#page=1	https://www.hrpdcva.gov/uploads/docs/05A_Attachment%20-%20HRPDC%20Sea%20Level%20Rise%20Planning%20Policy%20and%20Approach%20-%20Adopted%20101818.pdf	https://www.hrpdcva.gov/uploads/docs/HRPDC%20FY%2015%20Task%2094.01%20Final%20Report%20-%20Coastal%20Resilience.pdf	not available	https://library.municode.com/va/chesapeake/codes/code_of_ordinances	https://www.hrpdcva.gov/uploads/docs/ChsPorJLUS_Report_Draft_June2021.pdf
	Published date	2017	2014	2018	2017	2019	2013	2021
Criterion	Amended/Revised date	2017	2016			2019		
1	Equity based strategic polices for local government wide flood protection and prevention.	Table 7.4 page 243	Pages 11, 56, 206				Code of Ordinances are City policies (Ref Doc)	Section 1.5 Starting on page 28, and 6.3 (page 182), Policies and Practices, page 20, Section 6.0, page
2	Documentation of existing social, economic, natural, and other conditions present in the local government.	page 3:9-10 (29-30)	Chapter 2 (Page 22)		Code of Virginia (page 7)			Economy page 22-23, Section 1.1, page 21-23 Section 1.5, page 28-31
3	Review of the vulnerabilities and stressors, both natural and social in the local government.	Vulnerability Assessment Page 5:1 (Page 153), Overview of Vulnerability (page 5:5, 156)	Pages 68, 113, 170, 178		FMP (page 11)		26-89-b (page 5)	Section 4.6 (page 76), 4.6.2 (page 79), Summary of Challenges, page 15-17
4	Forward looking goals, actionable strategies, and priorities through as seen through an equity based lens.	Chesapeake Mitigation Actions 1-16 (Page 7:151, 383)	Page 45-58 and Appendix C (good summary, but really most of the document addresses this item)	Yes pages 1-4	page 68-69	Page 23	26-99 (page 11-12), 26-100-3 (Page 13),	3.2.5 (page 50), 5.3.17 (Risk Assessment), JLUS Goals, page 16 Table ES.1, page 17 Priority Actions, page 18-19 Section 1.2, page 23-25 Section 5.0, page 103
5	Strategies that guides growth and development away from high risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.	Mitigation Action 2, 3 and 15			page 68-69		26-519 (page 47-49)	Project specific
6	Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by Conserve Virginia or similar data driven tools.	Mitigation Action 2, 3, 13, and 15	Pages 34, 58, 73		page 68-69		OSAP (page 62-66, 70)	REPI Page 29, Section 1.3, page 25-26 Section 3.2, page 43-47
7	Identification of areas suitable for property buyouts in frequently flooded areas.	Mitigation Action 2, 3, 13, and 15	pages 67, 68 (no specific mention of property buyouts however, only alluded), New property acquisitions page 73		page 68-69		OSAP (page 66-67, 70)	#2 (page 226)
8	Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as "lifelines" by FEMA.	Mitigation Action 16	Pages 122		page 68-69		Defined (page 1-2), 26-100-5 (page14)	4.6.5 (page 95), Table 1 Ches (page 219)
9	Identified ecosystems/wetlands/floodplains suitable for permanent protection.	Page 6:24 (230), #3 page 7:5 (237)	Pages 14, 34, 59, 61, 66, 69-71,				26-513 (page 39-40), 26-520 (page 49)	5.3.29 (Page 164), Section 1.3, page 25-26
10	Identified incentives for restoring riparian and wetland vegetation.	Page 6:10 (216), #3 page 7:5 (237)					26-516 (page 45), 26-522-2 (page 54)	
11	A framework for implementation, capacity building and community engagement.	Page 6:2 (208), 6:5 (211), 6:10 (216), 7:1 (233),	Pages 32, 76,		page 68-69	Page 23	Sec 26-93 (page 6-9), 26-358 & 360 (page 29-30), 26-518 (page 46-47)	7.0 (page (191), Section 1.4.3, page 27
12	Strategies for creating knowledgeable, inclusive community leaders and networks.	Pages 17-18, HMPS Committee members table 2.2 (page 2:4-5, 12-13)	Pages 130 and 170		Page 49, 51		26-86 (page 1)	Sect. 6.1 and 6.2, Section 1.4, page 26
13	A community dam safety inventory and risk assessment posed by the location and condition of dams.	Table 4.2 (Page 4:18, 64)			National Flood Insurance Program (page 8-9)			
14	A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.	Population (Page 3:2, 22), Historic (3:9-10, 29-30), Infrastructure (3:15, 35), Sea level rise (4:32, 78)	Pages 68, 125		Chesapeake is CRS Class 8 (Pages 14-15), page 68	Page 6, 43		Intro (page 21), Roadway Flooding, page 15-16, Section 4.6, page 76-101
15	Strategies to address other natural hazards that would cause, affect or result from flooding events including: • Earthquakes. • Storage of hazardous materials • Landslides/mud/debris flow/rock falls. • Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely. • Preparations for severe weather events including tropical storms or other severe storms, including winter storms.	Pages 90-152, 187-206, Table 7.5 (page 7:13, 245)	Page 127 - prepare power utilities for severe weather	Severe Storms		Page 23	26-606 (page 73)	Section 4.6, page 76-79

Resilience Plan Criteria Matrix

	Document Name	Public Facilities Manual (Chapt. 5, 15, and 17)	Chesapeake Bay TMDL Action Plan	Southern Rivers TMDL Action Plan	Southern Rivers TMDL Action Plan Conceptual Water Quality Projects	Elizabeth River Bacterial TMDL Action Plan	Community Rating System data	2021 Legislative Priorities
	URL	https://www.cityofchesapeake.net/government/city-departments/departments/Department-of-Development-and-Permits/Development-Engineering-and-Construction/pfm/volume1/chapters.htm	https://www.norfolk.gov/DocumentCenter/View/38025/Final-Report---Chesapeake-Bay-TMDL-Action-Plan---06_28_2018_FINAL?bidId=	https://www.cityofchesapeake.net/Assets/documents/departments/public_works/TMDL/Chesapeake+Southern+Rivers+TMDL+Action+Plan+-+July+24$!2c+2018.pdf	https://www.cityofchesapeake.net/Assets/documents/departments/public_works/TMDL/Draft+Conceptual+Water+Projects.pdf	https://norfolk.gov/DocumentCenter/View/38026/Norfolk-ER-Bacteria-TMDL---Final-Action-Plan---06-28-2018_FINAL?bidId=	not available	https://www.cityofchesapeake.net/Assets/documents/departments/city_manager/2021+Legislative+Program/Proposed+2021+Legislative+Package.pdf
	Published date	2016, 2018, 2010	2018	2018	2018	2018	2021	2021
Criterion	Amended/Revised date					2018		
1	Equity based strategic polices for local government wide flood protection and prevention.		Section 3.2, page 10	Table 1-2, page 13 Section 12, page 71-73 Section 15, page 78		Section 5.0, page 16-17		Page 6 & 7, and Page 12 "Preserve Legal Standards"
2	Documentation of existing social, economic, natural, and other conditions present in the local government.		Section 1.3, page 8	Section 1, page 11-13		Section 1.1, Page 1		Page 22 "Deep Creek AIWW Bridge & North Landing AIWW Bridge Replacements"
3	Review of the vulnerabilities and stressors, both natural and social in the local government.			Section 6, page 41-43		Section 2.0, page 5 Section 3.0, page 6-7		Page 15 "Barriers to Human Service Providers" Page 18 "Uranium Mining"
4	Forward looking goals, actionable strategies, and priorities through as seen through an equity based lens.		Section 1.2 & 1.3, page 7 & 8	Section 3, page 21-22 Section 7, page 44-57 Section 8, page 58-62		Table 1-2, page 4 Section 7.1, page 20 Section 7.3, page 21		Page 8
5	Strategies that guides growth and development away from high risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.		Section 3.3, page 11	Section 7.5, page 54 Section 7.6.1, page 55				
6	Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by Conserve Virginia or similar data driven tools.			Section 8.3.3, page 61				
7	Identification of areas suitable for property buyouts in frequently flooded areas.		Section 3.3, page 11	Table 2-1, page 17 Section 8.3.4, page 61				
8	Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as "lifelines" by FEMA.		Section 3.3, page 11	Section 6, page 41-43		Section 2.0, page 5 Section 3.0, page 6-7	CRS program	Page 10 & 11
9	Identified ecosystems/wetlands/floodplains suitable for permanent protection.		Section 3.3, page 11	Table 2-1, page 17		Section 1.2, page 2 Figure 1-1, page 3		
10	Identified incentives for restoring riparian and wetland vegetation.			Section 8.3.4, page 61				
11	A framework for implementation, capacity building and community engagement.		Section 3.9 & 3.10, page 15	Section 7.2, page 50-51 Section 13, page 74		Section 6, page 18-19 Section 8.0, page 22		
12	Strategies for creating knowledgeable, inclusive community leaders and networks.		Section 3.9, page 15	Section 7.2, page 50-51 Section 13, page 74		Section 6, page 18-19 Section 8.0, page 22		
13	A community dam safety inventory and risk assessment posed by the location and condition of dams.							
14	A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.							Page 16 "Virginia Commonwealth Flooding Board" Page 17 "Real Estate Disclosures for Flooding"
15	Strategies to address other natural hazards that would cause, affect or result from flooding events including: • Earthquakes. • Storage of hazardous materials • Landslides/mud/debris flow/rock falls. • Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely. • Preparations for severe weather events including tropical storms or other severe storms, including winter storms.		Table 3.4-1 (Annual Pollutant Loads)					

	Resilience Plan Criteria Matrix							
	Document Name	Capital Improvement Projects Summary – Stormwater Projects	Crestwood 2&3 Calibration	Sterns Creek Watershed Master Drainage Plan	Bedford Study Area	MS4 Program Plan	Greenbrier Resiliency Plan	Chesapeake Citizen Stormwater Committee - Annual Report to Council (2018)
	URL	not available but full CIP can be found at: https://www.cityofchesapeake.net/Assets/documents/departments/budget/CIP+Approved+2020-2024/CIP+Approved+2021-2025/FY21-25+Approved+CIP+Document.pdf	not available	not available	not available	https://resources.cityofchesapeake.net/vsmp/ms4-plan/#page=1	not available	not available
	Published date	2021	2021	2021	1986	2017	2020	2018
Criterion	Amended/Revised date		2022	2022				
1	Equity based strategic polices for local government wide flood protection and prevention.		Section 4, page 4	Section 6, page 6-1 - 6-5		Section 2.4, page 8-9 Section 2.5, page 9-10	Section 2, page 8	
2	Documentation of existing social, economic, natural, and other conditions present in the local government.		Section 2, page 2 Section 3, page 3 Figure 1-15, page 23-37 Figure 18-20, page 41-43	Executive Summary, page ES-1 - ES-3 Section 2.4, page 2-7	Existing Conditions, page 1-2 Table 1, page 4 Figure 1, page 8			
3	Review of the vulnerabilities and stressors, both natural and social in the local government.					Water Quality Impact Assessments, page 222 & 318		
4	Forward looking goals, actionable strategies, and priorities through as seen through an equity based lens.	Page 1-34	Section 1, page 1 Table 5, page 20-22	Executive Summary, page ES-1 - ES-3 Section 1.1, page 1-2 Section 4.3, page 4-5 - 4-6 Section 4.4, page 4-6 - 4-9 Table 5-1, page 5-2	Future Conditions, page 2-3 Table 2, page 5			
5	Strategies that guides growth and development away from high risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.							
6	Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by Conserve Virginia or similar data driven tools.	Page 1-34		Section 1.3, page 1-5 & 1-6				page 2 of 4
7	Identification of areas suitable for property buyouts in frequently flooded areas.							page 2 of 4
8	Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as "lifelines" by FEMA.					Section 4.9, page 36-40		
9	Identified ecosystems/wetlands/floodplains suitable for permanent protection.	Page 1-34		Section 1.3, page 1-5 & 1-6				page 2 of 4
10	Identified incentives for restoring riparian and wetland vegetation.		Table 5, Scenario F, page 21 Figure 17a, page 40					
11	A framework for implementation, capacity building and community engagement.					Section 4.10, page 41-43		All
12	Strategies for creating knowledgeable, inclusive community leaders and networks.					Section 4.10, page 41-43 Section 4.11, page 44-46		All
13	A community dam safety inventory and risk assessment posed by the location and condition of dams.					Dam Safety and Floodplain Management		
14	A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.				Introduction, page 1			
15	Strategies to address other natural hazards that would cause, affect or result from flooding events including: • Earthquakes. • Storage of hazardous materials • Landslides/mud/debris flow/rock falls. • Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely. • Preparations for severe weather events including tropical storms or other severe storms, including winter storms.			50 and 100 year storm	50 year storm			

Resilience Plan Criteria Matrix

	Document Name	Chesapeake Citizen Stormwater Committee - Annual Report to Council (2020)	Contract for Elizabeth River Project to Provide Environmental Conservation Services for the City of Chesapeake	City of Chesapeake 2022 Mitigation Action Items (internal update)	Essential Facilities	Administrative Regulation 1.29: Facilitating Procurement Opportunities for Small Businesses and Businesses Owned by Women, Minorities, and Service Disabled Veterans	City Directive 2.09: Department of Human Resources Equal Employment Opportunity Policy	Administrative Regulation 1.30: Chesapeake Alert Emergency Notification/Citizen Information/Employee Notification System
	URL	not available	not available	not available	not available	https://www.cityofchesapeake.net/Assets/documents/departments/human_resources/administrative_regulations/AR129.pdf	https://www.cityofchesapeake.net/Assets/documents/departments/human_resources/administrative_regulations/AR209.pdf	https://www.cityofchesapeake.net/Assets/documents/departments/human_resources/administrative_regulations/AR130.pdf
	Published date	2020	2020	2022	2022	2011	2004	2011
Criterion	Amended/Revised date						2021	2014
1	Equity based strategic polices for local government wide flood protection and prevention.			All		Pg. 1 - 3	Equity Statement	
2	Documentation of existing social, economic, natural, and other conditions present in the local government.					Page 3	Page 2-4	
3	Review of the vulnerabilities and stressors, both natural and social in the local government.							
4	Forward looking goals, actionable strategies, and priorities through as seen through an equity based lens.					Pg. 1 - 3		
5	Strategies that guides growth and development away from high risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.			Mitigation 2 & 3		Pg. 1-3		Page 1, 2-6
6	Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by Conserve Virginia or similar data driven tools.			Mitigation 2 & 3 & 15				
7	Identification of areas suitable for property buyouts in frequently flooded areas.			Mitigation 2 & 3 & 15				
8	Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as "lifelines" by FEMA.			Mitigation 10	All			
9	Identified ecosystems/wetlands/floodplains suitable for permanent protection.	Page 3 of 4	Page 3					
10	Identified incentives for restoring riparian and wetland vegetation.		Page 4					
11	A framework for implementation, capacity building and community engagement.	All	Page 1					Page 1-6
12	Strategies for creating knowledgeable, inclusive community leaders and networks.	All				Pg. 1-3		
13	A community dam safety inventory and risk assessment posed by the location and condition of dams.							
14	A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.							
15	Strategies to address other natural hazards that would cause, affect or result from flooding events including: • Earthquakes. • Storage of hazardous materials • Landslides/mud/debris flow/rock falls. • Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely. • Preparations for severe weather events including tropical storms or other severe storms, including winter storms.							

Resilience Plan Criteria Matrix

	Document Name	Administrative Regulation 1.33: City Manager's Office Authority to Apply for Grant Policy	City Policies and Processes for Budget	Mobile Home Displacement Policy	Budget Work Session: Policy and Programmatic Levers	Public Facilities Manual Chapter 5 - Stormwater Management and Drainage Design	Program Year 47 2021/2022 Annual Action Plan	City of Chesapeake Strategic Plan
	URL	https://www.cityofchesapeake.net/Assets/documents/departments/human_resources/administrative_regulations/AR133.pdf	https://www.cityofchesapeake.net/Assets/documents/departments/budget/FY2021-22/CIP/Policies+and+Process.pdf	https://www.cityofchesapeake.net/Assets/documents/departments/planning/2035compplan/supporting-docs/mobile-home-displacement-policy.pdf	not available	https://www.cityofchesapeake.net/Assets/documents/departments/development_permits/pfm/volumei/chapters/05-Stormwater-Management-and-Drainage-Design.pdf	https://www.cityofchesapeake.net/Assets/documents/departments/planning/housing/PY+47+2021-2022+Annual+Action+Plan.pdf	not available
	Published date	2015	2022	2011	2021		2021	2021
Criterion	Amended/Revised date					2016		
1	Equity based strategic polices for local government wide flood protection and prevention.	Page 1-3	Pg. 8	Pg. 1-4	Slide 9		2-7, 8-13, 14, 15-16, 27-32, 37-38, 39-43, maps	slide 4-9, 15
2	Documentation of existing social, economic, natural, and other conditions present in the local government.	Page 1-3	Pg. 1-6	Pg. 1-4	Slide 11		2-7, 8-13, 14, 15-16, 27-32, 37-38, 39-43, maps	
3	Review of the vulnerabilities and stressors, both natural and social in the local government.							
4	Forward looking goals, actionable strategies, and priorities through as seen through an equity based lens.			Pg. 1-4			2-7, 8-13, 14, 15-16, 27-32, 37-38, 39-43, maps	
5	Strategies that guides growth and development away from high risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.		Pg. 19				19-26	
6	Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by Conserve Virginia or similar data driven tools.		Pg. 59				19-26	
7	Identification of areas suitable for property buyouts in frequently flooded areas.		Pg. 59				19-26	
8	Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as "lifelines" by FEMA.		Pg. 59				19-26	
9	Identified ecosystems/wetlands/floodplains suitable for permanent protection.		Pg. 59				19-26	
10	Identified incentives for restoring riparian and wetland vegetation.						19-26	
11	A framework for implementation, capacity building and community engagement.		Pg. 203				19-26	
12	Strategies for creating knowledgeable, inclusive community leaders and networks.		Pg. 19	Pg. 1-4			19-26	
13	A community dam safety inventory and risk assessment posed by the location and condition of dams.						19-26	
14	A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.		Pg. 59				19-26	
15	Strategies to address other natural hazards that would cause, affect or result from flooding events including: • Earthquakes. • Storage of hazardous materials • Landslides/mud/debris flow/rock falls. • Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely. • Preparations for severe weather events including tropical storms or other severe storms, including winter storms.							

Appendix B

Plan and Program Inventory

Documents Reviewed for Plan Requirements

- 2021 Legislative Priorities (2021)
- 2021 Regional Legislative Agenda (2020)
- 2021 Regional Legislative Agenda for the 757 (n.d.)
- 2035 Chesapeake Comprehensive Plan (2016)
- Administrative Regulation 1.30: Chesapeake Alert Emergency Notification/Citizen Information/Employee Notification System (2014)
- Administrative Regulation 1.33: City Manager's Office Authority to Apply for Grant Policy (2015)
- Administrative Regulation 1.29: Facilitating Procurement Opportunities for Small Businesses and Businesses Owned by Women, Minorities, and Service Disabled Veterans (2011)
- Budget Work Session: Policy and Programmatic Levers (2021)
- Chesapeake Citizen Stormwater Committee – Annual Report to Council (2020)
- Chesapeake Citizen Stormwater Committee – Annual Report to Council (2018)
- Chesapeake, Code of Ordinances IV, VII, IX, X, and XI (2013)
- City Directive 2.09: Department of Human Resources Equal Employment Opportunity Policy (2021)
- City of Chesapeake Strategic Plan (2021)
- City Policies and Processes for Budget (2022)
- Essential Facilities (2022)
- HRPDC Integrating Coastal Resilience into Local Plans, Policies, and Ordinances (2017)
- HRPDC Sea Level Rise Planning Policy and Approach (2018)
- Mobile Home Displacement Policy (2011)
- Public Facilities Manual [Chapters 5, 15, and 17] (2016)
- Ranking Scale Description for Stormwater Project Prioritization (2021)
- Stormwater Utility Fee (2013)

Documents Reviewed for Projects and Plan Requirements

- Bailey Creek Watershed MDPU (2012)
- Bells Mill Creek Watershed MDPU (2009)
- Butts Station Road / Kemp Woods Outfall [NS-2] Watershed MDPU (2005)
- Capital Improvement Program FY 2022-2026 (2021)
- Capital Improvement Projects Summary – Stormwater Projects (2021)
- Capital Improvement Projects Progress Report – Stormwater – FY21-23 (n.d.)
- Chesapeake Avenue Area Drainage and Sanitary Sewer Improvements - SWMM Modeling (2020)
- Chesapeake Bay TMDL Action Plan (2021)
- Chesapeake Citizen Stormwater Committee – Annual Report to Council (2018)

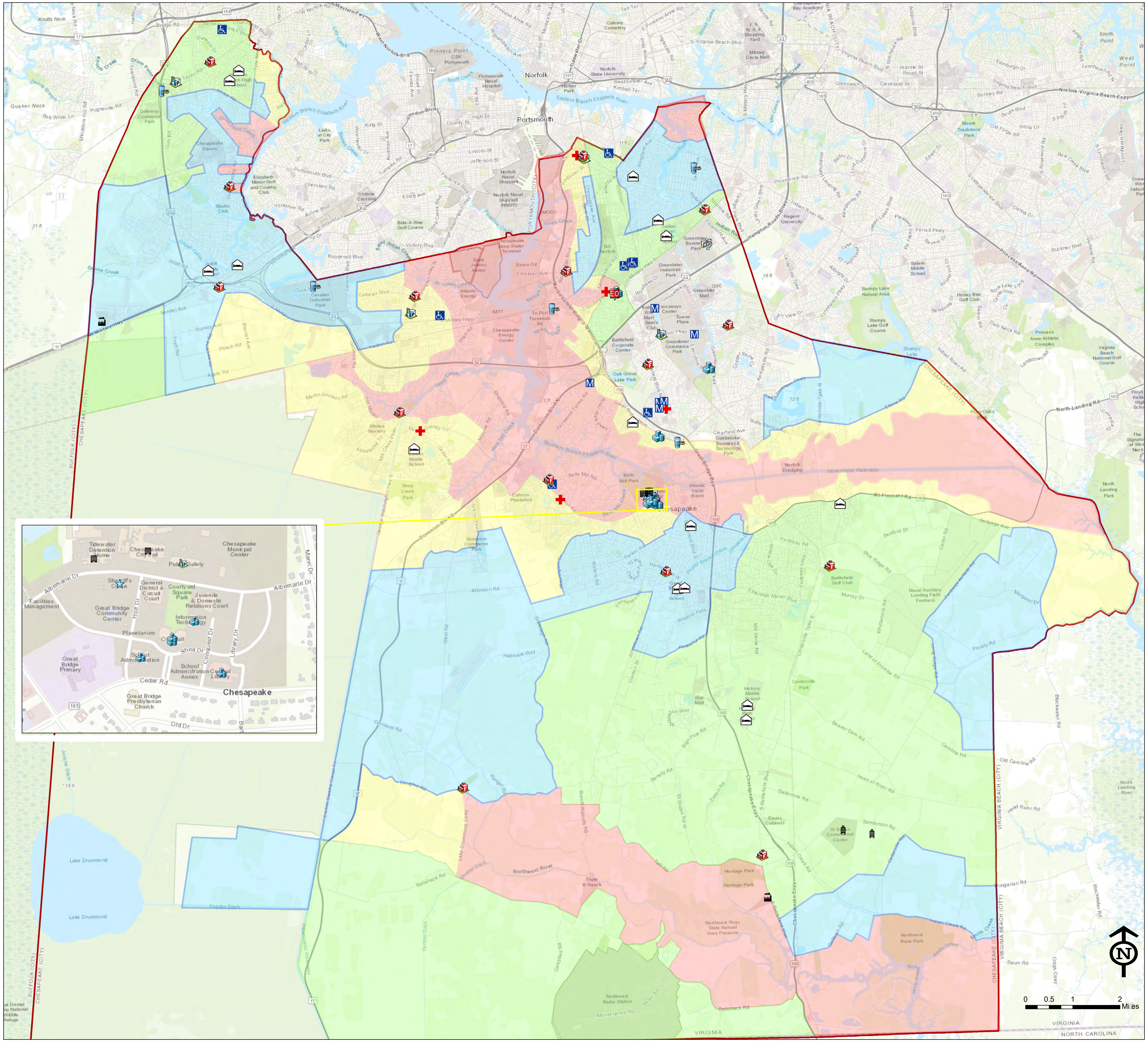
- Chesapeake Citizen Stormwater Committee – Annual Report to Council (2020)
- Chesapeake Essential Facilities (2022)
- City of Chesapeake 2022 Mitigation Action Items (2022)
- Contract for Elizabeth River Project to Provide Environmental Conservation Services for the City of Chesapeake (2020)
- Cooper's Ditch Watershed Technical Memorandum (2012)
- Crestwood 2&3 Calibration (2022)
- Crestwood Drainage Study (2000)
- Crestwood-1 Master Drainage Plan Update (2021)
- Deal Drive Drainage Improvements Drainage Analysis Report (2019)
- Deep Creek Watershed MDPU (2006)
- Deep Creek Watershed Technical Memorandum (2010)
- Drum Point Creek Watershed Master Drainage Plan – Identified Improvements (2018)
- Drum Point Creek Watershed Master Drainage Plan – Link Node Diagram (2018)
- Drum Point Creek Watershed Master Drainage Plan (2018)
- Elizabeth River Bacterial TMDL Action Plan (2018)
- Elmwood Landing Drainage Study (2021)
- Elmwood Landing Offsite Drainage Analysis – SWMM Modeling (2020)
- Existing and Future Hydrology and Hydraulics Albemarle and Chesapeake Canal Drainage Basin Southside Albemarle and Chesapeake Canal Sub-Basin, Bedford Study Area (1986)
- Existing and Future Hydrology and Hydraulics Albemarle and Chesapeake Canal Drainage Basin Southside Albemarle and Chesapeake Canal Sub-Basin (1986)
- Existing and Future Hydrology and Hydraulics Albemarle and Chesapeake Canal Drainage Basin Northside Albemarle and Chesapeake Canal Sub-Basin (1985)
- Existing and Future Hydrology and Hydraulics for Bowers Hill Area of the Goose Creek Drainage Basin (1985)
- Existing and Future Hydrology and Hydraulics Southern Branch of the Elizabeth River Drainage Basin Crestwood Sub-Basin (1985)
- Existing and Future Hydrology and Hydraulics Western Branch Elizabeth River Drainage Basin Goose Creek Sub-Basin (1985)
- Existing and Future Hydrology and Hydraulics Western Branch Elizabeth River Drainage Basin Sterns Creek Sub-Basin (1986)
- Forest Lakes Drainage Study – Pre-Storm Pumping Technical Memorandum (2021)
- Forest Lakes Drainage Study – Recommended Mitigation Measures (2020)
- Greenbrier Resiliency Plan (2020)
- Hampton Roads Hazard Mitigation Plan (2017)
- Hodges Creek Outfall Study Area (1985)
- Horse Run Ditch East Watershed MDPU (2011)

- Indian River Watershed MDPU (2011)
- Master Drainage Reports Identified Projects (2021)
- Milldam Creek Watershed Technical Memorandum (2011)
- MS4 Program Plan (2017)
- New Mill Creek Watershed MDPU (2006)
- New Mill Creek Watershed MDPU [New Mill 3&4] (2011)
- New Mill Creek Watershed SWMM Conversion [New Mill 1 & 2] (2011)
- Newton Creek Outfall Study Area (1985)
- Norfolk Highlands Master Plan (2019)
- Northside Canal-3 Watershed Study (2021)
- Oak Grove Watershed MDPU (2010)
- Pocaty River Watershed MDP (2009)
- Portsmouth & Chesapeake Joint Land Use Study (2021)
- Program Year 47 2021/2022 Annual Action Plan (2021)
- Public Works Capital Projects Summary – Stormwater Projects (2021)
- South Norfolk Master Drainage Study (2009)
- Southern Chesapeake [2&3] Watershed Technical Memorandum (2012)
- Southern Chesapeake 1 Watershed MDP (2008)
- Southern Chesapeake 4 Watershed Study (2010)
- Southern Chesapeake Watershed MDPU [Study Area 2&3] (2007)
- Southern Rivers TMDL Action Plan (2018)
- Southern Rivers TMDL Action Plan Conceptual Water Quality Projects (2018)
- St. Julian Creek Watershed Technical Memorandum (2012)
- Stern Creek Watershed Master Drainage Plan (2021)
- The Virginia Coastal Resilience Master Plan (2020)
- Washington Manor Outfall [GL-1] Watershed Study (2015)

Appendix C

Maps

Chesapeake
Essential Facilities



Essential Facilities

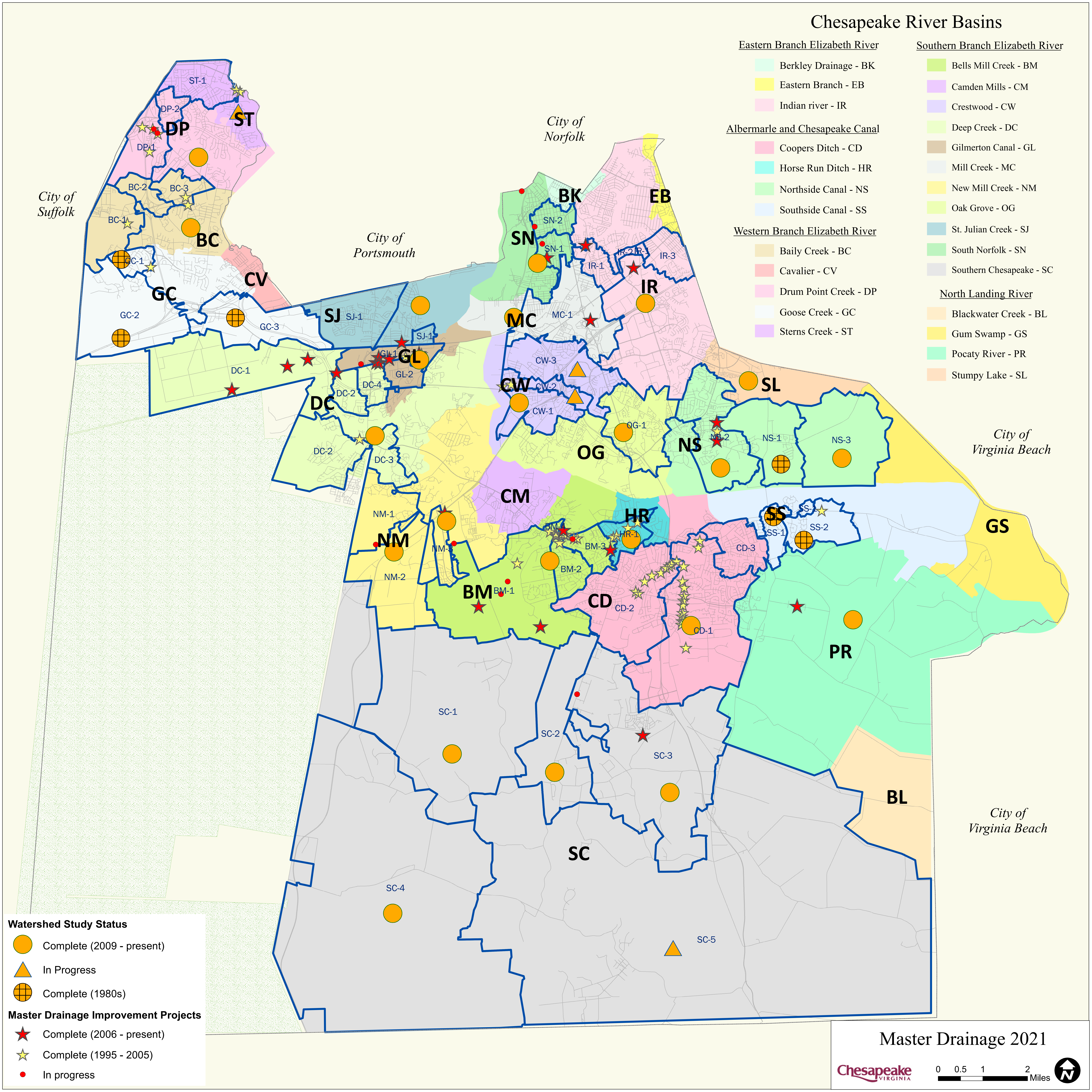
- Emergency Operations
- Fire Station
- Medical
- Municipal Bldgs
- Plant
- Police Station
- Senior Disabled
- Shelter
- Sheriff
- Special Needs
- Urgent Care
- Water Storage Tank
- Corrections - Medium
- Corrections - Maximum

Evacuation Zone

- A
- B
- C
- D

2/8/2022

Chesapeake
VIRGINIA



Chesapeake River Basins

Eastern Branch Elizabeth River

- Berkley Drainage - BK
- Eastern Branch - EB
- Indian river - IR

Albermarle and Chesapeake Canal

- Coopers Ditch - CD
- Horse Run Ditch - HR
- Northside Canal - NS
- Southside Canal - SS

Western Branch Elizabeth River

- Baily Creek - BC
- Cavalier - CV
- Drum Point Creek - DP
- Goose Creek - GC
- Sterns Creek - ST

Southern Branch Elizabeth River

- Bells Mill Creek - BM
- Camden Mills - CM
- Crestwood - CW
- Deep Creek - DC
- Gilmerton Canal - GL
- Mill Creek - MC
- New Mill Creek - NM
- Oak Grove - OG
- St. Julian Creek - SJ
- South Norfolk - SN
- Southern Chesapeake - SC

North Landing River

- Blackwater Creek - BL
- Gum Swamp - GS
- Pocaty River - PR
- Stumpy Lake - SL

Watershed Study Status

- ● Complete (2009 - present)
- ▲ In Progress
- ⊕ Complete (1980s)

Master Drainage Improvement Projects

- ★ Complete (2006 - present)
- ☆ Complete (1995 - 2005)
- • In progress

Master Drainage 2021

Appendix D

Resilience Plan Project Table

Resilience Plan Project Table				
Parameter Name of Project:	Oakdale Area BMP and Drainage Improvements	Norfolk Highlands Drainage Improvements (5 Improvement Phases)	Welch Lane Drainage Improvement Phase I & II	Cooper's Ditch Phase II
On Virginia Costal Resilience Web Explorer?	Yes	Yes	Yes	No
Name of the Document the Project is included in:	Approved Capital Improvement Plan; Oakdale Area Drainage Study	Approved Capital Improvement Plan; Norfolk Highlands Area Drainage Study	SW CIP Progress Report	Approved Capital Improvement Plan
Date the Document was published:	March 2021; July 2020	March 2021; ?	March 2022	March 2021
Chesapeake River Basin Watershed is located in (see master drainage map on Chesapeake watershed page):	Eastern Branch Elizabeth River	Eastern Branch Elizabeth River	Southern Branch Elizabeth River	Albemarle and Chesapeake Canal
Name of the Watershed the Project is located in:	Berkley (BK)	Indian River (IR)	Oak Grove (OG)	Coopers Ditch (CD), Coopers Ditch (CD-1)
Rain Fall Events (for 24hr storms) Analyzed:	2-, 5-, 10-, 100-yr	2-, 5-, 10-yr	2-, 5-, 10-yr	50-, 100-yr
Tailwater (or water surface elevation) Analyzed:	Current PFM Std	Current PFM Std	Current PFM Std	Current PFM Std
Short Summary of Project (I.E. Storm System Upgrades, Detention Basin, Channel/Channel widening):	Construct wet pond, dry pond, storm sewer pipe upgrades to reduce flooding in surrounding neighborhood and enhance water quality in Cloverdale area of South Norfolk.	Replace, upsize, and realign pipe and ditch conveyance systems to reduce flooding in surrounding neighborhood.	Construct new drainage conveyance system along Welch Lane including storm structures, storm pipe, curb & gutter, re-sloping of pavement to reduce flooding in surrounding neighborhood.	Restore hydraulic capacity of Cooper's Ditch needed to serve the watershed by removing significant amounts of silt and sediment between Gloria Dr and Forest Rd.
Is the Project Nature-based?	Yes	No	No	No
What issues or problems are being addressed by the project?	Flooding, Pollution	Flooding	Flooding	Flooding
Does the proposed Project enable communities to adapt to and thrive through natural or human hazards?	Yes	Yes	Yes	Yes
Does the Project include forward-looking goals, actionable strategies, and priorities as seen through an equity-based lens?	Yes	Yes	Yes	Yes
Level of Protection / Design Storm	100-yr for ponds	10-yr	10-yr	50-yr
Size of the Drainage Area related to the Project if listed	~ 228 AC	Varies for each phase (< 200 AC)	~ 10 AC	> 200 AC
How many alternatives were developed/analyzed for the issues being solved	3	3	3	None
Does this Project require future maintenance	Yes	Yes	Yes	Yes
Estimated total project cost (includes Engineering, Land Acq, Construction as appropriate)	$7,567,485	$1,200,000	$1,280,000	$1,500,000
Does the Project have funding available at present?	Yes (Partial)	Yes (Partial)	Yes (Partial)	Yes (Partial)
Timing for implementation (contingent on funding availability)	Active (Construction start 2022)	Active (Construction start 2022)	Active (Construction Start 2023)	Active (Construction start 2023)
What other project(s) must be completed prior to installation of this Project?	None	None	None	None
Project Status - Completed, Under Construction, Design Complete (not yet constructed), Under Design, Scoping (design not yet started), On Hold, Future (not yet started & MAY have funding in a future year)	Under Design	Under Design	Under Design	Under Design
	1	2	3	4

Resilience Plan Project Table				
Parameter Name of Project:	Washington Manor Drainage Improvements	Hickory Ridge Outfall Improvements	Herring Ditch Outfall Improvements	Royce Dr Drainage Outfall Improvements Phase II
On Virginia Costal Resilience Web Explorer?	Yes (previously called Meads Court BMP/Drainage Improvements)	Yes	Yes	Yes
Name of the Document the Project is included in:	Approved Capital Improvement Plan; Washington Manor Outfall (GL-1) Watershed Study	Approved Capital Improvement Plan	Bells Mill Creek Watershed MDPU	SW CIP Progress Report
Date the Document was published:	March 2021; ?	March 2021	January 2010	March 2022
Chesapeake River Basin Watershed is located in (see master drainage map on Chesapeake watershed page):	Southern Branch Elizabeth River	Northwest River	Southern Branch Elizabeth River	Albemarle and Chesapeake Canal
Name of the Watershed the Project is located in:	Gilmerton Canal (GL), Washington Manor (GL-1)	Southern Chesapeake (SC), St. Brides Ditch (SC-3)	Bells Mill Creek (BM), Herring Ditch (BM-1)	Coopers Ditch (CD), Poplars Branch (CD-2)
Rain Fall Events (for 24hr storms) Analyzed:	2-,10-, 50-, 100-year	10-, 50-yr	2-, 10-, 50-, 100-year	2-, 5-, 10-yr
Tailwater (or water surface elevation) Analyzed:	Current PFM Std	Current PFM Std	Current PFM Std	Current PFM Std
Short Summary of Project (I.E. Storm System Upgrades, Detention Basin, Channel/Channel widening):	Replace and upsize pipes along Old George Washington Hwy and re-grade eastern outfall ditch to increase system capacity and reduce area flooding.	Correct erosion, increase outfall ditch capacity, replace pipes with box culvert in the conveyance system between Battlefield Blvd S. and Benefit Rd to reduce area flooding.	Widen outfall ditch and upsize culverts east of Shillelagh Rd to increase system capacity and reduce area flooding.	Regrade roadside ditches and replace driveway culverts to increase capacity and reduce flooding in surrounding neighborhood.
Is the Project Nature-based?	No	Yes	Yes	No
What issues or problems are being addressed by the project?	Flooding	Flooding, Erosion	Flooding	Flooding
Does the proposed Project enable communities to adapt to and thrive through natural or human hazards?	Yes	Yes	Yes	Yes
Does the Project include forward-looking goals, actionable strategies, and priorities as seen through an equity-based lens?	Yes	Yes	Yes	Yes
Level of Protection / Design Storm	50-yr	10-yr	50-yr	5-yr
Size of the Drainage Area related to the Project if listed	~ 560 AC	~140 AC	~ 1,500 AC	~ 20 AC
How many alternatives were developed/analyzed for the issues being solved	3	None	1	1
Does this Project require future maintenance	Yes	Yes	Yes	Yes
Estimated total project cost (includes Engineering, Land Acq, Construction as appropriate)	$1,550,000	$850,000	$2,500,000	$750,000
Does the Project have funding available at present?	Yes (Partial)	Yes (Partial)	No	No
Timing for implementation (contingent on funding availability)	Active (Construction start 2023)	Active (Construction start 2024)	Active	Active
What other project(s) must be completed prior to installation of this Project?	None	None	None	Phase I
Project Status - Completed, Under Construction, Design Complete (not yet constructed), Under Design, Scoping (design not yet started), On Hold, Future (not yet started & MAY have funding in a future year)	Under Design	Under Design	Under Design	Under Design
	5	6	7	8

Resilience Plan Project Table				
Parameter Name of Project:	Lamberts Trail Area Drainage Improvements Phase II	Pughsville Area Outfall Improvements	Elmwood Landing Area Drainage Improvements Phases I & II	Providence Rd Crossing Replacement
On Virginia Costal Resilience Web Explorer?	Yes	No	Yes	No
Name of the Document the Project is included in:	SW CIP Progress Report	PW SW Eng Unfunded Project List	SW CIP Progress Report; Elmwood Landing Drainage Study Elmwood Landing Offsite Drainage Analysis	PW SW Eng Unfunded Project List; PW Ops Condition Report
Date the Document was published:	December 2021	March 2022	March 2022; December 2021; January 2020	March 2022
Chesapeake River Basin Watershed is located in (see master drainage map on Chesapeake watershed page):	Southern Branch Elizabeth River	Western Branch Elizabeth River	Southern Branch Elizabeth River	Eastern Branch Elizabeth River
Name of the Watershed the Project is located in:	St. Julian Creek (SJ), Camelot (SJ-1)	Drum Point Creek (DP), Pughsville (DP-1)	Deep Creek (DC), Deep Creek (DC-2)	Indian River (IR), Georgetown (IR-1)
Rain Fall Events (for 24hr storms) Analyzed:	2-, 5-, 10-yr	50-yr, 100-yr	2-1000-yr	10-, 50-yr
Tailwater (or water surface elevation) Analyzed:	Current PFM Std	Current PFM Std	Current PFM Std / road elevation	Current PFM Std
Short Summary of Project (I.E. Storm System Upgrades, Detention Basin, Channel/Channel widening):	Replace aging storm pipes and improve ditches to increase system capacity and provide a higher level of protection	Regrade major outfall channel and remove beaver dams to restore hydraulic capacity.	A new neighborhood outfall pipe. Also, replace existing poor-condition cross pipes under both Martin Johnson Rd and Cookes Mill Rd to provide a higher level of protection.	Replace existing poor-condition cross pipes under Providence Rd near Georgetown Blvd with a new box culvert to provide a higher level of protection, for both flood events and transportation network.
Is the Project Nature-based?	Hybrid	Yes	No	No
What issues or problems are being addressed by the project?	Flooding	Flooding	Flooding, Erosion	Flooding, Erosion, Road Stability, Cave-Ins
Does the proposed Project enable communities to adapt to and thrive through natural or human hazards?	Yes	Yes	Yes	Yes
Does the Project include forward-looking goals, actionable strategies, and priorities as seen through an equity-based lens?	Yes	Yes	Yes	Yes
Level of Protection / Design Storm	10-yr	100-yr	50-yr for neighborhood, 1000-yr for culvert crossings	50-yr
Size of the Drainage Area related to the Project if listed	~ 100 AC	> 200 AC	94 AC fo neighborhood, 92,000 AC for culvert crossings	~200 AC
How many alternatives were developed/analyzed for the issues being solved	1	None	Multiple	None
Does this Project require future maintenance	Yes	Yes	Yes	Yes
Estimated total project cost (includes Engineering, Land Acq, Construction as appropriate)	$1,250,000	$1,544,055	$3,000,000	$1,400,000
Does the Project have funding available at present?	No	Yes (partial)	Yes (partial)	No
Timing for implementation (contingent on funding availability)	Active	Active	2023	Active
What other project(s) must be completed prior to installation of this Project?	Phase I	None	None	None
Project Status - Completed, Under Construction, Design Complete (not yet constructed), Under Design, Scoping (design not yet started), On Hold, Future (not yet started & MAY have funding in a future year)	Under Design	Under Design	Scoping	Scoping
	9	10	11	12

Resilience Plan Project Table				
Parameter Name of Project:	Mount Pleasant Rd Crossing Replacement	Shell Rd Drainage Improvements	Greenbrier Outfall Resiliency Improvements Phase I & II (Weir Lowering at IR HS Lake & S. Military Hwy Culvert Upsize)	Greenbrier Outfall Resiliency Improvements Phase III (I-64 Additional Culvert)
On Virginia Costal Resilience Web Explorer?	No	Yes	No	No
Name of the Document the Project is included in:	PW SW Eng Unfunded Project List; PW Ops Condition Report	SW CIP Progress Report	Greenbrier Resiliency Plan	Greenbrier Resiliency Plan
Date the Document was published:	March 2022	March 2022	November 2020	November 2020
Chesapeake River Basin Watershed is located in (see master drainage map on Chesapeake watershed page):	Albemarle and Chesapeake Canal	Southern Branch Elizabeth River	Eastern Branch Elizabeth River	Eastern Branch Elizabeth River
Name of the Watershed the Project is located in:	Coopers Ditch (CD), Fentress (CD-3)	Gilmerton Canal (GL)	Indian River (IR)	Indian River (IR)
Rain Fall Events (for 24hr storms) Analyzed:	10-, 50-yr	2-, 5-, 10-yr	100-, 500-, 1,000-year	100-, 500-, 1,000-year
Tailwater (or water surface elevation) Analyzed:	Current PFM Std	Current PFM Std	Current PFM Std + SLR	Current PFM Std + SLR
Short Summary of Project (I.E. Storm System Upgrades, Detention Basin, Channel/Channel widening):	Replace existing poor-condition cross pipe and box culvert under Mount Pleasant Rd near railroad tracks/Butts Road Pimary School with a new box culvert to provide a higher level of protection, for both flood events and transportation network.	Replace aging storm pipes and improve ditches to increase system capacity and provide a higher level of protection	Lower Indian River HS lake weir crest and upsize existing poor-condition box culvert under S. Military Hwy to lower upstream hydraulic grade line and provide additional flood storage in Greenbrier business corridor.	Construct new pipe crossing under I-64 (microtunneling) near Greenbrier Pkwy to lower permanent pool elevations of upstream impounds and provide additional flood storage in Greenbrier business corridor.
Is the Project Nature-based?	No	Hybrid	Hybrid	Hybrid
What issues or problems are being addressed by the project?	Flooding, Erosion, Road Stability	Flooding	Flooding	Flooding
Does the proposed Project enable communities to adapt to and thrive through natural or human hazards?	Yes	Yes	Yes	Yes
Does the Project include forward-looking goals, actionable strategies, and priorities as seen through an equity-based lens?	Yes	Yes	Yes	Yes
Level of Protection / Design Storm	50-yr	10-yr	1,000-yr	1,000-yr
Size of the Drainage Area related to the Project if listed	~ 450 AC	~ 10 AC	~ 3,800 AC	~ 3,000 AC
How many alternatives were developed/analyzed for the issues being solved	None	1	Multiple	2
Does this Project require future maintenance	Yes	Yes	Yes	Yes
Estimated total project cost (includes Engineering, Land Acq, Construction as appropriate)	$500,000	$900,000	$1,975,398	$3,200,000
Does the Project have funding available at present?	No	No	Yes (Partial)	No
Timing for implementation (contingent on funding availability)	Active	TBD	2022	TBD
What other project(s) must be completed prior to installation of this Project?	None	None	None	Phase I and Phase II
Project Status - Completed, Under Construction, Design Complete (not yet constructed), Under Design, Scoping (design not yet started), On Hold, Future (not yet started & MAY have funding in a future year)	Scoping	Scoping	Future	Future
	13	14	15	16

Resilience Plan Project Table				
Parameter Name of Project:	Drum Creek Farms Drainage Imporvements Phase II	Poplar Branch Ditch Regrading	Buskey Rd Crossing Replacement	Carawan Lane Drainage Improvements
On Virginia Costal Resilience Web Explorer?	No	No	No	No
Name of the Document the Project is included in:	Approved Capital Improvement Plan	PW SW Eng Unfunded Project List	PW SW Eng Unfunded Project List; PW Ops Condition Report	PW SW Eng Unfunded Project List
Date the Document was published:	March 2021	March 2022	March 2022	March 2022
Chesapeake River Basin Watershed is located in (see master drainage map on Chesapeake watershed page):	Western Branch Elizabeth River	Albemarle and Chesapeake Canal	Northwest River	Albemarle and Chesapeake Canal
Name of the Watershed the Project is located in:	Drum Point Creek (DP)	Coopers Ditch (CD), Poplars Branch (CD-2)	Southern Chesapeake (SC), Homestead Outfall (SC-2)	Horse Run Ditch East (HR)
Rain Fall Events (for 24hr storms) Analyzed:	10-, 50-yr	50-, 100-yr	10-, 50-yr	2-, 5-, 10-yr
Tailwater (or water surface elevation) Analyzed:	Current PFM Std	Current PFM Std	Current PFM Std	Current PFM Std
Short Summary of Project (I.E. Storm System Upgrades, Detention Basin, Channel/Channel widening):	Correct major erosion, increase outfall ditch capacity and enhance water quality in the conveyance system along Drum Creek Rd to reduce flooding in surrounding neighborhood.	Restore hydraulic capacity of Poplar Branch Ditch needed to serve the watershed by removing significant amounts of silt and sediment between Hanbury Rd and Battlefield Blvd.	Replace existing poor-condition cross pipes under Buskey Rd near Bunch Walnuts Rd with a new box culvert to provide a higher level of protection, for both flood events and transportation network.	Regrade roadside/outfall ditches and replace driveway culverts to increase capacity and reduce flooding in surrounding neighborhood.
Is the Project Nature-based?	Yes	Yes	No	No
What issues or problems are being addressed by the project?	Flooding, Erosion, Pollution	Flooding	Flooding, Road Stability, Cave-Ins	Flooding
Does the proposed Project enable communities to adapt to and thrive through natural or human hazards?	Yes	Yes	Yes	Yes
Does the Project include forward-looking goals, actionable strategies, and priorities as seen through an equity-based lens?	Yes	Yes	Yes	Yes
Level of Protection / Design Storm	10-yr	50-yr	50-yr	10-yr
Size of the Drainage Area related to the Project if listed	~ 100 AC	> 200 AC	~ 1,300 AC	~ 40 AC
How many alternatives were developed/analyzed for the issues being solved	None	None	1	1
Does this Project require future maintenance	Yes	Yes	Yes	Yes
Estimated total project cost (includes Engineering, Land Acq, Construction as appropriate)	$1,400,000	$1,000,000	$600,000	$1,350,000
Does the Project have funding available at present?	No	No	No	No
Timing for implementation (contingent on funding availability)	2024	2024	UNK	TBD
What other project(s) must be completed prior to installation of this Project?	None	None	None	None
Project Status - Completed, Under Construction, Design Complete (not yet constructed), Under Design, Scoping (design not yet started), On Hold, Future (not yet started & MAY have funding in a future year)	Future	Future	Future	Future
	17	18	19	20

Resilience Plan Project Table				
Parameter Name of Project:	Weiss Lane Outfall Improvements	Pleasant View Drainage Improvemt	Mount Pleasant Rd Outfall Improvement	Homemont Outfall Improvements
On Virginia Costal Resilience Web Explorer?	No	No	No	No
Name of the Document the Project is included in:	Deep Creek Watershed MDPU	PW SW Eng Unfunded Project List	PW SW Eng Unfunded Project List	PW SW Eng Unfunded Project List
Date the Document was published:	July 2010	March 2022	March 2022	March 2022
Chesapeake River Basin Watershed is located in (see master drainage map on Chesapeake watershed page):	Southern Branch Elizabeth River	Southern Branch Elizabeth River	Albemarle and Chesapeake Canal	Southern Branch Elizabeth River
Name of the Watershed the Project is located in:	Deep Creek (DC), Deep Creek (DC-2)	Deep Creek (DC), Deep Creek Locks (DC-3)	Horse Run Ditch East (HR)	Bells Mill Creek (BM), Herring Ditch (BM-1)
Rain Fall Events (for 24hr storms) Analyzed:	2-, 5-, 10-, 25-, 50-, 100-year	2-, 5-, 10-yr	50-, 100-yr	2-, 5-, 10-yr
Tailwater (or water surface elevation) Analyzed:	Current PFM Std	Current PFM Std	Current PFM Std	Current PFM Std
Short Summary of Project (I.E. Storm System Upgrades, Detention Basin, Channel/Channel widening):	Widen outfall ditch, upsize culverts under Weiss Lane, lower inverts to increase system capacity and reduce area flooding.	Regrade roadside/outfall ditches and replace driveway culverts to increase capacity and reduce flooding in surrounding neighborhood.	Regrade and improve major lead outfall ditch between Mount Pleasant Rd and rear of Ravenna subdivision to provide a higher level of protection.	Regrade roadside/outfall ditches and replace driveway culverts to increase capacity and reduce flooding in surrounding neighborhood.
Is the Project Nature-based?	Hybid	No	Yes	No
What issues or problems are being addressed by the project?	Flooding	Flooding	Flooding	Flooding
Does the proposed Project enable communities to adapt to and thrive through natural or human hazards?	Yes	Yes	Yes	Yes
Does the Project include forward-looking goals, actionable strategies, and priorities as seen through an equity-based lens?	Yes	Yes	Yes	Yes
Level of Protection / Design Storm	50-yr	10-yr	50-yr	10-yr
Size of the Drainage Area related to the Project if listed	~ 80 AC	~ 30 AC	~ 300 AC	~ 50 AC
How many alternatives were developed/analyzed for the issues being solved	3	1	None	None
Does this Project require future maintenance	Yes	Yes	Yes	Yes
Estimated total project cost (includes Engineering, Land Acq, Construction as appropriate)	$1,300,000	$1,300,000	$600,000	$1,100,000
Does the Project have funding available at present?	No	No	No	No
Timing for implementation (contingent on funding availability)	TBD	TBD	TBD	TBD
What other project(s) must be completed prior to installation of this Project?	None	None	None	None
Project Status - Completed, Under Construction, Design Complete (not yet constructed), Under Design, Scoping (design not yet started), On Hold, Future (not yet started & MAY have funding in a future year)	Future	Future	Future	Future
	21	22	23	24

Resilience Plan Project Table		
Parameter Name of Project:	Forest Lakes Outfall Improvements Phase II	Scenic Blvd Drainage Improvements
On Virginia Costal Resilience Web Explorer?	No	No
Name of the Document the Project is included in:	PW SW Eng Unfunded Project List	PW SW Eng Unfunded Project List
Date the Document was published:	March 2022	March 2022
Chesapeake River Basin Watershed is located in (see master drainage map on Chesapeake watershed page):	Southern Branch Elizabeth River	Southern Branch Elizabeth River
Name of the Watershed the Project is located in:	Bells Mill Creek (BM), Herring Ditch (BM-1)	Bells Mill Creek (BM), Herring Ditch (BM-1)
Rain Fall Events (for 24hr storms) Analyzed:	50-yr, 100-yr	2-, 5-, 10-yr
Tailwater (or water surface elevation) Analyzed:	Current PFM Std	Current PFM Std
Short Summary of Project (I.E. Storm System Upgrades, Detention Basin, Channel/Channel widening):	Pre-storm pumping of the front lake in the Forest Lakes neighborhood as an alternative to replace or supplement capacity improvements	Regrade roadside/outfall ditches and replace driveway culverts to increase capacity and reduce flooding in surrounding neighborhood.
Is the Project Nature-based?	Hybrid	No
What issues or problems are being addressed by the project?	Flooding	Flooding
Does the proposed Project enable communities to adapt to and thrive through natural or human hazards?	Yes	Yes
Does the Project include forward-looking goals, actionable strategies, and priorities as seen through an equity-based lens?	Yes	Yes
Level of Protection / Design Storm	50-yr	10-yr
Size of the Drainage Area related to the Project if listed	~ 50 AC	~ 30 AC
How many alternatives were developed/analyzed for the issues being solved	10	1
Does this Project require future maintenance	Yes	Yes
Estimated total project cost (includes Engineering, Land Acq, Construction as appropriate)	$4,000,000	$1,000,000
Does the Project have funding available at present?	No	No
Timing for implementation (contingent on funding availability)	TBD	TBD
What other project(s) must be completed prior to installation of this Project?	None	None
Project Status - Completed, Under Construction, Design Complete (not yet constructed), Under Design, Scoping (design not yet started), On Hold, Future (not yet started & MAY have funding in a future year)	Future	Future
	25	26

Chesapeake
VIRGINIA
PUBLIC WORKS

MEMORANDUM

TO: Crystal Bloom, P.E., Assistant City Engineer
Jay Tate, P.E., CFM, Director of Development and Permits

FROM: Deva Borah, PhD, P.E., Senior Project Engineer

DATE: April 7, 2022

SUBJECT: **AUTHORIZATION TO REQUEST FUNDING THROUGH COMMUNITY FLOOD PREPAREDNESS FUND (CFPF) GRANT PROGRAM FOR GREENBRIER OUTFALL RESILIENCY IMPROVEMENTS PHASE I & II**

The City of Chesapeake requests funding through the Community Flood Preparedness Fund (CFPF) grant program for the above-referenced flood prevention and protection project in accordance with the grant program requirements as provided in the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund.

The City has dedicated funding for this specific type of project in the Capital Improvement Budget (CIB) that will be used to provide the required local match, see Project #29-230 Resiliency & Reliability Program. The CIB Project Summary page and documentation to verify the availability of adequate funding to cover the local match amount are provided for your records.

The total project cost is $1,975,398. The amount of funding requested through the CFPF is 60% of the project cost or $1,185,238. The remaining cost of $790,160 will be a local match funded through Project #29-230 Resiliency & Reliability Program.

The grant program also requires a locality-certified floodplain manager (CFM) to confirm the project area is subject to recurrent flooding to ensure moneys from the program will be utilized for the primary purpose of implementing flood prevention and protection projects. This confirmation by the City's designated CFM is requested below.

Should you have any questions or need additional information, please contact me at extension 6472.

4/8/22

Crystal Bloom, P.E., Assistant City Engineer
(Approval of Request)
Date

J. B. Tate

4/8/22

Jay Tate, P.E., CFM, Director of Development and Permits
(Confirmation of Project)
Date

DB

Attachments

29-230: Resiliency & Reliability Program

Department:	**Storm Water Capital Projects**		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Stormwater Management
Year identified:	2019	Planning Area:	Greenbrier
Start Date:	7/1/2018	Project Status:	Adopted
Est. Completion Date:	12/30/2024		

Description:

This project will provide for drainage improvements with related acquisition of easements, replacement of pipes, re-grading of ditches, and associated activities to provide a higher level of protection and improved stormwater systems in city areas with inter-connected lake systems that are dependent on a single outlet control structure. This program will look at providing an improved outlet control structure in areas such as the Greenbrier lakes system, Etheridge lakes system, Stonegate lakes system, and other lake systems with drainage deficiencies. This project will also include the replacement of downstream culverts.

Justification:

Major investments in improvements are necessary to increase drainage capacity and upgrade deficient drainage systems in these areas.

Comments:

The frequency and intensity of storms impacting the City of Chesapeake and the region as a whole have been observed to be much greater than in the past. These project improvements will provide critical systems with added levels of protection that will help reduce the impact of flooding during major storm events.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022			0
2023			0
2024			0
	0	**0**	**0**

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Stormwater	1,600,000				**1,600,000**
Total Revenue	**1,600,000**				**1,600,000**
Expense					
Design & Engineering	500,000				**500,000**
Construction	900,000				**900,000**
Land Acquisition	200,000				**200,000**
Total Expense	**1,600,000**				**1,600,000**

CH_GL_107

My Expenses by Proj

1292300900 RESILIENCY&RELIABILITY PROGRAM

2022-04-06

Activity	Total Appropriation	Pre-Enc	Enc	Exp	Remaining	% Spent
CONSTRUCTION	900,000.00	-	-	-	900,000.00	0.00%
ENG/DESIGN	500,000.00	-	54,766.15	45,229.65	400,004.20	20.00%
GB_RESILIANCY	-	-	2,511.53	90,090.09	(92,601.62)	100.00%
LAND	200,000.00	-	-	-	200,000.00	0.00%
Total Expenditures	**$ 1,600,000.00**	**$ -**	**$ 57,277.68**	**$ 135,319.74**	**$ 1,407,402.58**	**12.04%**

*Note: All amounts reflect transactions currently budget checked against commitment control definitions.

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510034_ChesapeakeCity_CFPF-2: CFPF 2022 Grant Application on Greenbrier Outfall Resiliency Improvements Phase I & II

1 message

Deva K. Borah <dborah@cityofchesapeake.net> Fri, Apr 8, 2022 at 2:48 PM
To: Virginia Department of Conservation & Recreation <cfpf@dcr.virginia.gov>
Cc: Sam Sawan <sawan@cityofchesapeake.net>, "Crystal V. Bloom" <cbloom@cityofchesapeake.net>, Liz Scheessele <Liz.Scheessele@timmons.com>

Dear DCR CFPF Program Manager,

Please find the City of Chesapeake's Grant Application **CID510034_ChesapeakeCity_CFPF-2** on Greenbrier Outfall Resiliency Improvements Phase I & II **PROJECT** for 2022 CFPF Grant Funding in the **downloadable link provided below** as the file size is too large to attach.

We look forward to hearing from you if you are able to download the application with no issues and also as an acknowledgement of receipt of this application.

Sincerely,

Deva

Deva K. Borah, Ph.D., P.E., F.ASCE

Senior Engineer

City of Chesapeake – Department of Public Works

306 Cedar Road,, Chesapeake, Virginia 23322

Main: (757) 382-6101; Direct: (757) 382-6472

Cellular: (757) 705-6341
Email: dborah@cityofchesapeake.net
www.cityofchesapeake.net

Shared File

Name: CID510034_ChesapeakeCity_CFPF-2.pdf

Size:	55.5 MB
Public Link:	CID510034_ChesapeakeCity_CFPF-2.pdf
Expires On:	Fri, 15 Apr 2022 16:27:27 GMT

Click on the link below to download the shared file.

Download

CITY OF COVINGTON

333 W. LOCUST STREET, COVINGTON, VIRGINIA 24426

Thomas H. Sibold, Jr., Mayor
David S. Crosier, Vice-Mayor
William E. Carson Jr., Councilman
Raymond C. Hunter, Councilman
S. Allan Tucker, Councilman

Krystal M. Onaitis, City Manager
Mark C. Popovich, City Attorney

April 8, 2022

Ms. Wendy Howard-Cooper
Director of Dam Safety and Floodplain Management
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

RE: Authorization of City of Covington CFPF Studies Application

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

Please accept this written correspondence as signed documentation authorizing the City of Covington's request for funding from Round 3 of the 2022 Virginia Community Flood Preparedness Fund (CFPF). As the City only recently became aware of this funding and does not have funding established in our currently budget, we respectfully request the Department of Conservation and Recreation waive our match requirement for a City-wide Drainage Study.

In addition to the City's application for Capacity Building and Planning, we have also assembled the attached Studies Grant application to request CFPF grant assistance to complete a comprehensive City-wide Drainage Study and complete updates to the City's existing Floodplain Ordinance.

The City of Covington routinely experiences pluvial flooding in numerous locations throughout the City. In some locations, roadway underpasses are regularly flooded, which severely limit emergency access routes for hundreds of residents and businesses. More intense rainfall events in recent years have overwhelmed the City's existing storm system capacity and exacerbated flooding issues in areas with deteriorated stormwater piping. With limited resources, the City does not have an electronically mapped storm sewer network, and information can be found in numerous paper records, reports and maps. Having clear knowledge of the location, size, pipe material, and condition of the existing system is critical to identify the system improvements that must be made to alleviate recurrent flooding throughout the City.

The outcomes of this Drainage Study will inform the project-based Resilience Plan for the City. We believe that the implementation of a City-wide Drainage Study and Resilience Plan will better prepare the City to address its long history of problematic and recurrent flooding and plan for future mitigation efforts.

Thank you for your consideration of this grant proposal. If you have any questions about this proposal, please contact Patrick Madigan at (540) 965-3911 or pmadigan@covington.va.us.

Sincerely,

K. Onaitis

Krystal M. Onaitis
Covington City Manager
(540) 965-6300 ext. 7
konaitis@covington.va.us

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
City of Covington, VA

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

✓ **Study**

NFIP/DCR Community Identification Number (CID) 510040

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Krystal Onaitis

Signature of Authorized Official: K. Onaitis

Mailing Address (1): 333 W. Locust Street

Mailing Address (2): ______________________

City: Covington **State:** VA **Zip:** 24426

Telephone Number: (540) 965-6300 **Cell Phone Number:** (540) 958-3837

Email Address: konaitis@covington.va.us

Contact Person (If different from authorized official): Patrick Madigan

Mailing Address (1): 333 W. Locust Street

Mailing Address (2): ____________________

City: Covington **State:** VA **Zip:** 24426

Telephone Number: (540) 965-3911 **Cell Phone Number:** (540) 759-4437

Email Address: pmadigan@covington.va.us

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ☐ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): Robens

NFIP Community Identification Number (CID#):(See appendix F ____________________

Is Project Located in an NFIP Participating Community? ☐ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☐ No

Flood Zone(s) (If Applicable): The project is located on the upper Ware River in Gloucester County. The low bank shoreline faces north-northwest and has an average fetch of 0.7 miles with a long fetch to the northwest of 1.3 miles. The tide range is 2.5 ft. A marsh fringe with an eroding edge exists along the shoreline. To increase the level of shore protection and longer-term coastal resiliency, a living shoreline project was designed with 1 rock sill, sand fill, and Spartina patens and Spartina alterniflora marsh grass plantings. The structure (sill 4A) is part of a system designed for an overall living shoreline project on adjacent properties to provide shore protection with a reach approach. Coastal resiliency is enhanced by the reach approach because adjacent systems work together to provide an enhanced level of shore and habitat protection. Along the Robens properties, approximately 7,600 square feet

Flood Insurance Rate Map Number(s) (If Applicable): ______________________________

Total Cost of Project:
Gloucester-Mathews Gazette-Journal
P.O. Box 2060
Gloucester, Va. 23061

Total Amount Requested From Rt. 17 take TC Walker Rd (Rt 629). Turn onto Zanoni Rd (Rt 626). Turn onto Riverside Dr.

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Although 5,400 square feet of subaqueous land will be covered, the sills need to be slightly farther offshore to accommodate the beach fill that provides a level of protection. Bringing the structures closer to the shore would steepen the fill and reduce wetland plantings. No clearing, grading or excavating will occur. No SAV occurs in the area.	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	☐
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	☐
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	☐
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	✓

Studies Eligible for Consideration	☐ **Yes** ☐ **No**

Applicant Name:	The primary purpose of the project is shore protection. The existing marsh and the upland, where exposed, is eroding. A stable marsh will be create to protect the upland property through the installation of a living shoreline. A secondary purpose is to provide coastal resiliency for the affected shoreline from flooding and sea-level rise.

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	30
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	15
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	45
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	50
☐ Regional hydrologic and hydraulic studies of floodplains.	**45**	
☑ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	40
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
Total Points		198

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative

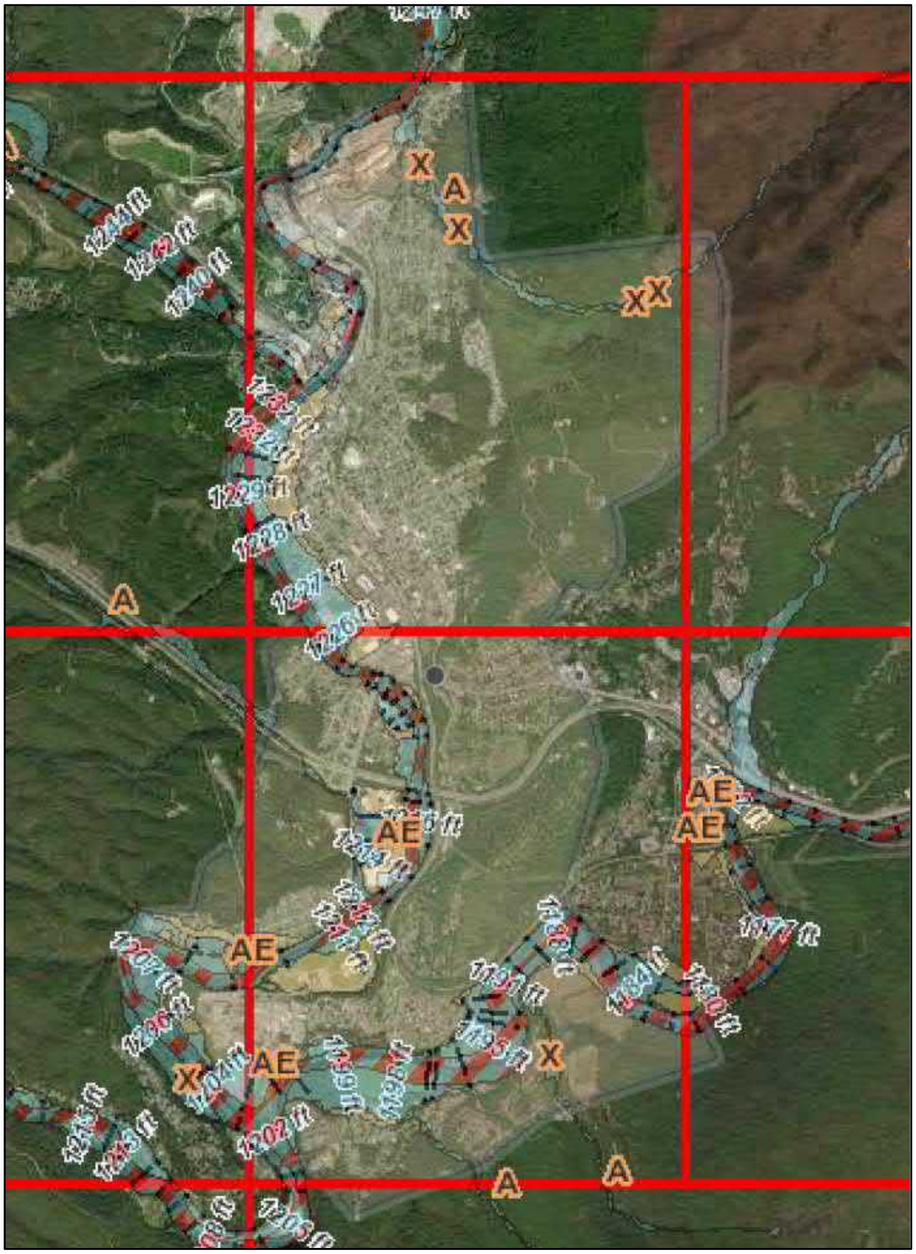
Supporting Documentation	Included
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No N/A
Historic flood damage data and/or images (Projects/Studies)	☑ Yes ☐ No N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from [ADAPT VA's Virginia Vulnerability Viewer]()	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A

Budget Narrative

Supporting Documentation	Included
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Community Flood Preparedness Fund

Studies Grant Application



City of Covington, VA
Community Identification Number: 510040
Submitted: April 8, 2022

THE CITY OF COVINGTON

Scope of Work Narrative

The City of Covington, Virginia is subject to riverine flooding from the Jackson River as well as pluvial flooding due to inadequate and antiquated storm sewer systems. The recurrence of higher intensity storms in recent years has stressed the stormwater conveyance system throughout the City causing local urbanized flooding that is detrimental to the residents and critical infrastructure. There are two underpasses below the CSX railroad tracks at N. Monroe Avenue and E. Chestnut Street that regularly flood after heavy rainfall, which severely limit access for emergency services to residents and businesses on the west side of the railroad tracks see Figure 1 below). **Attachment 1** contains additional links, photos, and other documentation of flooding issues within the City.

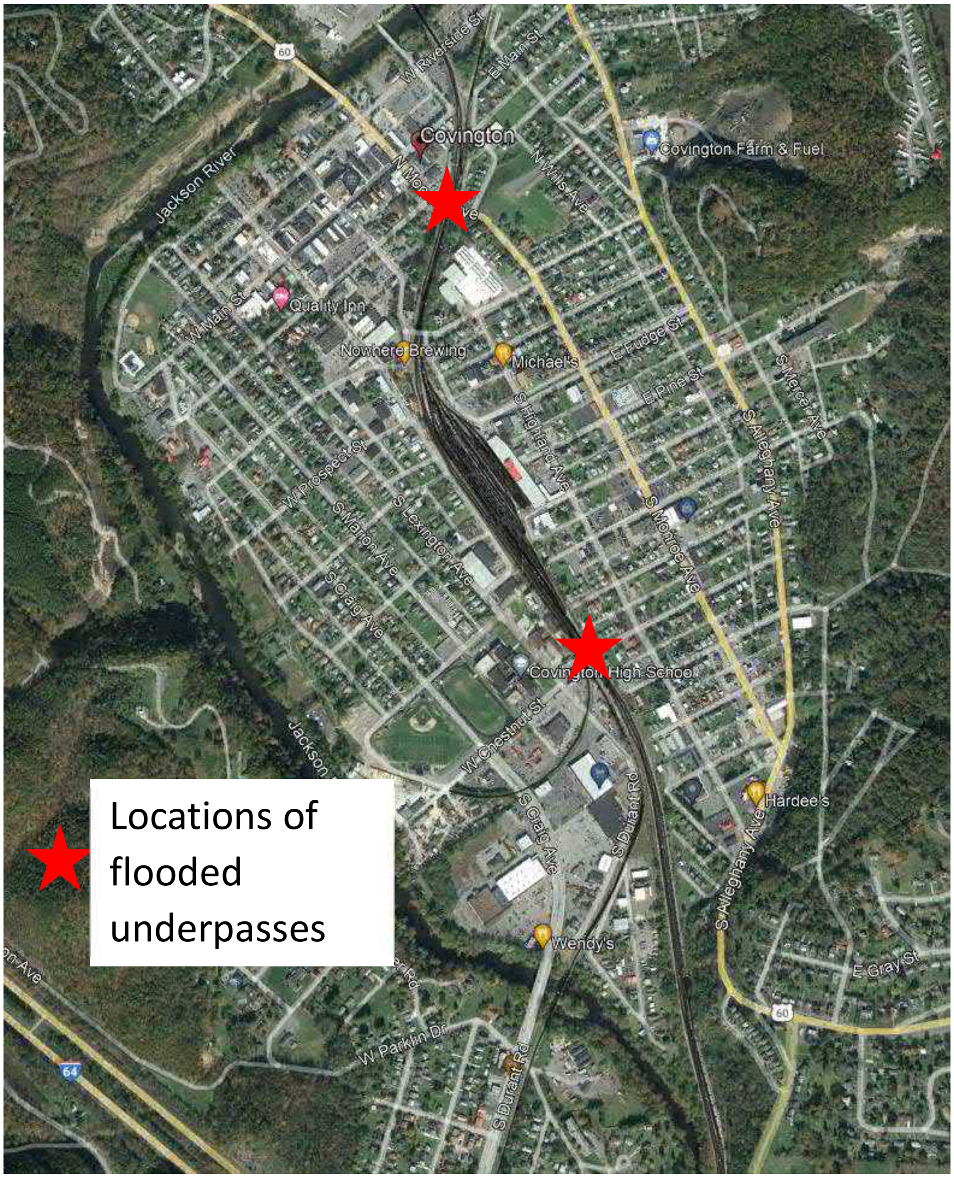


Figure 1 – Locations of Underpasses that Regularly Flood

More intense rainfall events in recent years have overwhelmed the City's existing storm system capacity and exacerbated flooding issues in areas with deteriorated stormwater piping. With limited resources, the City does not have an electronically mapped storm sewer network, and information can be found in numerous paper records, reports and maps. Having clear knowledge of the location, size, pipe material, and condition of the existing system is critical to identify the system improvements that must be made to alleviate recurrent flooding throughout the City.

The results of the Drainage Study will inform the City's Resilience Plan, for which a CFPF grant application for Capacity Building and Planning is also being submitted.

Limited resources in the City and a focus on sanitary sewer infiltration and overflow issues have prevented the City from investing in flood mitigation planning and project implementation. The City is a low-income geographic area, as defined in the CFPF Grant Manual, as an area where the median household income ($41,024) is significantly less than 80% of the local median household income ($76,398 in Virginia), according to the US Census Data in 2020[1]. Further, portions of the City are classified as Moderately Socially Vulnerable, according to the ADAPT Virginia's Virginia Vulnerability Viewer (see Figure 1 in **Attachment 2**). Finally, several areas in the City are designated as Qualified Opportunity Zones (see Figure 2 in **Attachment 2**).

The City understands that the CFPF grants must be used in accordance with the following guiding principles:

- Acknowledge climate change and its consequences; and base decision making on the best available science.
- Identify and address socioeconomic inequities and work to enhance equity through adaptation and protection efforts.
- Utilize community and regional scale planning to maximum extent possible, seeking region-specific approaches tailored to the needs of individual communities.
- Understand the fiscal realities and focus on the most cost-effective solutions for the protection and adaptation of our communities, businesses, and critical infrastructure. The solutions wilt, to the extent possible, prioritize effective natural solutions.
- Recognize the importance of protecting and enhancing nature based-solutions in all regions, natural coastal barriers, and fish and wildlife habitat by prioritizing nature-based solutions.

1.0 Specific Type of Studies Proposed

The City is proposing a new City-wide Drainage Study and an update of the existing Floodplain Management Ordinance. In addition, an evaluation of regional rainfall data will be conducted as part of the Drainage Study effort to determine if changes in heavy rainfall and intensity are occurring over time in the Covington/Alleghany Highlands region of Virginia. The results of this

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[1] https://www.census.gov/quickfacts/fact/table/covingtoncityvirginia,VA,US/PST045221

evaluation will be used in the hydrologic and hydraulic model of the City's current stormwater drainage system.

2.0 Relationship of the Study to Priorities in Grant Manual

The City has been exploring options to fund a City-wide Drainage Study for several years; however, resources are limited, and existing resources have focused on improvements to the sanitary sewer system to reduce or eliminate sanitary sewer overflows. The City Department of Public Works routinely responds to flooding concerns after rainfall events and responds to storm sewer maintenance needs as they arise – in a reactive, emergency response manner. The City is aware that portions of the storm sewer network are deteriorated and potentially undersized, and some large culverts are either collapsed or blocked, which significantly restricts flow during rainfall events. Many of the areas of the City that routinely flood are socially and economically vulnerable neighborhoods, and flooding in these areas cause damage to personal property and homes. This project will allow the City to inventory the antiquated storm sewer system, conduct condition assessments of critical locations within the system, model the existing conditions of the closed and open storm sewer systems and provide drainage improvement recommendations that will provide flood prevention and protection in an equitable manner throughout the City.

3.0 Qualifications of Organizations Conducting the Study

The City has received input from a qualified, current on-call consultant regarding the scope and fee to conduct the Drainage Study and update the Floodplain Ordinance. The qualifications of the consultant were reviewed during the procurement phase for the annual services contract. A copy of proposal for the selected A/E firm is included in **Attachment 3**.

4.0 Expected Use of Study in Resilience Plan

The outcomes of both the City-wide Drainage Study and the updated Floodplain Ordinance will be directly relevant and incorporated into the Resilience Plan. The City is planning to develop the Resilience Plan concurrently with the development of the Drainage Study; therefore, the two projects will be closely tracked. The projects that are developed and prioritized as part of the Drainage Study will be directly incorporated into the Resilience Plan.

In addition, the regional rainfall analysis will be useful for regional resilience planning efforts as localities across the state are considering changes to their drainage design standards to account for larger and more intense rainfall events.

5.0 Additional Supporting Documentation

- Detailed Map of the Project Area: See **Attachment 4**. City of Covington WebGIS Viewer can be found here: https://covingtonva.maps.arcgis.com/apps/webappviewer/index.html?id=b4c12fb539e34a47a3db289f8c11c6d3
- FIRMette of the Project Area – Because the project area for the proposed Drainage Study is the entire City, the preliminary Flood Insurance Rate Maps are provided in **Attachment 5**.
- City of Covington Current Floodplain Ordinance: https://library.municode.com/va/covington/codes/code_of_ordinances?nodeId=PTIICOOR_APXBZO_ARTXIII-AFLDI
- Current Hazard Mitigation Plan: https://rvarc.org/community/hazard-mitigation/
- Current Comprehensive Plan: https://public.3.basecamp.com/p/UmJw2ghsfpj3enw4RDLGN43f

Budget Narrative

Per the CFPF Grant Manual, the following budget narrative was created for the activities contained in this grant application.

Task	Project Budget	Source of Estimate
Drainage Study ***Including Evaluation of Regional Rainfall Data and Floodplain Ordinance Updates***	**$357,800**	Consultant Cost Estimate (see **Attachment 6**)
Total Requested Grant Amount	**$357,800**	

The total amount of funds requested is $357,800. Per the instructions in the Grant Manual (page 24), "for local governments designated as low-income geographic areas, 100 percent of the estimated total project costs should be included." The City does not have cash funds available for a match, and requests full funding of this project, per the authorization letter signed by the City Manager.

Attachment 1

Evidence of Historic Flooding

Attachment 1 – Evidence of Historic Flooding in the City

News articles and videos documenting flooding:

June 2016:
https://www.wdbj7.com/content/news/Several-roads-washed-out-in-Alleghany-County-384157931.html

https://www.youtube.com/watch?v=Ik3jenZ9Cjk

https://www.counton2.com/news/historical-flooding-in-covington-causes-garage-fire/

September 2018:
https://www.youtube.com/watch?v=M3bCQ7zrPmk

Repetitive Loss Claims in City Due to Flooding:

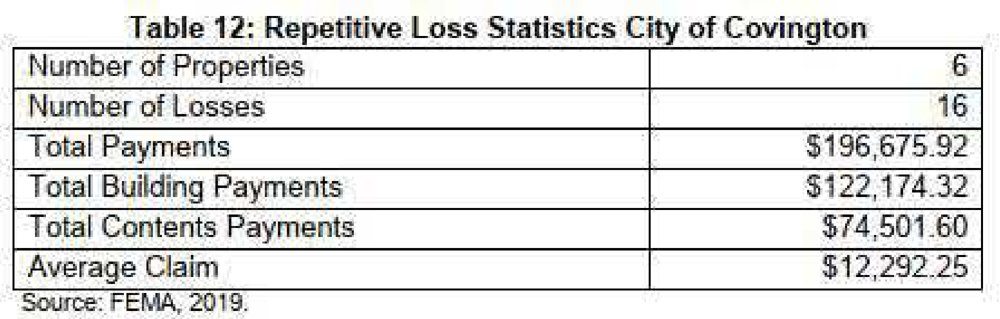
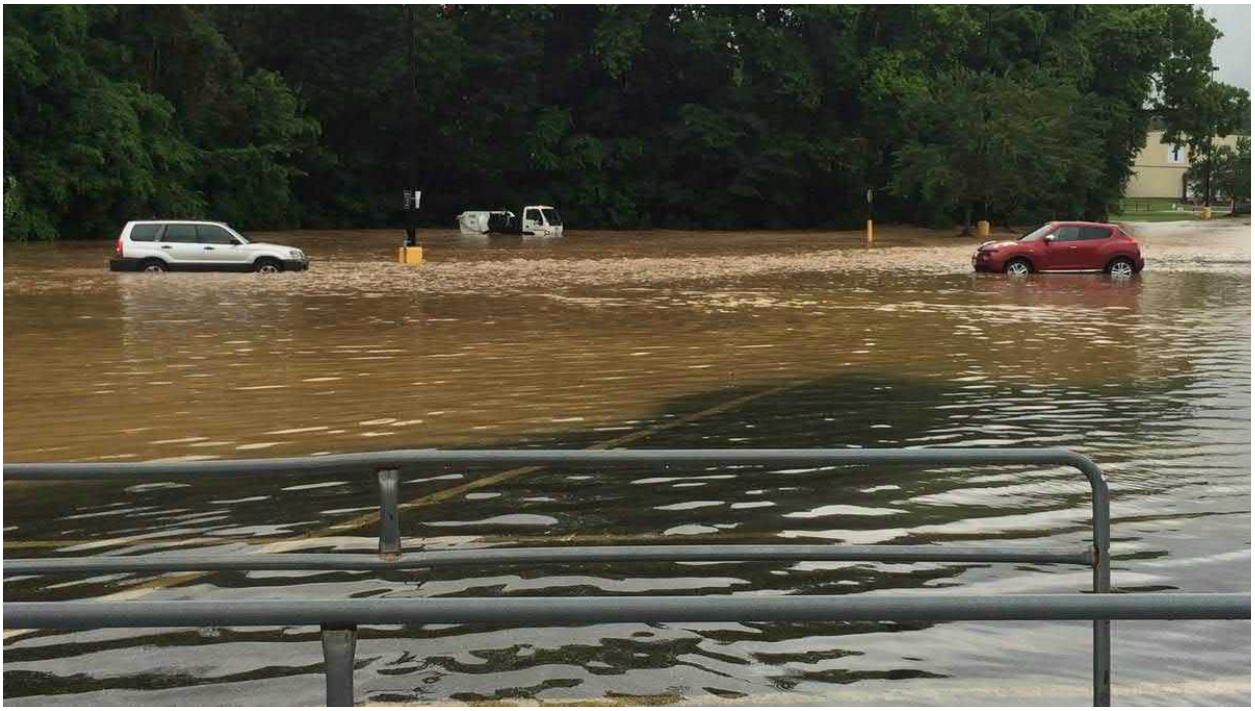


Table 12: Repetitive Loss Statistics City of Covington

Number of Properties	6
Number of Losses	16
Total Payments	$196,675.92
Total Building Payments	$122,174.32
Total Contents Payments	$74,501.60
Average Claim	$12,292.25

Source: FEMA, 2019.



Walmart Parking Lot (https://www.wdbj7.com/content/news/Several-roads-washed-out-in-Alleghany-County-384157931.html)

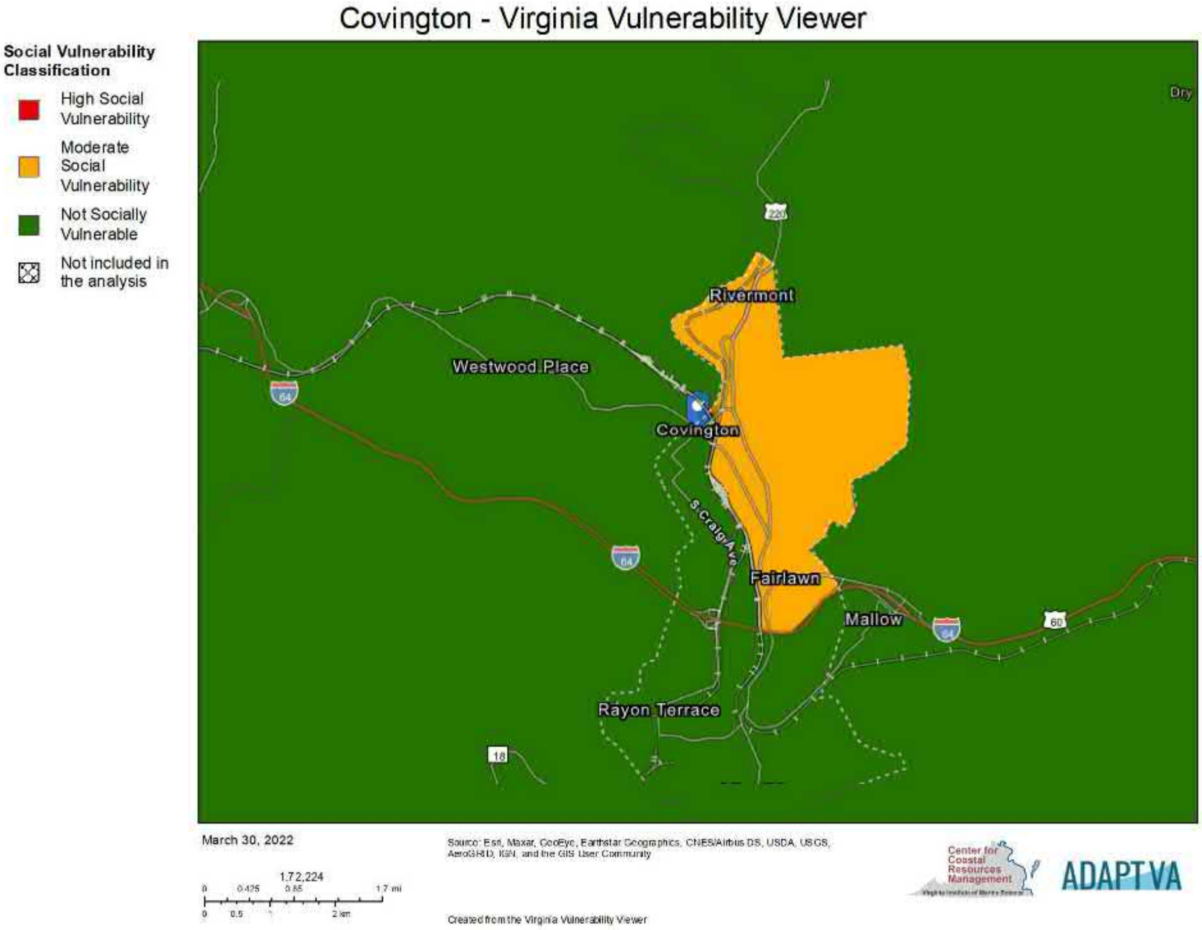
Underpass Flooding (Source: https://www.facebook.com/HighlandsMediaGroup/posts/1209223899532307)

Attachment 2

Virginia Vulnerability Map and
Qualified Opportunity Zone Map

Attachment 2 – Social Vulnerability Mapping and Qualified Opportunity Zone Map

Figure 1: Social Vulnerability Map for Covington, VA



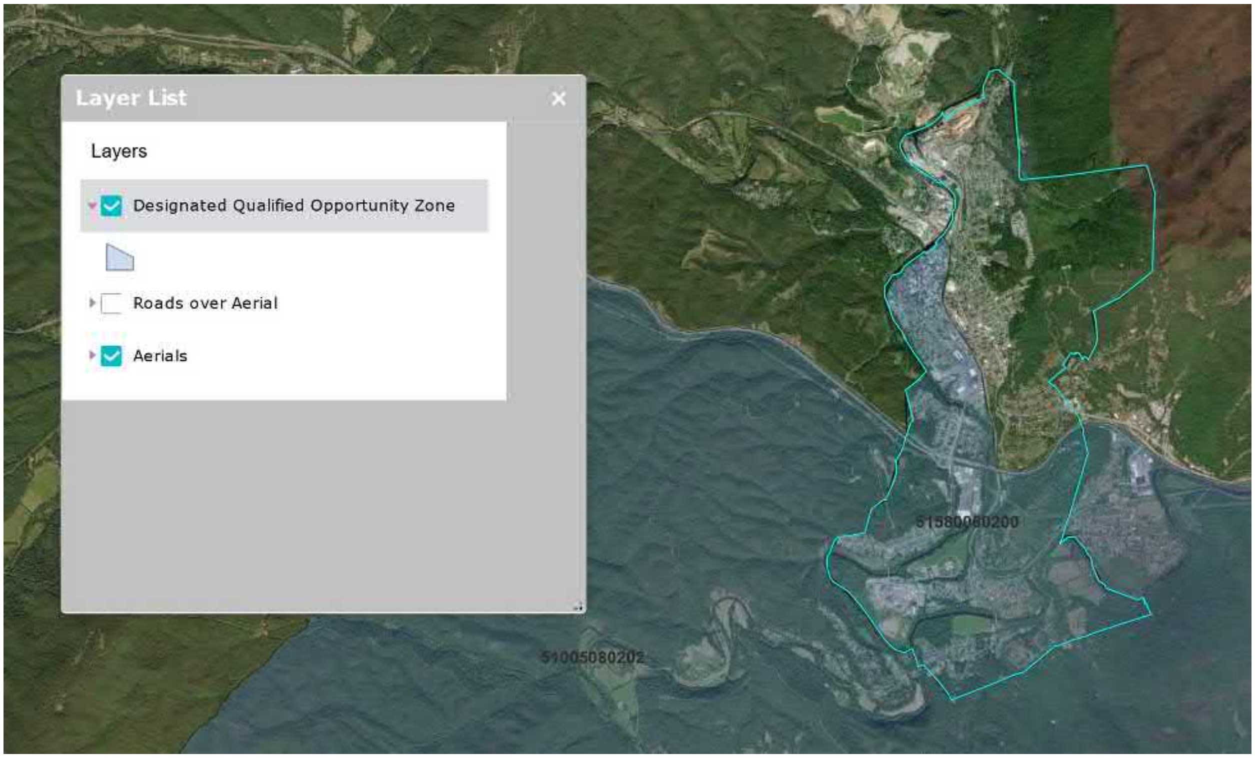
Covington - Virginia Vulnerability Viewer

March 30, 2022

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Figure 2: Qualified Opportunity Zones Map for Covington



Attachment 3

Consultant Proposal for Annual Services Contract

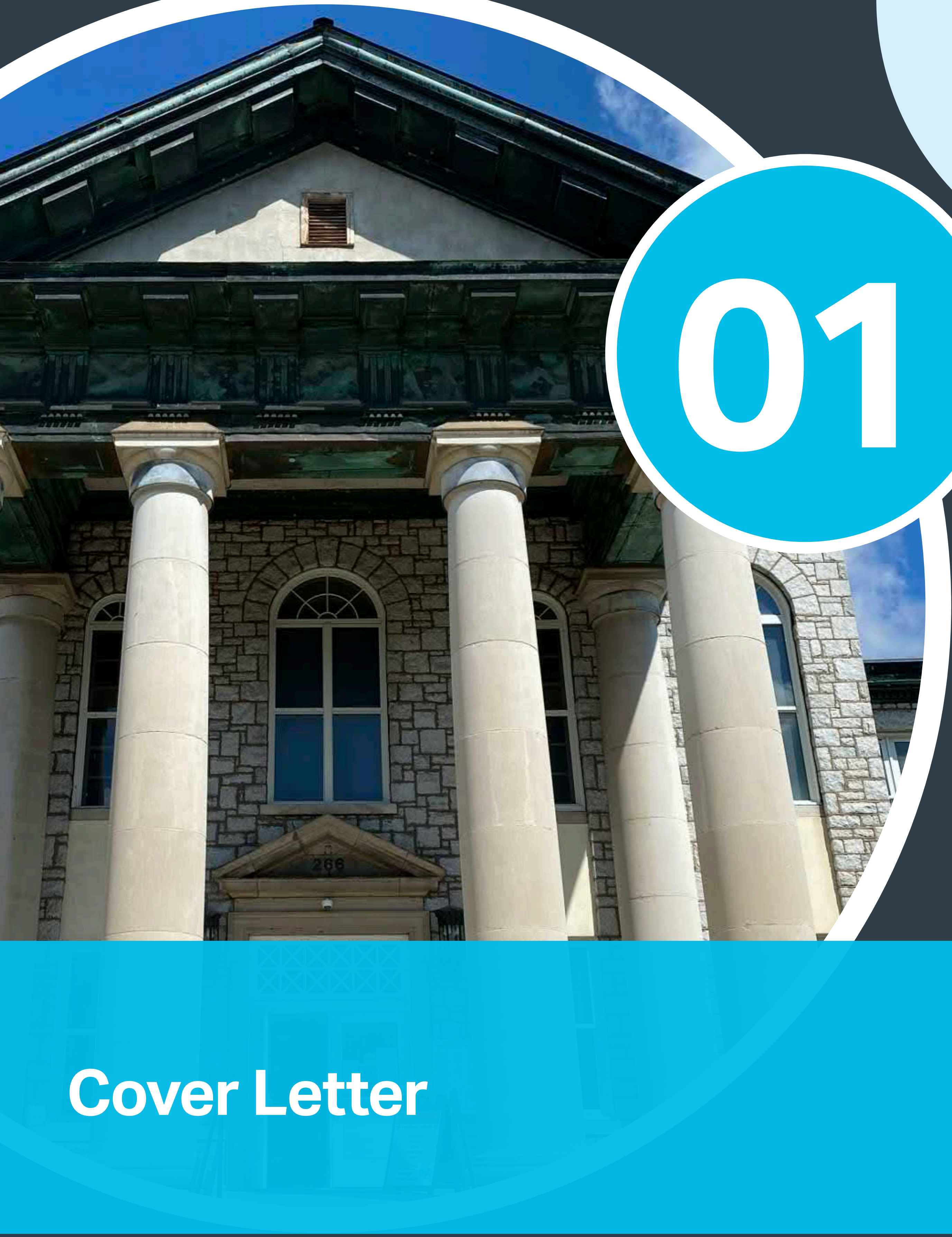
PROFESSIONAL ENGINEERING SERVICES
FOR GENERAL SERVICES TERM CONTRACT AGREEMENT

February 12, 2021

Submitted to: City of Covington, Virginia

Submitted by: AECOM

Imagine it.
Delivered.



01

Cover Letter

AECOM

AECOM
10 South Jefferson St., Suite 1600
Roanoke, Virginia 24011
www.aecom.com

540.857.3100 tel
540.857.3296 fax

February 12, 2021

City of Covington
City Central Accounting Office
333 West Locust Street
Covington, VA 24426
Attn: David C. Bryant, Jr., Director of Finance and Administration

RE: Request for Proposals: Professional Engineering Services for General Services Term Contract Agreement

Dear Mr. Bryant:

AECOM Technical Services, Inc. (AECOM) is pleased to submit three (3) copies of our proposal, in response to the City of Covington, VA (the City) request for proposals titled "Professional Engineering Services for General Services Term Contract Agreement".

We are excited about the opportunity to express our interest in this contract and to continue the relationship between AECOM and the City. AECOM offers the City:

- **Experienced management.** AECOM's management team understands the City, term contracts, the need for responsiveness, and how to perform as an extension to your staff. Our Project Manager, Shane Powers has extensive Virginia local government term contract experience and they are both linked to AECOM's long-standing relationship with the City having most recently completed the Industrial Park Industrial Study.
- **Readily accessible and experienced staff members.** This contract will be managed and task orders executed from our Roanoke office. Every member of our Roanoke-based project team has local Virginia government experience and a significant number of our team members have worked on project in Alleghany County.
- **Depth of Resources.** AECOM has the depth and breadth of resources to provide specialized expertise needed for this contract and the ability to respond in a flexible manner through our local office to readily adapt to the City's unique needs.

Our qualifications make AECOM the right choice to meet all of the City's requirements for this engineering services term contract.

Thank you for the opportunity to submit our qualifications and express our interest in this contract. We look forward to the opportunity to meet with you and members of the City's selection committee to: expand upon our qualifications, express our desire to serve the City of Covington and to answer your questions. For additional information on AECOM's capabilities and experience, please contact our proposed contract manager, Shane Powers, PLP at 540.529. 1356 or Shane.Powers@aecom.com or Ron Smith at 540.857.3374 or ronald.smith2@aecom.com.

Sincerely,

Ronald B. Smith, PE
Vice President

Shane Powers, PLP
Contract Manager

02

Acknowledgement

I hereby acknowledge that I have fully read the Request for Proposals titled:

REQUEST FOR PROPOSALS

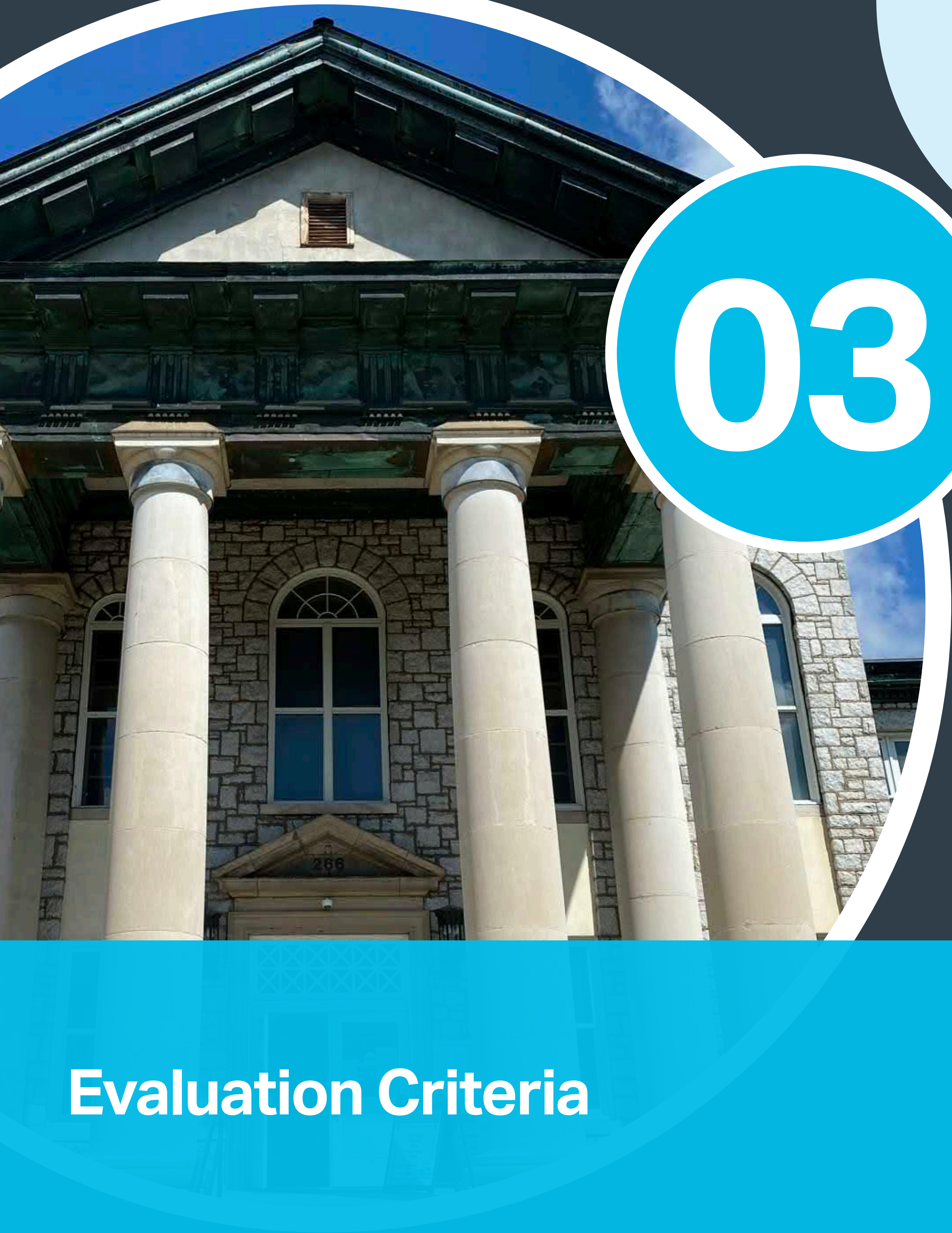
City of Covington, Virginia

PROFESSIONAL ENGINEERING SERVICES
for
GENERAL SERVICES TERM CONTRACT AGREEMENT

AECOM Technical Service, Inc.
Firm Name (Printed)

Ronald B. Smith, Vice President
Firm Representative / Title (Printed)

Ronald B.
Representative Signature



03

Evaluation Criteria

EVALUATION CRITERIA

Please see AECOM's response to the evaluation criteria below.

1. **Ability to perform the subject work**

AECOM has examined the current and projected workloads of all proposed team members and have determined that they have no obligations, either present or future, that would prevent them from performing with excellence on any task assigned to AECOM under this contract. One of the advantages of being a large firm with significant depth of manpower is that we can handle new projects without compromising our existing commitments. AECOM's current and projected backlog office-wide is moderate, and our staff has ample capacity for the additional work that will be generated by this contract.

2. **Current workload or agreements with the City**

AECOM's current workload with the City is too provide construction administration services for the Alleghany Courthouse renovations. This workload will not impact any new work that would be awarded in this contract.

3. **Current workload on projects other than with the City as illustrated below for our key staff.**

Name	Role	Workload/ Availability
Shane Powers, PLP	Contract Manger	55% | **45%**
Ian Camper, PE	Quality Control	70% | **30%**
Mark Garland, PE	Civil Projects Lead	75% | **25%**
Scott Hodge, PE	Transportation Lead	60% | **40%**
Brian Fisher, PE	Plan Development/ Utility Lead	60% | **40%**
John Wissinger, AIA	Architecture Lead	65% | **35%**
Michael Lauman, PE	MEP Services Lead	50% | **50%**
Andy Freeland, PE	Stormwater/ E&SC Review Lead	65% | **35%**
Todd Wheatly,PE	HVAC Mechanical	65% | **35%**
Rob Dean, PE	Bridge/PER	65% | **35%**
Stuart Martin, PE	Traffic Studies	75% | **25%**

4. **Past performance on similar projects**

The following client references demonstrate our successful performance on similar projects.

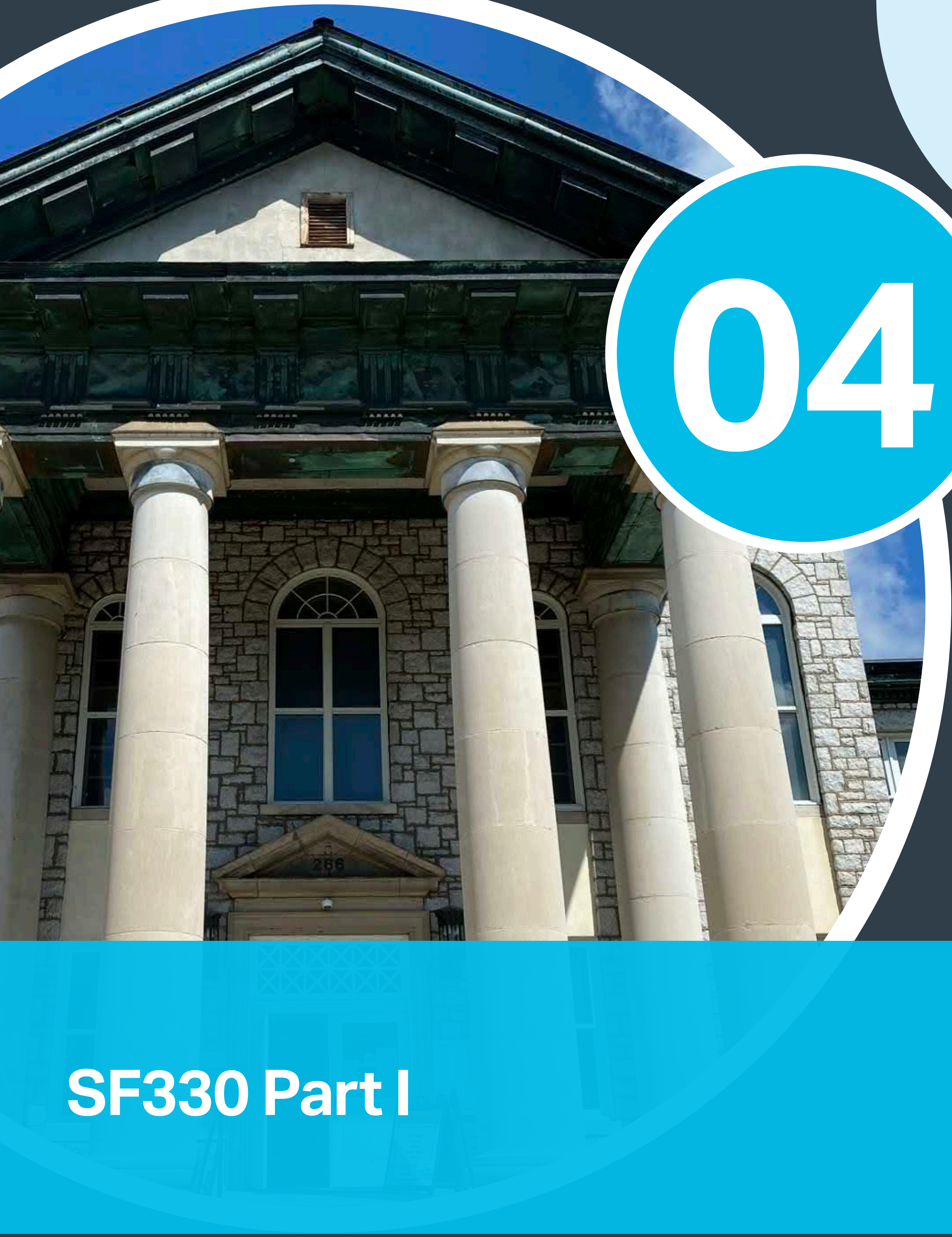
a. **Alleghany County**
Jonathan Lanford, County Administrator
Phone: 540.863.6600
Email: jlanford@co.alleghany.va.us
Address: 9212 Winterberry Avenue
Covington, Virginia 24426

b. **Pulaski County**
Jonathan D. Sweet, County Administrator
Phone: 540.9807705
Email: jsweet@pulaskicounty.org
Address: Office of the Administrator
143 Third Street, NW, Suite 1
Pulaski, Virginia 24301

c. **City of Roanoke - Engineering Division**
Luke Pugh, P.E., City Engineer
Phone: 540.853.5208
Email: Luke.Pugh@RoanokeVa.gov
Address: 215 Church Avenue, S.W. - Room 350, Roanoke, VA 24011

d. **Adams Construction Company**
Rick James, P.E., President
Phone: 540.283.7990
Email: rjames@adamspaving.com
Address: 523 Rutherford Avenue, NE, Roanoke, VA 24016

e. **City of Lynchburg VA Department of Water Resources**
Scott Parkins, PE, City Engineer
Phone: 434.455.4248
Email: scott.parkins@lynchburgva.gov
Address: Dept of Utilities
525 Taylor Street
Lynchburg, Virginia 24501



04

SF330 Part I

ARCHITECT – ENGINEER QUALIFICATIONS

PART I – CONTRACT-SPECIFIC QUALIFICATIONS

A. CONTRACT INFORMATION

1. TITLE AND LOCATION *(City and State)*

Professional Engineering Services for General Services Term Contract Agreement
Covington, Virginia

2. PUBLIC NOTICE DATE	3. SOLICITATION OR PROJECT NUMBER

B. ARCHITECT-ENGINEER POINT OF CONTACT

4. NAME AND TITLE

Ronald B. Smith, PE, Vice President

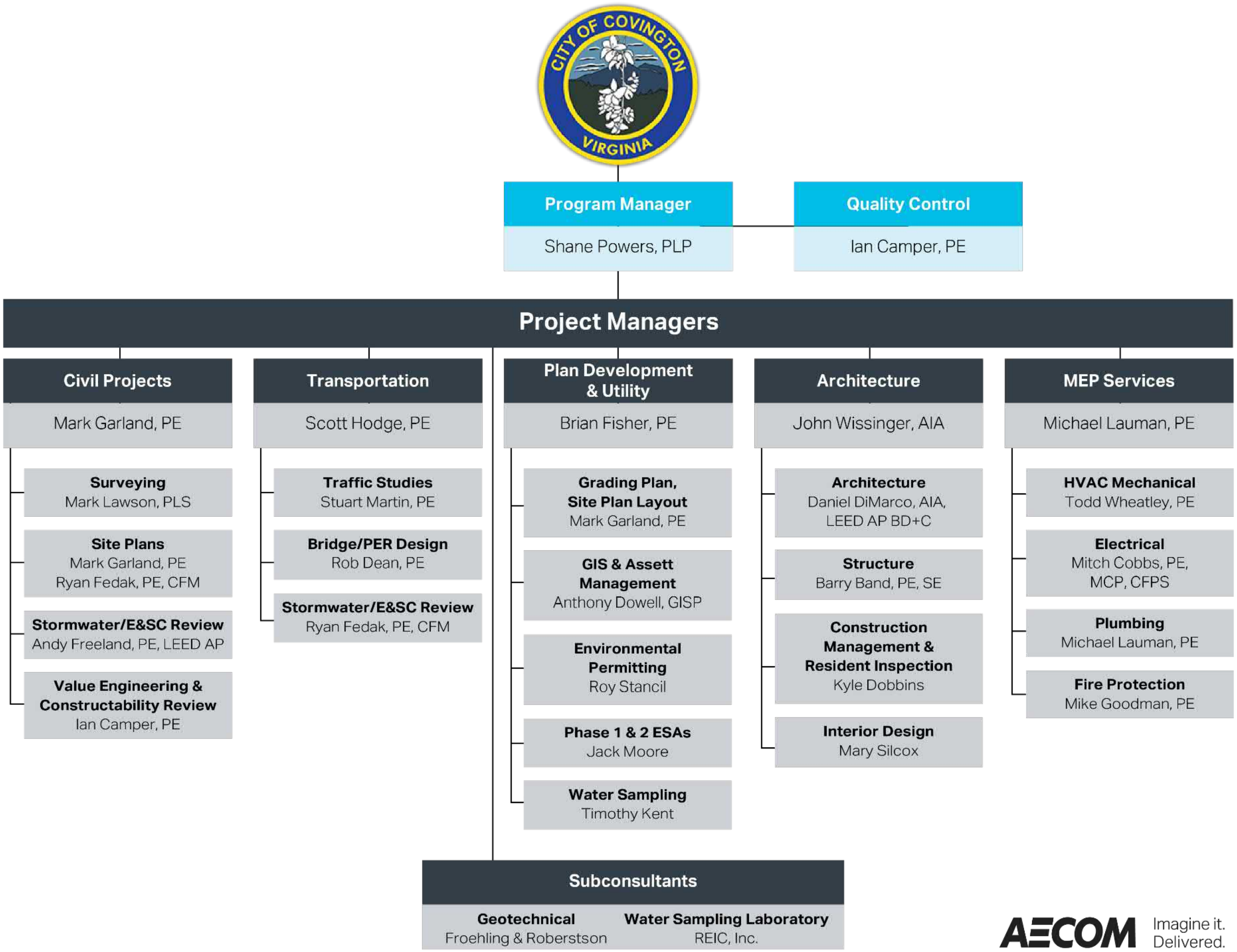
5. NAME OF FIRM **AECOM Technical Services, Inc.**		DUNS NUMBER **95-2661922**
6. TELEPHONE NUMBER **540-857-3374**	7. FAX NUMBER **540-857-3180**	8. E-MAIL ADDRESS **ronald.smith2@aecom.com**

C. PROPOSED TEAM

	(CHECK)			9. FIRM NAME	10. ADDRESS	11. ROLE IN THIS CONTRACT
	PRIME	J-V PARTNER	SUBCON-TRACTOR			
a.	●			**AECOM** ☒ CHECK IF BRANCH OFFICE	10 South Jefferson Street Suite 1600 Roanoke, Virginia 24011	Civil, mechanical, electrical, architectural, structural, geotechnical, water sampling / testing services, environmental services, transportation and traffic, and funding procurement
b.				☐ CHECK IF BRANCH OFFICE		
c.				☐ CHECK IF BRANCH OFFICE		
d.				☐ CHECK IF BRANCH OFFICE		
e.				☐ CHECK IF BRANCH OFFICE		
f.				☐ CHECK IF BRANCH OFFICE		
g.				☐ CHECK IF BRANCH OFFICE		
h.				☐ CHECK IF BRANCH OFFICE		

D. ORGANIZATIONAL CHART OF PROPOSED TEAM ☒ *(Attached)*

SECTION D – ORGANIZATIONAL CHART



- **Program Manager** – Shane Powers, PLP
- **Quality Control** – Ian Camper, PE

Project Managers

- **Civil Projects** – Mark Garland, PE
  - **Surveying** – Mark Lawson, PLS
  - **Site Plans** – Mark Garland, PE; Ryan Fedak, PE, CFM
  - **Stormwater/E&SC Review** – Andy Freeland, PE, LEED AP
  - **Value Engineering & Constructability Review** – Ian Camper, PE
- **Transportation** – Scott Hodge, PE
  - **Traffic Studies** – Stuart Martin, PE
  - **Bridge/PER Design** – Rob Dean, PE
  - **Stormwater/E&SC Review** – Ryan Fedak, PE, CFM
- **Plan Development & Utility** – Brian Fisher, PE
  - **Grading Plan, Site Plan Layout** – Mark Garland, PE
  - **GIS & Assett Management** – Anthony Dowell, GISP
  - **Environmental Permitting** – Roy Stancil
  - **Phase 1 & 2 ESAs** – Jack Moore
  - **Water Sampling** – Timothy Kent
- **Architecture** – John Wissinger, AIA
  - **Architecture** – Daniel DiMarco, AIA, LEED AP BD+C
  - **Structure** – Barry Band, PE, SE
  - **Construction Management & Resident Inspection** – Kyle Dobbins
  - **Interior Design** – Mary Silcox
- **MEP Services** – Michael Lauman, PE
  - **HVAC Mechanical** – Todd Wheatley, PE
  - **Electrical** – Mitch Cobbs, PE, MCP, CFPS
  - **Plumbing** – Michael Lauman, PE
  - **Fire Protection** – Mike Goodman, PE

Subconsultants

- **Geotechnical** – Froehling & Roberstson
- **Water Sampling Laboratory** – REIC, Inc.

AECOM Imagine it. Delivered.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Shane Powers, PLP	**Contract Manager**	31	31

15. FIRM NAME AND LOCATION (City and State) AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/ Surveying Engineering Technology AS/Construction Engineering Technology	Certified Construction Contract Administrator; Certified Cost Consultant; Construction Documents Technician

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Powers' experience includes: managing of site/civil, geotechnical, survey, water storage and distribution; storm drainage; and environmental investigation, remediation, and permitting. His projects involve site/civil, site master planning, building designs, parking, roadways, pedestrian walk way trails, water and sanitary sewer systems and complete site design packages for building projects.

19. RELEVANT PROJECTS

a. (1) TITLE AND LOCATION *(City and State)* **See Project 2 in Section F**

Site Evaluation Study for E911 Center, Alleghany/Clifton Forge/Covington, VA

(2) YEAR COMPLETED	
PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
2015	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

☒ Check if project performed with current firm

Project Manager. In charge for developing the site selection grading criteria for the new Alleghany E911 facility. The document was adapted to meet the needs of Alleghany County and to incorporate AECOM's experience in site selection process for other facilities. Selection criteria that was downplayed or removed were those that applied to more urban environments or those that compared existing buildings. Other sections were added or emphasized that are important to Alleghany County such as radio connectivity and cost.

b. (1) TITLE AND LOCATION *(City and State)* **See Project 3 in Section F**

Drone Zone, City of Covington and Alleghany County, VA

(2) YEAR COMPLETED	
PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
2018	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

☒ Check if project performed with current firm

Project Manager. PM in charge to provide a comprehensive study to analyze the confluence of requirements for a business plan, business operations, marketing plan and infrastructure land and building assessment to help create a framework for successful implementation of the envisioned by the Alleghany Highlands Drone Zone committee. The preselected sites were within the County. Based on the evaluations, and proposed development for the subject sites, recommendations were offered in the comprehensive study. Cost estimates were provided to perform the work.

c. (1) TITLE AND LOCATION *(City and State)* **See Project 8 in Section F**

Storm Drain Installation at the Riverside Corporate Center
Roanoke, VA

(2) YEAR COMPLETED	
PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
2011	2016

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

☒ Check if project performed with current firm

Project Manager. PM in charge to provide design for the Storm Drain Installation project located at the Riverside Corporate Center. The project involved coordination construction of 950 linear feet of 48" RCP storm drain piping from starting at Riverside Street running to the edge of Roanoke River. The property was owned by the City of Roanoke. In addition, construction administration services were provided to support the construction phase.

d. (1) TITLE AND LOCATION *(City and State)* **See Project 10 in Section F**

South Jefferson Redevelopment Area Virginia
Roanoke, VA

(2) YEAR COMPLETED	
PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
2005	Ongoing

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

☒ Check if project performed with current firm

Civil Support Technical Leader: Served as lead to summarize the existing site infrastructure and available utilities located at the Site in order to share the property data with potential investors. These investigations were prepared for Roanoke City and were based on desktop investigations, GIS, site observations and contact with the local utility providers.. The site infrastructure included water supply, sanitary sewer, power, gas, telecommunications, and transportation access to the site.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE a. TOTAL	14. YEARS EXPERIENCE b. WITH CURRENT FIRM
Ian Camper, PE	**Quality Control**	14	14

15. FIRM NAME AND LOCATION (City and State): AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/Civil and Environmental Engineering	Professional Engineer: VA

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Ian is an Associate Vice President, project manager and senior engineering manager responsible for the preparation of technical deliverables in accordance with AECOM's ISO 9001 Quality Control Procedures. His responsibilities include the development of project QA/QC procedures, scheduling and overseeing QA/QC reviews, and documenting QA/QC efforts in accordance with AECOM and client requirements. Ian also serves as the Lead Verifier for AECOM Roanoke's civil engineering practice, with responsibilities to verify QC reviews were carried out in accordance with AECOM procedures.

19. RELEVANT PROJECTS

a. (1) TITLE AND LOCATION *(City and State)* **See Project 9 in Section F**	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
Virginia Department of Transportation, Route 11, 220, & 220A – Access Management Project at Exit 150, Botetourt County, VA	2014	2018

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Quality Control. Provided quality control reviews for utility relocation design in support of improvements to the Interstate I-81 Exit 150 interchange. Verified that construction documents were prepared in accordance with VDOT, VDH, VDEQ, and Botetourt County technical requirements and design was coordinated across multiple disciplines. Verified that stakeholder comments were adequately addressed and closed out.

b. (1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
Prince William County, Locust Shade Waterline Replacement, Prince William County, VA	2017	2021

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Quality Control. Provided quality control reviews for the design of the replacement of 1.5 miles of waterline to service the Locust Shade Park. Provided review of a water distribution system hydraulic model developed to determine design alternatives for replacement. Verified that construction documents were prepared in accordance with PWCSA, VDOT and VDH requirements. Verified stakeholder comments were adequately addressed and closed out.

c. (1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
Alleghany County, Lower Jackson River Regional WWTP, Alleghany County, VA	2011	2012

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Engineer. Lead design engineer for the design of a new 2.6 mgd wastewater treatment plant for enhanced nutrient removal. Design engineer for the aeration basins, secondary clarifiers, effluent filtration, UV disinfection, aerobic sludge digestion, non-potable water system, and plantwide SCADA system.

d. (1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
Hampton Roads Sanitation District, James River Treatment Plan – SWIFT Upgrades, Newport News, VA	2020	2023 (Est)

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Quality Control. Provided quality reviews for wastewater treatment process improvements at the James River Treatment Plant as part of HRSD's SWIFT program. Reviewed design-build RFP documents for technical adequacy, discipline coordination, and compliance with HRSD and VDEQ requirements. Coordinated with the designers for resolution of reviewer and stakeholder comments before issuance of the final RFP documents.

e. (1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
Alleghany County, Clifton Forge WWTP Conversion to Pump Station, Clifton Forge, VA	2011	2012

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Quality Review. Provided quality reviews for the design of a new 5.0 mgd pump station and closure of the existing 2.0 mgd Clifton Forge WWTP. Verified construction documents were prepared in accordance with VDEQ and WQIF requirements and the design was coordinated across multiple disciplines. Verified that internal and external comments were resolved and addressed.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Mark Garland, PE	**Civil Projects Team Lead**	17	1.5

15. FIRM NAME AND LOCATION (City and State) AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/Civil Engineering	Professional Engineer: VA

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Garland has a diverse level of civil site development, stormwater, and architectural engineering design experience. He has developed a proven track record of successful project completion in Southwest Virginia through rigorous design practices and positive collaboration with clients, designers, contractors, and government officials. Significant experience in project site planning, stormwater calculations, construction document production, contract administration, multi-stakeholder coordination, and low-impact and resilient development strategies.

19. RELEVANT PROJECTS

a.	(1) TITLE AND LOCATION *(City and State)* **See Project 5 in Section F**	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Carilion-Clinic, Tanglewood Multi-Specialty, Roanoke, VA	2018	2021 est
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Civil Engineer. 120,000 s.f. interior renovation and site adaptation of existing retail to a medical clinic. Work included the design of new patient and emergency vehicle drop-off zones, improved vehicular routing, and utility upgrades.

b.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Main Street Village Center, Roanoke, VA	2018	2019
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Owner and Lead Designer. Purchased and redeveloped three long-vacant commercial properties in Roanoke's historic Wasena neighborhood town center into new restaurants and retail. Work included design and management of complete site and building rehabilitation in accordance with Virginia Department of Historic Resources standards.

c.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	The Electra Lofts, Roanoke, VA	2015	2016
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Owner and Lead Designer. Purchased and redeveloped a former industrial property in Roanoke's historic downtown district into 22 residential dwellings. Work included design and management of complete site and building rehabilitation in accordance with Virginia Department of Historic Resources standards.

d.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Cave Spring Middle School, Roanoke County, VA	2013	2014
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Civil Engineer. Complete renovation and site adaptation of the former Cave Spring Junior High, consisting of the construction of new educational wings and preservation of the existing auditorium and gymnasiums. Work included site planning, stormwater design and calculations, geothermal well field layout, and traffic routing design.

e.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Town of Marion, Streetscape Improvements, Marion, VA	2011	2012
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Civil Engineer. Design of streetscape improvements along Broad Street and Main Street in Marion, VA. Work included design and coordination of new and existing utilities with landscaping improvements, including a pedestrian walkway and new loading dock at the historic Lincoln Theatre.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Scott Hodge, PE	**Transportation Team Lead**	38	29

15. FIRM NAME AND LOCATION (City and State): AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/Civil Engineering	Professional Engineer: VA

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Hodge is experienced in the project management, preliminary and final site layouts for bridge and highway projects. His experience also includes preliminary highway and railroad designs; location studies and environmental impact statement oversight; final rural and urban highway designs; final passenger and freight railroad designs; design/build projects; and industrial park layout and infrastructure design. Mr. Hodge has additional experience in surveying, plat descriptions, site layouts, and rights-of-way.

19. RELEVANT PROJECTS

a.	(1) TITLE AND LOCATION *(City and State)* **See Project 7 in Section F**	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	City of Roanoke, Franklin Road Bridge Replacement, Roanoke, VA	2016	2019

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Manager. Provided engineering services for this project to completely replace the 550-ft long bridge on Franklin Road over ten tracks of Norfolk Southern Railway and Route 220 Expressway Ramp. The new structure includes haunched steel plate girders with decorative railing and lighting details. Services provided include study of alternatives for the replacement structure, bridge and roadway design, traffic management plans, aesthetic enhancements, and coordination with key stakeholders including NS Railway, VDHR, and utility owners. AECOM is currently providing construction phase services. Brief description of what you did on this project.

b.	(1) TITLE AND LOCATION *(City and State)* **See Project 9 in Section F**	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	VDOT, Route 11, 220, 220A Access Management at Exit 150 at I-81, Botetourt County, VA	2014	2018

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Manager. Provided the concept study and final design phases of improvements to Route 11 at the I-81 Exit 150 interchange including a hybrid roundabout and loop road connection from Route 11 to Route 220A. Services included coordinated traffic modeling, roadway design, multiple intersection designs, drainage design, application of access management criteria, signal design, Transportation Management Plan, landscaping design, signage and pavement marking plans, ITS and geotechnical services.

c.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	City of Lynchburg, Midtown Connector, Lynchburg, VA	2011	2018

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Manager. Provided engineering services for the proposed new one-mile-long roadway along with a roundabout. The proposed 3-lane context-sensitive roadway is classified an urban roadway. Responsible for providing roadway design, roadway drainage, stormwater management basins, erosion and sediment plans, water and sanitary sewer design, signal design, environmental review, geotechnical, and maintenance of traffic plans.

d.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Roanoke County, Merriman Road Roundabout, Roanoke County, VA	2010	2011

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Manager. Provided construction plans for a 5-legged roundabout that connects the nearby elementary school, the new county library, and heavily traveled Merriman Road. Also performed roadway drainage calculations, storm drain systems, stormwater management facilities, and E&S measures.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Brian Fisher, PE	**Plan Development & Utility Team Lead**	32	X
15. FIRM NAME AND LOCATION (City and State)	AECOM (Roanoke, VA)		

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/Civil Engineering	Professional Engineer: VA, NC, SC, IL, IN, WI

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Fisher has designed many large, complex sites overcoming challenges of topography, access, utility locations, regulatory issues, vehicular and pedestrian circulation, security concerns, storm water management, and other site requirements. He has served as the Lead Civil Engineer or performed Quality Control checking on projects for schools, hospitals, office complexes, parking garages, firing ranges, manufacturing facilities, and others.

19. RELEVANT PROJECTS

a.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Fallowater Lane Extension, Roanoke County, VA	2019	N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Engineer. Responsible for the water and sanitary line designs to support the Fallowater Lane Road Extension located in Roanoke County, Va. The road was approximately 0.25 miles had an urban local designation with curb and gutter and sidewalk on one side. The existing pavement was incorporated into the new road. A very important as aspect of the project was to maintain access and water/sanitary supplies to the existing businesses during construction and to minimize any adverse impacts to them. A design exception was needed from VDOT due to the proximity of the existing business entrances. The estimated construction cost is $1.8M. The project was being performed as a Locally Administered Project (LAP) with VDOT (no federal funding). Roanoke County administer the Preliminary Engineering (PE) phase and VDOT administer the Right of Way (ROW) phase.

b.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	ATFP Project – Private Client	2019	N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Engineer. Responsible for conducting a site investigation and gathered existing documentation. Those included, site geometry, passive and active vehicle control barriers, security fencing and gates, personnel protection, traffic considerations, lane requirements, pavement geometry, speed management, traffic control devices, inspection facilities, utility systems, and operational practices. Mr. Fisher met with the stakeholders to understand their concerns and expectations. Mr. Fisher identified threat vulnerabilities and develop recommendations for short-term improvements to improve the site's security posture. He and developed a cost-effective plan with exhibits and a descriptive narrative for the ATFP that will comply with the requirements of the physical security standards. He then developed design documents.

c.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Western Virginia Water Authority, Roanoke City, VA	2020	N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Engineer. Responsible for the preliminary masterplanning and site development for the new maintenance facility. Several site development alternatives were developed during the charrette process. GIS and local utility data was used to generate the alternative approaches that included building, maintenance shed, fueling pads, road, and parking areas. An important as aspect of the project was to maintain circular access to all the existing site functions within the client's property boundaries. Additionally, phasing was necessary to maintain use of existing administration facilities.

d.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Government Confidential Client, Parking Garage Infill/Parking Lot, Chantilly, VA	2019	Ongoing
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Civil Engineering Lead. Lead for the design of the project which included a Parking Garage expansion and a new 158 space parking lot and necessary appurtenances. Sitework included clearing, select site demolition, utility adjustments, grading, parking lot improvements, walking trail relocation and storm water management. He is also providing construction administration services (i.e., reviewing the shop drawings, site visits and RFI reviews).

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE a. TOTAL	14. YEARS EXPERIENCE b. WITH CURRENT FIRM
John Wissinger, AIA, LEED AP	**Architecture Team Lead**	22	5

15. FIRM NAME AND LOCATION (City and State)	AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
B Arch/Architecture; Certificate in Design Thinking	Registered Architect: VA, NJ, SC; NCARB Certificate LEED Accredited Professional

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Wissinger's responsibilities include ensuring design quality across all projects. This includes leading award winning design for research facilities, healthcare environments, and places of learning around the globe for commercial, government, and higher education clients. Mr. Wissinger's research includes design of integrated facilities where many users or organizations are combined into one facility or campus to improve synergies, enhance efficiency, and drive organizational outputs. Materials application is also a significant pursuit - studying carefully each project and understanding how to best apply the appropriate material to achieve the overall client goals and create culturally responsible projects.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
a.	**See Project 1 in Section F** **Alleghany County COVID-19 Renovations, Alleghany County, VA**	2020	Ongoing

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Principal/Lead Designer. Project principal and Lead designer for select renovations to the Alleghany County Courthouse and Parks and Recreation Building. Renovations included analysis both permanent and temporary changes. Working with the variety of stakeholders to arrive at a consensus for the design interventions has been key to the project success.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
b.	**See Project 3 in Section F** **Alleghany Highlands Drone Zone Development Study, Alleghany County, VA**	2018	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Lead. Project Lead for development of business analysis and case development for a new drone economy. Organization of large and diverse stakeholder workshops and analysis of the physical infrastructure of three existing sites were key components of the work.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
c.	**See Project 6 in Section F** **Virginia Tech Term Contract, Blacksburg, VA**	Ongoing	Ongoing

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Lead Designer. Led the design for various renovation projects including Ambler Johnston Courtyard Renovation, Temporary War Gymnasium, Miles Hall Renovation, Payne Hall Renovation, Steger Hall Laboratory Renovation and Whittemore Hall Clean Room Renovation.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
d.	**See Project 4 in Section F** **Carilion Clinic IDIQ, Roanoke, VA**	2018	Ongoing

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Design Director. As Design Director, provided architecture design leadership in a variety of capacities for completed feasibility studies, renovations, and tenant fit-out of more than 20,000 SF of clinical research, laboratory research, collaboration spaces and learning environments at the Riverside Campus.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
e.	**City of Lynchburg Water Resources, Lynchburg, VA**	Ongoing	Ongoing

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Lead Designer. Masterplan for an approximately 10 acre urban site including water treatment facilities, administrative areas, visitor spaces and field operations. The masterplan is designed to improved operations and reduced maintenance. Specific projects include reconfiguration of field operations, new building and optimization of existing administrative areas to create productive space for additional personnel.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE a. TOTAL	 b. WITH CURRENT FIRM
Michael Lauman, PE	**MEP Team Lead**	32	X

15. FIRM NAME AND LOCATION (City and State)	AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/Mechanical Engineering	Professional Engineer: VA, (Mechanical) CA, GA, MD, NC

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Lauman has worked with a variety of clients including higher education, healthcare, and Department of Defense for planning and designing new facilities and renovations to existing facilities. Mr. Lauman is skilled in the design and specification of traditional plumbing systems including stormwater, sanitary sewer and vent, domestic cold and hot water, hot water circulation, compressed air, and natural gas. He is especially skilled in the specification and design of specialty piping systems including medical gas and vacuum systems, fuel oil, pure water, personnel decontamination, and fire protection systems.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	 CONSTRUCTION (If applicable)
a.	**Carilion Ivy Market, Roanoke, VA**	2014	2016

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Project Engineer. Plumbing Engineer of Record for the renovation of a former grocery store. The site now houses an approximately 116,050-square-foot, multi-specialty, new outpatient medical clinic space, the Institute for Orthopedics and Neurosciences. The project includes the interior renovation area of approximately 60,000 square feet, plus the addition of a second floor structure and new construction of 3,300 square feet.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	 CONSTRUCTION (If applicable)
b.	**Augusta Health Medical Center, ER Expansion and Renovation, Fishersville, VA**	2017	2019

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Project Engineer. Plumbing Engineer of Record. AECOM is providing services for the approximately 30,000-square-foot expansion and renovation of the Emergency Department (ED). The project involves developing concepts and sketches to achieve a quality design that meets the client's objectives, and working with the design team to develop and realize the design, while balancing the parameters of cost, time, and quality.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	 CONSTRUCTION (If applicable)
c.	**Virginia Tech Surge Space Building, Blacksburg, VA**	2007	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Project Engineer. Provided mechanical and plumbing engineering design services for a 45,000 SF structure that provided flexible swing space during the university's 15-year modernization program. The $5.8M building was constructed in nine months and was dissembled and recycled at the end of its expected 15-year life.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	 CONSTRUCTION (If applicable)
d.	**Cassell Coliseum & Jamerson Hall, Blacksburg, VA Virginia Tech Electrical Term Contract 2007 - 2012**	2008	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Project Engineer. Conducted a study of the plumbing system in the Cassell Coliseum and Jamerson Hall. Designs included replacement of supply water piping to toilets and showers for all athletic team locker rooms in the Coliseum.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	 CONSTRUCTION (If applicable)
e.	**Virginia Tech Carilion School of Medicine and Research Institute**	2009	2010

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Project Engineer. Lead medical gas/plumbing engineer for the 50,000 SF medical school and 104,000 research institute. Designed the traditional plumbing systems including storm drainage, sanitary sewer, natural gas and domestic water. The project also includes extensive plumbing design for the research portion of the building with a central reagent grade water system, emergency tempered water system, and specialty gas and laboratory vacuum systems.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Andy Freeland, PE	**Stormwater/E&SC Review**	29	26

15. FIRM NAME AND LOCATION (City and State) AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/Civil Engineering	Professional Engineer: VA

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Freeland is a civil engineer in the Roanoke office with experience in comprehensive site design for private- and public-sector clients for local, national, and international projects. He is experienced with site planning, parking, site utilities, grading, storm drainage, erosion and sediment control, stormwater management, and pavement design.

19. RELEVANT PROJECTS

a.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Alleghany County, Lower Jackson Regional Wastewater Treatment Plant, Alleghany County, VA	2009	2012
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Lead Civil Engineer. Responsible for comprehensive site development plan for wastewater treatment plant with 2.6 mgd design flow. Site development included site planning, site utilities, access road, grading, drainage, erosion and sediment control, and stormwater management which incorporated stormwater quality using manufactured treatment devices. ACEC 2013 Honor Award for Engineering Excellence.

b.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Alleghany County, Lower Jackson Regional Wastewater Treatment Plant, Pump Stations, Alleghany County, VA	2010	2012
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Lead Civil Engineer. Responsible for comprehensive site development plan for wastewater pump station sites. Site development included layout, access road, grading, drainage, erosion and sediment control, and stormwater management compliance.

c.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Virginia Tech Carilion, Fralin Biomedical Research Institute, Roanoke, VA	2018	2020
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Specific Role. Lead Civil Engineer responsible for site development of this multi-story building with a gross floor area of 140,000 SF within the 25-acre Riverside Center campus. Site development included layout for vehicular and pedestrian traffic; coordination of utility service connections for domestic and fire water, sanitary sewer, storm drainage, natural gas, telecom, and electrical utilities; E&S control plan; stormwater plan; and building protection from 100-year flood hazard. Project included comprehensive permit application to City. Site design supported pursuit of building certification at the "Silver" level using LEED Ver. 4, incorporating green roof and rainwater harvesting elements.

d.	(1) TITLE AND LOCATION *(City and State)* **See Project 5 in Section F**	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	Carilion Clinic, Tanglewood Multi-Specialty Clinic, Roanoke County, VA	2018	2021 est
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Specific Role. Civil Engineer responsible for storm drainage, erosion and sediment control, and stormwater management for this retail-space renovation for medical clinic use. The project included submission to County for stormwater permitting.

e.	(1) TITLE AND LOCATION *(City and State)* **See Project 9 in Section F**	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	VDOT, Route 11, 220, & 220A – Access Management Project at Exit 150, Botetourt County, VA	2014	2018
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Specific Role. Civil engineer responsible for quality control checking of hydrology and hydraulics calculations for storm drainage systems related to redesign of a major interstate interchange area.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Kyle Dobbins	**Construction Management & Resident Engineer**	36	36

15. FIRM NAME AND LOCATION (City and State) AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
B.S. in Civil Engineering Technology, 1984 Old Dominion University A.A.S. in Civil Engineering Technology, 1982 Virginia Western Community College	Safety Trained Supervisor Certified Construction Contract Administrator Construction Document Technologist Certified Concrete Inspector - VDOT Certified Soils and Compaction Inspector - VDOT

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Dobbins' responsibilities include the supervision of construction administration and construction management personnel, coordinating the processing of specifications, coordination of shop drawing reviews and requests for information, development and implementation of AECOM Construction Administration procedures, and the performance of constructability reviews. His responsibilities also include conducting prebid conferences, bid evaluations, preconstruction conferences, coordinating the shop drawing submittal process, reviewing and approving Contractors' applications for payment, interpreting contract documents, conducting periodic site visits, reviewing and recommending approval of change orders, implementing Owner-requested changes to contracts, conducting substantial completion inspections, preparing punchlists, conducting final inspections, and recommending final acceptance to the Owner.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
a.	**See Project 1 in Section F** **Allegheny County COVID-19 Safety Improvement Renovations Covington, Virginia**	N/A	2021

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Construction Manager. Prepared Division 00 and 01 sections for the project specifications, responded to prebid questions, issued an addendum, conducted prebid conference and provide quality control review during the construction phase.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
b.	**See Project 5 in Section F** **Carilion Tanglewood Multi-Specialty Clinic, Roanoke, Virginia**	N/A	2021

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Construction Manager. Coordination of the shop drawing and request for information process. Implemented Owner requested changes to the contract.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
c.	**Carilion Clinic and Virginia Tech, Fralin Biomedical Research Institute, Roanoke, Virginia**	N/A	2020

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Construction Manager. Attended weekly Owner, Architect and Contractor meetings. Conducted periodic site visits. Coordinated the shop drawing and request for information process. Implemented Owner requested changes to the contract. Conducted inspections for substantial completion.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
d.	**Virginia Tech War Memorial Non-Permanent Gym, Blacksburg, Virginia**	N/A	2020

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Construction Manager. Conducted a prebid conference, coordinated the shop drawing and request for information process. Implemented Owner requested changes to the contract and reviewed contractor change order requests. Coordinated record documents submission.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
e.	**Fralin Biomedical Research Institute Administrative Office, Roanoke, Virginia**	N/A	2020

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Construction Manager. Coordination of the shop drawing and request for information process. Implemented Owner requested changes to the contract.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE a. TOTAL	14. YEARS EXPERIENCE b. WITH CURRENT FIRM
Mark Lawson, PLS	**Surveying**	25	16

15. FIRM NAME AND LOCATION (City and State) AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/Civil Engineering Virginia Surveyor Apprenticeship	Professional Land Surveyor: VA

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Lawson is a professional Land Surveyor with 25 years of experience. As a surveyor his experience includes American Land Title Association (ALTA) land title boundary surveys, commercial surveys, large tract boundary surveys, control surveys, industrial surveys, transportation surveys, global positioning system (GPS) surveys, geographic information systems (GIS), hydraulic and hydrographic surveys and all types of surveying to support engineering and architectural projects.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
a.	**Lower Jackson Force Mains and Sanitary Sewers County of Alleghany, VA**	2010	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Lead Surveyor. Lead surveyor for engineering topographic survey for 8.7 miles of new force main and gravity sanitary sewer. Coordinated global positioning system (GPS) aerial control survey sub-consultant, aerial mapping, and utility designators. Property boundaries, property ownership, and rights-of-way were incorporated into the topographic survey.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
b.	**City of Lynchburg, College Lake Dam Removal, Lynchburg, VA**	2020	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Lead Surveyor. Professional Surveyor responsible for topographic, bathymetric, and cross sectional data for the removal of College Lake Dam and the restoration of Blackwater Creek, its tributaries, and adjacent floodplain as necessary to provide a stable, high functioning ecosystem. Coordinated data collection, aerial mapping, and control surveys for the 330-acre project study area. Adjacent property ownership and right of way were included as part of the survey effort.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
c.	**Alleghany County, Lower Jackson Wastewater Treatment Plant Design, Iron Gate, VA**	2011	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Lead Surveyor. Professional Surveyor responsible for engineering topographic survey for new wastewater treatment plant site. Work included property subdivision, right-of-way, and easement platting.

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED PROFESSIONAL SERVICES	(2) YEAR COMPLETED CONSTRUCTION (If applicable)
d.	**Roanoke County, Adams Construction Company Asphalt Plant, Roanoke County, VA**	2009	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Lead Surveyor. Professional Surveyor responsible for the topographic and boundary survey of approximately 16.5 acres for a new asphalt production facility. Work included property boundary and easement platting.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Stuart Martin, PE	**Traffic Studies**	15	8

15. FIRM NAME AND LOCATION (City and State)	AECOM (Roanoke, VA)

16. EDUCATION (Degree and Specialization)	17. CURRENT PROFESSIONAL REGISTRATION (State and Discipline)
BS/Civil Engineering	Professional Engineer: VA

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards)

Mr. Martin is a traffic engineer in the Highway Department of the Roanoke office. He has over 15 years of experience in a wide variety of task management and project experience in traffic engineering, including traffic impact studies, corridor studies, traffic modeling/forecasting, trip generation, parking studies, traffic signal design, signal timing plans, safety studies, bicycle and pedestrian studies, roadway and intersection design, road safety audits, and maintenance of traffic plans.

19. RELEVANT PROJECTS

a.	(1) TITLE AND LOCATION (*City and State*) **See Project 9 in Section F**	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	VDOT, Route 11, 220, & 220A – Access Management Project at Exit 150, Botetourt County, VA	2014	2018

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Traffic Task Manager. in the development of construction plans for the reconfiguration of the I-81 Exit 150 interchange ramps from Northbound I-81, including a hybrid roundabout and loop road connection from Route 11 to Route 220A. Responsibilities included multiple signal designs, roundabout design, signage and pavement marking plans, maintenance of traffic plans, signal timing plans and construction administration.

b.	(1) TITLE AND LOCATION (*City and State*)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	VDOT, North Main Street/Route 460 Bypass Intersection Improvements, Town of Blacksburg, VA	Ongoing	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Lead Traffic Engineer. Lead Traffic Engineer for the planning, alternatives analysis and conceptual design of intersections improvements at an intersection with high crash rates. Responsibilities include sensitivity analysis of intersection and interchange design concepts, traffic operations analysis using HCS+, turn lane warrant analysis, conceptual design and design year traffic volume projections. Mr. Martin leads the effort to develop the technical report to the Town of Blacksburg summarizing the study.

c.	(1) TITLE AND LOCATION (*City and State*)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	City of Lynchburg, Midtown Connector, Lynchburg, VA	2016	Ongoing

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Lead Traffic Engineer. Served as Lead Traffic Engineer for this LAP project in Lynchburg for the proposed new one-mile-long roadway along with a roundabout. The proposed 3-lane context-sensitive roadway is classified an urban roadway that involved roadway and drainage design, SWM, erosion and sediment plans, water and sanitary sewer design, signal design, environmental review, geotechnical, and maintenance of traffic plans. Responsibilities included quality control of signage, pavement marking and maintenance of traffic plans, traffic signal design, roundabout operations analysis, and construction administration.

d.	(1) TITLE AND LOCATION (*City and State*)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	VDOT On-Call Design-Build/P3 Support: I-581/Elm Avenue Interchange, Roanoke, VA	Ongoing	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Engineer. Scope of services includes RFP development and project management, proof of concept plans, and an Interchange Modification Report for VDOT/FHWA approval. Mr. Martin is responsible for technical portions of the RFP, coordinating with local agencies/utilities, preliminary traffic signal design, preliminary signage and pavement marking plans, traffic operational analysis, signal timing plans, drafting of special provisions, and Synchro/SimTraffic traffic modeling.

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER		**1**	
21. TITLE AND LOCATION (City and State)		22. YEAR COMPLETED	
Alleghany County COVID-19 Renovations Alleghany County, VA		PROFESSIONAL SERVICES 2020	CONSTRUCTION (if applicable) 2021

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Alleghany County	Jonathan Lanford	540.969.6774

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

AECOM provided Alleghany County schematic design and construction documentation services for renovations related to health and safety protocols that have been caused by the COVID-19 pandemic. Full construction phase services are currently being provided as well. In total, eight specific areas were addressed through this project which impacted the County Courthouse and the Parks and Recreation Suite.

1. Building Entry & Security
2. Clerk's Office
3. Commonwealth Attorney's Offices
4. Witness protection Offices
5. Parks and Recreation Office
6. County Treasury Office
7. District Courtroom
8. District Clerk's Office

Areas were thoughtfully designed in order to integrate with the historic character of the courthouse building. Some interventions are temporary and designed for removal, while the majority provide long term solutions.

Relevance to the City:

☑ Security Planning

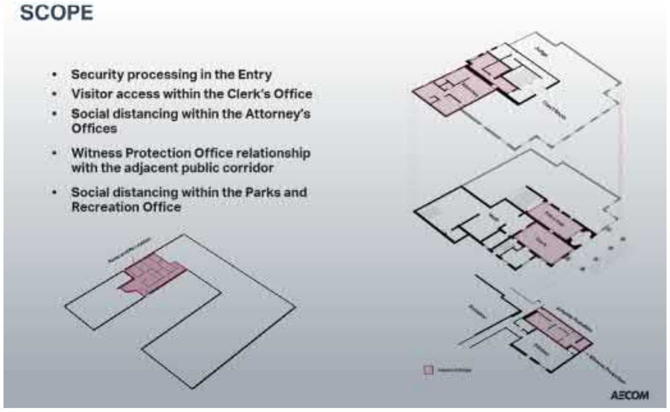
☑ Architecture and Interiors

☑ Mechanical Engineering

☑ Electrical Engineering

☑ Communications

Key Personnel: John Wissinger, AIA; Shane Powers, PE; Daniel DiMarco, AIA, LEED AP BD+C; Michael Lauman, PE; Mary Silcox, Michael Lauman, PE; Todd Wheatley, PE



SCOPE

- Security processing in the Entry
- Visitor access within the Clerk's Office
- Social distancing within the Attorney's Offices
- Witness Protection Office relationship with the adjacent public corridor
- Social distancing within the Parks and Recreation Office

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION (*City and State*)	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	**2**	
21. TITLE AND LOCATION (City and State) **E-911 Siting Study** Covington, VA	22. YEAR COMPLETED PROFESSIONAL SERVICES 2015	CONSTRUCTION (if applicable) N/A

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Allegheny County	John Lanford	540.863.6600

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

Relevance to the City:

- ☑ Master / Site Planning
- ☑ Civil Engineering
- ☑ Architecture and Interiors
- ☑ Mechanical Engineering
- ☑ Electrical Engineering
- ☑ Communications

Key Personnel: Shane Powers, PLP; Ian Camper, PE; Andy Freeland, PE, LEED AP

AECOM provided design services to develop and construct a new regional Emergency Call Center (E-911) Facility to serve Alleghany County and the City of Covington. The new E-911 facility will be owned and operated by Alleghany County. The County's original intent was to use land currently owned by the County on Pitzer Ridge Road as the site for the proposed E911 facility. AECOM provided architectural, communications technology and building engineering services for the siting study of the E911 facility. Additionally, AECOM conducted a communications technology evaluation study and prepared a space programming/planning study for the proposed E-911 facility.

As part of those services, AECOM and Sekiv Solutions presented preliminary opinions of probable construction cost to Alleghany County for the proposed E-911 facility at the Pitzer Ridge Road site. After evaluating those costs, the County determined that the cost to develop the Pitzer Ridge site was prohibitively high and desired to consider other locations. To accomplish this, the County requested that AECOM and Sekiv Solutions conduct a siting study to look for new alternative potential E-911 sites (both developed for renovation and greenfield/ undeveloped). Sekiv Solutions provided civil engineering services as a subconsultant to AECOM.

The E-911 Siting Study included the following tasks: Develop Site Evaluation Criteria and a Weighted Ranking System looking at topography, parcel size and shape, zoning, proximity to public utilities, site accessibility, suitable tower location can connectivity, interferences, impacts of potential vulnerabilities, and adaptability of existing structures. It also included a line of sight evaluation for connectivity to the existing County and City E-911 communication towers. A matrix ranking table was developed for evaluating the proposed sites.

The evaluation team, along with County staff, visited eleven sites and ranked each site using the matrix. These sites were previously chosen by the County as having the best potential to locate an E-911 facility. The evaluation team also included a structural engineer who visited the Falling Spring Elementary School site and observed existing conditions and reviewed design drawings for the last addition to the facility in 2003. A lead and asbestos specialist also visited the sites and observed facilities where access was available for signs of asbestos and lead paint to aid in developing a rough order of magnitude (ROM) cost for abatement should the facility be selected for renovations or demolition.

Site rankings were reviewed with County Staff to confirm ranking evaluations and to select up to four sites to carry forward to develop a concept level ROM preliminary opinion of probable construction cost. AECOM provided a ROM estimate cost differential for each of the preferred sites selected by the County, which included:

- Falling Springs Elementary School
- Adams Asphalt

- Mountain View Elementary School
- Nettleton Foundation Sites

Cost factors considered included building construction, site development, off site utilities, site-specific technology and connectivity, land, and contingency. The Falling Springs Elementary School was ranked the lowest cost location of the four sites evaluated.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	3	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Drone Zone Comprehensive Consulting Services Alleghany County, VA	2018	

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
City of Covington, Alleghany County & the Alleghany Highlands Economic Development Corporation	Jonathan Lanford	540.969.6774

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

AECOM and Drone Life (Subcontractor) provided Comprehensive Consulting Services to the City of Covington, Alleghany County & the Alleghany Highlands Economic Development Corporation. The project was funded by an Appalachian Regional Commission Planning Grant from the Virginia Department of Housing and Community Development for planning, needs assessment, marketing, and infrastructure approach for the Alleghany Highlands Drone Zone destination. The destination will help promote the Alleghany Highlands area for the emerging drone industry for R&D, Training and Recreational purposes.

The primary elements of the comprehensive strategy included: 1) Business Plan; 2) Business Operations; 3) Marketing Plan; and 4) Infrastructure Land & Building Site.

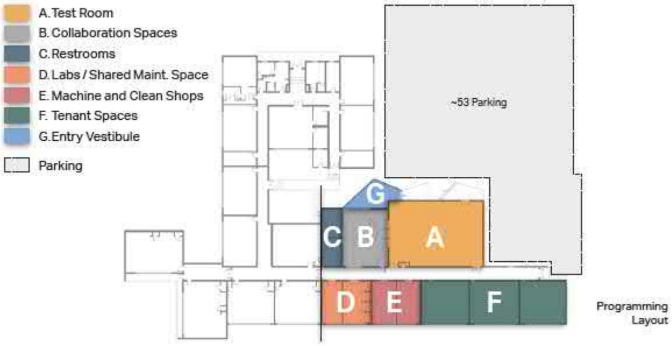
Key to the development of the strategy was engagement, collaboration and consensus building amongst a broad range of stakeholders including local government, key community leaders, higher education institutions, industry experts, industry entrepreneurs, and related economic partners. These workshops were conducted in person and virtually to bring as many people together as possible.

Relevance to the City:

- ☑ Civil Engineering
- ☑ Marketing Plans
- ☑ Architecture
- ☑ Funding Procurement

Key Personnel: Shane Powers, PLP; John Wissinger, AIA, LEED AP; Ian Camper, PE

The facilities proposed to support the Drone Zone include an old School, Field Site, and an abandoned Mine. High level analysis of each facility was conducted in order to ascertain the approximate level of investment required to meet the objectives for the project. Investment in each site will be phased as funding allows and consistent with the growth of the Drone Zone.



Sky View of Edgemont Elementary School

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT			
	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	**4**

21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Carilion Clinic Center Master Services Agreement Roanoke, VA	2018	Ongoing

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Carilion Clinic Center	Curtis Mills	540.981.7001

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

For more than 20 years AECOM has provided comprehensive design services for Carilion Clinic, meeting their needs for feasibility studies, small one room renovations and large new construction projects. All civil and utility infrastructure ensures that all buildings are fully services and resilient.

Center for Research, Simulation and Patient Safety: AECOM provided design services and construction administration services for the renovation of the Trolley Barn located at 15 Old Woods Avenue in Roanoke, VA. The historical trolley maintenance warehouse was re-purposed to accommodate the Carilion Simulation Center in approximately one half of the building footprint and provisions made for future use in the other half. The project includes the interior renovation area of approximately 10,620 DGSF to include distribution of existing engineering systems to support the new purpose.
The electrical design was able to make use of the existing power service. A high-end lighting design was used to celebrate the historical identity of the building. Security and telecommunication systems were also provided. Task orders included the following.

OPM Laboratory and Hokie Wellness Renovation: DS & CA services for renovation of a portion of the second floor of Riverside One in Riverside Center to include space for VTCRI MEG Lab and other spaces. The lab will include shielding requirements; 5,000 s.f.

Riverside 1 Bickle Suite Upfit: offices, meeting rooms and dry laboratories; 3,500 s.f.

Riverside One Medical Office Building Biosciences Suite Upfit: AECOM provided services for the Riverside One Medical Office Building (MOB) Biosciences Space upfit. The Virginia Tech Carilion Research Institute (VTCRI) is renovating an area of the 2nd floor of Carilion Clinic's Riverside One MOB, which is adjacent to the VTCRI building, to be upfitted for additional faculty offices and collaboration space for the Department of Biomedical Sciences. AECOM prepared a draft sketch of the proposed layout for the new upfit, which totals approximately 5,000 square feet for the new suite and associated corridor.

Relevance to the City:

☑ Surveying
☑ Civil Engineering
☑ Architecture and Interiors
☑ Mechanical Engineering
☑ Electrical Engineering
☑ Communications
☑ Security
☑ Geotechnical

Key Personnel: Shane Powers, PLP; John Wissinger, PE, AIA; Daniel DiMarco, AIA, LEED AP BD+C; Ian Camper, PE; Andy Freeland, PE, LEED AP; Mark Lawson, PLS; Mark Garland, PE; Michael Lauman, PE; Kyle Dobbins; Mary Silcox

Riverside 3 Generator Study: AECOM prepared a generator study for Carilion Riverside Clinic.

Translational Biology Medicine & Health Upfit: AECOM provided programming, planning and design services for a new College of Health Sciences for Virginia Tech (VT). The college was originally conceived by the director of the Virginia Tech Carilion Research Institute (VTCRI) and approved by the VT Board of Visitors in 2013. The College of Health

Sciences needed a new home for the inaugural class of 30 students slated to arrive in Roanoke in August 2014. Having successfully completed the VTC Research Institute in 2010, as well as several laboratory customizations for newly hired principal investigators since then, AECOM was selected to program, plan, and develop construction documents for this fast-paced, 6,000-square-foot project that needed to be open in less than seven months.

The design included a collaborative student area, a large lecture room, medium and small classrooms, audiovisual room, offices, break room, and support spaces. Sustainable design principles were also incorporated into the design. The facility is a higher education space with high quality finishes that are both durable and aesthetically pleasing. A rich color palette was developed that emphasized accent walls to provide a vibrant environment that would stimulate learning and collaboration. Carpet and acoustic ceiling tiles were used and the walls were designed to mitigate sound transfer. These features help provide an acoustically quiet environment that will support the facility's mission.

Simulation Center Concept Study: AECOM provided conceptual design services for a new 12,000 sf Simulation Center at the Virginia Tech Carilion (VTC) School of Medicine and Research Institute. VTC needs to expand its simulation training capabilities and identified Riverside 1 Medical Office Building, which is adjacent to the school and research center, as a possible location for the new Simulation Center. To assist VTC in obtaining state funding, AECOM programmed and developed a concept design and cost estimate for the new Simulation Center as part of a package submitted to the state to start approval process.

Health Sciences and Technology Expansion Building: AECOM provided architecture and engineering planning and design services for the Health Sciences and Technology Expansion Building at Virginia Tech's growing Roanoke Campus. This initial study was used to secure funding through state to begin the project in 2016.

Feasibility Study for Hospital Expansion: AECOM provided architecture and engineering planning and design services for expansion to the main hospital.


① **Virginia Tech Carilion School of Medicine and Research Institute (VTCRI PHASE I)**
As the gateway building to the academic medical campus, this 154,000 SF facility integrates laboratories, conference and classroom space, mock clinic spaces, offices and informal gathering spaces.


② **Biomedical Research Expansion Building (VTCRI Phase II)**
136,000 SF translational research building integrating thematic research areas with an imaging center, experiential learning and classroom areas and an experimental veterinary oncology treatment center.


③ **Institute for Orthopaedics and Neurosciences**
116,000 SF regional multi-specialty outpatient hub including orthopaedics, physical therapy and sports medicine, where integrated, and highly coordinated care is delivered while advancing translational research and educational initiatives in collaboration with Virginia Tech.


④ **Center for Simulation, Research and Patient Safety**
Transformation of Historic Trolley Barn into an advanced healthcare training environment which bridges the gap between the academic and clinical environment. It includes residential simulation space, operating rooms, trauma rooms, skills lab, classrooms and gathering areas.


⑤ **Carilion Medical Offices Building (Riverside 2)**
100,000 SF office and research building. It provides dedicated office space for Carilion and also tenant space for research and both start-up and established medical technologies companies.


⑥ **Carilion Clinics (Riverside 3)**
210,000 SF Outpatient clinic and Imaging Center; is housed under the largest green roof in the Roanoke Valley at 11,500 SF.


⑦ **Comparative Oncology Research Center for Virginia Maryland College of Veterinary Medicine**
Feasibility study for 16,500 s.f. of new clinical research space connected with adjacent Virginia Tech research building..


⑧ **Roanoke Memorial Hospital Addition Feasability Study**
Development potential study for a 920,000 SF addition comprising a new special imaging, ED, outpatient clinics, inpatient services and multi-level parking for up to 450 vehicles.


⑨ **Carilion Roanoke Community Hospital - Anatomy Teaching Labs**
Virginia Tech School of Medicine, Radford University and Jefferson College of Health Sciences collaborated to develop an interactive anatomy instruction suite including a flexible laboratory and an interactive briefing room.


⑩ **Carilion Clinic Riverside Parking Deck**
461,000 SF multi-level parking deck providing 1,480 vehicle spaces.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	**5**	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
Carilion Tanglewood Multi-Specialty Clinic Roanoke, VA	PROFESSIONAL SERVICES 2018	CONSTRUCTION (if applicable) 2021 est

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Carilion Clinic Center	Curtis Mills	540.981.7001

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

In 2018, Carilion Clinic selected AECOM to conduct a building assessment, followed by a feasibility study of a two-story, 130,000 SF, former J.C. Penney store located within a shopping mall, and the parking lot servicing the building, for potential use as a multi-specialty care clinical space. The study determined that the 50-year-old building's shell is generally in good condition and the structural framing is adequate to support the floor loading for a clinical occupancy. However, the existing systems — including electrical, mechanical, plumbing and fire protection — are aged and require replacement or upgrade to bring the facility up to current code standards. Available on-site parking and access adequately support the new use, and multiple options exist to develop the main entrance and patient drop-off area.

The AECOM project team surveyed the site and studied existing site elements to determine their suitability for reuse. Existing traffic patterns were analyzed and a new traffic pattern was designed for improved traffic flow and pedestrian safety, while also respecting the need for sufficient vehicle access to other retail tenants. Existing building entries were reconfigured with drop-off canopies and pedestrian waiting areas. New accessible parking areas and loading zones were created for enhanced patient access.

Fire, water and sewer services were replaced and reconfigured to improve the building's safety and current supply, with sufficient additional capacity built-in for future upgrades. Electrical and gas services were also upgraded, including the installation of an emergency standby generator.

Relevance to the City:

- ☑ Survey
- ☑ Civil Engineering
- ☑ Architecture and Interiors
- ☑ Mechanical Engineering
- ☑ Electrical Engineering
- ☑ Communications

Key Personnel: John Wissinger, PE, AIA; Mark Garland, PE; Andy Freeland, PE, LEED AP; Michael Lauman, PE; Kyle Dobbins; Mark Lawson, PLS; Daniel DiMarco, AIA, LEED AP BD+C; Mary Silcox

1A lighted translucent panel system illuminates the building's northeast corner, and green walls soften the facade.

Carilion Tanglewood Multi-Specialty Clinic 5

Existing and proposed stormwater systems were also studied to determine any existing points of inadequacy and utilize Nutrient Credit Banking for the most cost-efficient solution for compliance with Virginia Stormwater Management Program regulations. AECOM worked closely with the Western Virginia Water Authority, Roanoke County, VDOT and other project stakeholders throughout the design process to ensure agreement to the project approach.

Following the review of this study, AECOM was contracted as the designer-of-record to repurpose this former retail store into the new Carilion Tanglewood Multi-Specialty Clinic. The clinic will provide pediatric, ENT and plastic surgery services, as well as dental services for both children and adults. Outpatient procedures only will be offered at this clinic. Pediatric services to be provided include General, Adolescent, Physical Therapy/Occupational Therapy, Behavioral Health, Oncology, Endocrinology, Gastroenterology, Cardiology, Pulmonary & Allergy, and pre- and post-surgery clinical visits.

In February 2020, the AECOM project team began collaborating with leadership from pediatrics, dentistry, ENT, Audiology, and Plastic Surgery to develop a design that fits Carilion's goals and vision for the consolidation of all these services under one roof.

The project cost is estimated at $30 million, and the facility is anticipated to open in the summer of 2021.

The patient drop-off zone is designed for two or more vehicles at the entry canopy.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	**6**	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Virginia Tech A/E Term Contract Blacksburg, VA	Ongoing	Ongoing

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Virginia Polytechnic Institute and State University	Erich Roscher	540.629.3689 (mobile)

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

AECOM has provided services for Virginia Tech for more than 40 years. In 2018 AECOM was selected again to provide architectural and engineering services to Virginia Tech under a one-year term contract with up to four annual renewals. We have already performed services for six project orders as part of this relationship.

Ambler Johnston Courtyard Renovation: Concept Design through Construction Documents and on-call construction phase services were provided for this transformational exterior project. The design transitions the poorly utilized courtyard across four phases of work into a desirable exterior space that supports a multitude of learning environments for this student residence hall. Drainage, accessibility and spreading capital costs across multiple fiscal years were important drivers.

Cochrane Hall Structural Study: AECOM performed site observation and assessment for structural integrity.

Temporary War Gymnasium: Provided select architecture and engineering services in collaboration with a civil engineering firm and a manufacturer of Fabric Tensile Structures. The gymnasium, large enough to contain four basketball courts was developed over the top of existing tennis courts. This low cost solution allowed the University to continue to provide student activity space while the main gymnasium undergoes a significant renovation

Miles Hall Renovations: Full A/E concept design, construction documentation and construction phase services are being provided for select renovations including the laundry room, accessible restroom and shower, student lounge and two bedrooms of this dormitory. Construction is scheduled to begin in May 2021

Payne Hall Mechanical System Renovations: AECOM has designed a full replacement system of the mechanical systems to this dormitory. Associated works involving architecture, interior design, electrical engineering and plumbing engineering are also being provided. Phase 1 of construction is scheduled for the summer of 2021.

Relevance to the City:

- ☑ Civil Engineering
- ☑ Architecture and Interiors
- ☑ Structural Engineering
- ☑ Mechanical Engineering
- ☑ Electrical Engineering
- ☑ Communications

Key Personnel: John Wissinger, AIA, LEED AP; Daniel DiMarco, LEED AP BD+C; Todd Wheatley, PE; Michael Lauman, PE; Kyle Dobbins; Mark Lawson, PLS; Brian Fisher, PE; Mary Silcox

Whittemore Hall Clean Room Renovation: The design of all support systems to accommodate three new specialized pieces of equipment as well as a new process chiller to cool six additional machines is included within the scope of this project.

These additional projects were also carried out during the term contract held between 2008 and 2012.

Norris Hall Study: AECOM was responsible for the design of the new space configuration for the second floor of Norris Hall through the design development phase.

Surge Space Building Upfit: The flexible design of the Surge Building allowed quick reconfiguration and additional benefits.

Working Drawings Review - Ambler Johnston Hall Renovation: Ambler Johnston Hall is a roughly 270,000 GSF, seven-story residence hall originally constructed in 1949. The building underwent a complete phased renovation. AECOM provided a peer review of the Working Drawings (95% complete) prepared by the Architect/ Engineer of Record.

President's Suite Renovation: AECOM designed renovations to Burruss Hall 210, the President's Suite and Conference Room. This included replacement of reception area, boardroom and corridor ceiling, along with light fixtures and mechanical system diffusers, as needed.

Randolph Hall HVAC Renovations: Randolph Hall was built in the 1950s. AECOM was tasked with designing chilled water air handling units to condition several classrooms and offices in the building.

VET MED Building Emergency Power Upgrades: AECOM designed a new 300kW generator and diesel fuel storage tank for hte exterior of the Virginia-Maryland Regional College of Veterinary Medicine (VET MED).

Additional Tasks include:

- A/E Design Services for Vivarium Feasibility Study
- RB26 MRI Feasibility Study
- VT Research Institute MRI Feasibility Study (a 1,565-square-foot MRI suite within an active veterinary hospital. The MRI is designed to be accessible to farm animals.)
- Virginia-Maryland Regional College of Veterinary
- Medicine Normal Power
- Virginia Tech Carilion Research Institute 3rd Floor Studies
- Lane Stadium Antenna Grounding
- FFE Design Packages for Virginia Tech/Carilion School of Medicine and Research Institute
- Bioinformatics Emergency Power and Redundancy Study
- Virginia Maryland School of Veterinary Medicine Emergency Power Upgrades
- Cassell Coliseum and Jamerson Hall Plumbing Study
- Cassell Coliseum Piping Replacement Design

Norris Hall

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	7	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Franklin Road Bridge Replacement Roanoke, VA	2016	2019

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
City of Roanoke	Mr. Luke Pugh, PE	540.853.5208

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

AECOM provided engineering services to the City of Roanoke for the project to replace the fracture critical bridge on Franklin Road over ten tracks of the Norfolk Southern Railway Company. This bridge is located in a constricted urban setting and serves as a gateway to the City's Old Southwest Historic District.

During the preliminary design phase, AECOM developed an evaluation of alternatives for the replacement structure, including various alignments and structure types from conventional curved girders to signature cable stay spans. A corridor study was conducted to ensure compatibility of the new structure with the City's long term planning goals. This evaluation included sampling and testing of selected substructure elements to evaluate their reuse in the new structure.

Final design phase services included bridge and roadway design, geotechnical investigation, sequence of construction plans, traffic management plans, stormwater management, intersection signalization, roadway lighting, and landscaping. AECOM developed renderings for the proposed aesthetic enhancements in support of public relations and served as the City's agent in co-ordination with Norfolk Southern Railway, and supporter approval by regulatory agencies such as Virginia Department of Historic Resources and the City's Comprehensive Land Development Review.

Relevance to the City:

- ☑ Survey
- ☑ Phase I Environmental Services
- ☑ Roadway Design
- ☑ Bridge Design
- ☑ Stormwater Management

Key Personnel: Scott Hodge, PE; Stuart Martin, PE; Ryan Fedak, PE, CFM; John Wissinger, AIA, LEED, AP; Rob Dean, PE

The replacement structure will carry three lanes of traffic with accommodation for pedestrian and bicycle users. The superstructure will consist of haunched steel girders and a concrete deck. Aesthetic enhancements include decorative railing, ornamental lighting, and decorative pylons at each end of the bridge.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	**8**	
21. TITLE AND LOCATION (City and State) **Storm Drain Installation at the Riverside Corporate Center** Roanoke, VA	22. YEAR COMPLETED PROFESSIONAL SERVICES 2011	CONSTRUCTION (if applicable) 2012

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Carilion Clinic	Curtis Mills	540.981.7001

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

AECOM was commissioned by Carilion Clinic to prepare a design for the Storm Drain Installation project located at the Riverside Corporate Center. The project involved coordination construction of 950 linear feet of 48" RCP storm drain piping from starting at Riverside Street running to the edge of Roanoke River. The property was owned by the City of Roanoke.

The piping alignment of the 48" pipe was established to take full advantage of clear paths and to preserve magnolia trees and to preserve the newly constructed Roanoke River levee. Great care was taken with align the piping while protecting the roots of the historic magnolia trees. Even greater protection had to be taken while penetrating the Roanoke River levee. This penetration required jacking and boring of approximately 80' of a 48" steel casing pipe.

Water flap valve requirements were very important for the success of the storm drain system. Tidal flap valves with precise adjustments were made to receive approval by City of Roanoke and USACE to release water into river. AECOM provided topographical and utility survey, existing structures elevations and easement preparation documentation for the City of Roanoke. After the project was complete, AECOM had to verify the existing structures elevations to confirm as-built conditions to meet the City's requirements.

There were numerous subsurface challenges that included existing utilities, abandoned utilities and fluctuating river flow elevations. AECOM prepared flow calculations and E&S documentation under the City of Roanoke design requirements.

As a part of the construction development phase, AECOM assisted the Owner with solicitation of bidders, review of the bids, RFI review, show drawing reviews, review and approval of payment request, periodic site observations with substantial and final inspections.

Relevance to the City:

- ☑ Survey
- ☑ Easements
- ☑ Civil Design
- ☑ Geotechnical
- ☑ Construction Administration
- ☑ Permitting

Key Personnel: Shane Powers, PLP: Andy Freeland, PE, LEED AP; Mark Lawson, PLS

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	**9**	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Route 11, 220, & 220A – Access Management Project at Exit 150 Botetourt County, VA	2014	2018

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Virginia Department of Transportation	Mr. Thomas Digiulian, PE, LS	540.375.3593

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

AECOM developed multiple alternatives for evaluation to solve current and future issues at the Exit 150 interchange to I-81 the interface with Route 11, and intersection with Route 220. Our team's alternative development and evaluation included coordination of traffic modeling, preliminary drainage design, and application of access management criteria. The final project included an alternative evaluation report with a recommended preferred alternative for use in an Interchange Modification Report. The project's final design is complete and included development of final construction plans for roadway, drainage, signal design, stormwater management (SWM), and roundabout design. AECOM assisted VDOT during construction.

Relevance to the City:

☑ PER
☑ Phase I and II Environmental Services
☑ Boundary and Topographic Survey
☑ Bridge Design
☑ Roadway Design
☑ Geotechnical
☑ Construction Administration

Key Personnel: Scott Hodge, PE; Stuart Martin, PE; Ryan Fedak, PE, CFM; Ian Camper, PE; Rob Dean, PE

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	**(2) FIRM LOCATION** ***(City and State)***	**(3) ROLE**
a.	AECOM	Roanoke, VA	Prime

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

20. EXAMPLE PROJECT KEY NUMBER	**10**	
21. TITLE AND LOCATION (City and State) **South Jefferson Redevelopment Area Virginia** Roanoke, VA	22. YEAR COMPLETED PROFESSIONAL SERVICES Ongoing	CONSTRUCTION (if applicable) Ongoing

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
City of Roanoke	Luke Pugh	540.853.5208

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

Project Overview

For more than 20 years AECOM has been providing services instrumental in the redevelopment of the South Jefferson area of Roanoke. AECOM first analyzed a development for 110 acres located south of Roanoke's central business district. AECOM also prepared development design guidelines and an assessment to assist local officials in determining "blight" conditions for other eligible properties. These properties were located on approximately 110 acres, 80% of which are within the 100-year Roanoke River flood plain. AECOM provided master planning and land use planning services, economic assessments and analyses, preliminary assessment of the flood hazard risk, and environmental hazard risk and structural evaluations.

The primary goal of this analysis was to promote private reinvestment and economic growth for the area. The plan has fostered positive economic development through a staged process of public/private redevelopment and/or rehabilitation throughout the entire area and along key corridors connecting to downtown Roanoke including the VT School of Medicine and Research Institute.

The plan also provided an urban development pattern that mitigates environmental risk and was compatible with the surrounding commercial and residential districts.

Riverside Campus Masterplan Update: AECOM performed master planning for the Riverside Medical Center. This vision of a new biomedical research center transformed 40 acres of blighted floodplain along the southern edge of downtown Roanoke and adjacent to Carilion Health Care Center. The plan accommodates over 1 million square feet (msf) of new clinical, education, research and office space around a central landscaped enclave of which more than half has now been built. A 1,400 car parking deck provides convenient parking and access to the campus pedestrian core. Development and architectural guidelines respond to the critical site issues, modulate scale and mass, and prescribe the architectural appearance of the campus to ensure continuity with the downtown fabric, context with the adjacent buildings, and cohesiveness among campus structures.

Relevance to the City:

☑ Master Planning

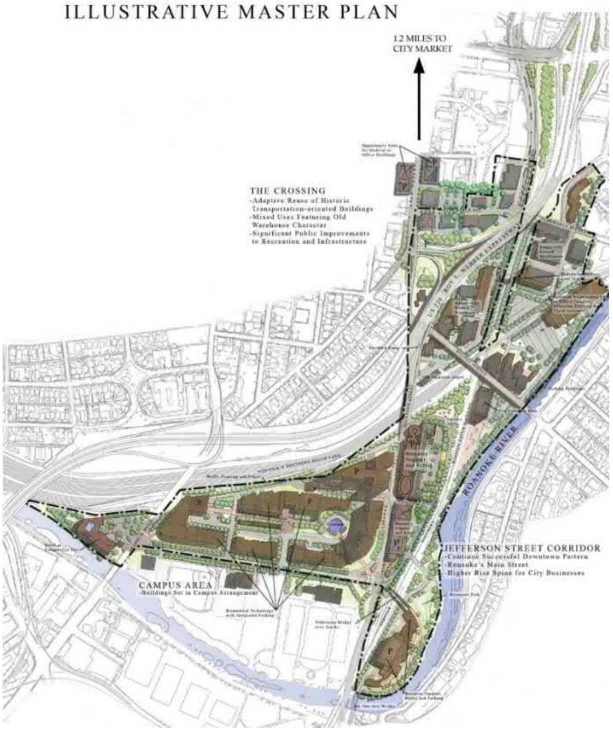
☑ Economic Assessment

☑ Structural Evaluations

Key Personnel: Shane Powers, PLP; Andy Freeland, PE, LEED AP; Mark Lawson, PLS; Scott Hodge, PE; Kyle Dobbins; John Wissinger, AIA; Daniel DiMarco, AIA, LEED AP BD+C

As each new building has been constructed AECOM has continued to update the stormwater masterplan to reflect the actual built condition and the requirement for the remaining developable land.

AECOM has also provided development studies for related parcels to determine the most advantageous sites for growth.



South Jefferson Redevelopment Area Virginia 10

	25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT		
	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a.	AECOM	Roanoke, VA	Prime

G. KEY PERSONNEL PARTICIPATION IN EXAMPLE PROJECTS

26. NAMES OF KEY PERSONNEL (From Section E, Block 12)	27. ROLE IN THIS CONTRACT (From Section E, Block 13)	28. EXAMPLE PROJECTS LISTED IN SECTION F (Fill in "Example Projects Key" section below before completing table. Place "●" under project key number for participation in same or similar role.)									
		1	2	3	4	5	6	7	8	9	10
Shane Powers	Contract Manager	●	●	●	●				●		●
Ian Camper	Quality Control		●	●	●					●	
Mark Garland	Civil Project Lead				●	●					
Scott Hodge	Transportation Lead							●		●	●
Brian Fisher	Plan Development & Utility Lead						●				
John Wissinger	Architecture Lead	●		●	●	●	●	●			●
Michael Lauman	MEP Services Lead	●			●	●	●				●
Andy Freeland	Stormwater E&SC Review Lead		●		●	●			●		●
Kyle Dobbins	Construction Mgmt & Resident Insp. Lead	●			●	●	●				●
Mark Lawson	Surveying				●	●	●		●		●
Stuart Martin	Traffic Studies							●		●	

29. EXAMPLE PROJECTS KEY

NO.	TITLE OF EXAMPLE PROJECT (FROM SECTION F)	NO.	TITLE OF EXAMPLE PROJECT (FROM SECTION F)
1	Alleghany County COVID-19 Renovations	**6**	Virginia Tech A/E Term Contract
2	E-911 Siting Study	**7**	Franklin Road Bridge Replacement
3	Drone Zone Comprehensive Consulting Services	**8**	Storm Drain Installation at the Riverside Corporate Center
4	Carilion Clinic Master Services Agreement	**9**	Route 11, 220, & 220A – Access Management Project at Exit 150
5	Carilion Tanglewood Multi-Specialty Clinic	**10**	South Jefferson Redevelopment Area Virginia

Introduction

We are a local firm with a global footprint; giving us the ability to provide the highest level of customer service and responsiveness coupled with extensive resources and expertise. AECOM has a local office in Roanoke, bringing the experiences of more than 170 professionals to serve the needs of the City of Covington (the City). In addition to our Roanoke offices, we have 9 other Virginia-based offices, which bring to the table over 2,000 professionals across all of our major business lines (water/wastewater, transportation, buildings and places, and environment). AECOM, as a worldwide provider of architectural and engineering services, has the capacity to serve the City with a full spectrum of services.

With AECOM's global reach of resources, we are able to extend our capacity to provide architectural and engineering services beyond our local footprint by accessing our depth of resources through our company-wide Technical Practices Network (TPN), composed of specialty work groups from various engineering and consulting disciplines. Our TPN is an invaluable resource that allows team members to solicit information and/or respond to inquiries on challenges that may have been encountered and addressed on similar projects anywhere in the world. AECOM's TPN is also available to our clients, where they can engage our experts to discuss solutions for their specific challenge.

Our History and Relationship with the City of Covington

AECOM, through its Virginia-based legacy companies, has been providing architectural and engineering services to local governments like the City since 1948. We have built a solid reputation by providing our clients with a wide-range of quality professional services to meet their many varied needs. We understand western Virginia and how to successfully partner with Virginia's local governments.

AECOM has a long standing relationship with the City and Alleghany County, and we look forward to continuing to partner with you by providing our architectural and engineering capabilities on upcoming public works and capital improvement construction projects

Whether boundary/topographic surveys, infrastructure, buildings, environmental, regulatory compliance, economic development services or transportation, AECOM has the experience and expertise to meet the City's needs as outlined in the RFP.

AECOM has prior experience in working directly in and for the City and Alleghany County. Below is a listing of some of the projects where AECOM has served the City and Alleghany County area:

- Renovation to County Courthouse
- VA P25 Radio System Project
- Drone Zone Project
- ADA Compliant Access – Alleghany County Courthouse Front Entrance Ramp
- Industrial Park Utility Analysis
- E911 Site Analysis and Center Development
- Water Storage Tank Recoating

- Lower Jackson River Regional Wastewater Treatment Plant (10 year multi-phase project)
- Fork Farm Road Bridge
- Jackson River Bridge (to BACOVA Guild)
- Bridge over the Jackson River (to elementary/middle school)
- PSAP Consolidation Studies – Virginia Information Technologies Agency (VITA)

Advantages to the City of Covington

Resource Control: By having AECOM staff primarily from our Roanoke operations provides these services, we can make sure that we have the right personnel with the right expertise, experience, and capabilities assigned to your projects. This will reduce the potential for conflicting demands. We are a Virginia firm serving Virginia clients.

Schedule and Cost Control: Having our primary team members based in Roanoke makes routine checks on project schedule and cost more efficient. All of our team members are within close proximity to each other. When project-specific tasks may require AECOM resources from outside the immediate geography, we will strive to engage these resources electronically.

Depth and Breadth of Resources: No one firm can provide the same level of local staff backed by the national resources of AECOM. There is virtually no project that the City might have that AECOM cannot perform.

Responsiveness: The majority of our team members are located in Roanoke, VA which is approximately one hour from the City's offices. Meetings, site visits, and emergency response can be accomplished quickly and economically. Day trips are not a problem.

Dedicated Staff: The project team members assembled for this Term Contract all have previous experience working the City or similar localities in the Commonwealth of Virginia. Some of these team members worked on the Renovation to the County Courthouse, Drone Zone, PSAP Consolidation Studies and Lower Jackson Regional Wastewater Treatment Plant projects.

Project Understanding

The Professional Engineering Services for General Services Term Contract Agreement RFP for the City of Covington will require specialized architectural, engineering, environmental, and surveying experience and expertise, and the ability to handle multiple task orders simultaneously. We have the resources and know-how to work such contracts and offer the following descriptions of our capabilities to provide the services listed in the RFP.

Surveying

AECOM's in-house surveying staff is well experienced in all level of surveying services and property mapping. In addition, we use current, state of the art equipment to produce accurate maps efficiently. Our level of experience covers a wide range of services, both regionally and internationally.

In addition, our survey staff in experience in FEMA mapping standards as related to FEMA elevation certificates. Our Roanoke survey staff has assisted our FEMA flood analysis and mapping staff by providing field measurements and data to determine bridge openings and stream morphology to assist in the development of FIRM maps.

AECOM is also experienced in alternative terrain data gathering methodologies such as LIDAR and drone mapping.

Feasibility Studies and Engineering Economic Analyses

AECOM has developed an extensive background and significant capabilities in the planning and preparation of Engineering Feasibility Studies. We have access, in-house, to virtually all required architectural-engineering discipline capabilities for completing a wide variety of feasibility studies. These studies have included such tasks as:

- Review and documentation of existing facilities
- Interpretations of existing facility construction documentation
- Assessment of condition and capacity of existing facility systems and components
- Assessment of environmental issues and concerns
- Permitting research and development
- Facility planning and programming
- Economic and cost-benefit analyses
- Cultural and natural resource delineations

Transportation Design and Study

AECOM has been a leader in transportation design and study projects for over 60 years, including rural and urban roadway projects. These projects include, but are not limited to, roadways on new locations and widening of existing roads. We also have extensive experience producing construction documents for our transportation projects. AECOM has provided the following tasks and design services for miles of roadway projects for the Virginia Department of Transportation and municipalities throughout Virginia:

- Horizontal and vertical alignment
- Maintenance of traffic and sequence of construction
- Pavement design
- Survey
- Property research
- Plat and easement preparation
- Utility designation and relocation
- Public involvement and public hearings
- Environmental permits

Many of our transportation projects have been completed under open-end contracts.

Building Design and Structural Analysis

Whether it's new construction, renovation or adaptive reuse, AECOM building designers create buildings that balance function and efficiency with aesthetic appeal. Because each project and client is unique, our design teams begin each assignment with a fresh perspective. From office buildings to educational facilities to museums, AECOM architects use a participatory approach to the design process, working closely with clients and stakeholders to develop an optimum design solution within an established budget. Through design workshops and one-on-one interviews, we gain a clear understanding of a client's needs and vision for a project.

As vital contributors to AECOM's building designs, our structural engineers are experienced designers of new stand-alone multi-story structures, building additions, and renovations to existing structures. In selecting structural materials, AECOM engineers strive to use the most economical material suited for the job, whether it is structural steel, cast-in-place reinforced concrete, prestressed concrete, post-tensioned concrete, timber, reinforced masonry, fiberglass-reinforced plastic or composite materials. AECOM structural engineers are skilled in solving all types of structural design problems, particularly in the area of building addition and renovation, including:

- Retrofitting existing buildings to increase load capacities
- New foundations on or adjacent to existing foundations
- Repair of deteriorating concrete and steel structures
- Adding new floors to existing buildings

AECOM has extensive LEED® (Leadership in Energy and Environmental Design) certified professionals who demonstrate the understanding of green building practices and principles, and familiarity with LEED requirements, resources, and processes. The LEED Green Building Rating System is a voluntary, consensus- based national standard for developing high-performance, sustainable buildings. By completing these requirements and attaining LEED accreditation, AECOM employees can provide sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

Stormwater Management

AECOM has prepared stormwater management plans and designed stormwater management facilities to mitigate the effects of watershed development by improving the quality of stormwater runoff and attenuating peak stormwater runoff rates. In implementing stormwater management criteria on a project, AECOM's experienced staff combines site layout with natural topography to maximize infiltration and reduce the amount of runoff. AECOM has also designed stormwater quantity and quality control devices including underground perforated pipes, infiltration trenches, retention ponds, extended detention ponds, and detention ponds.

Geographical Information Systems (GIS)

At AECOM, we use GIS technology internally to improve the quality and accuracy of the data we collect during our field investigations, to support our decision-making, and to provide consistent, dependable results through data analysis and graphic (map) representation. AECOM uses an integrated team approach to our projects; we assign GIS personnel to work directly with the environmental planners and engineers. Our team works together and with our client to determine what data is needed and how it should be collected, displayed, analyzed, and represented. In this way, each team member contributes from his or her area of expertise. This approach is reflected in our results: we bring accurate data and analysis methodologies to the people who have the practical experience to determine the best possible solution for our clients.

Environmental Design and Management Systems

Unlike many engineering firms, AECOM provides a wealth of experience in environmental site assessment and remediation. For Brownfields sites, AECOM offers these practical services: Phase I and Phase II environmental site assessments, underground and aboveground storage tank assessments and removal, meetings with regulatory authorities, meetings with economic development authorities, surveying, evaluations of asbestos-containing material, renovation of buildings and industrial processes, site planning, permitting, waste management, risk assessment, and corrective actions.

Wastewater Treatment Plants

AECOM provides pilot and treatability services, preliminary and final design, and construction-phase services for wastewater plants. AECOM has designed numerous, enhanced wastewater treatment plants with state-of-the-art advanced processes. Advanced treatment processes designed by the firm include combined and separate stage suspended growth nitrification, suspended-growth biological nutrient removal (BNR) for total nitrogen and phosphorus removal, nitrifying plastic media trickling filters, denitrifying filters, membrane bioreactors, biological aerated filters for denitrification and total nitrogen removal, single media, multimedia, and cloth media filtration, powdered and granular activated carbon adsorption, ultraviolet disinfection, and reverse osmosis. AECOM received an Honor award in 2013 by the American Council of Engineering Companies Virginia for the Lower Jackson River Regional Wastewater Treatment Plant Project.

AECOM has also prepared materials for EPA design seminars on nitrification and denitrification and prepared the EPA process design manual on upgrading existing wastewater treatment plants. AECOM is currently involved with research programs related to contaminants of emerging concern in collaboration with the Water Environment Research Foundation and the U.S. Geological Survey. AECOM is working with these organizations to develop cost-effective treatment technologies to mitigate and control the release of emerging contaminants into the environment and the water cycle. This work won the 2005 Platinum Award for research from the American Council of Engineering Companies. AECOM can also provide Process Safety Management and Risk Management Programs, O&M Manuals, and start-up assistance for water plants. As a full service A-E firm, we can complete all design in-house.

Wastewater Pumping Stations

AECOM provides designs for sewage pumping facilities with consideration of reliability, personnel safety, life-cycle cost- efficiency, expandability, and maintainability. Standardization of owner systems and local serviceability are always important design and pumping system selection considerations.

Sewerage System Master Planning

AECOM has completed dozens of preliminary engineering studies, facility plans, and river basin and municipal master plans, involving waste load allocation, projection of future sewer system demands, collection system sizing and alignment, and investigation of wastewater treatment alternative processes and locations. AECOM has worked closely with municipal planning and public works personnel and with state regulatory agencies to develop the guidance documents to define appropriate long-range sewerage services.

Interceptor and Sewage Collection Systems

AECOM has provided design for entire new sewage collection systems and for parallel and relief sewers. Pipeline sizes have varied from 8 to 66 inches. Projects have been located in urban centers, through developed property, and along environmentally sensitive streams and rivers.

Sewer System Rehabilitation

AECOM provides coordination and supervision of sewer system physical inspections, TV inspections, smoke testing, and flow monitoring services. AECOM rehabilitation designs have employed slip-lining, cured-in-place lining, pipe bursting, total line replacement, and spot repairs.

Water Distribution Systems

AECOM provides water distribution modeling and design of water transmission and distribution mains and water booster stations. AECOM has extensive experience with the design of water mains of all sizes.

Water Storage Tanks

AECOM provides design of ground-level, standpipe and elevated storage tanks, constructed of welded or bolted steel or concrete. We have designed water tanks having a capacity from 100,000 to 4 million gallons. Our related services have included tank rehabilitation, painting, and site plans.

Water Treatment Plants

AECOM provides pilot and treatability services, preliminary and final design, and construction phase services for water plants. AECOM utilizes conventional and state-of-the-art water treatment technologies, including compact treatment configurations, alternative disinfectants, and membrane filtration to define the site-specific, cost-effective solutions for our clients. AECOM can also provide Process Safety Management and Risk Management Programs, O&M Manuals, and start-up assistance for water plants. A full service A-E firm, we can complete all design in-house.

Construction Inspection

Our Roanoke Construction Support staff is ready to assist the City in all levels of effort during the construction process. Our years of experience in managing construction projects have found that the timely and efficient actions to address construction challenges are the pathway to a successful project. These challenges range from shop drawing and pay estimate reviews to dealing with conflict and change orders. We face these challenges head-on while keeping the City in the discussion. We have learned that listening and communicating are the keys to moving projects to completion.

AECOM has the capacity to provide the City with a full complement of architectural and engineering services across major business lines. Below, you will see general qualifications from each of our four key business lines.

Term Contract Experience

AECOM has completed hundreds of open-end term contracts for a variety of clients-including municipalities and authorities with numerous individually negotiated task orders. As a result, we understand the special characteristics of these contracts: short-notice, quick-response requirements, expedited delivery, and continuity of assigned personnel. Our local capabilities and experience allows AECOM to successfully meet these special project needs.

Site/Civil Engineering

AECOM has over 60 civil professionals living and working in Virginia, serving a wide range of clients. We create sustainable and integrated projects appropriate to our clients' goals. We provide comprehensive solutions for our clients and are experts in surveying, site design, grading, water resources, storm water control and treatment, and master planning. We offer integrated services for total project delivery, covering everything from grant/funding applications and initial environmental planning studies to detailed design, and construction management. We understand our responsibility to our clients and their citizens, and work to create, enhance, and sustain the world's built, natural, and social environments. AECOM offers comprehensive engineering to local municipalities. Our civil engineering capabilities incorporate expertise in:

- Surveying
- Master Planning
- Site Grading
- Roadway layout and design
- Utility design and coordination
- Storm water design and treatment
- Permitting/regulatory compliance

- Grants and funding application preparation and administration
- Inspection Services

Transportation

AECOM's transportation expertise falls within multiple sectors – highways and bridges, aviation, freight rail, transit, ports and marine, as well as strategic planning and advisory services. We deliver comprehensive services over the full life cycle of a project to benefit the local government and private industry clients that it serves. We have a genuine appreciation and understanding of the operating structures and business needs of the transportation industry. AECOM's transportation professionals are constantly looking for more efficient, safer, and sustainable ways to move people across cities, countries, and continents. Our Transportation capabilities incorporate expertise in:

- Roadway planning and design
- Preliminary Engineering Reports (PER)
- Greenways and blueways
- Traffic and signalization studies
- Bridge analysis, rehabilitation and design
- Public participation
- Drainage studies and design
- Hydraulic and hydrology studies (Flood Plain Analysis)

Buildings and Places

Creating innovative and practical building engineering designs, our experts ensure that every project meets and exceeds the expectations of clients and building users. Combining local market knowledge with technical expertise, our multidisciplinary approach to building design is based on the client's needs and business case to render cost-effective, functional, inspiring solutions.

We are known internationally for our creative, sustainable, and holistic design approaches which, from the outset, embraces low-carbon and economic operational performance. Our professionals around the world strive to deliver visionary buildings that maximize naturally occurring energy and minimize waste.

Our Buildings and Places professionals have extensive local government experience in:

- Municipal building renovations and expansions
- Emergency services buildings
- Public safety buildings
- Fire and rescue
- Public schools Courthouses
- Correctional facilities/jails
- Recreational facilities
- Construction Administration Services

Environment

AECOM's skilled engineers, scientists, and project specialists provide comprehensive environmental management services that meet client business and operational lifecycle needs for feasibility, impact analysis, and operational compliance as well as remediation, restoration, and reuse of impacted property. Daily we demonstrate global capabilities to manage the world's most complex and important projects. And our clients and their communities truly benefit from our innovative and proven solutions.

We also offer stream restoration services out of our Raleigh office. Our team of professionals have worked throughout the Southeast, and are ready to help the City. Our Environment business line specialized in:

- Stream Restoration
- NEPA documentation and permitting
- Environmental site assessments
- Environmental remediation
- Environmental permitting
- SPCC plan development

H. ADDITIONAL INFORMATION

30. PROVIDE ANY ADDITIONAL INFORMATION REQUESTED BY THE AGENCY. ATTACH ADDITIONAL SHEETS AS NEEDED.

Summary

Resource control: AECOM's staff of 185 engineers and designers in our Roanoke office provides the services requested by the City, we will have the right personnel with the right expertise, experience, and capabilities assigned to your projects. This deep bench will reduce the potential for conflicting demands.

Schedule and cost control: As previously noted, having our primary team members based in Roanoke makes routine checks on project schedule and cost more efficient. All of our team members are within close proximity to each other. When project-specific tasks may require AECOM resources from outside the immediate geography, we will strive to engage these resources electronically to save project dollars.

Depth and breadth of resources: No one firm can provide the same level of local staff backed by the national resources of AECOM. There is virtually no project that the City might have that AECOM cannot perform.

Responsiveness: The majority of our team members are located in Roanoke, VA which is approximately an hour from the City's offices. Meetings, site visits, and emergency response can be accomplished quickly and economically. Again, day trips are not a problem.

Dedicated experienced staff: The project team members assembled for this term contract all have previous experience working with the City or similar localities in the Commonwealth of Virginia.

I. AUTHORIZED REPRESENTATIVE THE FOREGOING IS A STATEMENT OF FACTS.

31. SIGNATURE Ronald B.	32. DATE February 12, 2021

33. NAME AND TITLE
Ronald B. Smith, Vice President

05

SF330 Part II

AECOM Imagine it. Delivered.

ARCHITECT – ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(If any)*

PART II - GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.	3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS)

2b. STREET 10 South Jefferson, Suite 1600			5. OWNERSHIP a. TYPE Corporation
2c. CITY Roanoke	2d. STATE VA	2e. ZIP CODE 24011	b. SMALL BUSINESS STATUS Large
6a. POINT OF CONTACT NAME AND TITLE Allen Crocker, PE, LEED AP, Vice President Operations Leadership			7. NAME OF FIRM *(If block 2a is a branch office)* AECOM Technical Services, Inc.
6b. TELEPHONE NUMBER 540.857.3100	6c. E-MAIL ADDRESS allen.crocker@aecom.com		

8a. FORMER FIRM NAME(S) *(If any)*	8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER
No firm name change during the last six years		

9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees (1) FIRM	(2) BRANCH	a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
02	Administrative	2,699	7	A05/A06	Airports; Terminals and Hangars; Lighting; Fueling	10
06	Architect	1,104	17	C15	Construction Management	10
08	CADD Technician	1,949	14	C18	Cost Estimating; Cost Eng. & Analysis	8
12	Civil Engineer	6,535	27	D02	Dams (Earth; Rock); Dikes; Levees	10
16	Construction Manager	739	2	D04	Design-Build – Preparation of RFPs	9
18	Cost Engineer/Estimator	913	3	E02	Educational Facilities; Classrooms	10
21	Electrical Engineer	1,011	18	E07	Energy Conservation; New Energy Sources	9
23	Environmental Engineer	1,166	1	E09	Env. Impact Studies, Assessments or Statements	10
24	Environmental Scientist	1,528	1	E12	Environmental Remediation	10
25	Fire Protection Engineer	45	6	G01	Garages; Vehicle Maint. Facilities; Parking Decks	7
29	GIS Specialist	363	1	G04	GIS: Development, Analysis, & Data Conversion	8
32	Hydraulic Engineer	37	2	H01	Harbors; Jetties; Piers; Ship Terminal Facilities	7
37	Interior Designer	82	12	H07	Highways; Streets; Airfield Paving; Parking Lots	10
42	Mechanical Engineer	1,114	23	H09	Hospital; Medical Facilities	9
48	Project Manager [subset of other disciplines]	[8,450]	[22]	M05	Military Design Standards	7
57	Structural Engineer	1,523	13	O01	Office Buildings; Industrial Parks	9
58	Technician/Analyst	4,250	18	P05/P06	Planning (Community, etc.; Site, Installation & Project)	9
60	Transportation Engineer	1,486	4	P12	Power Generator; Transmission	10
				R06	Rehabilitation (Buildings; Structures; Facilities)	8
				S04	Sewage Collection, Treatment and Disposal	10
		22,213	10	S05	Soils & Geologic Studies; Foundations	8
				S09	Structural Design; Special Structures	8
				S10	Surveying; Platting; Mapping; Flood Plain Studies	8
	Total (all AECOM entities)	48,757	**179**	S13	Storm Water Handling & Facilities	9
				T03	Traffic &Transportation Engineering	10
				W02/W03	Water Resources; Water Supply Treatment/Distribution	10

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS
(Insert revenue index number shown at right)

a. Federal Work	10
b. Non-Federal Work	10
c. Total Work	10

PROFESSIONAL SERVICES REVENUE INDEX NUMBER

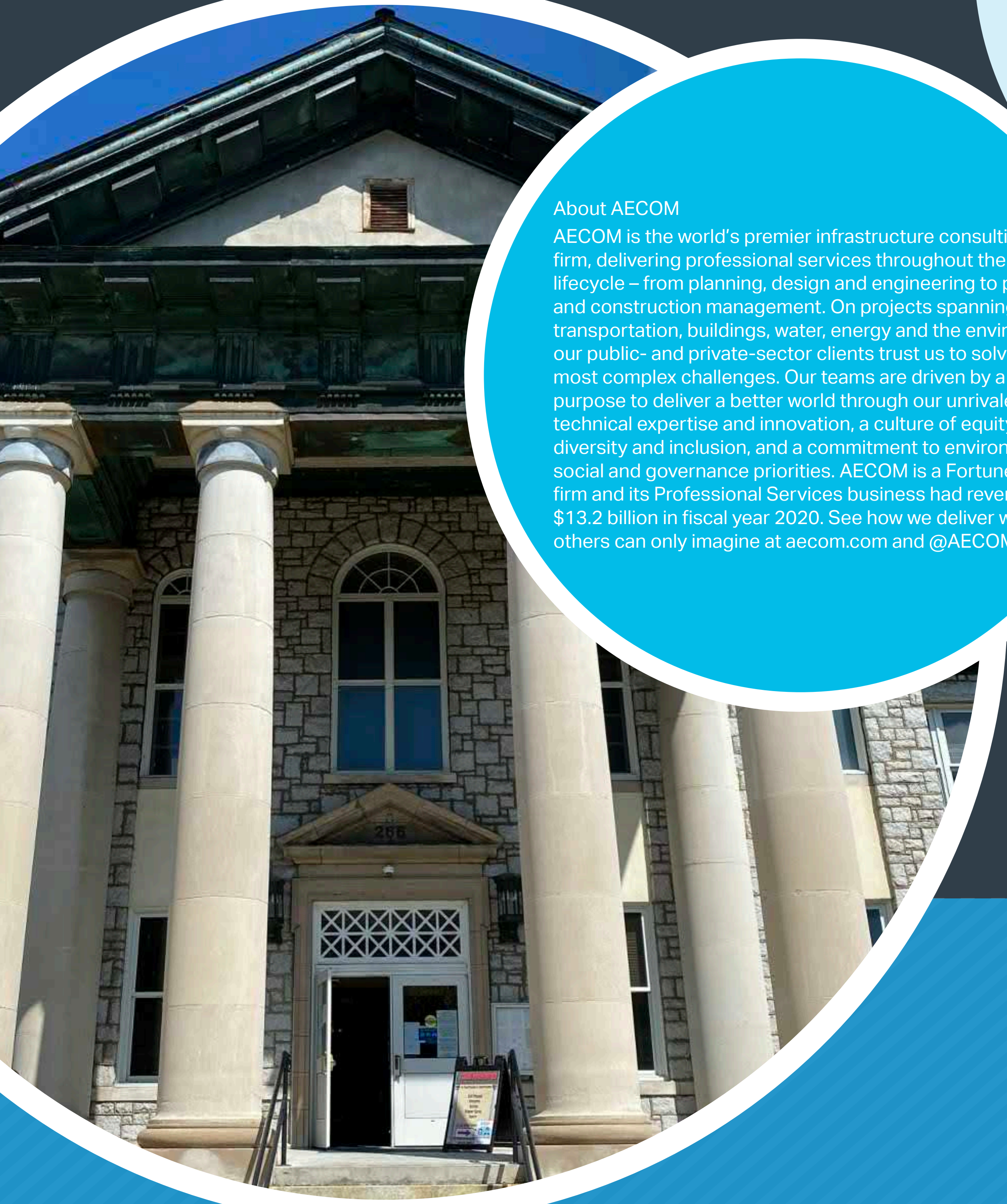
1. Less than $100,000
2. $100,000 to less than $250,000
3. $250,000 to less than $500,000
4. $500,000 to less than $1 million
5. $1 million to less than $2 million
6. $2 million to less than $5 million
7. $5 million to less than $10 million
8. $10 million to less than $25 million
9. $25 million to less than $50 million
10. $50 million or greater

12. AUTHORIZED REPRESENTATIVE
The foregoing is a statement of facts.

a. SIGNATURE

b. DATE
01 January 2021

c. NAME AND TITLE
Mark Handley, PE, Senior Vice President, National Governments



About AECOM

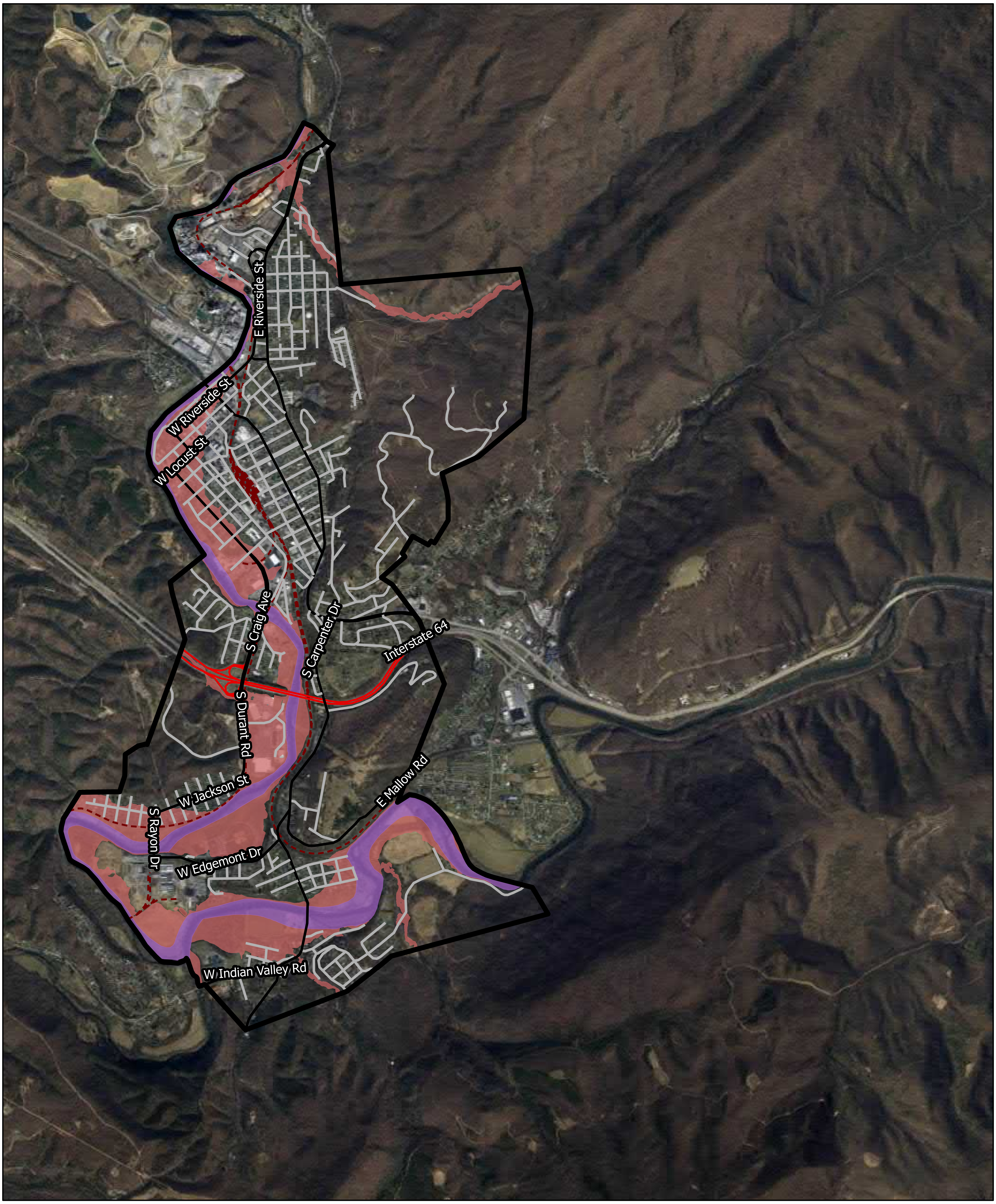
AECOM is the world's premier infrastructure consulting firm, delivering professional services throughout the project lifecycle – from planning, design and engineering to program and construction management. On projects spanning transportation, buildings, water, energy and the environment, our public- and private-sector clients trust us to solve their most complex challenges. Our teams are driven by a common purpose to deliver a better world through our unrivaled technical expertise and innovation, a culture of equity, diversity and inclusion, and a commitment to environmental, social and governance priorities. AECOM is a Fortune 500 firm and its Professional Services business had revenue of $13.2 billion in fiscal year 2020. See how we deliver what others can only imagine at aecom.com and @AECOM.

AECOM
10 South Jefferson St., Suite 1600
Roanoke, Virginia 24011

Attachment 4

Detailed Map of Project Area

City of Covington



4/1/2022, 3:48:54 PM

▭ City Limits

Road Centerlines

— Interstate 64

— Interstate Ramp

— Primary

— Primary

— Primary

— Secondary

--- Rail Lines

🟪 Floodway

🟥 FEMA Hazard Areas

1:36,112

0 0.33 0.65 1.3 mi

0 0.5 1 2 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Virginia Geographic Information Network (VGIN)

Print from WebGIS

Attachment 5

FEMA FIRM Maps for City

National Flood Hazard Layer FIRMette

FEMA

80°1'29"W 37°47'48"N

80°0'52"W 37°47'19"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	ı ı ı ı ı ı ı	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	〰 513 〰	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

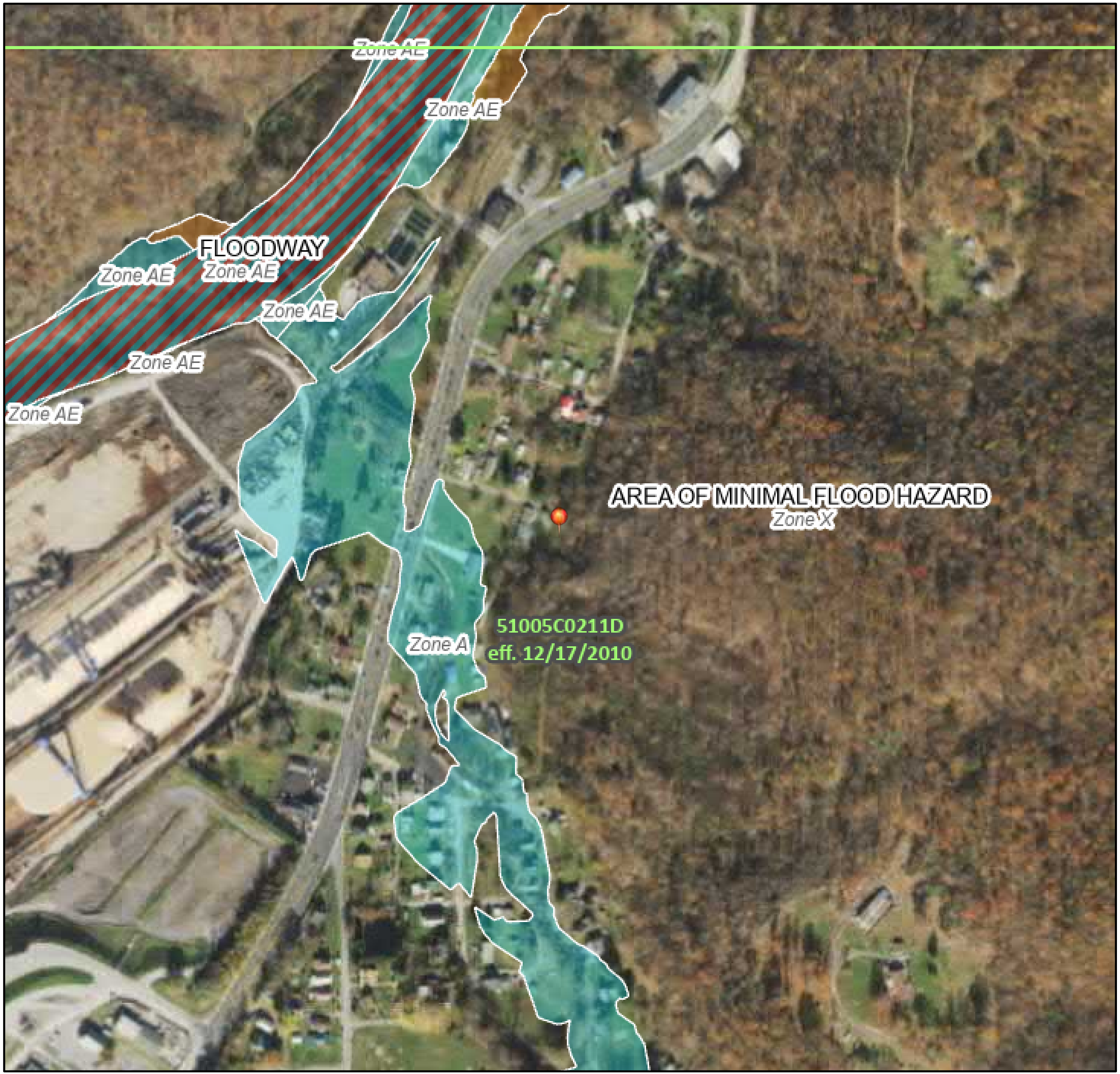
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/1/2022 at 4:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

79°59'31"W 37°48'46"N



79°58'53"W 37°48'18"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	▭	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	▭	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	▭	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— – – –	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	━	Limit of Study
	━	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	━	Profile Baseline
	━	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/1/2022 at 4:04 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

79°59'30"W 37°46'34"N

79°58'52"W 37°46'5"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
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OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	▭	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	━━	Limit of Study
	━━	Jurisdiction Boundary
	— — —	Coastal Transect Baseline
	— —	Profile Baseline
	——	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/1/2022 at 4:06 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 6

Consultant Proposal to Develop Drainage Study

AECOM
10 South Jefferson Street
Roanoke, VA 24011
aecom.com

April 1, 2022

Ms. Krystal M. Onaitis, MPA
City Manager
City of Covington
333 W. Locust Street
Covington, VA 24426
konaitis@covington.va.us

Proposal to Develop City-Wide Drainage Study for City of Covington, VA

Dear Krystal,

AECOM Technical Services, Inc. (AECOM) is pleased to provide you this proposal for select A/E services to support the development of a City-wide Drainage Study (Drainage Study) for the City of Covington (City), to be funded by a Round 3 Community Flood Preparedness Fund (CFPF) Grant administered by the Virginia Department of Conservation and Recreation (DCR). In addition to the Drainage Study, this scope of work includes assistance with updates to the City/s existing floodplain ordinance. This Drainage Study is a critical component to the development of the City's Resilience Plan, as the location, size and condition of the City's stormwater sewer is not fully known, and the City is subject to recurrent flooding due to inadequate and antiquated storm sewer systems. This proposal includes mapping of the stormwater sewer system, condition assessment, hydrologic and hydraulic modeling, and improvement scenario development. The outcomes of this Drainage Study will inform the City's Resilience Plan.

Background

Areas within the City of Covington, Virginia have historically flooded, including over two dozen roadways[1] in the City. This flooding is a health and safety concern for citizens of the City as emergency access routes are impacted by flood waters. In addition, riverine flooding of the Jackson River has occurred at all times of the year, and during all major floods, high velocity flood flows and hazardous conditions exist in the main stream channel and in some parts of the flood plain.

The City does not have their stormwater system mapped in GIS, and the condition of the system is unknown in most areas of the City. City personnel routinely provide reactive maintenance of the stormwater system when complaints are filed due to flooding. Damaged and deteriorated piping is commonplace throughout the City and is likely contributing to recurrent pluvial flooding. In addition, the impact of climate change on rainfall intensity must be factored into H&H modeling efforts to determine if capacity increases are needed.

---

[1] Source: Table 48 from the RVAC Regional Hazard Mitigation Plan

Scope of Services

AECOM will assist the City in development of a City-wide Drainage Study that aligns with the CFPF Study priorities, as listed in the Grant Manual. The following tasks are included and outlined below with a brief summary of services.

Task 1 – Storm Sewer Data Review and Surveying

Task 1.1 – Desktop Data Review and Digitization of Storm Sewer

Task 1.1 includes a review of existing data that is available for the City's storm sewer system. AECOM understands that some of the data available is in hard copy format and needs to be digitized. Sanitary sewer overflows (SSOs) are an ongoing problem, and the City is required to evaluate and correct inflow and infiltration problems within its sanitary sewer collection system and numerous studies and design work has been completed to investigate, inspect and separate the sanitary and storm sewer systems throughout the City. This task includes a review and digitization of available storm sewer data as the first step in the development of a City-wide storm sewer GIS layer.

Task 1.2 – Survey of Storm Sewer

Task 1.2 includes surveying to collect the location, size, inverts and material of major stormwater pipes, ditches, and other structures within the City limits. AECOM will utilize our Roanoke-based surveying crew to collect this information and translate the data for use in ArcGIS and CADD. AECOM has budgeted four weeks (320 hours) of a two-man surveying crew to collect stormwater system information within the study area and 160 hours to post-process survey data.

Task 2 – Storm Sewer Condition Assessment

Task 2 includes condition assessment of critical areas of the City's storm sewer system to identify clogged, broken, cracked, collapsed and otherwise damaged pipe and structures. Understanding the current condition of major pipes will be necessary to develop the H&H model for the City's storm sewer system and will allow the City to develop a prioritized maintenance program for their system. The exact length, size and quantity of stormwater pipes and structures in the City is unknown at this time, so for budgeting purposes, an estimate of $25,000 has been included in this scope for an infrastructure inspection subcontractor to provide CCTV inspections of critical portions of the City's system. At the conclusion of Task 1, AECOM will work with City personnel to identify locations of frequent flooding, maintenance requests and other key areas that will be inspected. The results of these inspections will not only inform the H&H model (Task 4) but will also be provided for the City to help prioritize system maintenance efforts and resource planning.

Task 3 – Evaluation of Regional Rainfall Data

An evaluation of historic regional rainfall data will be conducted to determine if changes in heavy rainfall and intensity are occurring over time in the Covington/Alleghany Highlands region of Virginia. This evaluation will use local and regional level stationarity assessment of historic rainfall data from gauges in Covington (NOAA Site ID 44-2041 and Site ID 44-2044) as well nearby gauges in Clifton Forge, Gathright Dam, Jordan Mines and Hot springs. Historic rainfall trends, along with projections of future changes in the Precipitation-Frequency Curve will be used to determine if modifications should be made to regional rainfall design guidance for key return periods. The deliverable for this task includes a technical memorandum summarizing the findings and recommendations for modifications to the City's rainfall design storm guidance.

Task 4 – Hydrologic and Hydraulic Model of Drainage Areas within City

Using the data collected under Tasks 1 through 3 and available LiDAR for the City, AECOM will prepare PCSWMM models to evaluate the hydraulic performance of the watershed and stormwater management system for the 2-, 10-, 25-, 50- and 100-year storm events using regional rainfall data and Jackson River flood level information. AECOM will use these SWMM models to confirm the locations where recurrent flooding events have been observed and determine if capacity limitations contribute to road flooding in the study area.

Two scenarios will be analyzed to include Scenario A - Existing Conditions (based on current conditions) and Scenario B – Scenario A with new infrastructure improvements (to be identified by AECOM in conjunction with the City). Under Scenario B, alternative improvement combinations will be modeled together; separate models will not be constructed for each possible combination of improvements. AECOM will work with the City to determine the desired level of service for system improvements.

AECOM will present the results of this modeling effort to the City in a workshop (see Task 7) for review and consensus. Modeling files will be provided to the City for future use.

Task 5 – Drainage Study Report Development

This task includes preparation of model documentation and a summary of modeling results and recommended system improvements. The results of the Drainage Study are intended to inform the City's Resilience Plan, and proposed storm sewer system improvement scenarios will be included as resilience projects in the Resilience Plan. AECOM will provide a cost estimate for each improvement project identified. The cost estimate will include costs for surveying, design and construction costs and permit applications preparation, if necessary. Land acquisition costs will not be included. AECOM will document cost estimates and the criteria matrix used in the development of prioritization plan for system improvements. AECOM will submit a draft Drainage Study Report to the City for review and comment. One round of comments is assumed, and a final Drainage Study Report will be provided in electronic and hard copy format.

Task 6 – Floodplain Ordinance Updates

This task includes a review of the current floodplain ordinance and development of recommendations to be considered by the City. The City of Covington is in the Upper James HUC 8 watershed, one of the only watersheds in Virginia that FEMA has not funded to study yet. There are no new FEMA floodplain maps in the works right now, but AECOM suspects that FEMA may fund this watershed in the next couple of years. The City may elect to incorporate recommended ordinance changes once FEMA completes their floodplain study.

Task 7 – Project Management and Meetings

This task includes the following:

- Recurring communication between the City and identified stakeholders including biweekly project status calls, emails and virtual meetings.
- Project management tasks include monthly invoicing and the development of progress reports.
- Quality control reviews of all deliverables and products prepared as part of this project.
- Assistance with the development of CFPF progress reports.
- Attendance at milestone meetings, including the following:
  - Kick-off Meeting (assumed to be virtual, one hour in length)

- Condition Assessment Results Meeting – Present the results of stormwater system inspections.
- Modeling Results and Improvements Identification Meeting – Present the results of the stormwater modeling efforts and preliminary list of identified resilience projects to City personnel and identified stakeholders.
- Public Meetings – present potential project information and solicit input from public on the list of storm sewer improvement projects.

Deliverables for this task include meeting agendas, meeting summaries, invoices, and progress reports.

Assumptions

1. City to provide GIS data available. The City does not currently have GIS data for the stormwater system.
2. The Resilience Plan is a planning level document and will not be stamped and sealed by a Virginia Professional Engineer (PE).
3. AECOM will not be providing site plans, landscaping plans or detailed design for any of the identified storm sewer improvement projects identified in the Drainage Study at this phase of the project.
4. Environmental permitting will not be performed.
5. LiDAR data is available for the study area.
6. Phase I, II, III Archeological Investigations are not included.
7. FEMA CLOMR or LOMR applications are not included.

Schedule

The notice to proceed is dependent on the timing of the CFPF grant awards. AECOM is prepared to commence work within two weeks of NTP from the City, and it is believed that all work include in this scope can be completed within one year from NTP. It is noted that this work will be coordinated with the Resilience Plan, as information collected as part of this Drainage Study will inform the Resilience Plan. The estimated schedule for project milestones is as follows:

- Kick-Off Meeting - within two weeks of NTP
- Public Meeting #1 – within eight weeks of the Kick-Off Meeting
- Publications and Documents Review – approximate 8-week effort, to commence upon receipt of all requested information.
- Condition Assessment Results Meeting – within six weeks of completion of condition assessment inspections of the storm sewer system.
- Proposed Projects Meeting – within 8 weeks of the completion of modeling efforts (combined with Resilience Plan projects meeting).
- Public Meeting #2 – within four weeks of the Modeling Results and Improvements Identification Meeting.

- Draft Drainage Study Submittal to City – within two months of the Public Meeting #2.
- Final Drainage Study Submittal to DCR – within 8 weeks of receipt of comments from City.

<u>Additional Services</u> <u>(available upon request)</u>

1. FEMA CLOMR or LOMR application support
2. Grant Writing and Grant Administration Support

Fee

AECOM will provide the above-described services for the lump sum fee of **$357,380**, as shown in the Task Breakdown table below.

Task	Labor Cost	Subcontractor	Expenses
Task 1.1 -Storm Sewer Digitization	$37,310		
Task 1.2 -Storm Sewer Mapping	$79,660		$1,080
Task 2 - Storm Sewer Condition Assessment	$20,360	$27,500	
Task 3 - Evaluation of Regional Rainfall Data	$22,200		
Task 4 - H&H Modeling of Storm Sewer	$84,160		$1,000
Task 5 - Drainage Study Report Development	$41,960		
Task 6 - Floodplain Ordinance Updates	$12,380		
Task 7 - Project Management and Meetings	$29,770		
Sub-Total	$327,800	$27,500	$2,080
Total Fee	$357,380		

We are eager to begin serving you on this unique project.

Yours sincerely,

N Slater

Ronald Smith
Vice President
AECOM
M: +1-793-0232
E: Ronald.Smith2@aecom.com

Noelle Slater
Project Manager
AECOM
M: +1-757-879-6279
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Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Final CFPF Applications -City of Covington Va. (EMAIL 1 of 2)

1 message

Patrick Madigan <pmadigan@covington.va.us> Fri, Apr 8, 2022 at 1:00 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Rebecca Nuckols <Rnuckols@covington.va.us>

Sir/Madam,

Attached to this email is one of two applications for the City of Covington.

This application package is for the Drainage Study.

Please don’t hesitate to contact me with any questions.

Respectfully,

Patrick J. Madigan, Sr.

Director of Public Works

City of Covington

333 W Locust St.,

Covington, Va. 24426

(O) 540-965-3911

(M) 540-759-4437

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7866K

CITY OF COVINGTON

333 W. LOCUST STREET, COVINGTON, VIRGINIA 24426

Thomas H. Sibold, Jr., Mayor
David S. Crosier, Vice-Mayor
William E. Carson Jr., Councilman
Raymond C. Hunter, Councilman
S. Allan Tucker, Councilman

Krystal M. Onaitis, City Manager
Mark C. Popovich, City Attorney

April 8, 2022

Ms. Wendy Howard-Cooper
Director of Dam Safety and Floodplain Management
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

RE: Authorization of City of Covington CFPF Capacity Building and Planning Application

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

Please accept this written correspondence as signed documentation authorizing the City of Covington's request for funding from Round 3 of the 2022 Virginia Community Flood Preparedness Fund (CFPF). As the City only recently became aware of this funding and does not have funding established in our currently budget, we respectfully request the Department of Conservation and Recreation waive our match requirement for Capacity Building and Planning.

The CFPF grant would enable to City of Covington to commence Resilience Planning and Capacity Building through the development of a Resilience Plan and funding of Certified Floodplain Manager (CFM) training for one City employee to ensure that the City has a Floodplain Administrator on staff. The Resilience Plan would pull together both local and regional initiatives in a project-based, City-wide effort to address both riverine and pluvial flooding issues. A Community Outreach Plan would be developed to solicit input on flooding concerns and proposed projects from residents and stakeholders. The City is also submitting a separate CFPF grant application to fund a City-wide Drainage Study, as the current undersized and aging storm sewer infrastructure contributes to recurrent flooding issues throughout the City.

Thank you for your consideration of this grant proposal. If you have any questions about this proposal, please contact Patrick Madigan at (540) 965-3911 or pmadigan@covington.va.us.

Sincerely,

K. Onaitis

Krystal M. Onaitis
Covington City Manager
(540) 965-6300
konaitis@covington.va.us

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
City of Covington, VA

Category of Grant Being Applied for (check one):

✓ **Capacity Building/Planning**

_____**Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510040

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Krystal Onaitis

Signature of Authorized Official:

Mailing Address (1): 333 W. Locust Street

Mailing Address (2):

City: Covington **State:** VA **Zip:** 24426

Telephone Number: (540) 965-6300 **Cell Phone Number:** (540) 958-3837

Email Address: konaitis@covington.va.us

Contact Person (If different from authorized official): Patrick Madigan

Mailing Address (1): 333 W. Locust Street

Mailing Address (2): ____________________

City: Covington **State:** VA **Zip:** 24426

Telephone Number: (540) 965-3911 **Cell Phone Number:** (The primary purpose of) Although 5,400 square feet of subaqueous land will be covered, the sills need to be slightly farther

Email Address: pmadigan@covington.va.us

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ☐ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Robens

NFIP Community Identification Number (CID#):(See appendix F

Is Project Located in an NFIP Participating Community? ☐ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☐ No

Flood Zone(s) (If Applicable): The project is located on the upper Ware River in Gloucester County. The low bank shoreline faces north-northwest and has an average fetch of 0.7 miles with a long fetch to the northwest of 1.3 miles. The tide range is 2.5 ft. A marsh fringe with an eroding edge exists along the shoreline. To increase the level of shore protection and longer-term coastal resiliency, a living shoreline project was designed with 1 rock sill, sand fill, and Spartina patens and Spartina alterniflora marsh grass plantings. The structure (sill 4A) is part of a system designed for an overall living shoreline project on adjacent properties to provide shore protection with a reach approach. Coastal resiliency is enhanced by the reach approach because adjacent systems work together to provide an enhanced level of shore and habitat protection. Along the Robens properties, approximately 7,600 square feet

Flood Insurance Rate Map Number(s) (If Applicable): ______________________________

Total Cost of Project:
Gloucester-Mathews Gazette-Journal
P.O. Box 2060
Gloucester, Va. 23061

Total Amount Requested From Rt. 17 take TC Walker Rd (Rt 629). Turn onto Zanoni Rd (Rt 626). Turn onto Riverside Dr.

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Covington, VA

Eligibility Information

Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	☐
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	☑
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	540
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
N/A	Match not required	✓

Capacity Building and Planning Eligible for Consideration	☑ Yes ☐ No
Applicant Name:	759-4437

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	55
Development of a new resilience plan.	**55**	55
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development.	**40**	40
Stakeholder engagement and strategies.	**25**	25
Goal planning, implementation and evaluation.	**25**	25
Long term maintenance strategy.	**25**	
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based **on [ADAPT VA's Social Vulnerability Index Score.)](#)**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		283

Appendix D: Checklist All Categories

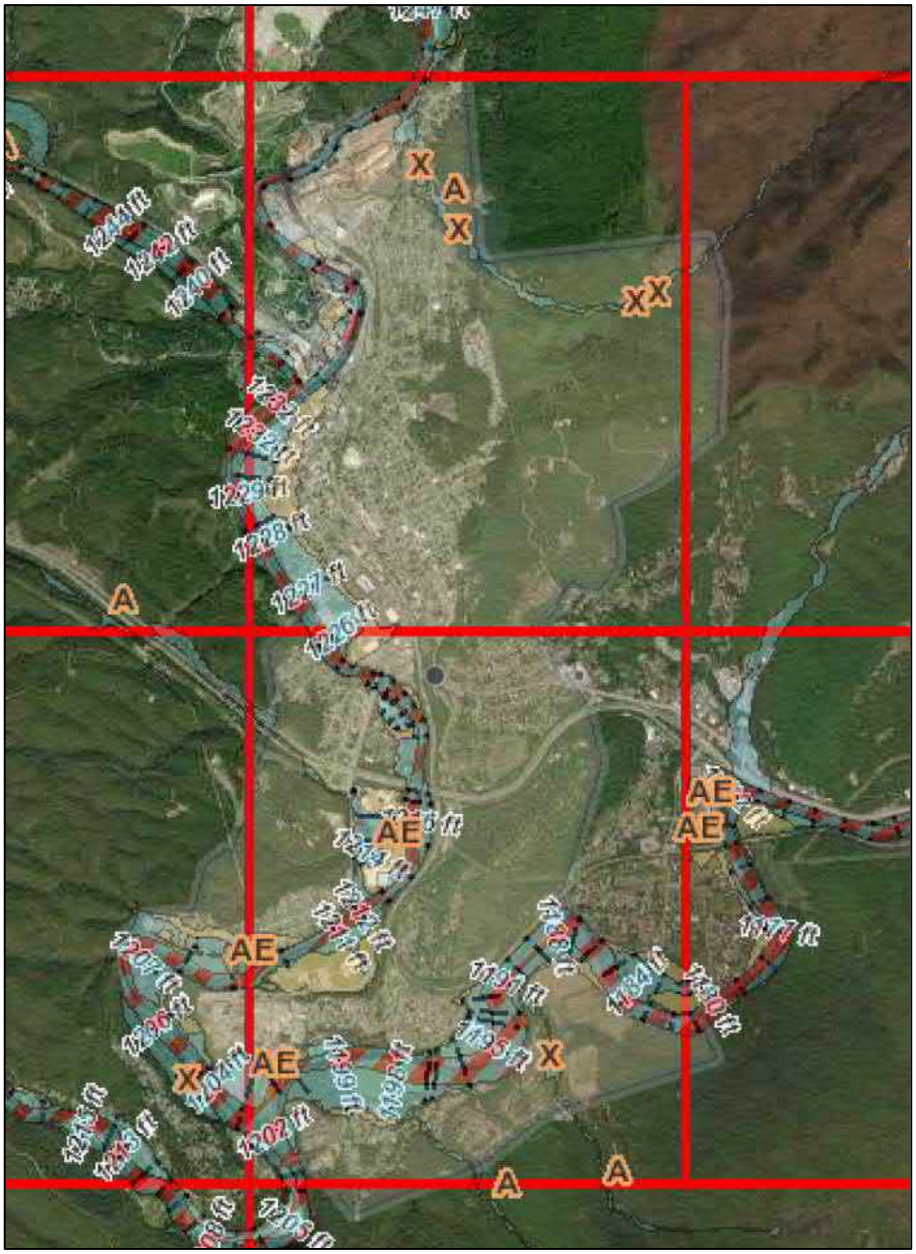
Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

Community Flood Preparedness Fund

Capacity Building and Planning Grant Application



City of Covington, VA
Community Identification Number: 510040
Submitted: April 8, 2022

THE CITY OF COVINGTON

1.0 Scope of Work Narrative

The City of Covington, Virginia is subject to riverine flooding from the Jackson River as well as pluvial flooding due to inadequate and antiquated storm sewer systems. The recurrence of higher intensity storms in recent years has stressed the stormwater conveyance system throughout the City causing local urbanized flooding that is detrimental to the residents and critical infrastructure. **Attachment 1** contains additional links, photos, and other documentation of flooding issues within the City.

The City plans to implement flood prevention and protection projects in areas that are subject to recurrent flooding as confirmed by a local floodplain manager. However, before these projects can be implemented, the City must first develop a Resilience Plan and provide training to a City employee to become a CFM. A Stakeholder Engagement and Community Outreach Plan will be implemented as part of the Resilience Plan development to capture input from the public about flooding concerns. Because of the lack of known information about the City's stormwater system, a City-wide Drainage Study is also needed to identify portions of the storm sewer system that must be upgraded or replaced to alleviate recurrent pluvial flooding from rainfall. The City has submitted a separate CFPF grant application to aid in the development of a Drainage Study, which will inform the Resilience Plan.

Limited resources in the City and a focus on sanitary sewer infiltration and overflow issues have prevented the City from investing in flood mitigation planning and project implementation. The City is a low-income geographic area, as defined in the CFPF Grant Manual, as an area where the median household income ($41,024) is significantly less than 80% of the local median household income ($76,398 in Virginia), according to the US Census Data in 2020[1]. Further, portions of the City are classified as Moderately Socially Vulnerable, according to the ADAPT Virginia's Virginia Vulnerability Viewer (see Figure 1 in **Attachment 2**). Finally, several areas in the City are designated as Qualified Opportunity Zones (see Figure 2 in **Attachment 2**).

The City understands that the CFPF grants must be used in accordance with the following guiding principles:

- Acknowledge climate change and its consequences; and base decision making on the best available science.
- Identify and address socioeconomic inequities and work to enhance equity through adaptation and protection efforts.
- Utilize community and regional scale planning to maximum extent possible, seeking region-specific approaches tailored to the needs of individual communities.
- Understand the fiscal realities and focus on the most cost-effective solutions for the protection and adaptation of our communities, businesses, and critical infrastructure. The solutions wilt, to the extent possible, prioritize effective natural solutions.

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[1] https://www.census.gov/quickfacts/fact/table/covingtoncityvirginia,VA,US/PST045221

- Recognize the importance of protecting and enhancing nature based-solutions in all regions, natural coastal barriers, and fish and wildlife habitat by prioritizing nature-based solutions.

1.0 Assess Capacity Needs and Assets

The City of Covington has identified the following resource needs:

- Financial – both a Resilience plan and an in-house Floodplain Administrator/Certified Floodplain Manager are required for any project implementation funding through the CFPF. Although there is a clear and documented need, the City does not have these items specified in the FY2021-2022 budget.
- Human – the City does not currently have a CFM on staff, but the City is planning to hire a new staff member that could be enrolled in CFM training. Therefore, the City is requesting funding to train a new City employee to become a Floodplain Administrator.
- Technical Assistance – The City is seeking a CFPF grant to execute a contract with a Consultant to develop a Resilience Plan. Once adopted, the Resilience Plan will be incorporated into the City's Comprehensive Plan and elements of the Resilience Plan will be included in the next update to the regional Hazard Mitigation Plan.
- Training – The City is requesting funds to provide CFM training for a City employee. In addition, the Community Outreach Plan will include public education on flood risks and mitigation measures.

The City plans to train new staff and utilize the expertise of Consultants to develop, increase and strengthen the floodplain management knowledge and skills in the City. The City plans to build internal resources through continuing partnerships with the Roanoke Valley-Alleghany County Regional Commission and utilizing grants, loans, and other funding sources. Under the separate, Drainage Study CFPF grant application, the City plans to review and revise the City's floodplain ordinance and related policies.

2.0 Goals and Objectives

The goals of this project include:

1. Enable the City to provide training and certification for a new employee to become a Certified Floodplain Manager.
2. Utilize a Consultant to develop a community-wide Resilience Plan to lay the planning framework needed to address riverine and pluvial flooding throughout the City limits.
3. Engage and educate the public that are impacted by flooding in the City.

3.0 Stakeholder Identification, Outreach and Education Strategies

The City plans to work across departments to identify key stakeholders that need to be engaged during the development of the Resilience Plan. While the Department of Public Works will be leading the effort, representatives from other City departments will be engaged throughout the Resilience Plan development effort. The City plans to retain a Consultant to develop an Outreach Plan as part of the overall Resilience Plan development. Outreach strategies include inclusion of a Resilience Plan website, a survey to collect information from the public on flooding concerns and public meetings (in person and virtual) to solicit input from the public on proposed flood mitigation strategies and to provide general flood resilience education.

4.0 Implementation Plan and Timelines

The City will complete all requested grant activities within the 36-month timeline allowable for this cycle of CFPF grant funds. The completion of a City-wide Drainage Study is necessary to complete the Resilience Plan, as the stormwater improvement projects recommended in the Drainage Study will be incorporated into the Resilience Plan. The following timeline outlines the intended activity schedule:

- Round 3 CFPF Grant Applications Due: April 8, 2022
- Announcements anticipated by DCR: June 17, 2022
- Contracts in place for Consultant to Develop Resilience Plan: August 1, 2022
- New City employee to be enrolled in CFM Training within twelve (12) months of grant award announcement.
- Public Meeting #1 to be held by October 3, 2022 to solicit input from the public and key stakeholders
- Public Meeting #2 to be held within four weeks of the completion of the project identification effort (to be coordinated with the Drainage Study), estimated to be complete within one year of the project kickoff (August 2023).
- Final Resilience Plan to be submitted to DCR for review by February 1, 2024.

5.0 Responsible Parties for Capacity Building and Plan Development Process

The City of Covington, Department of Public Works, will be responsible for overseeing and implementing all grant activities.

6.0 Performance Outputs and Measures

Success will be measured by the presence of a new Floodplain Administrator/CFM at the City and the development of a Resilience Plan that will serve as a roadmap for the City to plan future projects and activities with a goal to improve the City's flood resilience.

7.0 Plans for Maintaining Capacity Over the Long Term

The City plans to maintain capacity over the long-term through the establishment of a Floodplain Administrator position. Projects identified in the Resilience Plan will be funded through the City's budget and supplemental grants and loans.

8.0 Supporting Documentation

- City of Covington Current Floodplain Ordinance: https://library.municode.com/va/covington/codes/code_of_ordinances?nodeId=PTIICOOR_APXBZO_ARTXIII-AFLDI
- Current Hazard Mitigation Plan: https://rvarc.org/community/hazard-mitigation/
- Current Comprehensive Plan: https://public.3.basecamp.com/p/UmJw2ghsfpj3enw4RDLGN43f

Budget Narrative

Per the CFPF Grant Manual, the following budget narrative was created for the activities contained in this grant application.

Task	Project Budget	Source of Estimate
CFM Training. Exam and Annual Dues	$165 – ASFPM Yearly Dues (3 years) $185 – ASFPM CFM Exam Fee (Member Rate) $120 – Biennial Renewal Fee (Member Rate) **TOTAL: $800**	ASFPM Certification Fee Schedule[2]
Resilience Plan Development	**$139,790**	Consultant Cost Estimate (see **Attachment 3**)
Total Requested Grant Amount	**$140,590**	

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[2] https://www.floods.org/certification-program-cfm/getting-certified/#cfm-fee-schedule

The total amount of funds requested is $140,590. Per the instructions in the Grant Manual (page 24), “for local governments designated as low-income geographic areas, 100 percent of the estimated total project costs should be included.” The City does not have cash funds available for a match, and requests full funding of this project, per the authorization letter signed by the City Manager.

Attachment 1

Evidence of Historic Flooding

Attachment 1 – Evidence of Historic Flooding in the City

News articles and videos documenting flooding:

June 2016:
https://www.wdbj7.com/content/news/Several-roads-washed-out-in-Alleghany-County-384157931.html

https://www.youtube.com/watch?v=Ik3jenZ9Cjk

https://www.counton2.com/news/historical-flooding-in-covington-causes-garage-fire/

September 2018:
https://www.youtube.com/watch?v=M3bCQ7zrPmk

Repetitive Loss Claims in City Due to Flooding:

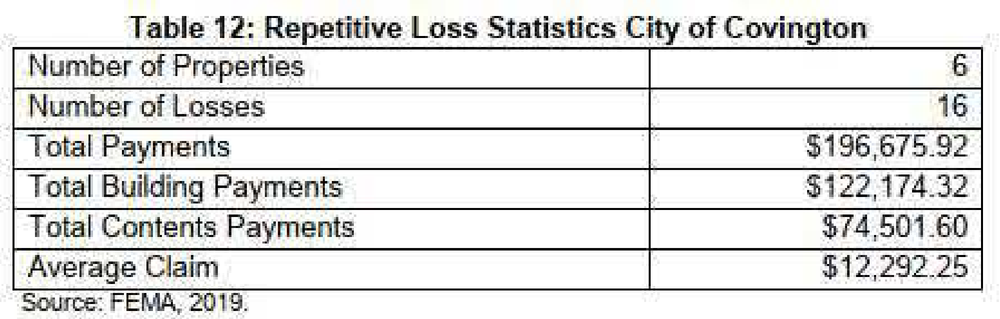
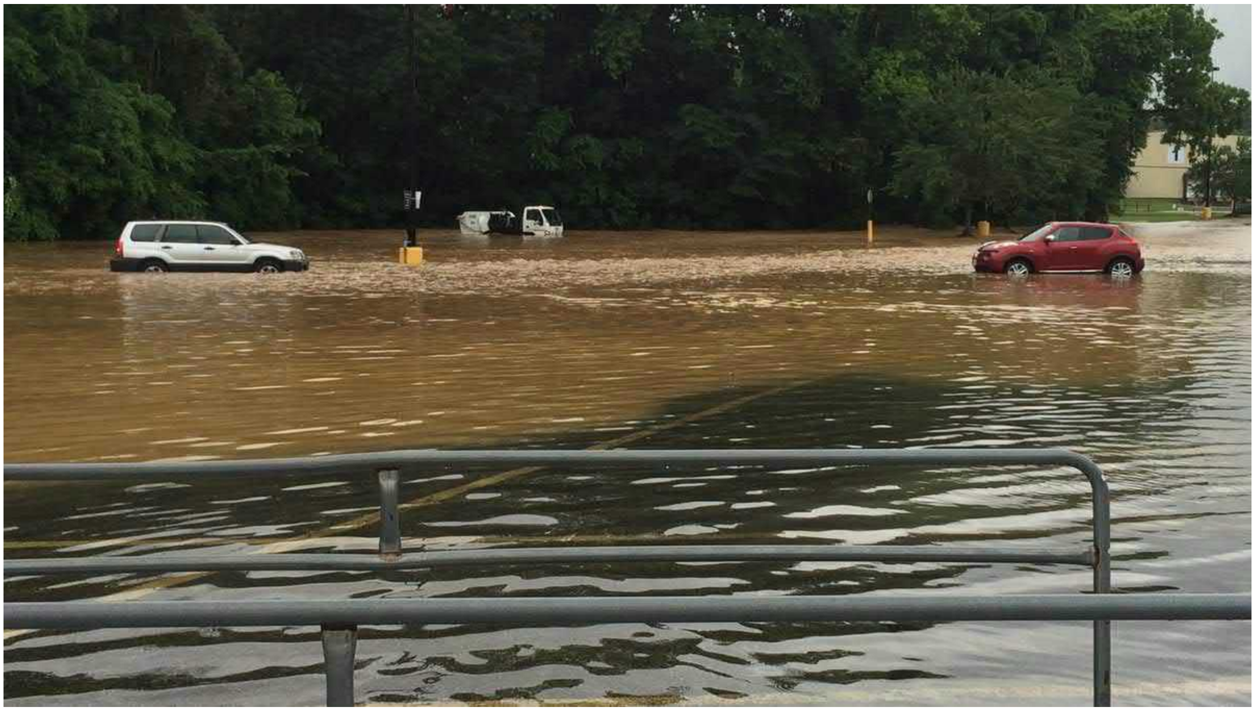


Table 12: Repetitive Loss Statistics City of Covington

Number of Properties	6
Number of Losses	16
Total Payments	$196,675.92
Total Building Payments	$122,174.32
Total Contents Payments	$74,501.60
Average Claim	$12,292.25

Source: FEMA, 2019.



Walmart Parking Lot (https://www.wdbj7.com/content/news/Several-roads-washed-out-in-Alleghany-County-384157931.html)

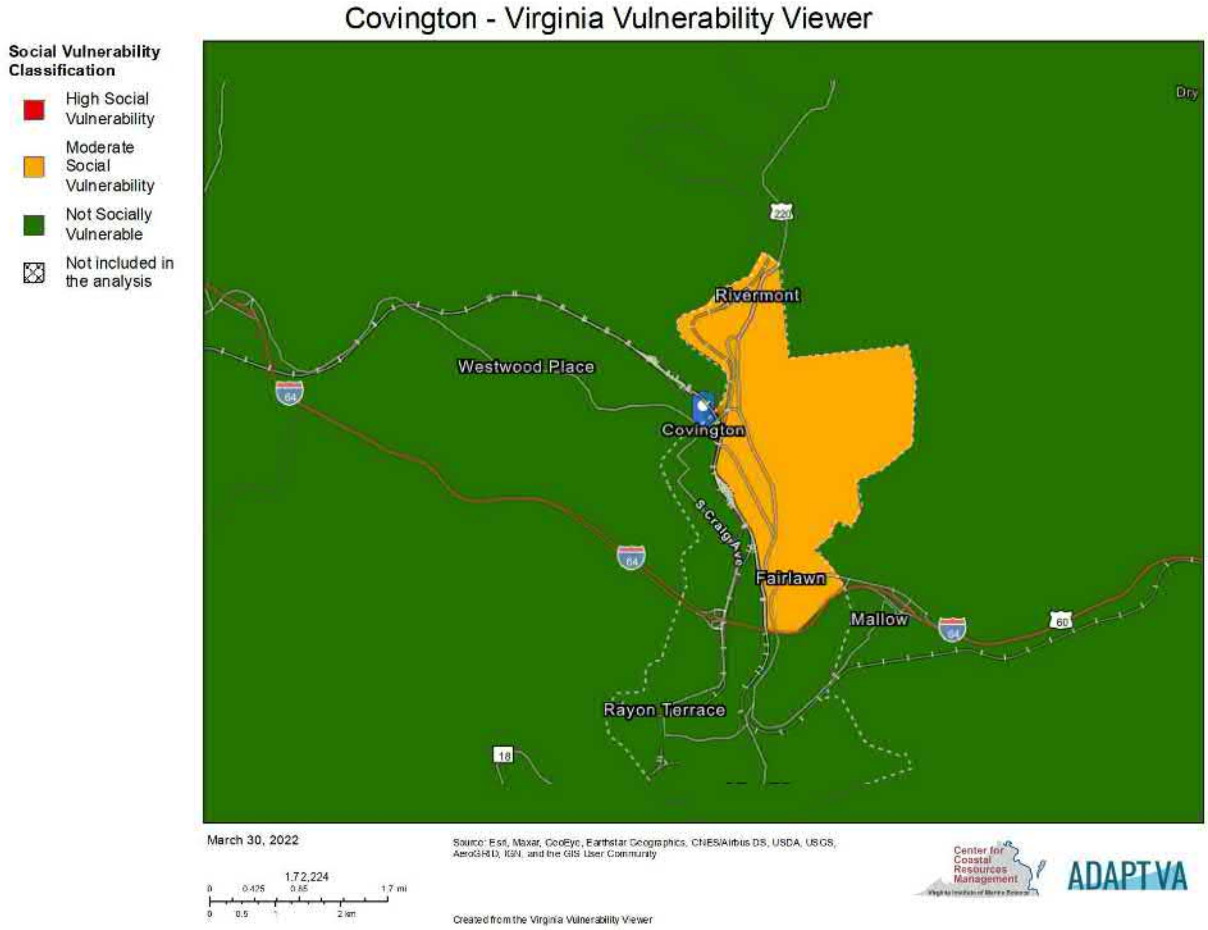
Underpass Flooding (Source: https://www.facebook.com/HighlandsMediaGroup/posts/1209223899532307)

Attachment 2

Virginia Vulnerability Map and Qualified Opportunity Zone Map

Attachment 2 – Social Vulnerability Mapping and Qualified Opportunity Zone Map

Figure 1: Social Vulnerability Map for Covington, VA

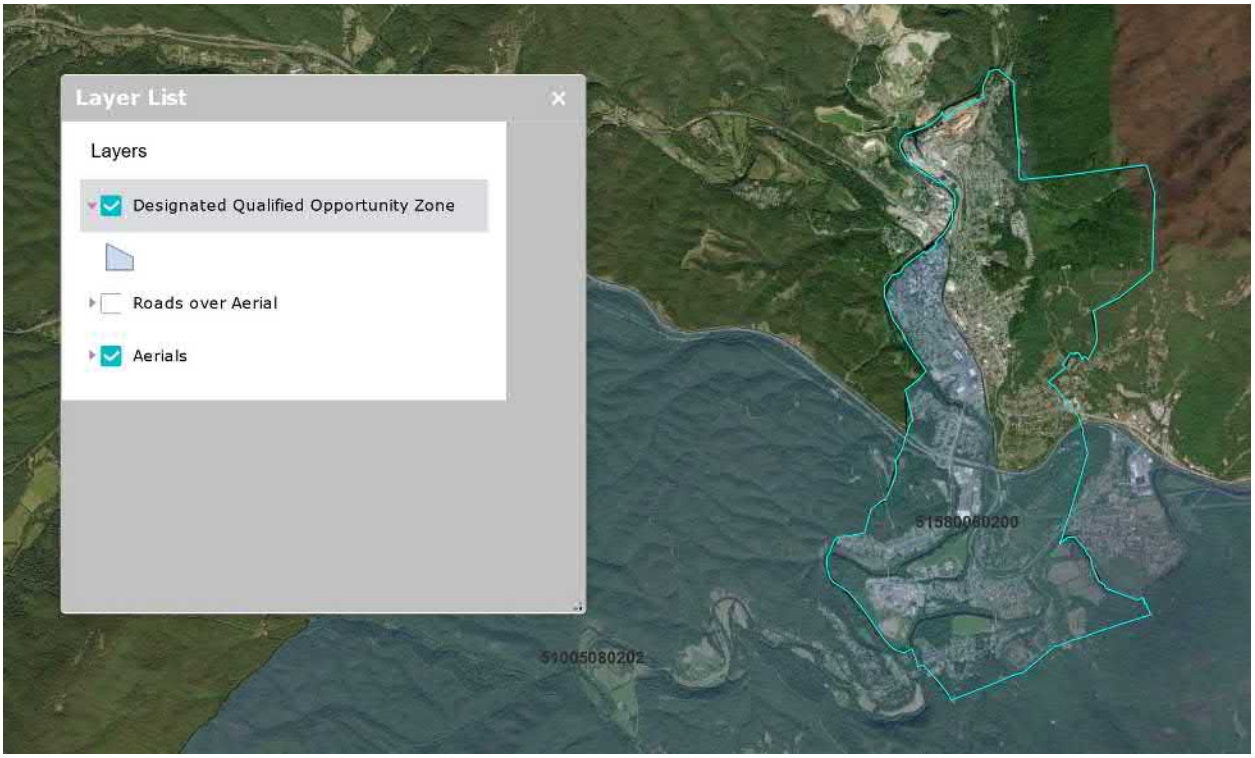


March 30, 2022

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Figure 2: Qualified Opportunity Zones Map for Covington



Attachment 3

Consultant Proposal to Develop Resilience Plan

AECOM
10 South Jefferson Street
Roanoke, VA 24011
aecom.com

April 1, 2022

Ms. Krystal M. Onaitis, MPA
City Manager
City of Covington
333 W. Locust Street
Covington, VA 24426
konaitis@covington.va.us

Proposal to Develop Resilience Plan for City of Covington, VA

Dear Krystal,

AECOM Technical Services, Inc. (AECOM) is pleased to provide you this proposal for select A/E services to support the development of a Resilience Plan for the City of Covington (City), to be funded by a Round 3 Community Flood Preparedness Fund (CFPF) Grant administered by the Virginia Department of Conservation and Recreation (DCR). The focus of this project is to work closely with the City to evaluate the vulnerability of public assets, utilities, roads and structures within the City to flooding from both the Jackson River and pluvial flooding caused by undersized and damaged drainage systems. The Resilience Plan will focus on the City's floodplains, current and planned gray and green infrastructure, and stormwater management, evaluate flood mitigation options and provide a path forward to allow the City to plan for improvements in the future.

Background

Areas within the City of Covington, Virginia have historically flooded, including over two dozen roadways[1] in the City. This flooding is a health and safety concern for citizens of the City as emergency access routes are impacted by flood waters. In addition, Riverine flooding of the Jackson River has occurred at all times of the year and during all major floods creating high velocity flood flows and hazardous conditions to exist in the main stream channel and in some parts of the flood plain.

Utilizing the proposed Resilience Plan, the City will have a strategy that will focus on upgrading, modifying, and installing new stormwater and flood control practices in strategic locations within the City. The development of the Resilience Plan will be guided by social equity data and principles as it related specifically to this effort. The development of a City-wide Drainage Study is also needed to help inform the Resilience Plan. The City is applying for a separate CFPF grant to fund this Drainage Study. The Resilience Plan will aim to implement nature-based

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[1] Source: Table 48 from the RVAC Regional Hazard Mitigation Plan

solutions to the maximum extent practicable to mitigate current flooding as well as increase resilience to future flooding situations.

The City, in conjunction with AECOM, will develop the Resilience Plan. The City currently lacks the capacity or in house expertise to undertake this effort singularly and thus outside resources are required for the completion of this task.

Scope of Services

AECOM will assist the City in preparing and adopting a Resilience Plan in accordance with the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund[2]. The Plan will include the five Commonwealth Planning Principles established by the Virginia Coastal Resiliency Master Planning Framework, which was published in October 2020. This proposal has been divided into seven tasks. Each task is outlined below with a brief summary of services.

Task 1 – Publications/Documents Review and Vulnerability Analysis

As part of Task 1, existing documents will be reviewed including the Roanoke Valley-Alleghany Regional Commission (RVARC) Hazard Mitigation Plan (August 2019)[3], existing GIS datasets, the City of Covington Comprehensive Plan (2015-2035)[4], Covington Municipal Code, Covington Floodplain Management Ordinance, existing utility mapping and other relevant documents. This task also includes a discussion with City personnel to identify specific locations where flooding regularly occurs and where projects are planned that should be included in the Plan. Finally, this task will include a review of the current and available revised FEMA Flood Insurance Studies (FIS) and Flood Insurance Rate Maps (FIRMs), repetitive loss data (if available) and information related to social and economic vulnerability.

Task 2 – Stakeholder Engagement and Community Outreach Plan

AECOM will assist the City with stakeholder identification, engagement, and community outreach. This task is broken into two phases:

- Phase 1 will focus on initial engagement, education and soliciting feedback from the public and key stakeholders on flooding concerns throughout the City. A survey will be prepared, and a public meeting will be held to collect information from the public on flooding concerns, potential strategies and general flood resilience education.
- Phase 2 will focus on obtaining input from key stakeholders and the public on proposed resilience strategies through a series of three public meetings and informational brochures/flyers.

These strategies will include the development of a Resilience Plan website as well as public meetings/workshops to present potential flood mitigation projects and solicit input from the public on the Resilience Plan and their personal experiences with flooding within the study area. AECOM will develop display boards, handouts and provide up to two staff members for the two public meetings. In addition, AECOM will develop digital content for inclusion on the Resilience Plan website (to be developed by the City).

Task 3 – Adaptation Alternatives Analysis

AECOM will utilize the information collected and developed in Tasks 1 and 2, as well as the outcome of the City-wide Drainage Study to identify a list of conceptual flood mitigation and stormwater drainage projects that will provide a holistic approach to improving resilience

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[2] https://www.dcr.virginia.gov/dam-safety-and-floodplains/document/Round-3-2022-CFPF-Manual-final.pdf
[3] https://rvarc.org/community/hazard-mitigation/
[4] https://public.3.basecamp.com/p/UmJw2ghsfpj3enw4RDLGN43f

throughout the City. Projects that provide community-wide benefits while utilizing nature-based solutions will be prioritized and additional focus will be given to areas of social and economic vulnerability as defined in the 2022 Grant Manual for Virginia Community Flood Preparedness Fund. The following project types are anticipated for evaluation as part of this effort:

- Regional ponds
- Stormwater system improvements
- Floodwall implementation
- Residential and commercial building floodproofing
- Urban green infrastructure installation
- Restoration of floodplains
- Site specific nature-based solutions
- Acquisition of flood-prone properties

AECOM will conduct a feasibility analysis for each potential project identified to determine its viability. These evaluations are intended to serve as a planning level exercise and the conceptual projects are not intended to be used as engineering documents. Each conceptual project will include a project summary, potential benefits and constraints, estimated timeline for implementation, and preliminary Engineer's Opinion of Probable Construction Costs (EOPCC). AECOM will develop up to eight potential projects to include as part of the Resilience Plan.

Task 4 – Development of Draft and Final Resilience Plan

AECOM will develop the Resilience Plan in accordance with the guidance provided in the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund. The Plan will utilize information collected, identified and developed in Tasks 1-3 as well as the City-wide Drainage Study to provide a flood mitigation approach for the City that is in accordance with the following principles:

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
4. It includes coordination with other local and interjurisdictional projects, plans and activities and has a clearly articulated timeline or phasing for plan implementation.
5. Is based on the best available science and incorporates climate change and current flood maps.

AECOM will prepare a Draft Resilience Plan in electronic and hard copy format for review and comments by the City. Any necessary revisions from the draft submittal will be included in the Final Resilience Plan, to be submitted to DCR at the conclusion of this task. AECOM will address up to one round of City comments on the Draft Plan as well as one round of comments from DCR on the Final Plan.

Task 5 – Project Management, Coordination and Meetings

This task includes the following:

- Recurring communication between the City and identified stakeholders including biweekly project status calls, emails and virtual meetings.

- Project management tasks include monthly invoicing and the development of progress reports.
- Quality control reviews of all deliverables and products prepared as part of this project.
- Assistance with the development of CFPF progress reports.
- Attendance at milestone meetings, including the following:
  - Kick-off Meeting (assumed to be virtual, one hour in length)
  - Public Meeting #1 – goal of soliciting information from the public on the locations, severity and type of flooding that has been experienced in the study area.
  - Modeling Results & Resilience Projects Identification Meeting – Present the results of the stormwater modeling efforts and preliminary list of identified resilience projects to City personnel and identified stakeholders.
  - Public Meeting #2 – present potential project information and solicit input from public on the list of projects.
  - Resilience Plan Development Meeting – discuss the Draft Resilience Plan submittal and comments and develop strategy for Final Plan development and submittal.

Deliverables for this task include meeting agendas, meeting summaries, invoices, and progress reports.

Assumptions

1. City to provide GIS data available. The City does not currently have GIS data for the stormwater system.
2. The Resilience Plan is a planning level document and will not be stamped and sealed by a Virginia Professional Engineer (PE).
3. AECOM will not be providing site plans, landscaping plans or detailed design for any of the identified flood mitigation measures contained in the study in this phase of the project.
4. Environmental permitting will not be performed.
5. LiDAR data is available for the study area.
6. Phase I, II, III Archeological Investigations are not included.
7. FEMA CLOMR or LOMR applications are not included.

Schedule

The notice to proceed is dependent on the timing of the CFPF grant awards. AECOM is prepared to commence work within two weeks of NTP from the City, and it is believed that all work include in this scope can be completed within one year from NTP. It is noted that this work will be coordinated with the City-wide Drainage Study, as information collected during that effort will inform the Resilience Plan. The estimated schedule for project milestones is as follows:

- Kick-Off Meeting - within two weeks of NTP

- Public Meeting #1 – within eight weeks of the Kick-Off Meeting
- Publications and Documents Review – approximate 5-week effort, to commence upon receipt of all requested information.
- Resilience Projects Identification Meeting – within two weeks of completion of project identification effort (to be coordinated with Drainage Study).
- Public Meeting #2 – within four weeks of the Resilience Projects Identification Meeting.
- Draft Resilience Plan Submittal to City – within two months of the Public Meeting #2.
- Final Resilience Plan Submittal to DCR – within 4 weeks of receipt of comments from City.

Additional Services (available upon request)

1. FEMA CLOMR or LOMR application support
2. Grant Writing and Grant Administration Support

Fee

AECOM will provide the above-described services for the lump sum fee of **$139,790**, as shown in the Task Breakdown table below.

Task	Labor Cost	Expenses
Task 1 - Publications Review and Vulnerability Analysis	$17,410	
Task 2 - Stakeholder Engagement and Community Outreach	$31,620	$1,080
Task 3 - Adaptation Alternatives Analysis	$31,300	
Task 4 - Draft and Final Resilience Plan Development	$31,300	
Task 5 - Project Management and Meetings	$26,080	$1,000
Sub-Total	$137,710	$2,080
Total Fee	$139,790	

We are eager to begin serving you on this unique project.

Yours sincerely,

Ronald B.

N Slater

Ronald Smith
Vice President
AECOM
M: +1-793-0232
E: Ronald.Smith2@aecom.com

Noelle Slater
Project Manager
AECOM
M: +1-757-879-6279
E: noelle.slater@aecom.com

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Final CFPF Applications - Ready to Submit (EMAIL 2 of 2)

1 message

Patrick Madigan <pmadigan@covington.va.us> Fri, Apr 8, 2022 at 1:02 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Rebecca Nuckols <Rnuckols@covington.va.us>

Sir/Madam,

Attached to this email is the second of two applications for the City of Covington.

This application package is for the Resilience Plan.

Please don't hesitate to contact me with any questions.

Respectfully,

Patrick J. Madigan, Sr.

Director of Public Works

City of Covington

333 W Locust St.,

Covington, Va. 24426

(O) 540-965-3911

(M) 540-759-4437

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3758K

City of Danville
Community Development

Virginia Department of Conservation and Recreation
(DCR)
ATTN: Virginia Community Flood Preparedness
Fund (CFPF)
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Ken Larking, City Manager
427 Patton Street, Suite 403
Danville, VA 24543

RE: CITY OF DANVILLE PLEDGE AGREEMENT TO MATCH FUNDING FROM CFPF FOR CAPACITY BUILDING AND PLANNING, IF AWARDED

Dear DCR Review Committee,

The City of Danville enhanced Plan It Danville comprehensive plan update including sustainability and flood prevention, under the Virginia Community Flood Preparedness Fund (CFPF) Grant Program.

The total amount of the project is $1,421,100 of which the proposed CFPF share is 90 percent, a total of $1,278,990. The proposed Danville share is 10 percent, a total of $142,110. It is the intent of City to utilize City funding to fulfill the match requirements. The City will also contribute over $500,000 towards project beyond the match requirements.

As the contributor of the match, The City of Danville will pay the cash contribution during the agreement period. The source of funding for the cash contribution will be City funds. The contact information for the contributor's representative is Doug Plachcinski and he can be contacted at plachhd@danvilleva.gov, 434-799-5260.

Sincerely,

Ken Larking
City Manager

427 Patton Street | Danville, VA 24541 | 434.799.5260 | www.danvilleva.gov

City of Danville
Community Development

Virginia Department of Conservation and Recreation
(DCR)
ATTN: Virginia Community Flood Preparedness
Fund (CFPF)
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Ken Larking, City Manager
427 Patton Street, Suite 403
Danville, VA 24543

RE: CITY OF DANVILLE AUTHORIZATION TO REQUEST FUNDING FROM CFPF FOR CAPACITY BUILDING AND PLANNING

Dear DCR Review Committee,

This communication confirms the intent of the City of Danville to assume responsibility for implementation of the proposed enhanced Plan It Danville comprehensive plan update including sustainability and flood prevention, under the Virginia Community Flood Preparedness Fund (CFPF) Grant Program.

The total amount of the project is $1,421,100 of which the proposed CFPF share is 90 percent, a total of $1,278,990. The proposed Danville share is 10 percent, a total of $142,110. It is the intent of City to utilize City funding to fulfill the match requirements. The City will also contribute over $500,000 towards project beyond the match requirements.

Thank you for your support of the City of Danville. Your partnership is an investment in our effort to protect residents and critical systems in the City.

Sincerely,

Ken Larking

Ken Larking
City Manager

City of Danville
Community Development
Planning Division

I. Grant Application Information

The City of Danville, Virginia enthusiastically submits this Virginia Community Flood Preparedness Fund (CFPF) grant application. Attachments include completed copies of the CFPF grant application form and Capacity Building/Planning Scoring Sheet. When completed, this planning initiative will significantly advance the sustainability of the City's current comprehensive plan initiative but will also meet the five (5) Resilience Plan criteria outlined in the CFPF Grant Manual.

The timing of this grant request could not be more synergetic because Danville is embarking on a comprehensive planning process to recreate the City's policies and land use regulations with cutting-edge best practices that promote equity and nature-based systems so our community is sustainable for future generations. The City dedicated over $500k the Plan It Danville comprehensive plan initiative.

Danville will integrate the work necessary for a DCR-approved Resilience Plan into the current Plan It Danville comprehensive plan project so there is a seamless framework for implementing innovative, coordinated, cost-effective projects and programs that will reduce potential for flood damages and recovery time. This goal is ambitious but appropriately formulated to manage risk, losses, capital outlays, and future threats alongside a robust outreach program and developing staff capacity. This proposed work program and subsequent plan is based on a keen awareness how stress imposed on aging infrastructure by development pressures and rapidly escalating climate change.

Considerable emphasis will be placed on prioritizing hazard mitigation activities that use nature-based solutions to reduce flood risk, as noted repeatedly in the Scope of Work**.** The project scores 350 points on the CFPF scoring she—the maximum possible for a locality in good standing with the National Flood Insurance Program (NFIP).

Danville was battered with 5 presidentially declared disasters since 2018 with localized effects, including Hurricane Michael that killed citizens and cause millions in property damage in the City. Mitigating potential disaster, responding to inevitable disruption, and managing unprecedented growth and change necessitate the resources available through the CFPF grant program. The City requests $1,278,990, to go along with the $142,110 local match and over $500,000 in additional city funds for a total Comprehensive Plan with enhance sustainability and flood prevention investment of over **$1,921,100.**

This investment will build permanent local capacity for administering and improving floodplain management, energize the community about sustainability and mitigating climate change, and reorient City policies and programs around these concepts for the next generation. The investment will also springboard off recommendations in the recently completed 2021 Multi-Jurisdictional Hazard Mitigation Plan for the West Piedmont Planning District Commission. The existing Floodplan ordinance is on Municode.com and the current 2030 Comprehensive Plan in on the City's website.

Enhanced activities will fold into the existing Plan It Danville comprehensive plan initiative project administration.

II. Scope of Work Narrative

Danville regularly experiences challenging riverine flooding that impacts its community landmarks, its homes and businesses, and its historic downtown. However, the City has rarely had the means to proactively address flooding impacts and plan new approaches for the future. The Community Flood Preparedness Fund offers the City an opportunity to plan toward a more resilient future with sustainable staff capacity.

The City will implement flood prevention and protection projects and studies in areas that are subject to recurrent flooding. However, first the City must update internal floodplain management functions alongside DEQ MS4 permitting tasks and develop a Resilience Plan. All work funded by this application and subsequent projects will be to mitigate future flood damage and to assist the City with floodplain compliance administration while sustainably addressing climate change equally across all demographics.

The City is a low-income geographic area, as defined in the CFPF Grant Manual, as an area where the median household income ($37,147) is significantly less than 80% of the local median household income ($76,398 in VA), according to the US Census 2021 QuickFacts.

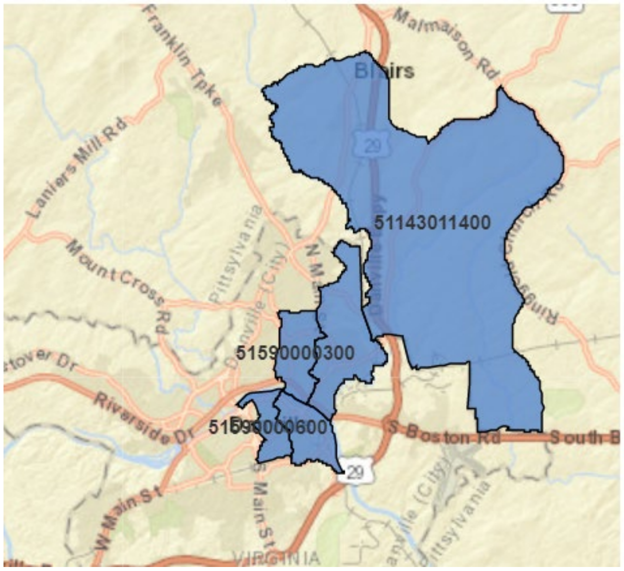


Figure - Danville's Opportunity Zones

Further, the City contains four (4) designated Qualified Opportunity Zones, shown to the right. Once the City's floodplain program is better established, priority will be be on community-scale hazard mitigation and nature-based solutions focused in the Opportunity Zones, when feasible.

Danville has never undertaken such a thorough, comprehensive look at land use planning, stormwater management, floodplain management, and resilience. City staff is fully engaged, and the City does not have additional in-house personnel, technical resources, and technical expertise available to adequately prepare the Resilience Plan elements so City projects will be eligible for future capital project funding.

Fortunately, the City is moving forward with a generational comprehensive planning initiative that has talented and skilled professionals under contract through qualifications-based selection processes. Our professionals experienced in stormwater management, community engagement, watershed planning, riverine flooding, resilience, computer modeling, funding, and engineering to develop additional resiliency components to enhance the comprehensive plan.

City officials will use input from these professionals and community stakeholders to shape the deliverables. The City will direct and manage the effort and provide recommendations for programs and projects. City staff and management will use the results of the utility feasibility analysis, ordinance reviews, system condition assessments, maintenance reviews, community feedback, design requirement recommendations, and capital project recommendations to align the City's implementation efforts with the anticipated needs.

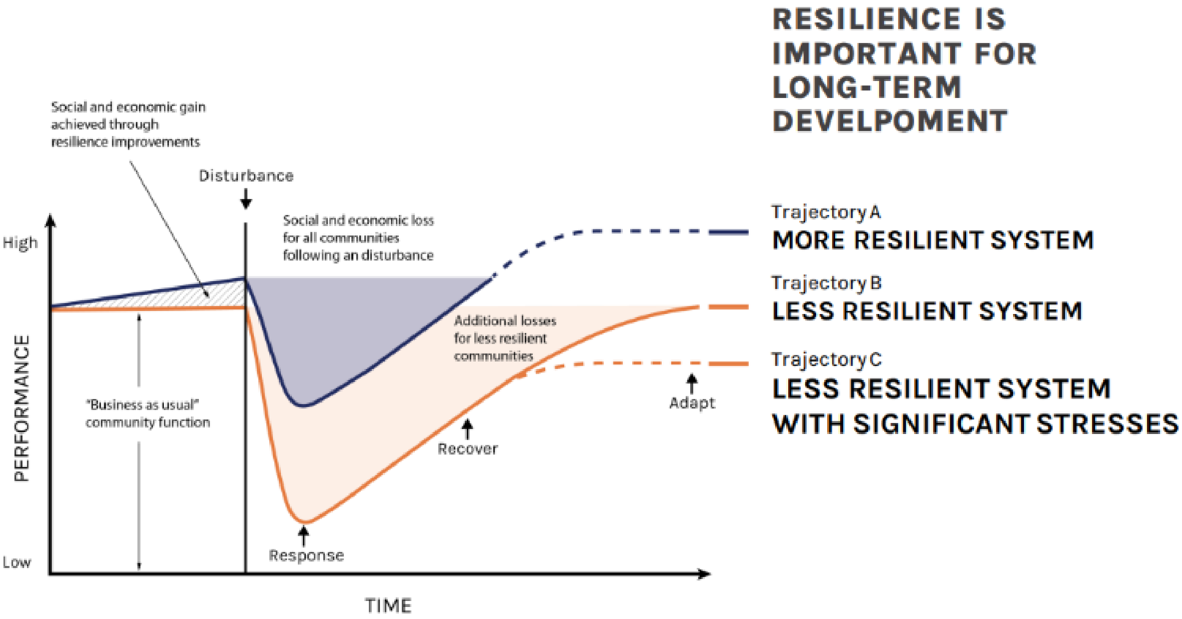
We organized the Plan It Danville initiative into six (6) major topic areas and will enhance all of them with the additional CFPF funding. Within each of these topic areas, this grant application indicates the additional capacity building and planning activities the resiliency planning grant will fund if awarded. Further, the Sustainability Planner funded by this grant will manage stormwater and floodplain management and outreach in concert with other City community-oriented services like healthcare workers, community policing officers, housing inspectors, and parks and recreation planning.

Lastly, and most significantly, the CFPF training will bolster a robust public outreach process that builds community capacity and understanding about the connections between sustainability and equity. This process will enrich out future local boards and commissions members as well as build communications conduits from our residents to Local Government. Key features of the enhanced engagement program include:

- Capacity Building
- Community Boosters
- Community Booster Coordinator
- Community Booster | Social Media Marketer
- Mobile Engagement Vehicle | Ethos Rover
- Project Storefront | Danville Mission Control Center
- Event Catering
- Project Advertising
- Project Communication Platform
- Community Events and Celebration

a. SUSTAINABILTY & RESILIENCE

Today, community resilience is referred to “as the ability to prepare for unanticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions” (NIST, 2021). Resilience is incredibly important to invest in ahead of any sort of unplanned disaster happening. The more a system is prepared, the less impact an unanticipated event will have in terms of disruption. The graphic to the right highlights a path for long-term development in terms of performance. Ideally, uninterrupted growth is the goal of any given area. Considering that unanticipated weather, economic, and public health events will likely occur, then the goal should be to minimize any potential dip in performance to build up additional capacity for preparedness as possible.



RESILIENCE IS IMPORTANT FOR LONG-TERM DEVELPOMENT

Adapted from model developed by M.E. Hynes, B. Ross, and CARRI (2008), presented at the DHS University Summit, Washington, DC

TRENDS

Danville’s current baseline review shows an area with complex, yet exciting, opportunities ahead of it when considering sustainable development. From a social and economic perspective, the area has a lingering legacy of inequity of income and socioeconomic status between specific groups that can disproportionately impact some demographics more than others. From an environmental perspective, the area has fluctuating weather patterns that point to significant changes in trends. The following elements will need to be mitigated Danville:

- **Weather changes including heatwaves, storm surges, severe flooding, and ecosystem loss.**
    - **Heat Hazard**: Average daily temperatures are expected to increase by 9.5 degrees from an average of 69.5 degrees (1961-1990) to around 79 degrees by 2020 exacerbating emission rates. The number of cooling degree days increased 2.4x from 1,330 days (1961-1990) to 3,183 days by 2020. These rates will continue to increase if climate focused interventions are not employed. Source: Climate Explorer NEMAC
    - **Drought**: In 2021, lower precipitation rates were recorded compared to normal year-to-date (YTD) metrics. In October 2020, Danville received a total of 43 inches of precipitation, ~5 inches more than normal YTD. While October 2021, the city received only 25 inches of precipitation. Indicating a dramatic shift in precipitation rates. Source: Climate Explorer NEMAC
    - **Precipitation Patterns**: More sporadic intense rain events, accompanied by less snowfall, increased winter rainfall, more inland flooding, and decreased summer rainfall

reflect more severe seasonal changes, that can impact agriculture and farming cycles. This can place a great deal of strain on existing infrastructure.

  - **Growing Degree Days:** Historically Danville's economy centered around agriculture. Specifically, the growth and production of tobacco products accounting for 4.78% of Danville's domestic production. While tobacco is no longer the leading product of Danville, local agriculture has the potential to continue to be a major economic driver for Danville. This is only possible if Danville can address the climate related issues such as the number of growing degree days. Source: DataUSA.IO
  - **Infrastructure Changes:** Aging or unused infrastructure along the Dan River, in Danville and adjacent cities, can cause public health, ecological, and financial challenges. However, there are political misgivings around the removal of the existing Dan River dams. Many residents want to keep the dams for the views they provide along the Riverwalk Trail. However, the dams are problematic and with their removal, the Dan River flow could increase and help mitigate major flooding and stormwater challenges the city faces. Improvements to the river could also provide much needed resiliency funding if the dams were to be removed. At the same time, trends in recent transportation data also show that investments in more regional systems could go a long way towards uplifting both environmental and socioeconomic goals.

- **Equity Changes:** Systemic resiliency can truly be achieved by carefully connecting the aspects of the comprehensive plan towards intentions across both social and environmental vulnerabilities. We can see how broader socioeconomic resilience can be created by intentionally identifying how local jobs and income-levels can be improved by removing the disproportionate cost-burden from daily activities on historically disadvantaged demographics. Reducing the available portion of income that goes to things like transportation, utility payments, and even food payments can play a huge role in pushing forward the capability of Danville residents to have more disposable income, and therefore, greater money to put towards wealth accumulation that can offset any unexpected expenses caused by unanticipated events.

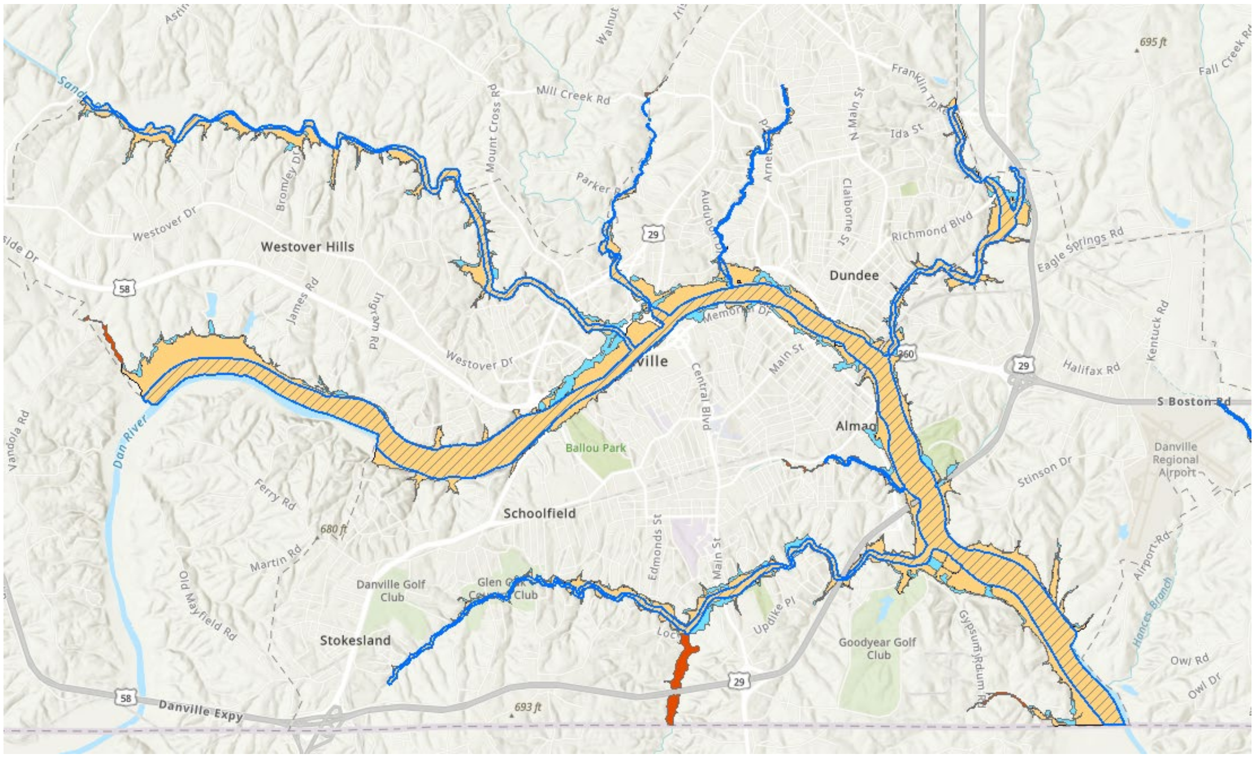
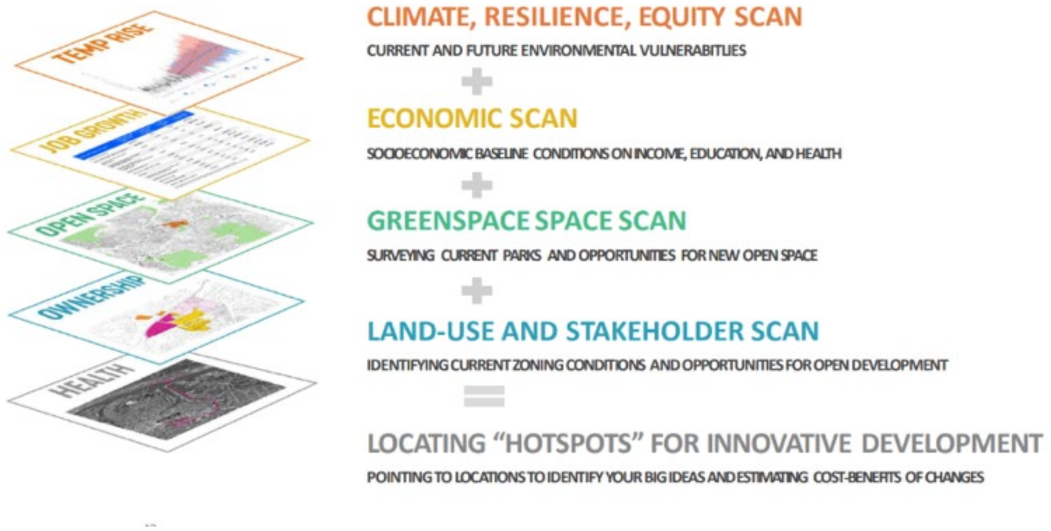


Figure 1- FIRM floodzones in Danville

OPPORTUNITIES

Each of the previously mentioned trends are also areas of opportunity. The following areas present the greatest areas of potential intentional opportunity creation that a broader comprehensive planning process can help to push forward in Danville. These include:



- Food- energy- water nexus: taking advantage of the local climate to create a center of environmental excellence in the region. Growing degree days still have a big impact on agriculture and food accessibility. However, due to drought and irregular weather patterns this does not directly equate to increased food production unless these three areas are managed and coordinated intentionally in planning. From the city’s comments on sustainable energy, it seems important to further understand the relationship between local and centralized utilities and identify what incremental changes can happen from an energy perspective.
- Affordable energy: energy is a huge part of the utility-income burden in certain parts of Danville. Evaluating new builds to enhance the use or renewable energy will help reduce the cost of utilities for residents and landowners.
- Connecting to the Commonwealth and federal-level opportunities for local climate leadership: Infrastructure investments and capacity investments are both show huge areas of possible collaboration and overlap. Already, recent solar investments and contracts by the City of Danville have been used as a strategy to build economy, reuse underutilized farmland, and attract companies. Solar energy could also play a role in times of emergency to provide power to critical places and uses, but also provide a way to build jobs.

GAPS

Data is the most important tool to support intentional decision-making. The comprehensive planning process can be supported by intentionally diving deeply into a few key data areas. Otherwise, it can be difficult to judge exactly where in the city these broad macro-level shifts can help to create the most strategic change. These key data areas can include the following the methodology:

NEXT STEPS

Stakeholder coordination through resilience is oftentimes tricky because certain information can be somewhat confidential. In particular, the maps and vulnerabilities that are related to utility-level infrastructure. It is imperative that the city develop strong relationships with utility companies to create comprehensive maps that can highlight areas of vulnerability and strength to develop a comprehensive approach to resiliency.

SUSTAINABILITY AND RESILIENCE ELEMENTS added by the Resiliency Plan application:
• *Providing 3 years of funding for a planning staff Sustainability Planner position to coordinate the planning grant and implementation and transition into a dedicated Floodplain Administrator. Danville needs to build capacity. This staff and outreach program will also satisfy the City's MS4 public involvement and public outreach requirements for the three (3) project years;*
• *Establishing reliable overhead and cost basis rates for future disaster response efforts so the City receives appropriate financial support in recovery;*
• *Developing an ongoing disaster response training program for City employees that are not first responders.*
• *Providing ongoing training, enrichment and peer exchange opportunities for the Sustainability Planner funded by this grant and other City Staff. Sustainability and equity are cross-cutting priorities that impact all City operations and services. These activities include FEMA training and participation at appropriate national and state/regional conferences or other events.*
• *Designating Danville resiliency hubs at community centers that will reduce extreme condition exposure during disasters and improve access to public services and spaces during safe times.*

b. HOUSING

Danville is projecting an influx in its residential and workforce populations, due to new large-scale development taking place at the Berry Hill mega-site and at the site of the future Caesar's Virginia Resort, set to open in 2023. With a rapidly approaching deadline, Danville must develop a clear plan for current and future residents to maximize the benefits of these sweeping changes. These advancements offer Danville an opportunity to take advantage of its historic communities and infrastructure, proximity to the scenic Dan River, and adjacency to other regional economic hubs. Ultimately, this will provide current and future residents the chance to merge lower costs of living with growth opportunities, unique historic elements, and recreational amenities that will enhance overall quality of life and capitalize on the city's small-town charm and potential big city amenities. In preparation for much of this new development, Danville is conducting a more extensive housing study. However, our preliminary findings, gathered prior to the completion of these additional studies or plans, will help to underscore continued housing research and provide high-level policy recommendations.

TRENDS

After meeting with some key community stakeholders and conducting our preliminary analysis, our team identified several housing trends. These trends will guide proposed future development and housing recommendations in the comprehensive plan. These include:

- **Aging housing stock impacting overall housing quality.** Seventeen percent of Danville's housing stock was built before 1940, with 45.9% of homes built between 1960 and 1970. Older homes are gaining some traction in the age of fixer-uppers. However, they can also result in high investment, construction, and maintenance costs. Overall, the aging housing stock contributes to rising infrastructure needs and decreasing home values that can impact general quality of life.

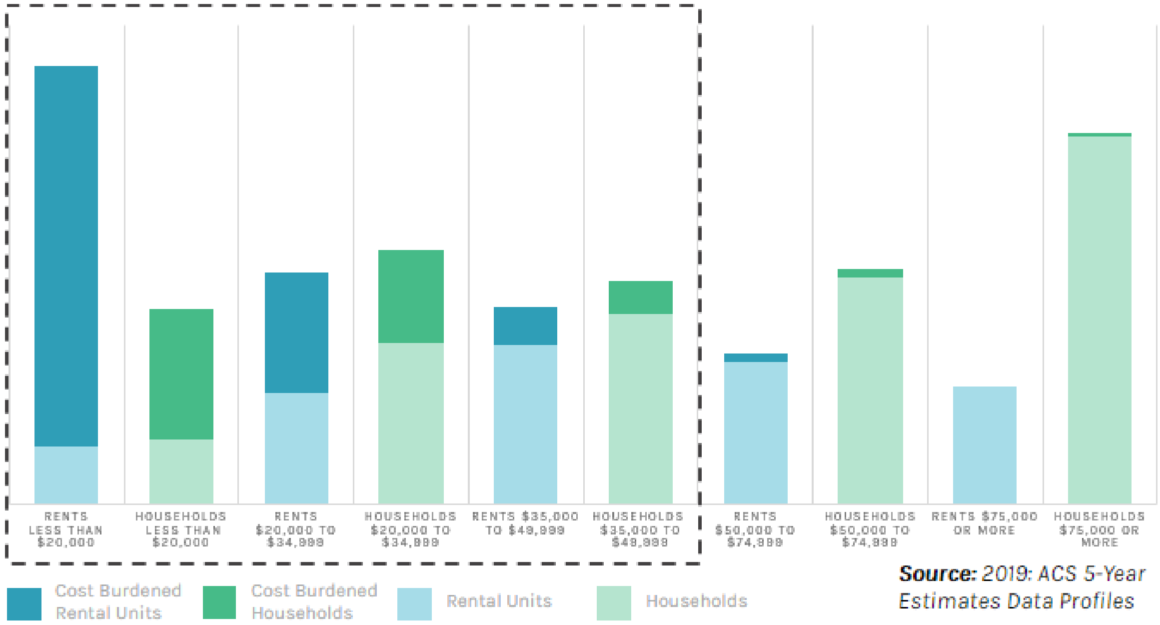
- **Low property values.** The median home value in Danville is $90,500 with 13% of homes valued at $200,000 and above, indicating a small margin of property investment growth. While low property values can be an advantage in terms of affordability, it can also detract from developer interest due to narrower profit margins. **Priorities should include bringing affordable properties up to a certain quality standard and having new construction focus on missing housing typologies.**

- **Predominant housing typology.** Over 70% of households in Danville are single-family units.

- **Large renter population. Forty-eight percent of** residents in Danville are renters. Many renters (85.3%) are spending less than $1000 a month on rent. However, 47% of renters are spending above the recommended 30% of their annual income on rent. This gap indicates that a larger portion of renters in Danville fall into the category of low-income or cost-burdened households.

- **Gap in affordability.** Rental unit and mortgage costs, comparative to income rates, illustrate that approximately 47% of renters and 27% of homeowners are spending above the recommended 30% of their annual income on rent or mortgage payments. Disparities in access to modern amenities further indicate wealth gaps. In Danville, there are currently 570 households without phone service, 3,548 households without access to a computer, and 5,062 households without internet service. Indicating a significant digital divide that exacerbates existing disparities.

COST BURDENED HOUSEHOLDS BY ANNUAL EARNINGS



Source: *2019: ACS 5-Year Estimates Data Profiles*

- **Affordability disproportionately affects residents.** Wage gaps based on gender and race show that housing affordability for women and minority led households are at a disadvantage when it comes to home ownership. The average woman in Pittsylvania County makes approximately $20,000 less than the average male counterpart. The median household income for Black households is about $10,000 less than that of White households.

- **Barriers to development.** Below average property values, higher construction costs, and pandemic related supply chain issues could deter developers. Alternative housing types could also impact development incentives. For example, there are several modular home communities in Danville that could receive HUD (Housing and Urban Development) funding. However, this could decrease surrounding home values, and impede some socio-economic groups from cultivating generational wealth.

- **Resident concerns**. Residents are expressing concerns over the potential for gentrification and displacement, often exacerbated by these types of planning efforts. Specifically, with the onset of a new major amenity like the Caesar’s Palace Casino. This is particularly true in the case of housing. Engagement efforts will focus on creating an inclusive planning process that begins with building community trust to ensure the plan prioritizes existing residents.

OPPORTUNITIES

- Potential strategies to be employed during the Comprehensive Plan process includes but are not limited to: Diversifying housing types. With such a large renter population and cost-burdened households, there is a market for alternate forms of housing including: “missing middle” housing, accessory dwelling units, workforce housing related to economic centers, and retrofits of exiting industrial, commercial, and vacant sites into multi-family mixed use centers. There are also advantages to include ideas such as:

  - A side lot program that allows homeowners living adjacent to vacant properties to purchase and consolidate lots to transform properties through the addition of yard space, driveways, gardens, or home expansions to create smaller affordable housing units and generate alternate income revenues for residents.
  - A scattered-site redevelopment that allows for smaller-scale (15 units or fewer) public housing development, using vacant lots, for greater variety and scale to encourage the development of more affordable units for lower-income residents. This strategy should be underscored by a good management, tenant screening, design, and public relations strategy that would minimize push back for fear of declining property values. While, simultaneously incentivizing multi-scaled development within communities.
  - Amending single family residential zoning to make attached residential and multifamily housing easier to implement and address the missing middle housing sector.
  - Address alternate ways to tackle short-term rentals in the zoning code.
- Expand home ownership literacy to increase wealth building opportunities for Danville residents, with a specific emphasis on historically- disenfranchised populations, to incentivize equitable reinvestment in Danville neighborhoods. This would include, but is not limited to, education on down payment assistance programs, home buyer education, etc.
- Consider opportunities for short term rentals to accommodate workforce and temporary housing during the construction of the casino, while also addressing long-term renter needs.
- Several methods could be used to encourage neighborhood-based reinvestment including capitalizing on regional resources to invest in Danville. There is strong interest from Pittsylvania County to strengthen the capacity of the Danville Land Bank and the Danville Neighborhood Development Corporation (DNDC). Other ideas include establishing a local housing trust fund, which could be managed by existing housing stakeholder groups; ensuring a portion of contracts go to local carpenters and developers to circulate local dollars; and allowing payment in lieu of taxes.

GAPS

The goal is to meet gaps in the market while building on existing community aesthetics and neighborhood character. However, there is often public misconception about placing alternative housing types in existing neighborhoods. This can be addressed through focused engagement that will:

- Identify Danville's housing needs at the neighborhood level through resident conversations, workshops, and surveys.
- Highlight potential barriers to development through developer and city staff focus groups.
- Educate residents about the advantages and disadvantages of a more diversified housing stock.
- Enhanced housing literacy will be paramount to creating lasting change from the resident's level.

NEXT STEPS

The next phase will be multi-pronged. The housing team must clarify what development is most advantageous for Danville's future while simultaneously meeting the current needs of residents.

- Engagement will be resident focused to cultivate a community-lead vision for Danville's neighborhoods. A key aspect of this engagement will be to expand housing literacy among residents of Danville, with a specific focus on marginalized populations and underserved communities
- Data analysis will determine which locations are best for alternative housing development models needed to accommodate new and legacy residents. It will consider current trends related to

economic hubs, amenities, physical access, and housing conditions to determine which housing types are needed in each area. While “missing middle” housing might not be a perfect fit for retrofits near the Danville Mall, existing neighborhoods could be better served through this strategy with additional funding for improvements to existing structures. An analysis of the potential for the Danville Mall to be transformed into a new form of development that emphasizes mixed use or town center development formulas should be investigated.

- An implementation toolkit will include alternative funding sources and a plan for actionable steps to implementation of housing policy.

The goal is to create complete neighborhoods, not isolated pockets of housing.

HOUSING elements added by the Resiliency Plan grant funding application:

- *Understanding accurate potential benefits for dwelling weatherization and energy efficiency improvements including updated building condition data.*

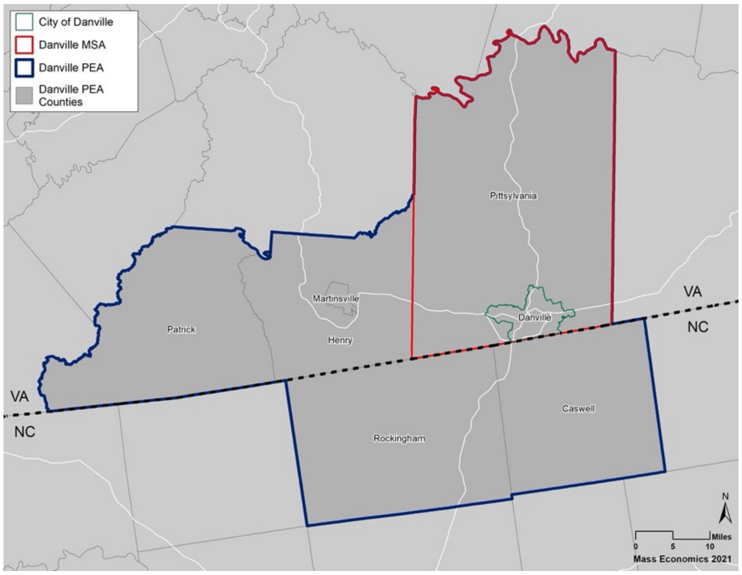
  Specifically, the City will integrate weatherization opportunities into code enforcement, building inspections, and utility programs to better reach residents and property owners through the Virginia Weatherization Program.

  Reducing access barriers to weatherization economic tools provided by Danville Redevelopment Housing Authority, Danville Utilities, and Pittsylvania County Community Action will dramatically assist Danville families to permanently lower crippling utility bills.
- *Updating the City’s flood prevention overlay ordinance and other operations to support Community Rating System membership.*
- *Evaluating and creating a flood insurance rebate $50k seed fund for low- and moderate-income areas.*
- *Developing community outreach promoting permaculture – the design of small agriculturally productive ecosystems suitable to augment household food supplies.*
- *Incorporating floodplain management regulations into the City’s subdivision code and any other appropriate ordinances.*

c. ECONOMIC GROWTH

While Danville’s micropolitan statistical area (mSA), and partial economic area (PEA) were less severely impacted by the pandemic, compared to the rest of the United States between March and April 2020, growth in these areas through June 2021 has notably lagged the national recovery average. This continued an overall decline that began in 2016. Additionally, significant income and resource disparities between various demographic groups and limited financial literacy have created barriers to attaining wealth and economic stability for many residents. However, there is opportunity for growth and development in Danville that can enhance economic opportunities for current and future residents if the right strategies are employed. Below you will note several economic trends contributing to Danville’s current economic state, as well as several opportunities for growth.

TRENDS



- **Job growth in Danville lags the rest of the mSA and PEA – both pre-COVID and during COVID.**
    - **The Danville economy is highly concentrated by a limited set of industries.**
    - The top 3 3-digit industries (Food and Drinking Services, Ambulatory Health Care Services, and Plastics and Rubber Products Manufacturing) (e.g., top 3 3-Digit industries make up 32% of all jobs in 2019 as compared to just 13% in Pittsylvania County and 16% in the U.S.
- **Fourteen of the City's 20 largest industries declined between March 2020 and June 2021, and they all declined more than the U.S average**.
- **There is diversity among work force job holders, meaning there are a higher shares of job holders who are women and BIPOC (Black, Indigenous, People of Color).** However, there are significant wage disparities that exist. For example, women earn approximately 63% of what their male counter parts make, and Black (men and women) workers earn about 70% compared to their white counter parts.
- **There are lower levels of minority-owned business enterprises (MBEs), but relatively high levels of women-owned business enterprises (WBEs).** While MBEs and WBEs have lower average jobs, revenues, and payroll per firm, compared to their male-owned and White-owned counterparts, respectively, MBEs in the city of Danville provide higher average wages than White-owned businesses. This is contrary to the rest of the U.S.
- **Job access challenges persist, specifically for those without access to a private vehicle (physical, commuter flows).**
- **From 2017-2021, retail remained stable in establishment count, employment, and wages, except for:**
    - Food Services (NAICS code 722) and Personal & Laundry Services (NAICS code 812) lost the greatest employment and wages between Q1 and Q2 of 2020 during the initial closure period of COVID.
    - Comparing Q1 2020 to Q1 2021, total quarterly wages in Personal & Laundry Services has not returned to pre-pandemic levels.
- **Year-over-year (2016-2020), annual household expenditures grew in Danville** at a greater rate than the national consumer price index (CPI), as calculated by the Bureau of Labor Statistics. Over the period 2016 to 2020, the CPI increased by 10% while expenditures increased over 21%.

OPPORTUNITIES

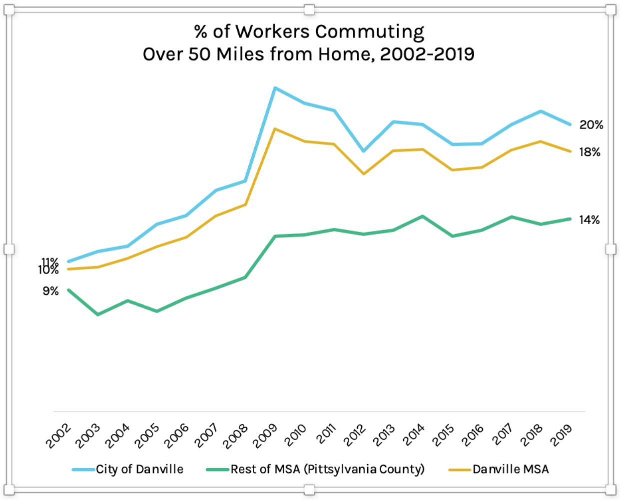
- Leverage publicly owned vacant and underutilized land and buildings. In addition to the mega-site, identify potential adaptive reuse and infill opportunities for both work force housing and commercial uses, along with a site assembly strategy.

- As a border city, assess opportunities to rationalize workforce housing and commercial development strategies. These can be developed in partnership with surrounding counties, including those in North Carolina and the existing rapport that exist with Pittsylvania County.
- Almost two-fifths of the mSA's acreage consists of farms. This is more than Virginia and North Carolina overall. This presents an opportunity to develop and enhance local agriculture and food economies. The food manufacturing industry grew by 24% in Danville between March 2020 to June 2021 and grew in the mSA and PEA overall.
- Like the U.S., retail and consumer-facing industries in Danville and the broader region were severely impacted by the COVID-19 pandemic. The food services, personal services (including laundry), hotels, and other travel/tourism-related industries all declined dramatically through June 2021 – but, as more current data are released, the planning team will evaluate and track the on-going (and uneven) economic recovery in these important industries.
- E-commerce is strong in the PEA overall. Although not a current strength in the city, being only one-fifth of the expected jobs, the sector has grown dramatically nationally during the pandemic.
- Driven by pandemic-accelerated growth of e-commerce and hybrid digital-physical models (e.g., online ordering and supply chain management) there is potential for Danville to lead by helping retailers, restaurants, and business-to-business firms make necessary transitions.
- Conduct retail market analysis to identify submarkets for increased retail/entrepreneurial growth. Beginning by expanding upon the River District's success, as the only branded experiential retail district and home to an opportunity zone, to target for additional development, retail, and entrepreneurial opportunities.
- Employee inflow exceeds outflow. Providing an ability to capture demand for retail goods and services and residential development could be supported by an employee- friendly market.
- Sales tax in Danville and Pittsylvania County is lower than in surrounding municipalities in North Carolina and Virginia. Danville has a competitive advantage for retailers seeking real estate and an opportunity to instate a special tax to bolster the City's municipal budget.
- Leverage Danville's location in a region. Proximity to several academic institutions (i.e., colleges and universities in Chapel Hill, Durham, Greensboro, Blacksburg, and Lynchburg) places Danville in a potentially advantageous position to explore satellite campuses, partnerships, and other educational and economic drivers.

GAPS

- There is a significant small business lending capital gap from traditional banks in Danville. However, there are high levels of lending capital in Pittsylvania County overall. Gaps may be partially addressed by foundation, small business administrations, and state/local government lending, which should be investigated fully in next phase of work.
- There are low levels of MBE entrepreneurship in the City of Danville – but relatively high WBE rates - and both WBEs and MBEs are smaller scale employers compared to their male-owned and white-owned counterparts, respectively.

- Lower levels of educational attainment, disparities by race/ethnicity, and workforce education gaps persist within Danville's and the broader region.
- Available capital to realize real estate development is limited.
- Access to and the presence of major interstate roads create a barrier to economic development.
- Larger retail centers (grocery-anchored strip centers or larger) do not exist within 13-33 miles in each direction from the city's center and the city's southern and western neighborhoods have limited retail development.



- An arts district does not exist in Danville.
- Defining strategies and policies to relocate retail currently located in annexed portions of the city to designated commercial districts.

NEXT STEPS

- Update economic data through end of 2021, as new data is released (6-month lag), to understand ongoing impacts of the COVID-19 pandemic, with a focus on the impacts on BIPOC workers, MBEs, and WBEs.
- Assess land assembly opportunities among vacant and underutilized land and buildings.
- Identify inclusive industry-cluster opportunities through scoring/weighting methodology.
- Develop better understanding of future housing market and demands (inclusive of the potential impact of the casino project) which, in turn, will influence retail and other neighborhood cluster demand (I.e., integrate findings from the ongoing housing study).
- Bolster residential demand with strategies to strengthen and improve commercial corridors over the next 10 years, including exploring the viability of retail and a diversity of non-retail uses.
- Remedy any misaligned municipal codes as it relates to commercial and residential growth opportunities such as outdated parking requirements.
- Understand assistance programs offered to businesses in greater detail and specifically define where opportunities are not meeting the needs of developers, property owners, corporations, and retailers. More at: https://www.discoverdanville.com/business-support/incentives-overview/river-district-businesses-and-developers/
- Continue developing cross-cutting strategies across the project.

ECONOMIC GROWTH elements added by the Resiliency Plan grant funding application:

- *Writing a stormwater design manual explaining low impact site development concepts and best management practices for public and private projects in ESRI storymaps. This program element culminates in a community wide education forum with community partners like the Dan River Basin Association and the Danville Science Center.*
- *Similarly, writing a native plant and tree guide in ESRI storymaps that encourages native landscaping that cools heat islands, replenishes Danville's canopy, provides training to public and private arborists, minimizes stormwater techniques, and beautifies the community with nature-based solutions. This program element culminates in a tree-based outreach event with*

the City's parks and recreation department during our annual Make Danville Shine community pride celebration.

- *Updating the City's Stormwater Management and Flood Prevention internet presence through a redesigned webpage and targeted social media posts to drive increased clicks.*
- *Implementing a GIS based system for managing public and private stormwater control measures and best management practice design/construction plans, maintenance agreements, and inspection records, including private owners' inspection reports to monitor compliance with maintenance agreements. This process will reduce red tape and increase private business efficiencies.*
- *Selecting, acquiring, and implementing software that supports the City's MS4 and VDPES Industrial permit obligations;*
    - *Multi department/user access and integration with other City IT solutions.*
    - *Automate annual and monthly DEQ reporting.*
- *Integrating floodplain management and land disturbance permits into the City's CityWorks permitting system. This process will reduce red tape and increase private business efficiencies.*

d. CONNECTIVITY & MOBILITY

Mobility is an essential part of Danville's future growth and success. Future large-scale development has the potential to rapidly expand Danville's population and therefore its infrastructure needs. However, current transit systems in Danville are considerably disjointed. With the arrival of new development, it will be necessary to assess how the existing transit system could be more integrated. Transportation in Danville is highly dependent on the use of personal vehicles due in large part to large road infrastructure, disconnected pedestrian infrastructure, and local topography. The city of Danville offers several services, including:

- Inner-city busing with 6 fixed routes
- Inter-city busing with 2 fixed routes from Danville to Washington, D.C. and Martinsville to Richmond
- Handy-Van Services
- Reserve-a-Ride services
- Biking services at the Danville Riverwalk Trail and Anglers Ridge Mountain Biking Trail
- Danville Regional Airport

The area also has several projects underway in partnership with the Virginia Department of Transportation and West Piedmont, including:

- Kentuck Road and Piney Forest Road right-of-way improvements
- Ringgold Depot trail connection to the Riverwalk trail
- Bikeable infrastructure improvements on Piedmont Drive

TRENDS

- **Mobility has been drastically impacted as an industry nationwide during the pandemic.** In Danville specifically, COVID-19 has accelerated trends of reduced ridership on fixed transit routes and increased demand for on-demand shared-use mobility. While transit ridership is down over 20%, the demand for rideshare services such as the Reserve-a-Ride service is up 40% in the past year. Senior ridership on public transit has shifted to on-demand rideshare services. However, this service is mostly used for work trips with peak user times covering 4:00 to 7:00 in the morning. This shift in trends is due in part to the pandemic. A rise in rurally located medium-sized businesses over the past decade and the unreliable nature of local taxi services has also played a part in the rise of on-demand services. At approximately $4 a ride, on-demand services are affordable for residents. However, the city does not have a cost-effective way to provide the early morning and late evening on-demand transit services most requested by employees working odd-hour shifts.

- **Bus transit is competing against this increase in on-demand service popularity, safety concerns, and perception issues with mass transit.** The largest of these barriers is high bus driver turnover rates. Drivers have difficult working conditions, safety concerns, and see opportunities for higher pay with the school bus system. The city has waved several licensing requirements to open the hiring pool but have not seen as much interest as anticipated. The city has also seen challenges receiving public and political backing to raise bus fares, which could help increase driver wages.
- **Certain areas are well-served by sidewalks, while others are not.** In general, areas with strong sidewalk networks are insular, lack crosswalks, and tend to be disconnected from the larger transportation framework. A similar trend is seen in bike infrastructure, where strong paths are created in park and economic centers but could benefit from connections to surrounding residential areas. There is a strong incentive for regional investment in multi-modal transportation, but the design could be pushed further to include buffers, materials, and signage which would enhance safety and encourage different mobility behaviors.

OPPORTUNITIES

The primary goal is to create a comprehensive vision for the city, weaving together bicycle planning, riverwalk planning, safety and sidewalk improvements, and complete streets policy. This plan should fill existing connectivity gaps, encourage regular use of non-motorized transit, and align with overall goals of health and resiliency. Initial ideas include:

- **Leverage the Dan River –** Build from the Riverwalk as a recreational anchor or spine
- **Identify funding opportunities** - Position Danville to take advantage of upcoming state and federal funding opportunities. Look ways existing assets can generate more revenue. For example, explore revenue potential of airport as drone hub with ties to manufacturing, shipping, or industrial services.
- **Establish nodes** – Use the land use plan to identify nodes at universities, downtown retail districts, the Riverwalk, and casino, then create actionable steps for development into interconnected non-motorized zones.
- **Connect housing** - Create walkable neighborhoods with basic services available within a 20-minute walk/bike distance, which are connected to downtown and the river, providing attractive missing middle housing to serve a range of income levels and increase growth and density. Expand mobility access in these areas to facilitate access to resources, jobs, exercise. Plan for industrial redevelopment that incorporates workforce housing and connectivity.
- **Explore resiliency opportunities** – Identify methods of fleet conversion to electric or hydrogen.

GAPS

The objective of the engagement process from a transportation perspective will be to understand communities' real and perceived barriers to mobility and access. The comprehensive plan will then look to address gaps in:

- Pedestrian infrastructure – walkable neighborhoods with housing close to amenities and sidewalk or bike infrastructure to accommodate needed connections. Focus on proximity for low-income and missing middle housing.
- Bus infrastructure – address the driver workforce supply and demand imbalance
- Civic infrastructure – align goals and needs of regional transportation planning, city transportation planning, and other city departments to gain local backing and ensure integration of services.

- Physical barriers – understand how the river and topography separate neighborhoods in ways which can be addressed through transportation improvements.

NEXT STEPS

Stakeholder engagement will be key, especially dedicated conversations with non-government task groups, activists, regional players, key employers, and transit users. Coordination with the Schoolfield transportation study will also be an important step to ensure the two plans complement each other and contribute to a unified vision for city staff to build on. Other objectives include:

- Define roadway typologies and assign mode hierarchies
- Map and index current and planned mobility projects
- Create a matrix of upcoming funding sources and timelines
- Develop walkable neighborhood plans
- Investigate zoning code changes for missing middle housing in coordination with housing study
- Assess supportive housing mobility needs
- Explore sustainable fleet options and funding
- Develop a Riverfront connectivity plan
- Research airport opportunities
- Develop a universal fare card strategy

CONNECTIVITY AND MOBILITY elements added by the Resiliency Plan grant funding application:

- *Evaluate relocating or floodproofing all critical facilities that are in Special Flood Hazard Areas or susceptible to disruption from flooding or other weather events.*
- *Considering ordinance performance standards for impervious surfaces and developing a data set with plan review tools to analyze impervious surface changes. Transportation infrastructure is the largest contributor to impervious surface runoff in Danville*
- *Designing templates for green infrastructure retrofits in public and open spaces and integrating them into the City's zoning ordinance standards for landscaping. Danville's publicly owned facilities must demonstrate low impact development outcome to lead the way for private development in our community. Every transportation infrastructure should proactively exceed stormwater quality and quantity management requirements*

e. COMMUNITY HEALTH

While there are challenges to improving the health of the Danville community, there are multiple opportunities to address it within the context of this Comprehensive Plan. Many of the top causes of death in the community can be reduced with shared approaches. Healthy diet, regular exercise, stopping smoking and regular health screenings have been found to reduce acute disease dramatically. Creative strategies to educate the public on the importance of healthy living can be repeated throughout the community and in several of the overall Comprehensive Plan concepts. A comprehensive focus on community education and a shared passion to improve health will go far to raise awareness, which is often the greatest obstacle to improving health.

TRENDS

- **Lower life expectancy rates are prevalent in the city.** Danville's average life expectancy range falls in the lower fiftieth percent of the United States overall. This has contributed to the prevalence of Cancer, Coronary Heart Disease and is compounded by obesity. In addition, the potential for Opioid-related overdoses ranks as the third greatest contributor to poor health in this area. Other chronic diseases associated with respiratory and neurological systems have a great impact on the health of the community.

- **Economic and access barriers to healthcare.** Economic pressures within the community contribute to both a reluctance and even the inability to access healthcare. Access to insurance and Medicaid is limited to less than thirty percent of the population in Danville proper. Many residents are forced to prioritize healthcare lowest on their monthly expenditures following housing and food.

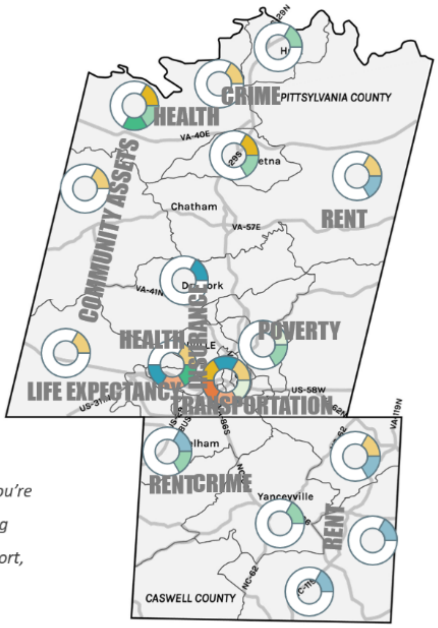
Low Access to Insurance and Medicaid
education for options, tap community institutions for education and support, telehealth for clinical and mental treatment

Prevalence of Cancer
healthy diet, stop smoking, exercise, screening, limit alcohol

Prevalence of Coronary Disease
30-60 minutes of daily activity, brisk walking, running, swimming, cycling, interval/circuit training, healthy diet, health weight, stop smoking

High Poverty
education is the avenue out of poverty, communication strategies for sharing opportunities

"If you don't have ***access to fresh fruits and vegetables*** *and those types of things, then you're just compounding your health problems going forward. If they're not actively engaged in sport, then the kids are* ***overweight****."*



"A person who's living in poverty will think ***'I only need to go when I have to,*** *because if I go now, it's going to cost me money that I don't have.' So as long as you're not hurting and in pain, then we're OK."*

NO VEHICLES
options and collaboration, technology solutions, community forums

Cost Burdened Renters
policy for healthy homes, align housing with populations, culturally driven

High Violent Crime Rate
regional community groups, root cause assessment

Low Community Assets
align investment with regional needs, design to maintain wellness, collaborate with healthcare institutions

Low Life Expectancy
celebrate screening, health education and literacy, educate early

- **Culture does play an increasing role in healthcare access.** This is not just a challenge for Danville, it is a pattern nationally. Some segments of the population access care only when symptoms force action, while others seek alternative forms of treatment outside of an acute care setting. The diversity of cultures in the Danville community creates a diversity in healthcare perception and behavior which is resulting in a less healthy community than seen in other areas of the country.

OPPORTUNITIES

Many of the strategies for improving community health are interlocked with several strategies highlighted in other sections.

- Economic strategies will contribute to a growth in insured citizens
- Housing strategies will ensure citizens are living in safe/mold-free environments
- Mobility strategies will improve access to healthcare institutions and support exercise
- Neighborhood strategies will focus neighbors on health and wellness beyond the individual
- Resilience strategies will focus on personal resilience and personal sustainability
- The key opportunity to share the desire for improved health at a community level, providing individual support with a community approach.

GAPS

Data will inform the opportunities for health and wellness improvement within the Danville community. A deep dive into both the macro and micro level drivers surrounding individual health outcomes will provide a more holistic assessment/measure of which interventions could create the greatest improvements.

NEXT STEPS

Our next steps must be to engage with the authors of the Dan River Health Equity Assessment to share data and community engagement perspective. This information will provide a platform for a deeper dive into key contributors of negative outcomes. Data collection will then focus on the key areas of concern, international strategies for improving health, and an assessment of which strategies have the greatest impact on health outcomes.

COMMUNITY HEALTH elements added by the Resiliency Plan grant funding application:
• *Monitoring and inspecting outfalls and discharge points for illicit discharges with a GIS based system.*
• *Using micro sensors and other cutting edge data collection tools to collect and analyze data so we better understand the localized effects of pollution like increased temperatures and asthma.*
• *Creating a community blueprint for a net zero carbon goal with a feasible horizon.*

f. NEIGHBORHOODS, PARKS, AND LAND USE

The topography and historic development trends of the south have led to the distinct separation of uses throughout the city of Danville. The result is a pattern of corridors and districts separated from each other and pockets of exclusive uses that lack a clear identity.

TRENDS

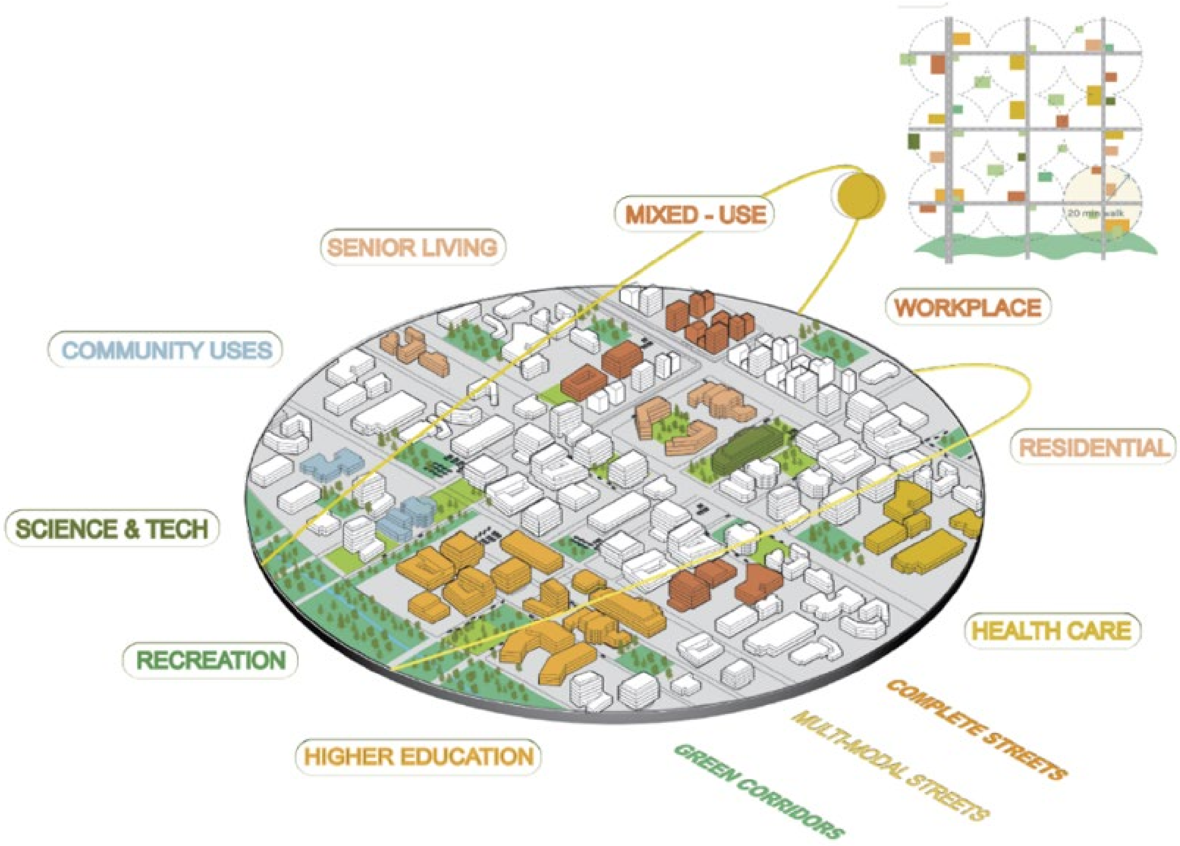
- **Residential Uses**
    - There is a lack of housing supply to meet future potential demand and a lack of diverse housing options to accommodate diverse resident needs.
    - The largest gaps in housing remain in missing middle housing and good quality starter housing. Some of these gaps are offset by an increase in housing development in surrounding Piedmont County, but future trends should identify key residential opportunities in the city itself.
- **Retail and Manufacturing Uses**
    - Retail and manufacturing uses are better thought of as employment opportunities and amenities. Danville is losing retail, which decreases the distribution of employment opportunities and amenities in the city.
    - Commercial uses are mostly along major transit corridors but are not walkable or connected to residential neighborhoods without a car.
- **Natural Features and Open Space**
    - The Dan River is an amenity, but also serves as a divide between North and South Danville.
    - There is a desire to expand the existing 4-acre riverfront park to connect with other parks and open spaces.
    - Danville’s existing parks system is old and primarily located in the heart of the city. There are limited neighborhood parks. North and West Danville are most in need of better-quality parks.
    - Primary concerns around park spaces include connectivity and quality. Most neighborhood parks are primarily unwanted vacant lands that transitioned into informal open space.
    - The few parks that provide quality outdoor space for residents are programmed by the Parks and Recreation Department. These efforts are greatly appreciated and valued within the community.
    - School open spaces are also used as community parks and open spaces but there is no formal agreement between the schools and the parks department.

- **Neighborhoods**
  - Neighborhood identities are more colloquial than political.
  - Neighborhoods are almost entirely residential in use, although there are mixes of residential typologies.
  - Amenities such as parks and retail centers are within a 15-minute walk of residents, but topography generally makes these areas more drivable than walkable.

OPPORTUNITIES

The Danville Comprehensive Plan can use land use as a tool for creating complete neighborhoods in Danville. Complete neighborhoods enable residents to access basic needs within a twenty-minute walking radius. Complete neighborhoods look to combat segregation by race, economic standing, and use to better serve the city. In doing so, complete neighborhoods look to:

- Create accessible, walkable communities with manageable motorized connections
- Combat climate change using sustainable land use patterns
- Incentivize local investment by enhancing neighborhood pride
- Encourage best uses of the land to support a diverse set of residents
- Support healthy living



- Raise local economies
- Schools will soon be receiving additional funding for school improvements which provides an opportunity to couple community spaces with schools. Increase community interaction through a special analysis of neighborhoods using metrics such as access to employment opportunities and open space.

GAPS

Throughout this pre-planning process, several gaps in understanding as it relates to Danville's land uses and neighborhood identity have been identified which will be further explored in the comprehensive planning process.

- Identify how the Schoolfield Plan and other parallel studies will work into the Comprehensive Plan and ensure compatibility.
- Identify how annexed areas of the city have been worked into the community fabric.
- Identify existing deserts (food, physical activity, disconnected from transit) to address the hierarchy of need city-wide and lead to actionable short-term goals as well as a long-term vision.

NEXT STEPS

The engagement strategy for neighborhood analysis will largely focus on understanding how residents currently identify their existing neighborhoods to create a community-based complete neighborhood framework. The housing, mobility, economy, health, and resiliency components will coordinate stakeholder interviews and focus groups which will provide further insights on existing nodes to be enhanced, city interest in specific policies, and equitable resident representation.

NEIGHBORHOODS, PARKS, AND LAND USE added by the Resiliency Plan application:
• *Integrating an overall City watershed plan framework within the Plan It Comprehensive Plan.*
• *Cataloging and producing flood elevation certificates for all buildings in Special Flood Hazard Areas.*
• *Imagining several community scale flood prevention projects*
• *Analyzing stormwater utility feasibility in Danville.*
• *Improving GIS data integrity and feature information for the City's stormwater utility infrastructure.*

SAMPLE GEOGRAPHIC ANALYSIS WORKFLOW

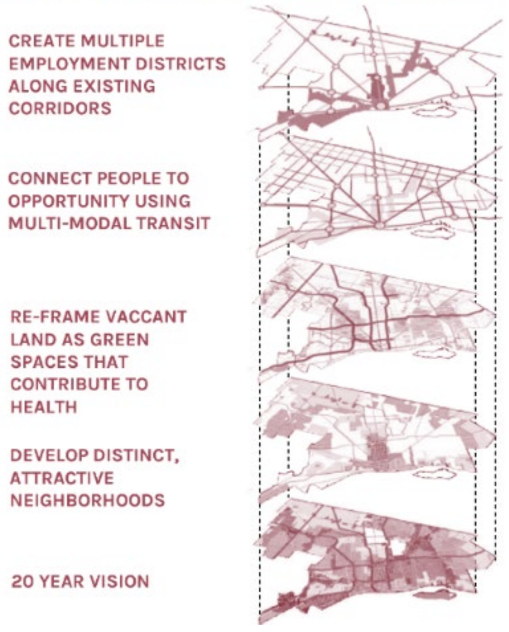


Figure – City of Danville FIRM Maps

g. ENHANCED PUBLIC OUTREACH

OVERVIEW

Plan It Danville is a community-centered engagement process to develop a sustainable comprehensive plan for the City of Danville. The process intentionally realizes Danville's future dreams, ideas, and priorities from a diverse array of viewpoints. An essential premise is that the more people are engaged in shaping the Plan, the more likely they will participate in actively implementing the shared vision. This year-long journey with several phases integrates individuals to add to the conversation about what Danville residents would like to see for their community.

BACKGROUND

A comprehensive plan is considered a 20-year document that public officials should review every five years, and the City of Danville is at the beginning of a new review cycle. The City of Danville decided to aspire to create an award-winning plan based on a process that empowers the community to engage in a holistic view of city government decision-making processes and policymaking – and to think bigger about how Danville could evolve to serve the needs of residents equitably.

The future of planning in Danville is envisioned as a standard interface with community members to guide change to improve the quality of life and access to opportunities. It influences the various factors affecting social determinants of health, such as transportation and housing, which contrasts the current plan, which only serves as a planning resource rather than a guiding document.

APPROACH AND GUIDING PRINCIPLES

From our preliminary investigation, it is evident that stakeholders are excited by Danville's future potential and are ready to see growth that reflects the community's values and needs. Our planning approach will be inclusive and take the necessary steps to **Engage, Inform, and Empower** all stakeholders throughout the process. This approach places Danville's citizens at the center of an 18-month planning process.

- As we **ENGAGE** – we build connections throughout the city by listening, acknowledging local expertise, and working collectively with civic and community leaders to build trust between the community and our project team members. We take the initiative to connect with groups that have been historically overlooked and disenfranchised during past processes.

- As we **INFORM** – we foster authentic connections with the community and stakeholders through a clear and transparent channel of communication that reflects the ideas and opinions of residents by providing a consistent feedback loop between project team members and residents.
- As we **EMPOWER** – we identify opportunities to increase community and civic capacity to help ensure plan implementation.

This approach underscores a project framework that focuses on **three foundational guiding principles – resiliency, equity , and health** - that will serve as the basis for the comprehensive plan. This framework helps to ensure that policy recommendations for the comprehensive plan are crosscutting across the guiding principles. The approach and framework outlined here are supported by **four major planning outcomes** that emerged consistently throughout all our preliminary conversations and research. The themes are as follows:

In early November of 2021, the SmithGroup project consultant team visited Danville to familiarize themselves with Danville's community context and conduct a series of on-site listening sessions with key stakeholders on economic development, engagement, equity, health, housing, mobility, and resiliency. The team's initial findings led them to determine that three (3) foundational principles will transcend through all the Plan's themes: equity, resilience, and health. The Plan's themes will be education, economy, environment, and empowerment.

- **Enhanced Education** – for workforce development, workforce attraction and retention, engagement in lifelong learning, and functioning neighborhood school hubs.
- **Healthy Environment** – for complete neighborhoods, connectivity and mobility, environmental resiliency, land use, community character, and blue/green infrastructure improvements.
- **Thriving Economy** – for local retail, industry, housing, entrepreneurship opportunities, and employment.
- **Community Empowerment** – for long-term civic engagement, capacity building, and elevating Danville's identity and sense of pride.

COMMUNITY ENGAGEMENT GOALS AND OUTCOMES

The premise to this people-based strategy that when people are actively engaged in shaping a Plan they are empowered to own an active role in implementing the shared vision. Collaborative investment in the future community will determine how sustainable and resilient Danville remains. Thus, strength and resiliency are created through intentional activity of storytelling, mapping, and gathering data through surveying. This iterative approach to build the community's confidence in their role to craft their environment in a way that reflects their cultural values of continual growth. Based on the guiding principles, the community engagement goals within this process include:

Establish **equitable access** for the community to share their local knowledge through:

- 120 neighborhood meetings led by Community Boosters
- 20 Tabling Event opportunities at local events hosted by Community Boosters
- Mobile engagement vehicle to meet the people within their communities
- Project storefront located in downtown Danville as a place to gather, learn and inform the planning process
- 5 Danville-wide Community Events that serve as the culmination of each phase in the planning process
- **Ensure communication is multi-directional.** Planners-to-community, community-to-planners, community-to-community, etc.
- **Informed decision-making** providing feedback to inform the decision-making process through:

- Create digital, print, and physical communication channels: Make provisions for direct physical contact with any segments of the community that may experience limited access via other means.
- Manage some channels of communication directly while also enlisting support of pre-existing community channels. Pre-existing channels are likely to include official city channels, established media channels, and formal/informal community channels and nexus points. Actively work to identify and engage the latter on an ongoing basis.

Create a culture of highly responsive community involvement that is **empowers action** to shaping the community.

- Adoption of the comprehensive plan that individuals within the local community and government that spurs strategically, actionable change.
- Build follow-up communications, including simple thank yous, into the communications plan. All individuals who contribute time or share views are entitled to proactive communications informing them of how their contributions are being used. All individuals who contribute time or share views should be personally thanked at the appropriate time(s)

Communication Strategic goals

1. **Make Planning 101 Information Available Anytime:** Build or update the most highly used and visited “front doors” to the Danville brand for community members and other stakeholders.
2. **Provide Anywhere, Anytime Channels for Community Members to Interact:** Incorporate contact, comment, query, feedback mechanisms into #1 or develop purpose-built tools for this goal.
3. **Generate Excitement and Enthusiasm for the Effort:** Concept and develop awareness and engagement campaign for the Plan, including all messages and assets as well as launch and rollout plans: Concept and develop awareness and engagement campaign for the Plan, including all messages and assets as well as launch and rollout plans.
4. **Connect with Key Audiences:** Develop communications templates and tools geared to specific audiences (by type, location, preferred way of receiving/consuming media, etc.)
5. **Foster Engagement:** Coordinate/Integrate campaign effort with community engagement effort.
6. **Create Momentum & Measure Progress:** Identify key performance indicators as well as the means for measuring them. Begin conducting measurements. Develop policy, process for reporting.

PEOPLE-BASED STRATEGY

“Each individual person is very important. Each person has tremendous potential. She or he alone can influence the lives of others within the communities, nations, within and beyond her or his own time.”

-Muhammad Yumus

This engagement process places people at the center for success. Each individual voice contributes knowledge and wisdom that informs how they live, work, and play together.

According to the American Planning Association, a comprehensive plan encompasses "a process that seeks to engage all members of the community to create a more prosperous, convenient, equitable, healthy, and attractive place for present and future generations." This planning effort is forward-facing, with messaging and engagement efforts that reflect and resonate with the City of Danville while also evoking feelings of excitement and optimism for the future.

Key Community Groups and Stakeholders

A vital goal of the engagement effort is to make the Comprehensive Plan process accessible, appealing, and inclusive to everyone in Danville (residents, business owners, property owners, employees, etc.). The method also seeks to build community capacity so that individuals can effect positive change by conversing alongside City government, healthcare and educational institutions, philanthropy, and other stakeholders to understand community systems. This process will shape the future of Danville by:

- Increasing awareness of the planning process
- Assuring that engagement efforts are broad and deep throughout the community using a variety of participation tools and techniques
- Hiring Danville residents who are passionate about engaging their community
- Carrying the voices of the community in a way where people can see how their ideas generate a new vision through the planning process
- It encourages action and implementation in a way that leverages the community's resources most efficiently and effectively

Local Residents

- Born and raised in Danville and those who have relocated
- Many have grown up with the legacy of Schoolfield fresh in their mind, or even more literally connected to the district via family members. These people are the primary audience and primary end-user to keep in mind. The city's locals need to embrace whatever development comes to Schoolfield for it to be a success.

Local Business

- Manufacturing, shipping, logistics, agricultural industry - there are a variety of large-scale manufacturing operations within Danville. The city has been progressive with retaining and supporting their growth.
- Non-manufacturing businesses (e.g., creative industries, healthcare, retail, Caesar's Resort, etc.) have the potential to grow within the revitalized Schoolfield.

Local Educators Note

- Averett University and/or Danville Community College (DCC) could be anchor institution(s) in the mix of the development. With a small local footprint, Averett is primed to expand and highly interested in engaging with innovative new development opportunities.
- High schools and elementary schools could be large users of the space when complete: it should be created with educational and group learning in mind.

International Business

- Japan, Australia, and countries from across the world are already interested in Danville for its approach to supporting manufacturing and innovative business development. This planning and marketing campaign will surely attract the eyes of an international audience if done correctly.

Some other key groups we will engage include, but are not limited to:

- City Departments + Staff
- Former Dan River Mill Workers
- The Danville Museum of Fine Arts and History and other historic / cultural organizations
- Other Government Entities (e.g., School District)
- Developers (local and regional)
- Students (K-12 and College/University)
- Community Leaders
- Churches and Religious Institutions
- Cultural Groups (e.g., Smokestack Theatre Company)

- Hospitals and Health Providers
- Seniors / Active Adults
- Danville Neighborhood Development Corporation
- Southside Outreach Group
- Housing Authority

Community Engagement Process

The Plan It Danville community engagement process will be a 12-month community conversation about our backyards, our neighborhoods, our city, and Danville's place within the region and will be conducted in five phases. These tools can be utilized as a method of expanding engagement during the pandemic. The final set of tools will determine by the community organizers and advisors. Proposed engagement tools include:

- Physical Presence and In-Person Engagement:
    - A fixed storefront location
    - A mobile planning van
    - Hiring community organizers for door-to-door engagement, attendance at pre-planned events, and tailored opportunities for underrepresented groups
    - The creation of a "meeting in a box" game that groups can use for team building and those who might not attend a Plan meeting
    - A giant vinyl billboard to allow for social distancing and engagement activities
    - Promotional pieces, refreshments, and Comprehensive Plan-branded wares
- Digital Communications Platform:
    - Enhanced Project Website
    - Social Media: YouTube Channel, Facebook Page, Instagram, Twitter, WhatsApp
- Advertising:
    - Physical: Posters, Postcards, Social Media Posts, Yard Signs, Feather Flags, Pole Banners, Sidewalk Graphics, Bus Graphics, Bus stops, direct mailers, Billboard
    - Digital: Public service announcements, radio announcements, Television, movie theatre, Showcase magazine, and The Register and Bee newspaper

Engagement Leaders

A futuristic theme will be used for the Comprehensive Plan process. In early listening sessions, there was concern expressed by some community members about a “Mill Mentality” that controlled who made decisions on behalf of the city’s residents. This planning process seeks to empower Danville’s people to determine what the future will hold and encourage localized decision-making. To that end, a series of key functions have been identified:

- Ground Control – A collection of advisors to provide insight into the community and ensure that the consultant team and city staff are set on the right course for success.
- Boosters – Paid organizers from the community that are enthusiastic about spreading the word so that everyone is aware of the planning process and how they can participate.
- Technicians – City staff and key stakeholders that are familiar with resources that can assist in informing comprehensive plan content and recommendations so that implementation is successful.

Ground Control

The Ground Control member position is designed for thought-leaders who work or live in Danville and may seek to take a proactive role in the Danville Comprehensive Plan community engagement process. As a member of the Ground Control team, they will serve with the City of Danville staff and provide guidance to Community Booster's as they do community engagement sessions.

Members of the "Ground Control" team will be primarily asked to advise and make recommendations about the community engagement process to the consultant team (hired by the City). Additional activities may include:

- Reviewing the guiding principles and overall objectives of the Danville Comprehensive Plan.
- Providing wisdom on the best approaches to reach the city's traditionally disenfranchised populations.
- Facilitating partnerships to improve stewardship and accountability.
- Providing insight and advice about where and how to host small conversations and tabling sessions at local events within the community.
- Advising what types of events would be most successful in reaching all segments of Danville's population.
- Collaborating with the City of Danville and the community stakeholders to integrate efforts to increase the staying power of the engagement process and plan recommendations after the Comprehensive Plan is written.
- Identifying potential pitfalls or issues in engagement efforts, use of language, or other areas that might compromise the integrity of the planning process.
- Vetting consultant recommendations.
- Providing support and/or participating at larger community meetings.

An initial orientation meeting will occur to review the proposed community engagement approach for the planning process. Then, it is estimated that there will be one meeting held per month over the next 12 months on a regular schedule. These meetings will consist of consultant presentations, open discussions, and facilitated exercises that assist in guiding the formation of the Comprehensive Plan. Each meeting will be approximately 1.5 hours in length. Full participation in discussions is requested of participants, understanding that emergencies do arise from time to time. Additionally, their participation at some community meetings and events would be beneficial so that they may hear directly from the neighbors, business owners, and other stakeholders.

Community Boosters

The Community Booster position is designed for passionate grassroots organizers who work or live in Danville and desire to take a proactive role in the Danville Comprehensive Plan community engagement process. As a Community Booster, they will act as an extension of the PlanIt Danville project team and assist with community outreach.

"Boosters" will work in a team with others with primary tasks that include increasing awareness of, and participation in, the planning process for Danville's Comprehensive Plan effort. Community Boosters will:

- Attend small gatherings where people already meet and engage, anywhere from church study groups to soccer fields.
- Conduct door-to-door outreach in neighborhoods, business districts, and where people may not feel invited to participate and/or who would not ordinarily participate in a planning process.
- Hold "pop-up" events using a roving planning vehicle to survey residents and community members about their priorities for the future.

- Create unique own events that are relevant to the community, and which can contribute to the planning process.
- Host open houses and meetings in the PlanIt Danville storefront.
- Provide support at larger community meetings alongside the consultant team.

Eight (8) hours of training is required to become a Community Booster. Training will provide each Booster with knowledge regarding the planning process, instruction, and tools to conduct effective meetings and supportive skills such as conflict resolution. This is a paid position. Bilingual facilitators will receive an additional bonus where another language is required to ensure effective communication with participants. The number of hours may vary based on the project timeline but will not generally exceed 12 hours per week. There will be busy points in the process where the need may increase to approximately 24 hours of time. Work hours are flexible: daytime, evenings, or weekend schedule based on each individuals needs and availability. The overall commitment is approximately one year.

PROJECT TIMELINE AND PROCESS

The total project planning period will be 18-months (the additional six (6) months allow for creating the final Plan and developing an implementation program). The community advisors will guide the engagement approach through the community organizers on engagement tools that will best serve the targeted audience Key process design components include:

- The overall approach is iterative– with each step building on the one before it so that the community can see their input will be used and ensure it is correctly understood, which informs how the development of the next phase.
- Large city-wide meetings will be used at critical points in the process so that all city areas can learn from one another.
- In each project phase, pre-programmed community events meet people where they are, in addition to providing for online/virtual input opportunities and special project-related events.
- Engagement methods will accommodate differences in learning and communication styles (verbal, drawing, writing).

GRANT REQUEST TIMELINE: July 2022 – December 2023

Phase	Deliverable	Timeline	Engagement
Phase 1 | Define It!	**Let's build on the best of who and what has come before us.**	Months 1-3	Small Conversations

Goal: The planning team wants to hear from everyone who calls Danville home. As a first step, we'll begin conversations with community members who are often the least engaged—older adults, young people, people who rely on public transit, and unhoused individuals. Early on, we will also connect with community members who want to take an active, ongoing role throughout the process. To begin, community trailblazers and innovators serve as inspirational members of the community. We'll also understand the strengths, weaknesses, threats, and opportunities that community members see. How do individuals define their "home"—the neighborhood they live in and its key features? We also want to learn about that and create maps for people to begin conversations.

Key Areas of emphasis:

- ***Storytelling:*** *Acknowledge History through historical figures like Wendall Scott the Nascar driver.*
- ***Mapping:*** *Have the community draw and define their neighborhood centers.*
- ***Data / Survey:*** *SWOT analysis through strengths, weaknesses, opportunities, and threats.*

Phase 2 | Dream It!	**Let's envision new solutions to existing issues.**	Months 3-6	Community Event #1

Now we're ready for the first-ever event this century that will bring all the neighborhoods of Danville together. You'll be able to see and respond to community members' shared reflections and perspectives on what community means to them. Building on this milestone, together, we'll factor in all the current issues and opportunities to arrive at a shared vision and set of values. During this phase, the planning team will also open a storefront home-base to welcome individuals and groups who want to learn more and connect further, which helps ensure everyone can take who wants to. A mobile engagement vehicle will visit different sites and events where community members come together.

Key Areas of emphasis:

- ***Storytelling:*** *Quality of life today through the lens of current successes, issues, and barriers.*
- ***Mapping:*** *Show neighborhood map and allow for feedback showcased through daily events.*
- ***Data / Survey:*** *Weaknesses and threats define the vision while the strengths and opportunities inform the projects values.*

Phase 3 | Design It!	**Let's set specific goals and outcomes—and look to how they might shape the Danville landscape.**	Months 6-10	Community Event #2

With the beginning of a new school year, let's look at other communities' successes for inspiration we can apply to Danville. In addition to gaining real-world insights, this effort will test the vision and values we have developed. It will allow us to identify the tasks we must accomplish to realize our vision. It will also help us see how we should track progress and measure success. Together we'll review and refine and maps or plans we have drawn up to date.

Key Areas of emphasis:

- ***Storytelling:*** *Aspire through visually identifying existing communities that reflect the values of the project.*
- ***Mapping:*** *Get feedback in opportunities that promote change.*
- ***Data / Survey:*** *Test the vision statements and analyze the tasks needed to accomplish the vision paired with brainstorming key metrics.*

Phase 4 | Detail It!	**Together let's decide who in the community will lead what.**	Months 10-12	Community Event #3

We're ready to think about how everyone in the community is interconnected and how different individuals and groups can help bring the community's values and priorities to life. In doing so, we'll study the local map, prioritize areas for future investment, and brainstorm ways to act. We will identify potential "owners" to assume responsibility for critical aspects of the implementation effort. This phase will include up to four special studies to develop our shared understanding of what policy, program, or practice steps might be needed to get an early start on advancing key ideas and projects.

Key Areas of emphasis:

- ***Storytelling:*** *Empower the community to be the change and ask what is needed to take action.*
- ***Mapping:*** *This analysis will prioritize geographic areas that build criteria for investment with themed breakouts for the community, stakeholders, and city staff*
- ***Data / Survey:*** *Taking the time to list and brainstorm options to implement and prioritize.*

Phase 5 | Do It!	**Let's draw up an action plan to achieve our aspirations.**	*Months 13-18*	Community Event #4

During this final phase of the Plan process, the planning team will bring together all the findings, studies, and analyses from the effort to date to draft the 20-year Comprehensive Plan for Danville. As a companion to the project, we will also develop a five-year strategy to help stakeholders, foundations, champions, and community members to get the implementation off to a great start. Once we're all set, let's share the plan and celebrate our effort together with a lively, final community event!

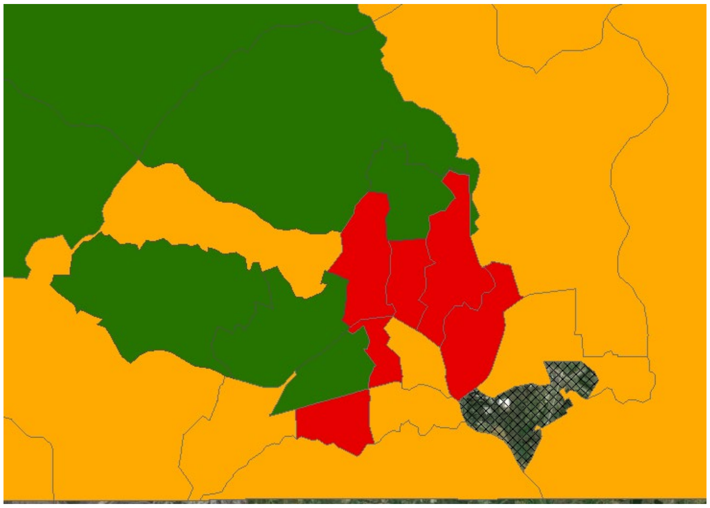


Figure 2- Socially Vulnerable Classifications. Red indicates High social vulnerability and Orange indicates moderate social vulnerability.

February
2022
- Extend Invite to Ground Control
- Recruit Community Boosters

KICK OFF

March

DEFINE IT

- Ground Control Orientation
- **Community Booster Training**
- Storefront Setup

April

- **Storefront Opens**
- *Agency Work Session*
- Ground Control Strategy Meeting

May
Farmer's Market / 1
Every Saturday thru October
Rods and Rides / 7

- (2) Technical Focus Group Sessions
- *Agency Work Session*
- Engagement Rover Launch
- Ground Control Strategy Meeting
- *Agency Work Session*

June
Music at the Market / 16 - July 28
Children's Festival / 18

COMMUNITY EVENT #1

July
Farmer's Market |
Every Wed. July - August
4th of July Celebration

DREAM IT

- *Agency Work Session*
- (2) Technical Focus Group Sessions

August
National Night Out / 5

- Ground Control Strategy Meeting
- *Agency Work Session*

September

COMMUNITY EVENT #2

Blue Ridge Music Festival / 8 - 11

DESIGN IT

- *Agency Work Session*

October
River District Festival
Market Monster Mash / 31

- (2) Technical Focus Group Sessions
- *Agency Work Session*
- Ground Control Strategy Meeting

November

COMMUNITY EVENT #3

DETAIL IT

- *Agency Work Session*

December
Christmas Parade / 3
Light Show / 8 - 22

- (2) Technical Focus Group Sessions
- *Agency Work Session*

January
2023

- Ground Control Strategy Meeting
- Storefront Closes

February

COMMUNITY EVENT #4

DO IT

- Synthesis and Master Plan Writing

March

April

May

- Ground Control Strategy Meeting

Final Comprehensive & Implementation Plan Deliverable

June

COMMUNITY EVENT #5

Start Implementation Plan
5 Year Plan for the City of Danville, Stakeholders, Foundations, Champions, etc. (Companion document)

July

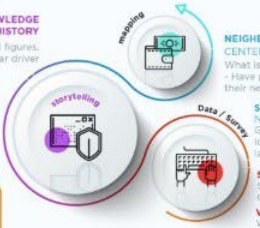
Mission 1
Initiate public involvement

Mission 2
Prepare flight manual

SMALL CONVERSATIONS
Seniors | Students | Homeless Shelter |
Bus Riders | Parks and Recreation Participants
Churches | Block Clubs / Neighborhoods | Disabilities

ACKNOWLEDGE HISTORY
Cutouts of historical figures, e.g. Wendell Scott Nascar driver

QUALITY OF LIFE TODAY
What are the issues and barriers? What's working?



NEIGHBORHOOD CENTER
What is the neighborhood center?
- Have participants draw what defines their neighborhood to them.

SHOW NEIGHBORHOOD MAP
Get feedback: Using the map, draw your week! Identify key places noting the nodes and landmarks that make up your neighborhood

SWOT
Strengths / Weaknesses / Opportunities / Threats

VISION / VALUES
Weaknesses + Threats = Vision
Strengths + Opportunities = Values

Mission 3
Share history and quality of life |

Map neighborhood |

Survey SWOT |

Visioning

Mission 4
Department and organizational functions, challenges, and opportunities.

Strategic plans for organizations and departments (inventory)

Mission 5
Share aspirations |

Map opportunities for change |

Survey vision components

Mission 6
Map idea alignment and draft outcomes

ASPIRATIONS
Identify examples in other places
- Draw pictures of what you would like it to be (informed future)

OPPORTUNITIES FOR CHANGE
Get feedback: draw on the map opportunities in the community that could be different today.

VISION COMPONENTS
- Test Vision Statements
- Brainstorm ways to achieve the future vision
- Key metrics

Mission 7
Execute Special Studies: Area specific plans |

Identify community champions

Mission 8
Implementation Readiness Assessment

Execute Special Studies: Area Specific Plans

Identify Community Champion

Implementation Readiness Assessment

Department & Organizational functions, challenges and opportunities.
Strategic plans for organizations and departments (inventory)
Mapping alignment and resources for desired outcomes
Resource Pairing and Gaps Analysis

Mission 9
Empower |

Show + Tell |

List + Brainstorrm |

Prioritization

Mission 10
Define roles and responsibilities |

Measure for desired outcomes

Empowerment
How can you be the change? What do you need to take action?

SHOW + TELL
Mapping analysis / Priority geographic areas
- Build criteria for investment
- Themed-based breakouts

LIST + BRAINSTORM
List and brainstorm options to implement and prioritize

DANVILLE COMMMUNITY ENGAGEMENT PLAN STRATEGY

PlanIt Danville is a community-centered engagement process to develop a new comprehensive plan for the City of Danville. The process intends to capture Danville's future dreams, ideas, and priorities from a diverse array of viewpoints. An essential premise is that the more people that are engaged in shaping the plan, the more likely they will take an active role in implementing the shared vision. Thus, strength and resiliency will be created through activity. Through this year-long journey, this iterative approach will build the community's confidence in their role in shaping their environment while also creating a culture of growth and learning for a successful trajectory for the next two decades.

H. ENHANCED PLAN ELEMENTS FOR RESILIENCY AND FLOOD P REPAREDNESS BUDGET

SUSTAINABILITY AND RESILIENCE elements added by the Resiliency Plan application:	**Estimated costs basis**	**Estimated cost**
· *Providing 3 years of funding for a planning staff Sustainability Planner position to coordinate the planning grant and implementation and transition into a dedicated Floodplain Administrator. Danville needs to build capacity. This staff and outreach program will also satisfy the City's MS4 public involvement and public outreach requirements for the three (3) project years;*	Staff direct and indirect costs	$ 270,000
· *Establishing reliable overhead and cost basis rates for future disaster response efforts so the City receives appropriate financial support in recovery;*	Consultant Budget	$ 30,000
· *Developing an ongoing disaster response training program for City employees that are not first responders.*	Consulting Planner 4 at 100 hours	$ 19,200
· *Providing ongoing training, enrichment and peer exchange opportunities for the Sustainability Planner funded by this grant and other City Staff. Sustainability and equity are cross-cutting priorities that impact all City operations and services. These activities include FEMA training and participation at appropriate national and state/regional conferences or other events.*	$30k for 3 program years	$ 90,000
· *Designating Danville resiliency hubs at community centers that will reduce extreme condition exposure during disasters and improve access to public services and spaces during safe times.*	Consulting Civil Engineer 5 at 200 hours	$ 43,000
HOUSING elements added by the Resiliency Plan grant funding application:		
· *Understanding accurate potential benefits for dwelling weatherization and energy efficiency improvements including updated building condition data.*	Consulting Planner 3 at 160 hours	$ 23,200
Specifically, the City will integrate weatherization opportunities into code enforcement, building inspections, and utility programs to better reach residents and property owners through the Virginia Weatherization Program.	Consulting Planner 4 at 40 hours	$ 6,400
Reducing access barriers to weatherization economic tools provided by Danville Redevelopment Housing Authority, Danville Utilities, and Pittsylvania County Community Action will dramatically assist Danville families to permanently lower crippling utility bills.	Consulting Planner 4 at 40 hours	$ 6,400
· *Updating the City's flood prevention overlay ordinance and other operations to support Community Rating System membership.*	Consulting Planner 3 at 60 hours	$ 8,700
· *Evaluating and creating a flood insurance rebate $50k seed fund for low- and moderate-income areas.*	Consulting Planner 3 at 40 hours + 50k	$ 55,800
· *Developing community outreach promoting permaculture – the design of small agriculturally productive ecosystems suitable to augment household food supplies.*	Consulting Planner 3 at 40 hours	$ 5,800

· *Incorporating floodplain management regulations into the City's subdivision code and any other appropriate ordinances.*	Consulting Planner 3 at 60 hours	$ 8,700
ECONOMIC GROWTH elements added by the Resiliency Plan grant funding application:		
· *Writing a stormwater design manual explaining low impact site development concepts and best management practices for public and private projects in ESRI storymaps. This program element culminates in a community wide education forum with community partners like the Dan River Basin Association and the Danville Science Center.*	Consulting Engineer 2 at 160 hours	$ 21,600
· *Similarly, writing a native plant and tree guide in ESRI storymaps that encourages native landscaping that cools heat islands, replenishes Danville's canopy, provides training to public and private arborists, minimizes stormwater techniques, and beautifies the community with nature-based solutions. This program element culminates in a tree-based outreach event with the City's parks and recreation department during our annual Make Danville Shine community pride celebration.*	Consulting Engineer 2 at 160 hours	$ 21,600
· *Updating the City's Stormwater Management and Flood Prevention internet presence through a redesigned webpage and targeted social media posts to drive increased clicks.*	Planner 2 at 160 hours	$ 20,000
• Selecting, acquiring, and implementing software that supports the City's MS4 and VDPES Industrial permit obligations	Consultant Budget	$ 20,000
· *Implementing a GIS based system for managing public and private stormwater control measures and best management practice design/construction plans, maintenance agreements, and inspection records, including private owners' inspection reports to monitor compliance with maintenance agreements. This process will reduce red tape and increase private business efficiencies.*	Consultant Budget	$ 20,000
· *Integrating floodplain management and land disturbance permits into the City's CityWorks permitting system. This process will reduce red tape and increase private business efficiencies.*	Consultant Budget	$ 20,000
CONNECTIVITY AND MOBILITY elements added by the Resiliency Plan grant funding application:		
· *Evaluate relocating or floodproofing all critical facilities that are in Special Flood Hazard Areas or susceptible to disruption from flooding or other weather events.*	Consulting Engineer 4 at 160 hours	$ 27,200
· *Considering ordinance performance standards for impervious surfaces and developing a data set with plan review tools to analyze impervious surface changes. Transportation infrastructure is the largest contributor to impervious surface runoff in Danville*	Consulting Planner 2 at 60 hours	$ 7,500
· *Designing templates for green infrastructure retrofits in public and open spaces and integrating them into the City's zoning ordinance standards for landscaping. Danville's publicly owned facilities must demonstrate low impact development outcome to lead the way for private development in our community. Every transportation infrastructure should proactively exceed stormwater quality and quantity management requirements*	Consulting Planner 4 at 200 hours	$ 32,000

COMMUNITY HEALTH elements added by the Resiliency Plan grant funding application:		
· *Monitoring and inspecting outfalls and discharge points for illicit discharges with a GIS based system.*	Consulting Engineer 1 at 200 hours	$ 22,000
· *Using micro sensors and other cutting edge data collection tools to collect and analyze data so we better understand the localized effects of pollution like increased temperatures and asthma.*	Consultant Budget	$ 30,000
· *Creating a community blueprint for a net zero carbon goal with a feasible horizon.*	Consulting Planner 5 at 200 hours	$ 35,000
NEIGHBORHOODS, PARKS, AND LAND USE added by the Resiliency Plan application:		
• *Integrating an overall City watershed plan framework within the Plan It Comprehensive Plan.*	Consulting Engineer 2 at 160 hours	$ 21,600
· *Cataloging and producing flood elevation certificates for all buildings in Special Flood Hazard Areas;*	Consulting Engineer 3 at 240 hours	$ 36,000
· *Imagining several community scale flood prevention projects;*	Consulting Engineer 5 at 120 hours	$ 25,800
· *Analyzing stormwater utility feasibility in Danville;*	Consulting Planner 4 at 160 hours	$ 25,600
· *Improving GIS data integrity and feature information for the City's stormwater utility infrastructure;*	Consulting Survey 1 at 300 hours	$ 33,000
	TOTAL:	$ 986,100

I. COMMUNITY ENGAGEMENT BUDGET

1. Capacity Building: id community organizers, training modules (facilitation training, master plan process, engagement approaches), id community advisors to guide procedures throughout the process, coordination	$280,000
2. Community Boosters: training time, resources for small event coordination for groups and neighborhoods (food, bus tickets, children's activities, etc.), time for door knocking, iPad surveys, and hosting tables at events	$60,480
3. Community Booster | Coordinator	$46,800
4. Community Booster | Social Media Marketer	$12,960
5. Mobile Engagement Vehicle | The Ethos Rover: Contains travel materials and display, vehicle branding	$9,000
6. *Community Events and Celebration: promotional materials that encourage community members to represent Danville and take pride in the process (hats, T-shirts, decals, tote bags, water bottles, etc.)	$88,500
7. Event Catering: Local food trucks, catering, etc.	$40,000
8. Project Storefront | Danville Mission Control Center: information center / meeting space, refreshments, storefront branding (window signage), meeting materials, utilities	$31,200

	9. Project Communication Platform: website, social media, yard signs, billboards, banners, postcard invites, feather flags, pole banners	$25,000
	10. Project Advertising: Public Service Announcements, newspapers, magazines, Digital Marketing including Out-of-Home advertising such as billboards, and In-home advertising such as Hulu ads, etc.	$55,000
	TOTAL	**$346,500**

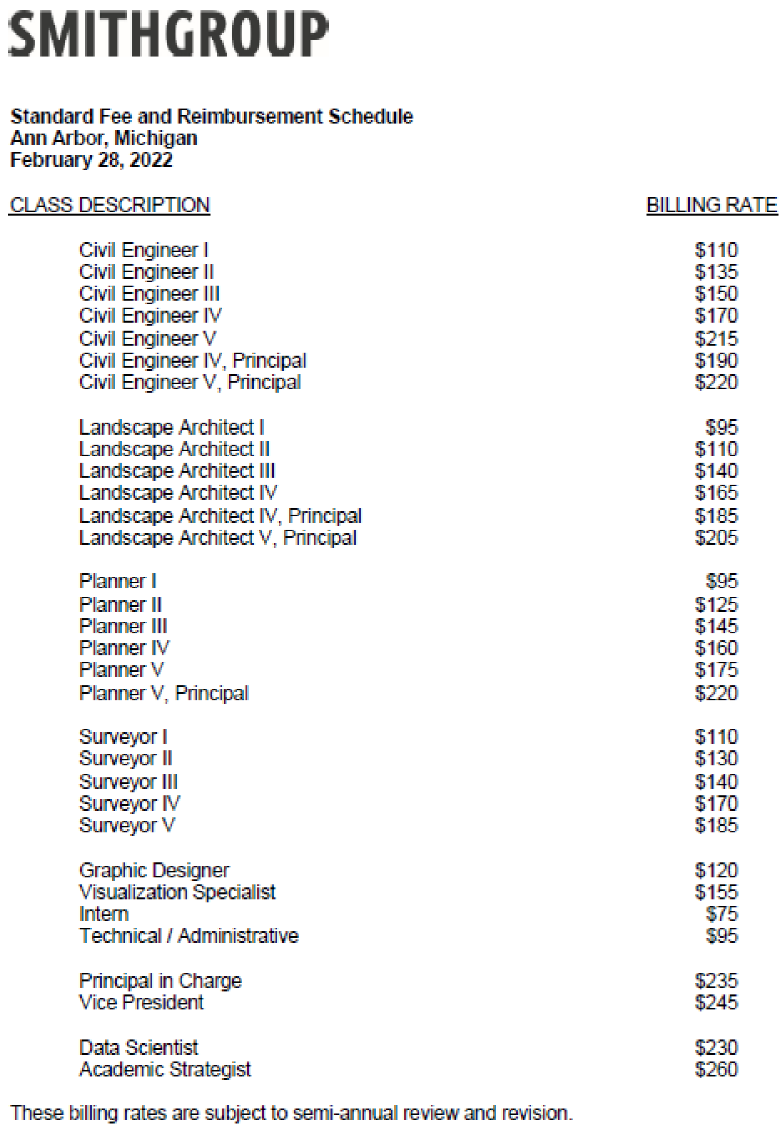
J. PLAN IT DANVILLE PROMOTIONAL MATERIALS BUDGET

	Quantity	**Cost**	**Total**	**Description**
Community Event #1 | Define It				
Branded T-Shirts	1,200	$7.00	$8,400	Promotional material that builds excitement to **learn and prepare for lift off**.
Promotional Decals | Define It	500	$0.30	$150	
Pin | Define It	1,000	$0.87	$870	
Mini Fan	500	$2.98	$1,490	
			$10,910	
Community Event #2 | Dream It				
Branded T-Shirts	200	$7.00	$1,400	Compel the community to “put on their thinking caps” to **envision** a bright future.
Promotional Decals | Dream It	200	$0.33	$66	
Pin | Dream It	1,000	$0.87	$870	
Branded Cap	576	$12.13	$6,987	
			$9,323	
Community Event #3 | Design It				
Branded T-Shirts	200	$7.00	$1,400	Inviting the community to actively **promote** what the shaping their environment.
Promotional Decals | Design It	200	$0.33	$66	
Pin | Design It	1,000	$0.87	$870	
Branded Mug	576	$2.63	$1,515	
			$3,851	
Community Event #4 | Detail It				
Branded T-Shirts	200	$7.00	$1,400	**Empower** community to be leaders in self-advocacy
Promotional Decals | Detail It	200	$0.33	$66	
Pin | Detail It	1,000	$0.87	$870	
Branded Knit Beanie	500	$4.70	$2,350	
			$4,686	
Community Event #5 | Do It				
Branded T-Shirts	200	$700	$1,400	**Celebrate** achievement and kick-off implementation as a community
Promotional Decals | Do It	200	$0.33	$66	
Pin | Do It	1,000	$0.87	$870	
Branded Sunglasses	500	$2.26	$1,130	
			$3,466	
Miscellaneous Décor per event	5	$500	$2,500	
Vehicle Decal	2	$100	$200	
Community Booster Events	7	$5,000	$35,000	
Contingency		15%	$10,490	
		Total	$80,426	
		Anticipated Sales Tax and Fees (10%)	$8,043	
		Promotional Material Total	$88,469	
			TOTAL:	**$88,500**

k. TOTAL CFPF GRANT REQUEST AND CITY MATCH

Enhanced Plan Elements for Resiliency and Flood Preparedness	$ 986,100
Enhanced Public Outreach Program	$ 346,500
Promotional Materials	$ 88,500
Total Enhanced Plan Elements, Outreach, and Promotion	**$ 1,421,100**
TOTAL CFPF GRANT REQUEST	**$ 1,278,990**
Danville Local Match	$ 142,110

I. CITY COMPREHENSIVE PLAN BUDGET BILLING RATES FOR CFPF PROJECT ENHANCEMENT ESTIMATION



SMITHGROUP

Standard Fee and Reimbursement Schedule
Ann Arbor, Michigan
February 28, 2022

CLASS DESCRIPTION	BILLING RATE
Civil Engineer I	$110
Civil Engineer II	$135
Civil Engineer III	$150
Civil Engineer IV	$170
Civil Engineer V	$215
Civil Engineer IV, Principal	$190
Civil Engineer V, Principal	$220
Landscape Architect I	$95
Landscape Architect II	$110
Landscape Architect III	$140
Landscape Architect IV	$165
Landscape Architect IV, Principal	$185
Landscape Architect V, Principal	$205
Planner I	$95
Planner II	$125
Planner III	$145
Planner IV	$160
Planner V	$175
Planner V, Principal	$220
Surveyor I	$110
Surveyor II	$130
Surveyor III	$140
Surveyor IV	$170
Surveyor V	$185
Graphic Designer	$120
Visualization Specialist	$155
Intern	$75
Technical / Administrative	$95
Principal in Charge	$235
Vice President	$245
Data Scientist	$230
Academic Strategist	$260

These billing rates are subject to semi-annual review and revision.

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
City of Danville

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

____ **Project**

____ **Study**

NFIP/DCR Community Identification Number (CID) 510044

If a state or federally recognized Indian tribe, Name of tribe ____

Name of Authorized Official: Ken Larking, City Manager

Signature of Authorized Official: ____

Mailing Address (1): 427 Patton Street

Mailing Address (2): ____

City: Danville **State:** VA **Zip:** 24541

Telephone Number: (434) 799-5100 **Cell Phone Number:** (____) ____

Email Address: klarking@danvilleva.gov

Contact Person (If different from authorized official): Doug Plachcinski, AICP, CFM

Mailing Address (1): 427 Patton Street

Mailing Address (2): ____________

City: Danville **State:** VA **Zip:** 24541

Telephone Number: (434) 799-5260 x3236 **Cell Phone Number:** (____) ____________

Email Address: plachhd@danvilleva.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

__**Capacity Building and Planning Grants**__

☒ Floodplain Staff Capacity.

☒ Resilience Plan Development

  ☒ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☒ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): City of Danville

NFIP Community Identification Number (CID#):(See appendix F 510044

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): ____________________

Flood Insurance Rate Map Number(s) (If Applicable): Community-Wide initiative

Total Cost of Project: $1,421,100 for CFPF planning initiative enhancement and capacity

Total Amount Requested $1,278,990 ($142,110 local match)

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Danville	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☒ Yes ☐ No
Applicant Name:	City of Danville

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans. (Integrated into active Comprehensive Plan)	**55**	55
Development of a new resilience plan.	**55**	55
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development. 30	**40**	40
Stakeholder engagement and strategies.	**25**	25
Goal planning, implementation and evaluation.	**25**	25
Long term maintenance strategy.	**25**	25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	15
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	15
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☑ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☑ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

City of Danville Resiliency Planning and Capacity Building Grant Application

1 message

Plachcinski, Doug <plachhd@danvilleva.gov> Fri, Apr 8, 2022 at 3:21 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

It is my pleasure to submit the attached Community Flood Preparedness Fund application to provide Sustainability Planning and Build Capacity throughout Danville to mitigate future flooding and respond resiliently to a rapidly changing climate.

We look forward to working with the program.

Danville
All-America City
NATIONAL CIVIC LEAGUE
2020

Doug Plachcinski, AICP, CFM

Planning Director & Zoning Administrator

Community Development Department

City of Danville, Virginia

Phone: (434) 799-5260 x-3236

Email: plachhd@danvilleva.gov

P.O. Box 3300

Danville, VA 24541

www.danvilleva.gov

CID510044_Danville_CFPF.pdf
2698K

2022 Virginia Community Flood Preparedness Fund

MOULTRIE AVENUE ROADWAY & DRAINAGE IMPROVEMENT PROJECT

Applicant: City of Hopewell, Virginia
Contact: Austin Anderson, City Engineer
Phone: 804.541.2379
Email: aanderson@hopewellva.gov

Moultrie Avenue Roadway & Drainage Improvements Project

Table of Contents

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Hopewell

Category of Grant Being Applied for (check one):

____Capacity Building/Planning

__X___Project

_____Study

NFIP/DCR Community Identification Number (CID)____510080

If a state or federally recognized Indian tribe, Name of tribe________________________

Name of Authorized Official: John M. Altman, Jr.

Signature of Authorized Official: John M. Altman

Mailing Address (1): 300 N. Main Street

Mailing Address (2): ____

City: Hopewell State: Virginia Zip: 23860

Telephone Number: (804) 541-2243 Cell Phone Number: (____) ______________

Email Address: matlman@hopewellva.gov

Contact Person (If different from authorized official): Austin Anderson ________

Mailing Address (1): _300 N. Main Street____________________

Mailing Address (2): ______________________________

City:___Hopewell__________**State:**___VA__________**Zip:** __23860 **Telephone**

Number: (804) _541-2379 **Cell Phone Number: ()** ______________

Email Address: aanderson@hopewellva.gov____________________

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes__ X__ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- X **Storm water system upgrades.**
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.

X, Stream bank restoration or stabilization.

☐ Restoration of floodplains to natural and beneficial function.

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  - ☐ Revisions to existing resilience plans and modifications to existing comprehensive andhazard mitigation plans.
  - ☐ Resource assessments, planning, strategies and development.
    - ○ Policy management and/or development.
    - ○ Stakeholder engagement and strategies.

Location of Project (Include Maps): Moultrie Avenue, Hopewell, VA

NFIP Community Identification Number (CID#): 510080

Is Project Located in an NFIP Participating Community? **X Yes** ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes **X No**

Flood Zone(s) (If Applicable): ______________________________

Flood Insurance Rate Map Number(s) (If Applicable): ______________

Total Cost of Project: **$2,240,300**

Total Amount Requested **$1,344,180**

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation

Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Hopewell	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☐ **Yes** ☐ **No**	
Applicant Name:	City of Hopewell	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. **The category chosen must be the primary project in the application.**		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gaugeinstallation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	**35**
All other projects	**25**	
7. Is the project area socially vulnerable? (**Based on [ADAPT VA's Social Vulnerability Index Score.)]**		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	

Moderate Social Vulnerability (0.0 to 1.0)	8	8
Low Social Vulnerability (-1.0 to 0.0)	0	
Very Low Social Vulnerability (Less than -1.0)	0	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	10	
No	0	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	10	
No	0	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	5	5
No	0	
11. Does this project provide "community scale" benefits?		
Yes	20	20
No	0	
Total Points		

Appendix D – Checklist for All Categories

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	**X Yes** ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	**X Yes** ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	**X Yes** ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	**X Yes** ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	**X Yes** ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	**X Yes** ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	**X Yes** ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	**X Yes** ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No **X N/A**
Completed Scoring Criteria Sheet in Appendix B, C, or D	**X Yes** ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	**X Yes** ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	**X Yes** ☐ No ☐ N/A

Scope of Work Narrative – Projects

Project Information

Project Overview

The City of Hopewell, Virginia seeks $1,344,180 in Virginia Community Flood Preparedness Funds matched with $896,120 in local funds to undertake the construction of roadway and drainage improvements to Moultrie Avenue and its surrounding blocks to address recurring inland flooding. These improvements will include installation of pavement, curb and gutter, drainage structures, grass swales, channel improvements, and stream bank stabilization. The drainage conveyance design for this project consists of a series of curb inlets, swales, and storm systems. The strategy places an emphasis on minimizing utility conflicts related to overhead electrical poles and existing sanitary lines, although the relocation of some sanitary lines will be required. The project approach also placed an emphasis on minimizing tree removal, shifting the alignments of the proposed roadway and drainage improvements. Additionally, the roadway design team varied the typical section throughout the corridor to match the existing roadway and minimize the amount of new impervious area.

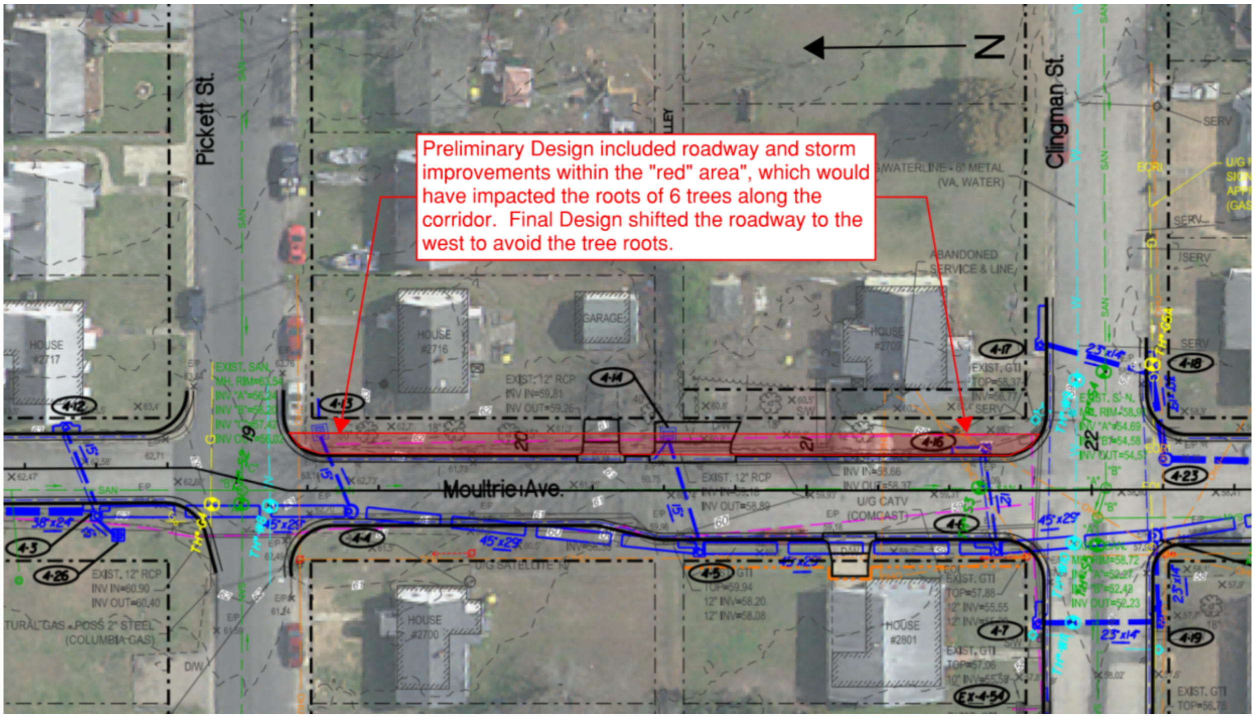
The Moultrie Avenue Roadway and Drainage Improvement project has a total length of approximately 1,700 linear feet, from the intersection of Jackson Street to the intersection of Bluefield Street.

AERIAL SITE MAP (NOT TO SCALE)

The proposed project will undertake a combination of nature-based and gray infrastructure development designed to intercept, contain, and convey water more efficiently and effectively. Project activities will include:

- A closed drainage system along Moultrie Avenue from the intersection of Jackson Street to the existing channel south of Bluefield Street, bypassing the undersized existing culverts at Clingman Street, Hooker Street, and Bluefield Street.
- Concrete driveway aprons and missing links of curb and gutter from the intersection of Johnson Street to Hooker Street.
- New pavement, including surface overlay and sections of full depth reconstruction.

- Channel and stream bank improvements upstream and downstream of the culvert replacements.
- Swale stabilization upstream of inlet 4-27.
- Tree preservation between Pickett Street and Clingman Street; south of Bluefield Street, as highlighted with the below graphics:



Preliminary Design included roadway and storm improvements within the "red" area", which would have impacted the roots of 6 trees along the corridor. Final Design shifted the roadway to the west to avoid the tree roots.

Preliminary Design "red" impacted 6 trees; Final Design avoided these impacts

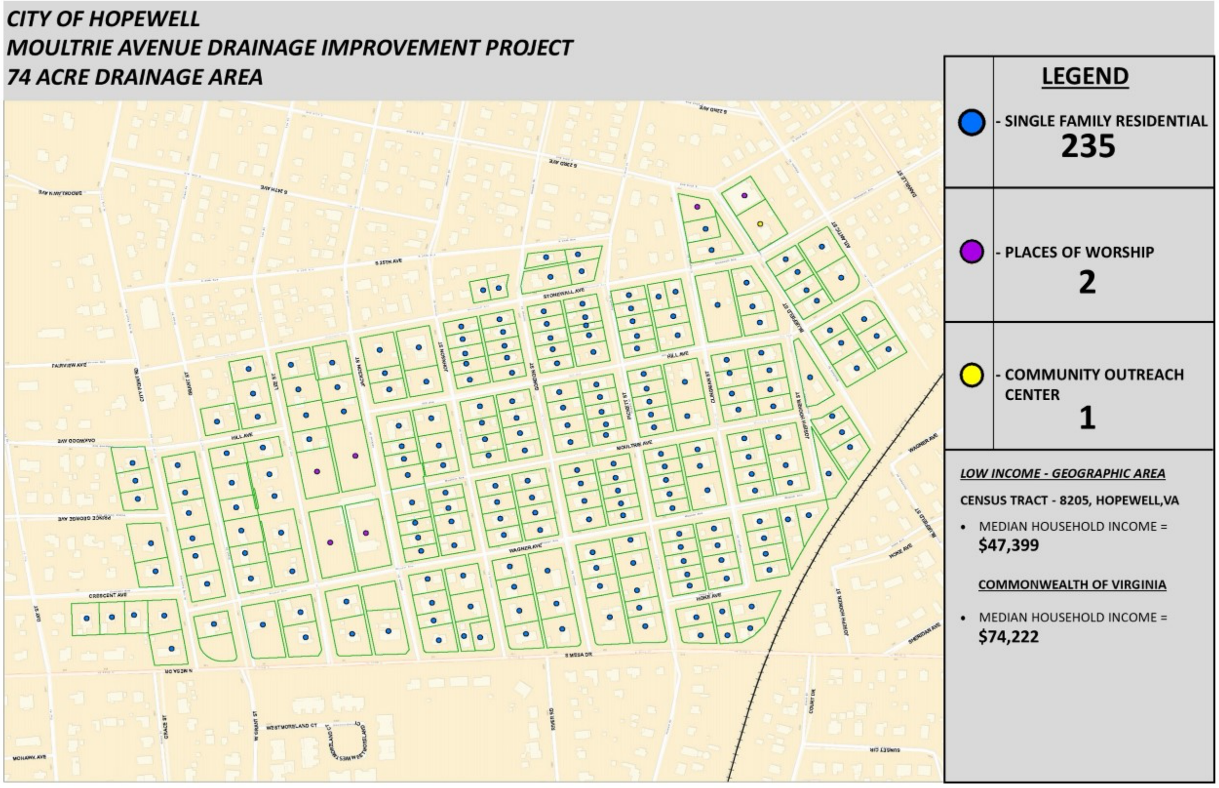
Moultrie Avenue (looking north); Preserved trees shown in the center of the picture

Once completed, the Moultrie Avenue Roadway and Drainage Improvements Project will have numerous and far-reaching benefits including enhanced protection of human health and safety, minimized damage to private property and structures, minimized damage to roads and utilities, reduced expenditures of public money for constructing expensive flood control, and protection of wetlands and waterways.

Population and RL and/or SRL Properties, Residential and/or commercial structures, and Critical Facilities

The Moultrie Avenue Roadway and Drainage Improvements project takes place and directly impacts Census Tract 516708205. According to the U.S. Census Bureau, this tract is home to 4,858 residents and 1,655 households. The median household income in 2020 was $47,399 and the poverty rate was 9.5%. The median age is 38.9. The residents are 60.5% white, 28.8% black or African American, 1.2% Asian, 9.5% other. There are 1,943 housing units in Tract 8205, of which 14.8% are vacant. The housing stock in this tract is also aging with no new housing developments since 2009 and over 68% of housing units built before 1970.

The project team has estimated that the Moultrie Avenue Roadway and Drainage Improvement project will directly benefit 235 single family residential households. This area spans approximately 74 acres and does not include and repetitive loss or severe repetitive loss structures within the project area. In addition to these households, the project area contains two houses of worship and one community outreach center.



Historic Flooding Data and Hydrologic Studies Projecting Flood Frequency

The Moultrie Avenue Roadway and Drainage Improvement project was prioritized and selected by the City of Hopewell as a result of repetitive inland flooding during heavy rainfall events. While this project is not located in a FEMA mapped Flood Hazard Area, the existing stormwater system is undersized and ill-equipped to handle even a 1-year flood event.

Since August 2020, the City has recorded 6 significant flood events within the project area, including August 15, 2020, August 23, 2020, November 12, 2020, July 1, 2021, July 26, 2021, and August 20, 2021. These events overtopped the roadways within the project limits, flooded multiple properties and caused flood damage to multiple homes. These flooding events have continued to block access to driveways and roadways as well as causes water damages to structures and long-term issues including mold.

Flooding during July 26th, 2021 storm event

Flooding during August 15th, 2020 storm event

Flooding during November 12th, 2020 storm event

According to Flood Factor, there are 717 properties in Hopewell that have greater than 26% chance of being severely affected by flooding over the next 30 years. This represents 7% of all properties in the city. From 2021 to 2051, the City is likely to experience a 0.5% increase in the percent of properties at risk in the 500-return period (0.2% annual risk) from 7.50% in 2021 to 8.00% in 2051.

Cost Share

The City of Hopewell is fully prepared to cover the cost share of the proposed project, as highlighted in the attached budget narrative and match commitment letter. The funding for the grant match is contained in the Hopewell 2022 – 2026 Capital Improvement Plan.

Administration of local floodplain management regulations

The City of Hopewell's Floodplain Ordinance can be found at https://library.municode.com/va/hopewell/codes/code_of_ordinances?nodeId=COCI_APXAZOOR_ARTXVFLDI_LJUBOCH

The Regional Hazard Mitigation Plan is located at the Crater Planning District Commission website at https://craterpdc.org/environment/documents/hazmit2017/Hopewell_%20JurSumMaps_2017.pdf

The current Hopewell Comprehensive Plan can be found at https://hopewellva.gov/wp-content/uploads/2018/03/City-of-Hopewell-2018-Comprehensive-Plan-Final-Draft.pdf

Need for Assistance

Hopewell is an economically distressed community that has recently been experiencing a population decline, reducing its tax base and highlighting the challenges of being a small-town, manufacturing community in the 21st Century. Despite being only miles from Richmond, the state capital of Virginia, Hopewell's economy is struggling compared to the rest of the Commonwealth of Virginia and the United States. On key indicators of income, Hopewell is drastically worse off than Virginia and the country overall. Hopewell has a median household income of only $39,030, compared to $76,456 at the state level, and its per capita income is only $21,927, compared to $40,635 at the state level. Furthermore, Hopewell suffers from unemployment woes, with 6.9% of Hopewell residents unemployed, compared to 4.6% across Virginia. Economic opportunity is also a challenge as only 14.8% of residents have a four-year college degree or graduate degree, which is significantly less than Virginia's 38.8% of residents with four-year degrees or higher and the national average of 32.1%.

According to the Virginia ADAPT screening tool, the project area census tract is classified as having moderate social vulnerability with a vulnerability index score of 0.4; however, the CDC ATSDR's Social Vulnerability Index for 2018 identified an overall SVI Score of .6595, indicated a moderate to high level of vulnerability. While the project area is moderately well-off compared to other census tracts in Hopewell, it still lags the State on key economic indicators including median income, unemployment rate, and poverty rate.

Hopewell has the staff resources to support flood mitigation and adaptation measures and at present, the City employs approximately 6 relevant staffers including a floodplain administrator who also serves as the director of planning, two engineers, an emergency manager, and a building official. Despite having staff capacity, the city is facing ongoing pressures to address aging infrastructure and stricter stormwater management regulation under tight budget constraints. Recognizing the need to take a long-term approach to stormwater management, the City utilized GIS floodplain mapping and stormwater drainage and storm sewer asset inventories to create a Stormwater Resilience Plan adopted by City Council in September 2021. The City is now ready to implement this plan, but lacks the financial resources needed to undertake larger, long range projects with community scale benefits such as the proposed Moultrie Avenue Roadway and Drainage Improvement project.

Goals and Objectives

Investing in upgrades to aging and overloaded stormwater systems can allow water to be conveyed more efficiently and effectively, improving flood resilience and protection in areas prone to recurring flood events. Effective stormwater conveyance such as that proposed in this Moultrie Avenue Roadway and Drainage Improvement project also provides environmental, social, and economic benefits to the local community. Expected benefits from the project include the reduction of flooding to protect people and property in the 74-acre project area, reduced demand on existing stormwater drainage systems, reduced erosion, and increased protection of the local environment by decreasing the headwater elevations at various culverts.

By investing in enhanced stormwater systems in the project area, the project team intends to meet the following goals and measurable objectives.

Goal 1. Improve stormwater conveyance to relieve the burden on existing infrastructure systems

1. Objective: Upgrade the storm system to improve conveyance from the 1-year event to the 10-year event.

Goal 2: Control flooding in the project area to protect life and property

1. Objective: Reduce backwater flood elevations at the properties upstream of the culverts at Clingman Street, Joseph Hooker Street, and Bluefield Street.

Goal 3: Protect waterways to support healthy streams and rivers

1. Objective: Stabilize 170 lf of existing banks and channels
2. Objective: Restore 0.72 acres of native grasses and plants
3. Objective: Maximize Tree Preservation. Design development reduced the removal of trees from 7 (preliminary) to 1 (final) by shifting the alignment of Moultrie Avenue between Pickett Street and Clingman Street.

Approach, Milestones, and Deliverables

The project team has completed all preliminary design, engineering, and permitting activities for the Moultrie Avenue Roadway and Drainage Improvement project and the project is ready to be bid out to eligible construction firms through a competitive RFP process. As such, the project team has identified the following approach, milestones, and deliverable to implement the construction of the project. The project team anticipates a 2-year project period.

Milestone 1: Project Kick-off

Deliverables

- Agreement signed with DRC
- Confirm project team, roles, and responsibilities
- Hold initial kick-off meeting

Milestone 2: Competitive Procurement Process

Deliverables

- Finalize RFP for construction services
- Issue a public bid
- Review qualified applicants
- Select contractor

Milestone 3: Mobilization

Deliverables

- Deliver equipment and operating supplies to site
- Establish offices, building, and other necessary general facilities for the contractor’s operations at the site
- Complete insurance agreements
- Establish traffic controls

Milestone 4: Construction

Deliverables

- Construction Survey
- Complete excavation and demolition activities
- Closed drainage system along Moultrie Avenue from the intersection of Jackson Street to the existing channel south of Bluefield Street, bypassing the undersized existing culverts at Clingman Street, Hooker Street, and Bluefield Street.
- Concrete driveway aprons and missing links of curb and gutter from the intersection of Johnson Street to Hooker Street.
- New pavement, including surface overlay and sections of full depth reconstruction.
- Channel improvements, stream bank stabilization, and tree preservation.

Milestone 5: Demobilization

Deliverables

- Disassembly, removal, and site cleanup

Milestone 6: Project Closeout

Deliverables

- Final report delivered to DCR

Project Schedule

	Q3 2022	**Q4 2022**	**Q1 2023**	**Q2 2023**	**Q3 2023**	**Q4 2023**	**Q1 2024**	**Q2 2024**
Project Kick-Off	■							
Competitive Procurement Process	■							
Mobilization		■						
Construction		■	■	■	■	■	■	

Demobilization								🟦
Project Closeout								🟦

Project Partners

Partner	**Role**
Virginia Department of Transportation	Key funding partner; assisted in the development of project design and engineering
HDR	Completed preliminary design and engineering
Virginia American Water	Contributing to relocation effort of water lines
Columbia Gas	Contributing to relocation of gas lines

Relationship to Other Projects

Hopewell has received $330,000 in cost share from the Virginia Department of Transportation through their Revenue Sharing Program matched with $330,000 in local funds to undertake the design and engineering of this project, which is now completed. In addition, this project builds off the recently completed Hopewell Stormwater Resiliency Plan, adopted by City Council in September 2021. The Moultrie Avenue Roadway and Drainage Improvement project was identified as a Category 4 – Long Range project and was included in the City’s 2022-2026 Capital Improvement Plan. This project is one of the largest proposed projects in terms of cost and scale in the Stormwater Resilience Plan.

Maintenance Plan

The Moultrie Avenue Roadway and Drainage Improvement Project, once implemented and in place, will adhere the maintenance standards outlined in the City of Hopewell Post-Construction Stormwater Management Program and Process. This Post-Construction Stormwater Management Manual includes a series of written procedures that ensure adequate long-term inspection and maintenance of Stormwater Best Management Practices (BMPs) and has been developed as part of Minimum Control Measure 6 as described in the City’s municipal separate storm sewer system (MS4) Permit. Hopewell’s Post-Construction Stormwater Management Program includes three distinct components: program documentation, inspections, and maintenance. These components will remain the responsibility of the City’s Public Works Department.

The City’s Post Construction Stormwater Management Manual can be found at https://hopewellva.gov/wp-content/uploads/2019/09/Hopewell-Post-Construction-SWM-Manual-w-Apps-Rev-Sep2019.pdf.

Criteria

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**

    a. Yes

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**
    a. Yes, see attached.
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**
    a. N/A
4. **Has the applicant provided evidence of an ability to provide the required match funds?**
    a. Yes, see attached letter of match commitment.
5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**
    a. Yes

Budget Narrative

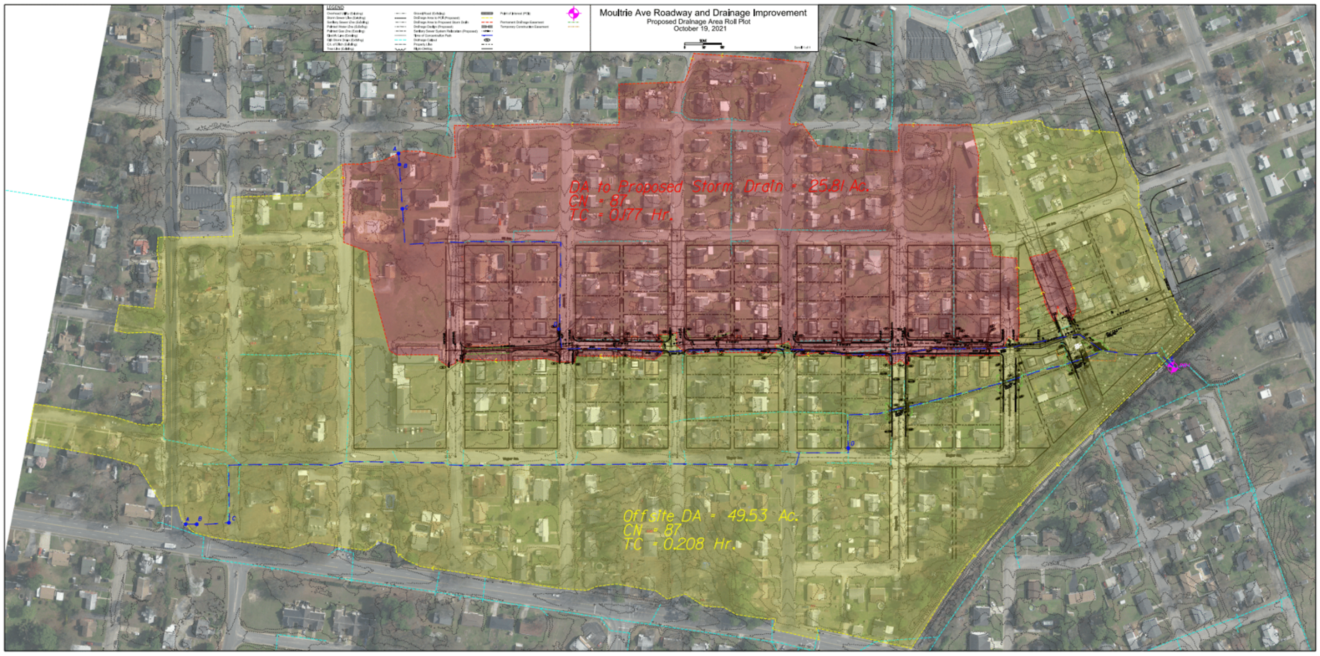
Moultrie Avenue Roadway & Drainage Improvement Estimated Project Budget

Item	Cost
Mobilization	$125,016
Construction Surveying	$18,815
Construction	$2,096,469
Estimated Total Project Cost	**$2,240,300**
Virginia DCR RTP Request	**$1,344,180**
Local Match – City of Hopewell	**$896,120**

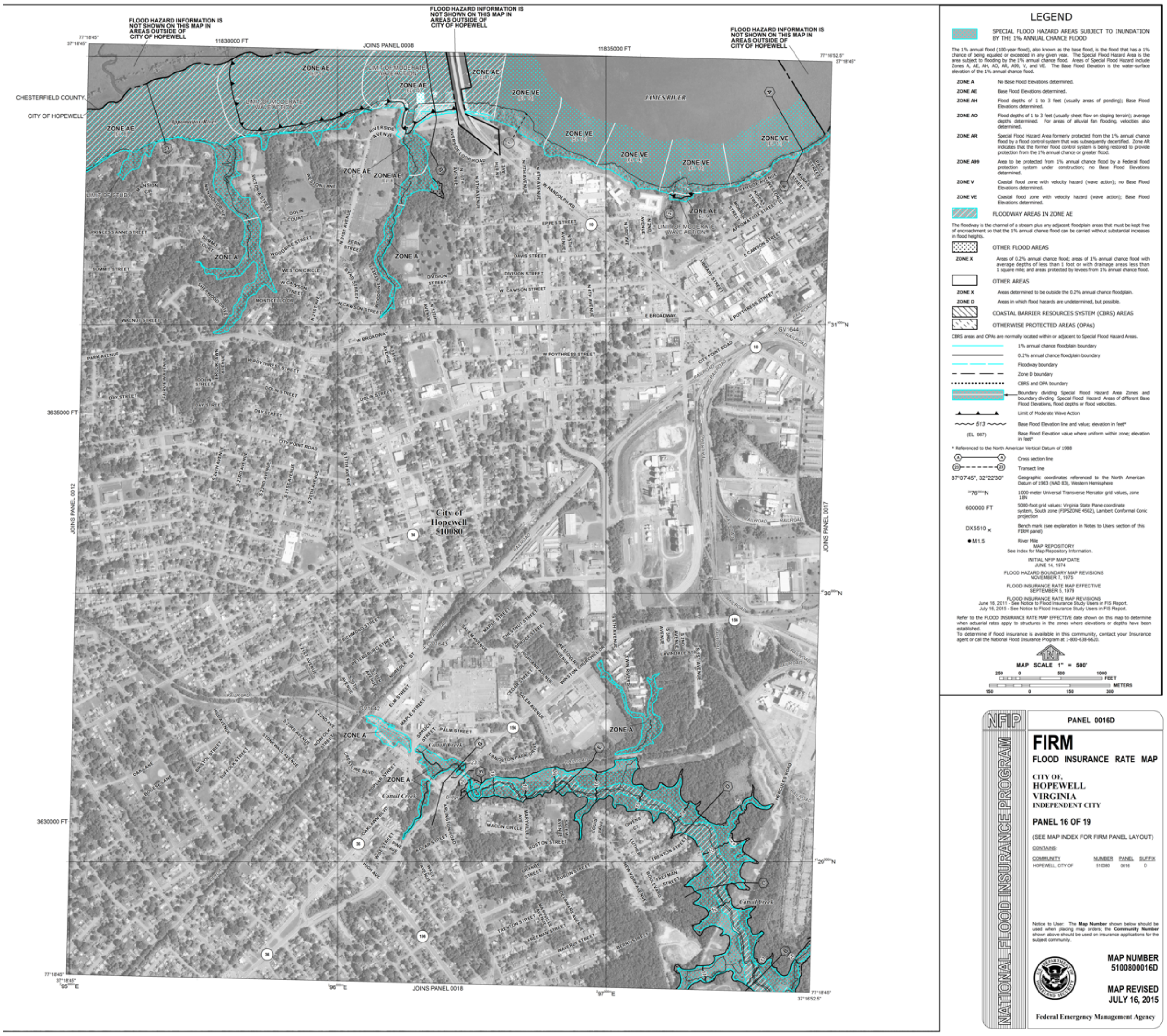
The proposed items and estimated total project cost were developed by HDR as part of the design and engineering process. For a complete list of quantities and unite prices for the proposed scope of work, please see the attached detailed cost estimates.

Supporting Documents

Project Area Map



Flood Insurance Rate Map



LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

───	1% annual chance floodplain boundary
───	0.2% annual chance floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
········	CBRS and OPA boundary
▨	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
▲ ▲ ▲	Limit of Moderate Wave Action
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

Ⓐ——Ⓐ	Cross section line
㉓- - -㉓	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
⁴²76⁰⁰⁰ᵐN	1000-meter Universal Transverse Mercator grid values, zone 18N
600000 FT	5000-foot grid values: Virginia State Plane coordinate system, South zone (FIPSZONE 4502), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
See Index for Map Repository Information.

INITIAL NFIP MAP DATE
JUNE 14, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS
NOVEMBER 7, 1975

FLOOD INSURANCE RATE MAP EFFECTIVE
SEPTEMBER 5, 1979

FLOOD INSURANCE RATE MAP REVISIONS
June 16, 2011 - See Notice to Flood Insurance Study Users in FIS Report.
July 16, 2015 - See Notice to Flood Insurance Study Users in FIS Report.

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0016D

FIRM
FLOOD INSURANCE RATE MAP

CITY OF,
HOPEWELL
VIRGINIA
INDEPENDENT CITY

PANEL 16 OF 19

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HOPEWELL, CITY OF	510080	0016	D

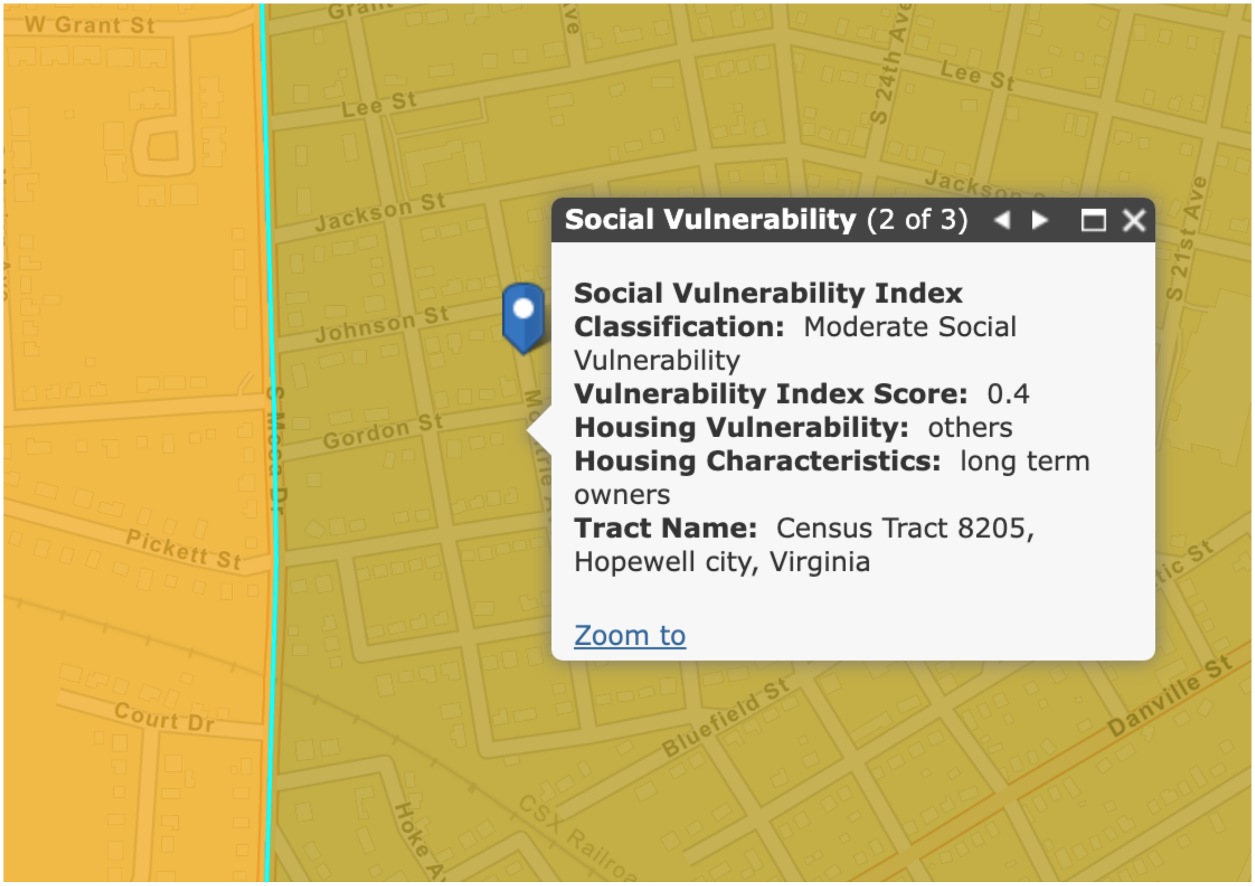
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
5100800016D

MAP REVISED
JULY 16, 2015

Federal Emergency Management Agency

ADAPT Social Vulnerability Viewer



Social Vulnerability (2 of 3)

Social Vulnerability Index Classification: Moderate Social Vulnerability
Vulnerability Index Score: 0.4
Housing Vulnerability: others
Housing Characteristics: long term owners
Tract Name: Census Tract 8205, Hopewell city, Virginia

Zoom to

Detailed Cost Estimates

CITY OF HOPEWELL, VA
Moultrie Ave Roadway and Drainage
Improvements UPC 113072Final Design (100%)
Cost Estimate - Revised 10/20/21

VDOT ITEM NO.	VDOT SPEC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	TOTAL
00100	513	MOBILIZATION	LS	1	$126,563.97	$126,563.97
00101	517	CONSTRUCTION SURVEYING	LS	1	$19,121.58	$19,121.58
00120	303	REGULAR EXCAVATION	CY	1330	$43.01	$57,203.30
00140	303	BORROW EXCVATION	CY	400	$19.62	$7,848.00
00588	501	UNDERDRAIN UD-4	LF	3003	$17.59	$52,822.77
00591	501	CROSSDRAIN CD-2	LF	420	$33.70	$14,154.00
00595	302	OUTLET PIPE	LF	204	$40.01	$8,162.04
01120	302	12" PIPE	LF	290	$40.00	$11,600.00
01150	302	15" PIPE	LF	389	$63.81	$24,822.09
01180	302	18" PIPE	LF	75	$70.47	$5,285.25
02140	302	23" X 14" ELLIPTICAL PIPE	LF	210	$99.00	$20,790.00
02190	302	30" X 19" ELLIPTICAL PIPE	LF	936	$128.00	$119,808.00
02240	302	38" X 24" ELLIPTICAL PIPE	LF	842	$175.00	$147,350.00
02290	302	45" X 29" ELLIPTICAL PIPE	LF	606	$277.50	$168,165.00
02380	302	60" X 38" ELLIPTICAL PIPE	LF	49	$380.00	$18,620.00
06150	302	15" END SECTION ES-1 OR 2	EA	1	$840.00	$840.00
06495	302	NS END SECTION - 60" X 38" ELLIPTICAL PIPE	EA	1	$4,274.55	$4,274.55
06740	302	DROP INLET DI-1	EA	4	$5,000.00	$20,000.00
06818	302	DROP INLET DI-3B, L=6'	EA	1	$5,830.68	$5,830.68
06819	302	DROP INLET DI-3B, L=8'	EA	12	$6,413.75	$76,965.00
06820	302	DROP INLET DI-3B, L=10'	EA	2	$6,996.82	$13,993.64
06821	302	DROP INLET DI-3B, L=12'	EA	1	$7,579.88	$7,579.88
06822	302	DROP INLET DI-3B, L=14'	EA	3	$8,162.95	$24,488.85
06835	302	DROP INLET DI-3C, L=6'	EA	5	$5,978.34	$29,891.70
06936	302	DROP INLET DI-3C, L=8'	EA	3	$6,210.07	$18,630.21
06837	302	DROP INLET DI-3C, L=10'	EA	2	$6,365.72	$12,731.44
06839	302	DROP INLET DI-3C, L=14'	EA	2	$7,002.29	$14,004.58
06855	302	DROP INLET DI-3E, L=8'	EA	2	$7,000.00	$14,000.00
07006	302	DROP INLET DI-3F, L=8'	EA	1	$7,000.00	$7,000.00
07310	302	DROP INLET DI-4E, L=8'	EA	2	$10,000.00	$20,000.00
07506	302	DROP INLET DI-5	EA	1	$4,551.90	$4,551.90
07508	302	DROP INLET DI-7	EA	3	$5,298.91	$15,896.73
09000	ATTD	NS NUTRIENT CREDITS	LB/YR	0.31	$20,000.00	$6,200.00
09056	302	MANHOLE MH-1 OR 2	LF	41	$1,027.98	$42,147.18
09150	414	EROS. CTRL. STONE CL 1 EC-1	TON	130	$92.44	$12,017.20
	ATTD	SPECIAL DESIGN JUNCTION BOX JB-1	EA	4	$6,372.66	$25,490.64
	ATTD	NS SINGLE 7' X 2.5' BOX CULVERT	LF	114	$1,801.20	$205,336.80
	ATTD	NS SINGLE 7' X 2.5' BOX HEADWALL	EA	6	$3,448.20	$20,689.20
	ATTD	NS SINGLE 7' X 2.5' BOX WINGWALL	EA	12	$5,486.61	$65,839.32
10128	308	AGGR. BASE MAT. TY. 1 NO. 21B	TON	1822	$34.04	$62,020.88
10628	515	FLEXIBLE PAVE. PLANING 0"-2"	SY	2688	$3.90	$10,483.20
10635	315	ASPHALT CONC. TY. SM-9.5A	TON	484	$107.99	$52,267.16
10643	315	ASPHALT CONC. TY. BM-25.0D	TON	1054	$115.28	$121,505.12

11040	315	CONCRETE ENTRANCE PAVE. 7"	SY	201	$89.26	$17,941.26
11070	315	NS SAW-CUT ASPH. CONC.	LF	2948	$8.50	$25,058.00
12600	502	STD. COMB. CURB & GUTTER CG-6	LF	2987	$31.57	$94,299.59
12610	502	RAD. COMB. CURB & GUTTER CG-6	LS	515	$39.11	$20,141.65
12920	502	ENTRANCE CUTTER CG-9B	SY	251	$143.41	$35,995.91
14260	ATTD	CRUSHER RUN AGGR. NO. 25 OR 26	TON	82	$34.86	$2,858.52
23600	ATTD	NS FENCE (FOR TREE PROTECTION)	LF	60	$6.33	$379.80
24430	508	DEMOLITION OF PAVEMENT FLEXIBLE	SY	5073	$11.22	$56,919.06
24702	510	NS REMOVE EXIST (FOR TREE REMOVAL)	EA	1	$1,000.00	$1,000.00
27102	603	REGULAR SEED	LB	348	$15.80	$5,498.40
27422	303	DEWATERING BASIN EC-8	EA	1	$1,915.40	$1,915.40
27451	303	INLET PROTECTION TYPE A	EA	9	$483.56	$4,352.04
27461	303	INLET PROTECTION TYPE B	EA	50	$365.60	$18,280.00
27471	303	INLET PROTECTION TYPE C	EA	13	$483.56	$6,286.28
27500	303	GEOTEXTILE FABRIC	SY	119	$5.56	$661.64
27505	303	TEMP. SILT FENCE TYPE A	LF	1353	$4.22	$5,709.66
	ATTD	SANDBAG DAM	CY	63	$218.00	$13,734.00
42080	520	8" SANITARY SEWER PIPE	LF	68	$192.21	$13,070.28
42755	520	SANITARY SEWER MANHOLE	EA	3	$819.64	$2,458.92
42771	520	RECONSTRUCT EXISTING SANITARY MANHOLE	LF	1	$446.89	$446.89
50610	ATTD	RELOC. EXIST. SIGN STRUCT. TY. 1	EA	9	$427.13	$3,844.17
50974	ATTD	NS TRAFFIC CONTROL	LS	1	$10,000.00	$10,000.00
CN		**SUBTOTAL ESTIMATE AMOUNT**				**$2,057,843.33**
CN		**CEI (12% OF CONSTRUCTION SUBTOTAL ESTIMATE)**				**$246,941.20**
CN		**CONTINGENCY (10% OF CONSTRUCTION SUBTOTAL ESTIMATE)**				**$205,784.33**
CN		**VDOT OVERSIGHT (CN PHASE)**				**$8,500.00**
PE		**LOCALITY PRELIMINARY ENGINEERING PHASE (DESIGN FEE)**				**$374,730.00**
PE		**VDOT OVERSIGHT (PE PHASE)**				**$6,500.00**
		TOTAL ESTIMATE				**$2,900,298.86**

Match Commitment Letter

John M. Altman, Jr.
City Manager

maltman@hopewellva.gov
p: (804) 541-2243
f: (804) 541-2248

300 North Main Street
Suite 216
Hopewell, VA 23860

www.hopewellva.gov

April 8, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Flood
Richmond, Virginia 23219

RE: City of Hopewell Community Flood Preparedness Fund Match Commitment

To Whom It May Concern:

On behalf of the City of Hopewell, I authorize the request for funding for the City's grant proposal submission to the Virginia Community Flood Preparedness Fund to support the Moultrie Avenue Roadway and Drainage Improvements Project. The improvements include installation of pavement, curb and gutter, and drainage structures. The drainage conveyance design for this project consists of a series of curb inlets, ditches, and storm systems.

If awarded, and subject to execution of a grant agreement, the City of Hopewell pledges its commitment to providing $896,120 in funding to meet the match requirements established by the 2022 Virginia Community Flood Preparedness Fund Grant Manual Round 3. This match is equivalent to 40% of the overall project cost of $2,240,300. The City has budgeted funds for the Moultrie Avenue Roadway and Drainage Improvement Project under the 2022 – 2026 Capital Improvement Plan.

Hopewell greatly appreciates the opportunity to seek funding to improve flood protection and prevention measures in order to boost our community's resilience.

Sincerely,

John M. Altman

John M. Altman, Jr.
City Manager

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

City of Hopewell Round 3 CFPF Application

1 message

Austin B. Anderson <aanderson@hopewellva.gov> Fri, Apr 8, 2022 at 4:00 PM
To: "CFPF, rr" <cfpf@dcr.virginia.gov>

Please see the application at the link below:

https://hopewellva.egnyte.com/dl/1emi3M5tQL

Austin Anderson

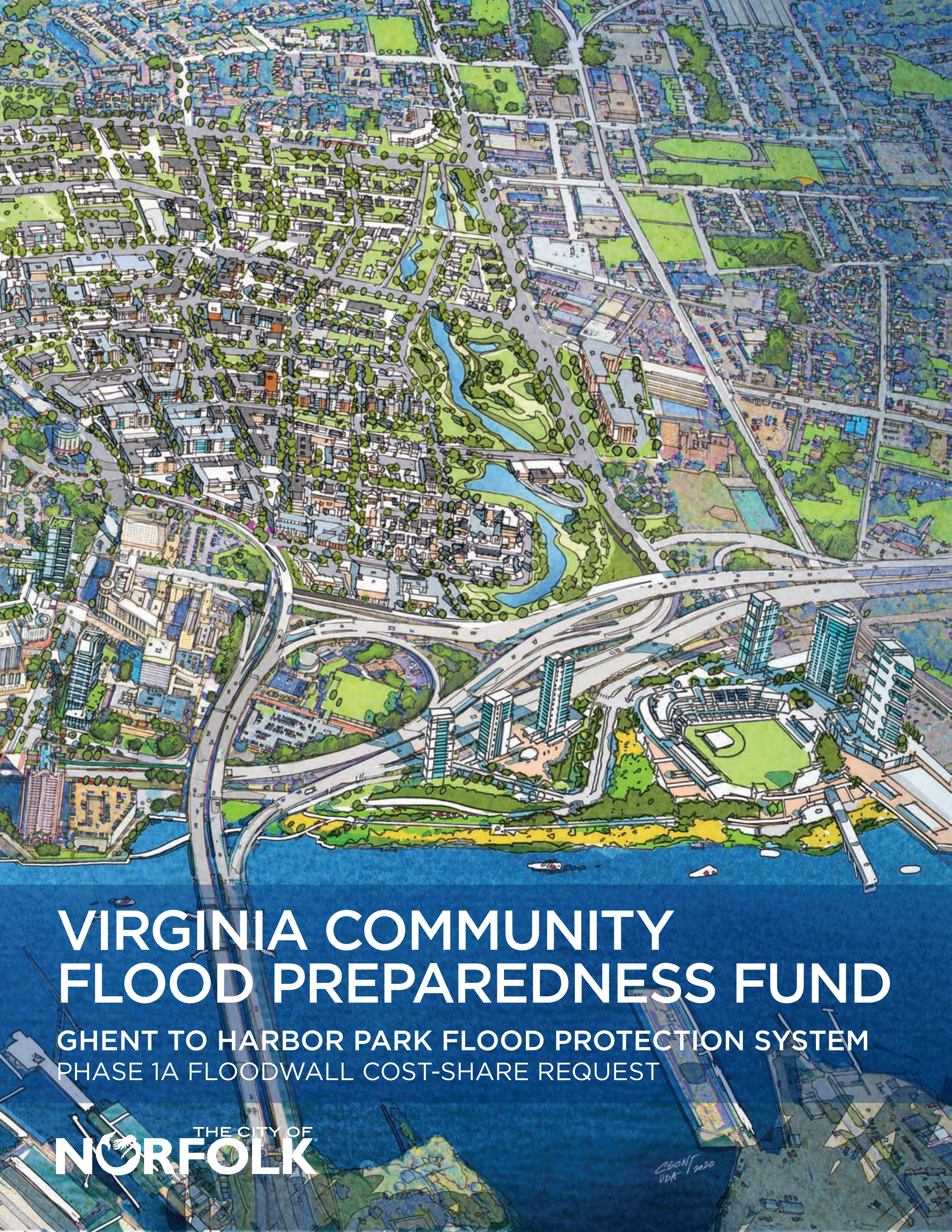
City Engineer

224 N. Main Street, Suite 310

Hopewell, Virginia 23860

P: (804) 541-2379

C: (804) 638-3319



VIRGINIA COMMUNITY FLOOD PREPAREDNESS FUND

GHENT TO HARBOR PARK FLOOD PROTECTION SYSTEM

PHASE 1A FLOODWALL COST-SHARE REQUEST

THE CITY OF
NORFOLK

VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION:
VIRGINIA COMMUNITY FLOOD PREPARDNESS FUND GRANT

Application

Office of Resilience

City of Norfolk

501 Boush Street

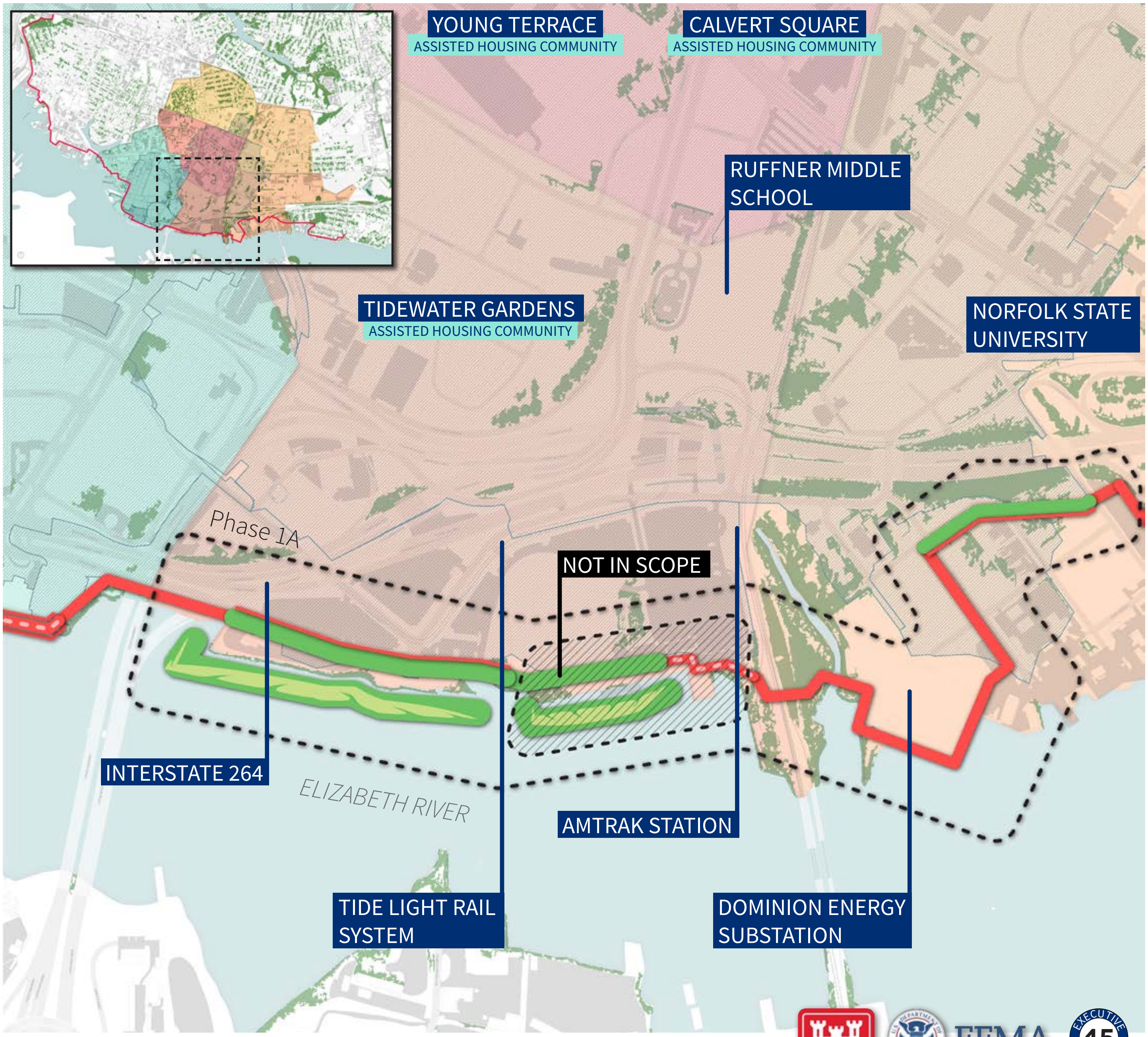
Norfolk, VA 23510

THE CITY OF NORFOLK

Contents

GRANT-FUNDED PROTECTION FOR VULNERABLE CITIZENS AND CRITICAL INFRASTRUCTURE

Phase 1A Protection Alignment and Protected Assets



PROTECTION FOR VULNERABLE RESIDENTS

- Communities with Social Vulnerability Rating Indexes from 2.2 to 4.5
- Six census tracts containing three assisted housing communities

PROTECTION FOR CRITICAL INFRASTRUCTURE

- Dominion Energy substation
- Amtrak station connecting Norfolk to the Northeast Regional rail line
- Interstate 264
- The Tide Light Rail System

FEMA EXECUTIVE ORDER 45

Phase 1A utilizes natural and nature-based protection measures to construct a hybrid flood barrier system that ensures Norfolk will meet protection requirements set forth by the US Army Corps of Engineers, FEMA, and the State of Virginia.

NORFOLK'S GHENT TO HARBOR PARK HYBRID BARRIER SYSTEM

Phase 1A Project Data and Funding

LOCATION

Norfolk, Virginia
Ghent to Harbor Park

OWNER

City of Norfolk

TOTAL SYSTEM COST

$627,668,000

STATUS

Federal funding secured
March 30, 2022

VIRGINIA COMMUNITY FLOOD PROTECTION FUND GRANT REQUEST: $28,127,975

TOTAL PHASE 1A PROJECT COST:	**$160,731,286**
US Army Corps of Engineers Funding:	$104,475,336 (65%)
City of Norfolk Funding:	$28,127,975 (17.5%)
Commonwealth of Virginia Funding:	$28,127,975 (17.5%)

ANTICIPATED PROJECT BENEFITS

Prioritizing flood protection for the most vulnerable populations before all others (highest SVI census tracts).

NOTABLE CHARACTERISTICS

The City of Norfolk's Coastal Risk Management Study provides a good example of how to use benefit-cost analysis to evaluate and prioritize resilience projects.

COASTAL HAZARDS ADDRESSED

SEA LEVEL RISE

REGIONAL LAND SUBSIDENCE

INCREASED RAINFALL EVENTS

INCREASING STORM INTENSITIES

CHRONIC HIGH-TIDE FLOODING

RESILIENCE STRATEGIES EMPLOYED

NATURAL WETLANDS

NATURE-BASED WAVE MITIGATION

STRUCTURAL BARRIERS

WATERSHED-LEVEL DESIGN

NORFOLK'S COASTAL STORM RISK MANAGEMENT SYSTEM

A Comprehensive System For Flood Protection

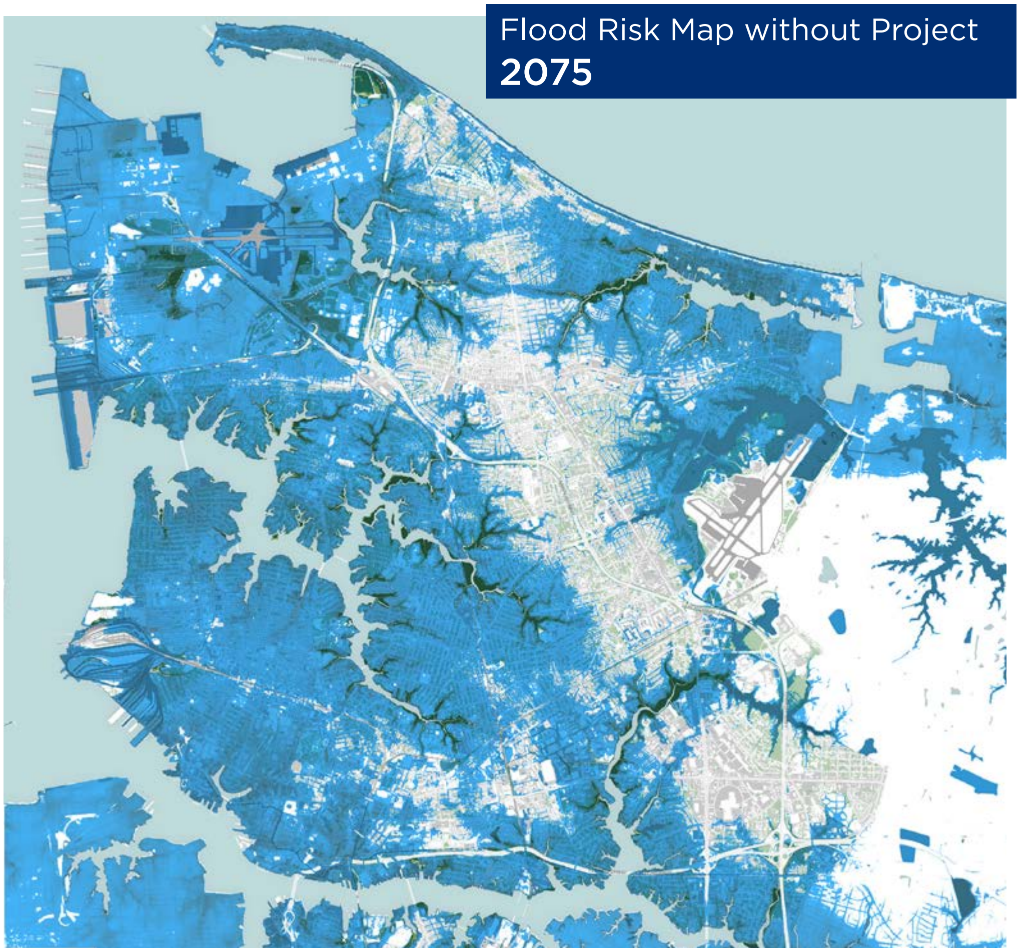
US ARMY CORPS OF ENGINEERS: NORFOLK COASTAL STORM RISK MANAGEMENT STUDY

A City-wide flood protection system to address:

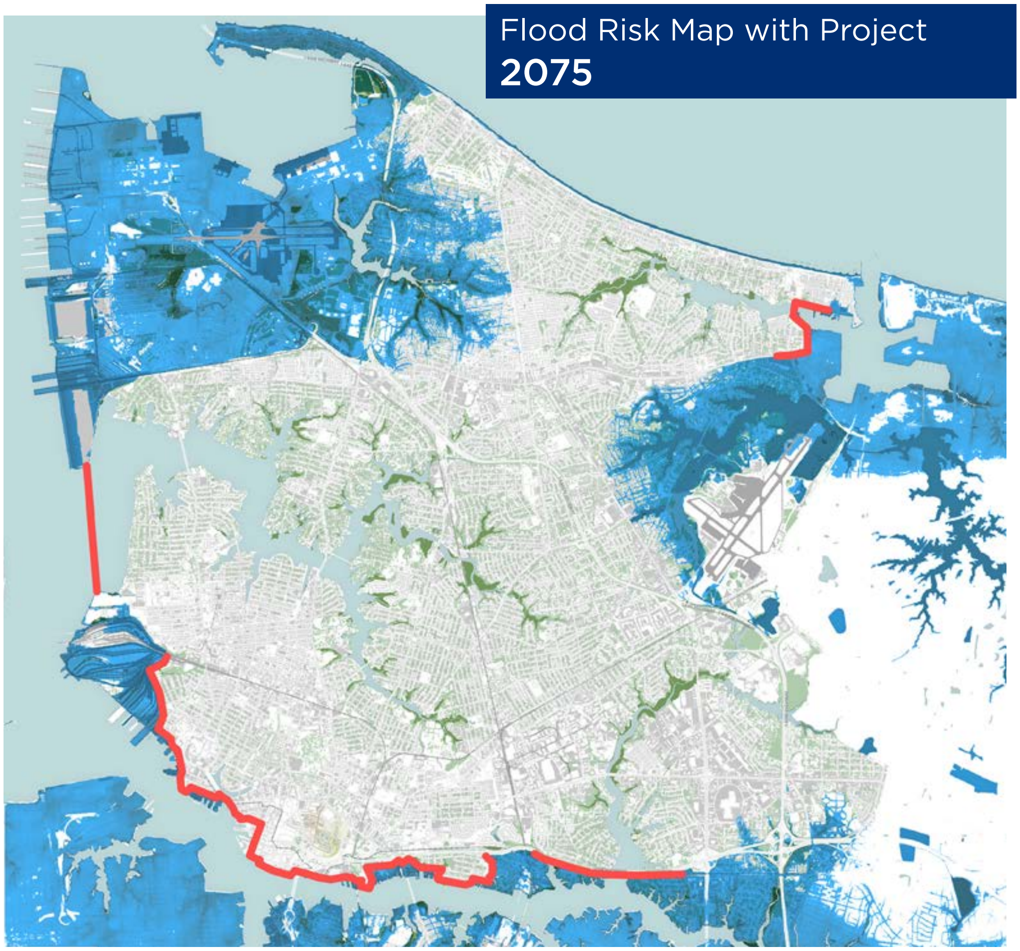
- Sea Level Rise
- Regional Land Subsidence
- Increased Rainfall Events
- Increasing Storm Intensities
- Chronic High-Tide Flooding

NORFOLK'S COASTAL STORM RISK MANAGEMENT SYSTEM

A Comprehensive System For Flood Protection

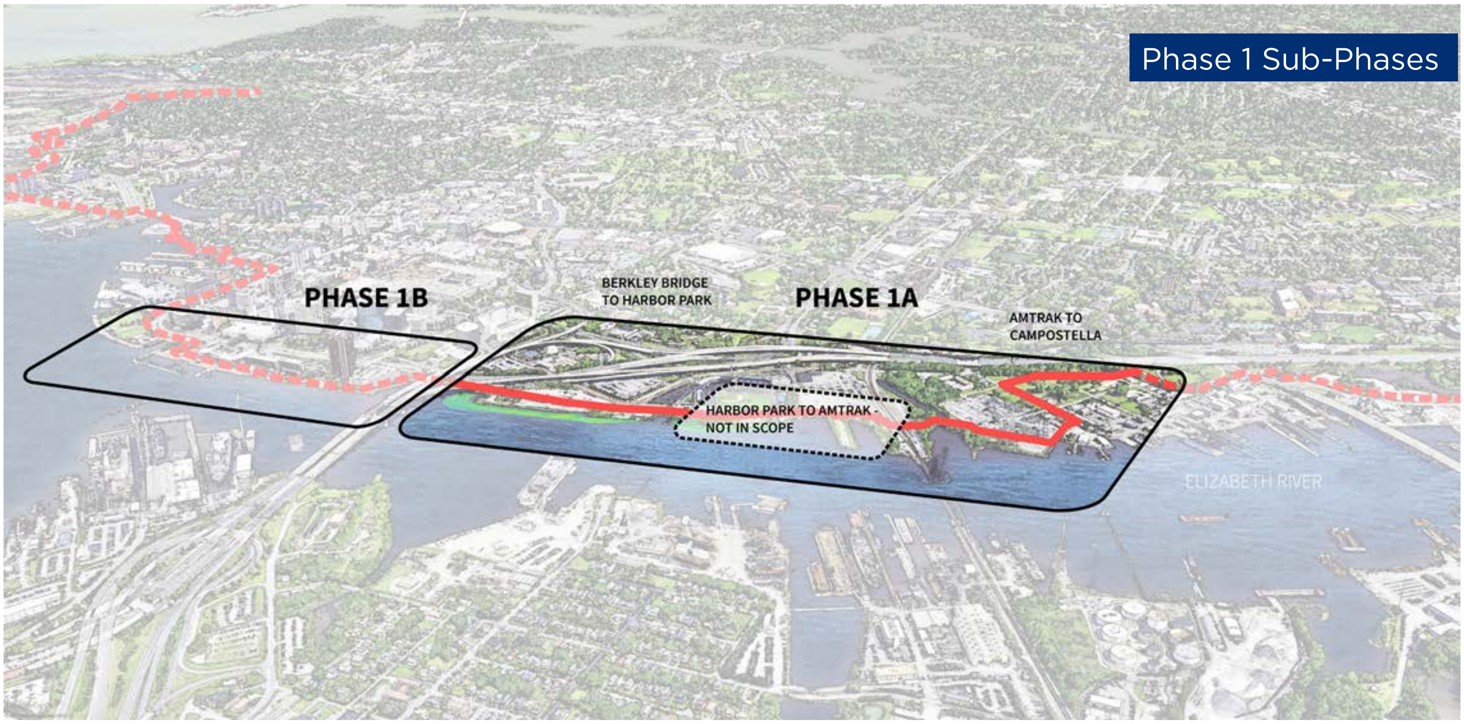


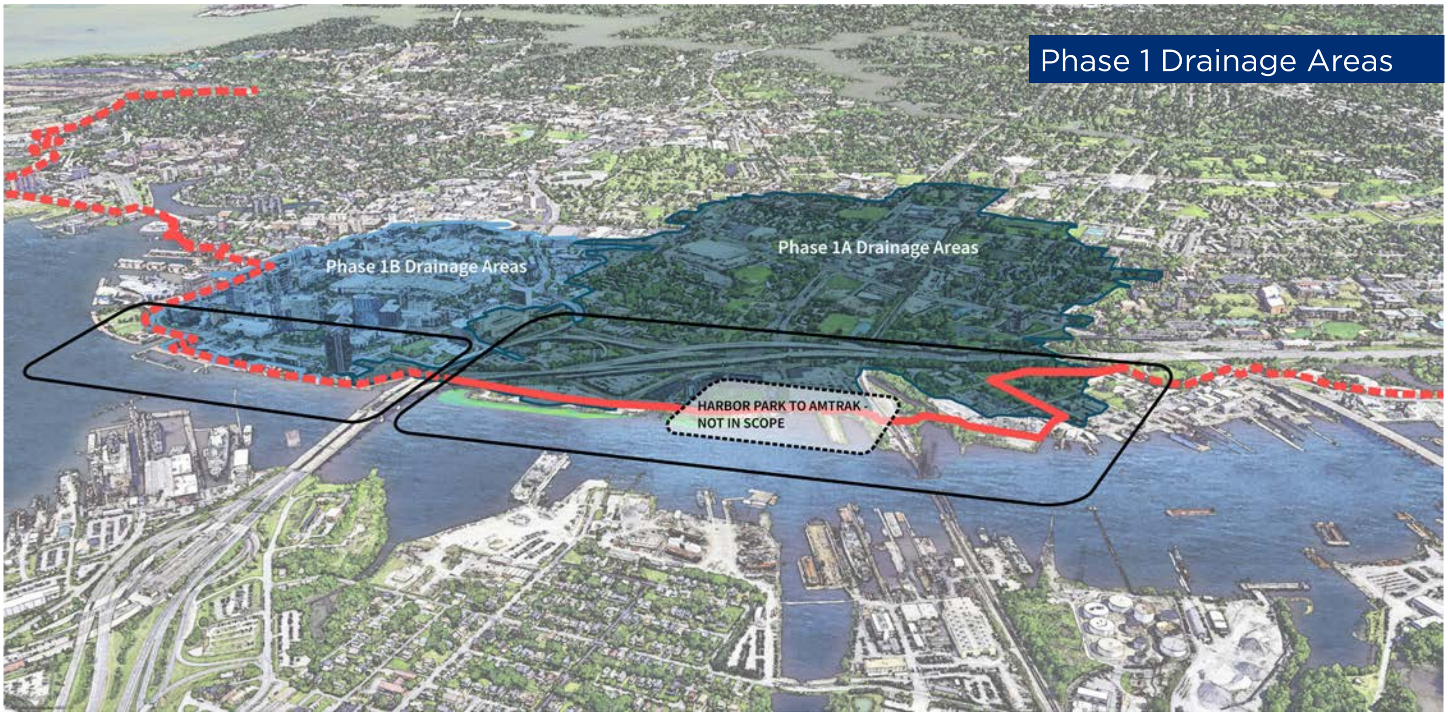
Flood Risk Map without Project
2075



Flood Risk Map with Project
2075

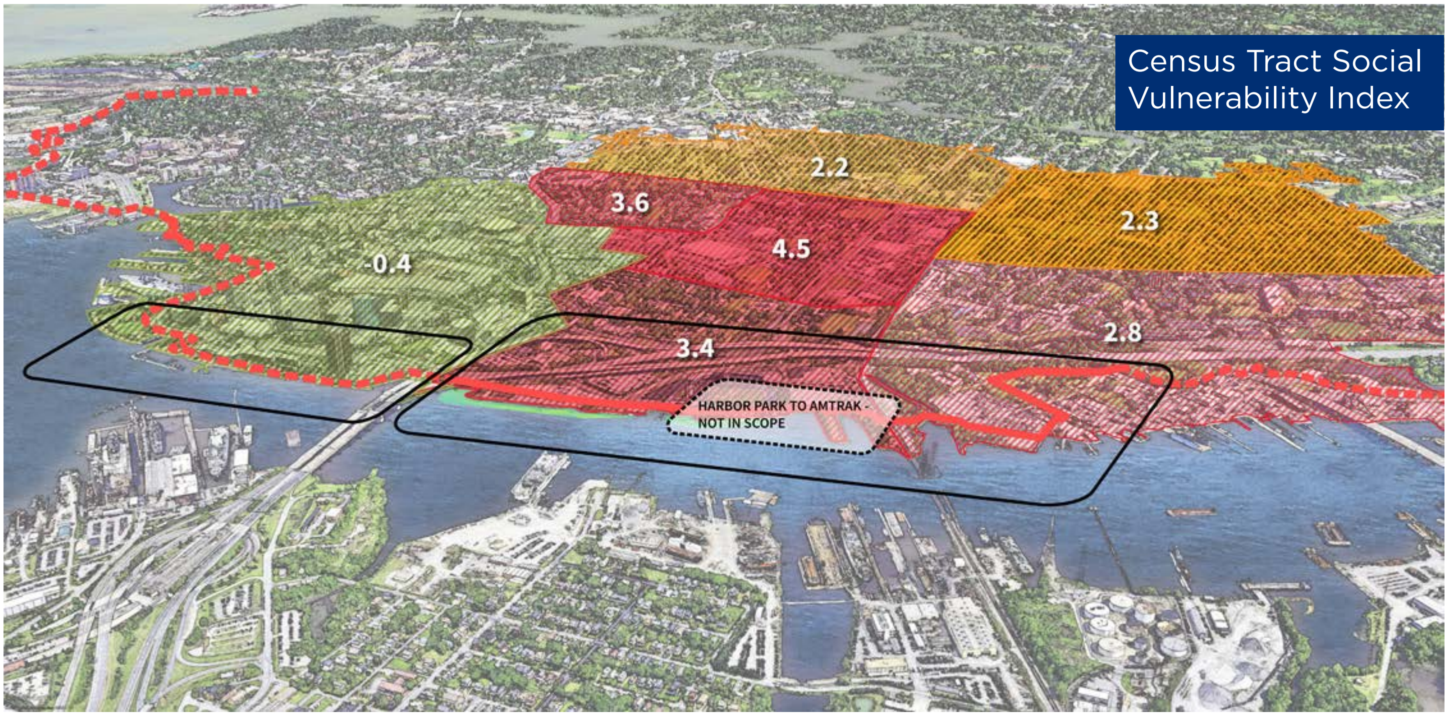
PROJECT PHASING AND DRAINAGE AREAS





VIMS ADAPTVA SOCIAL VULNERABILITY INDEX

Protecting communities that are the most at-risk



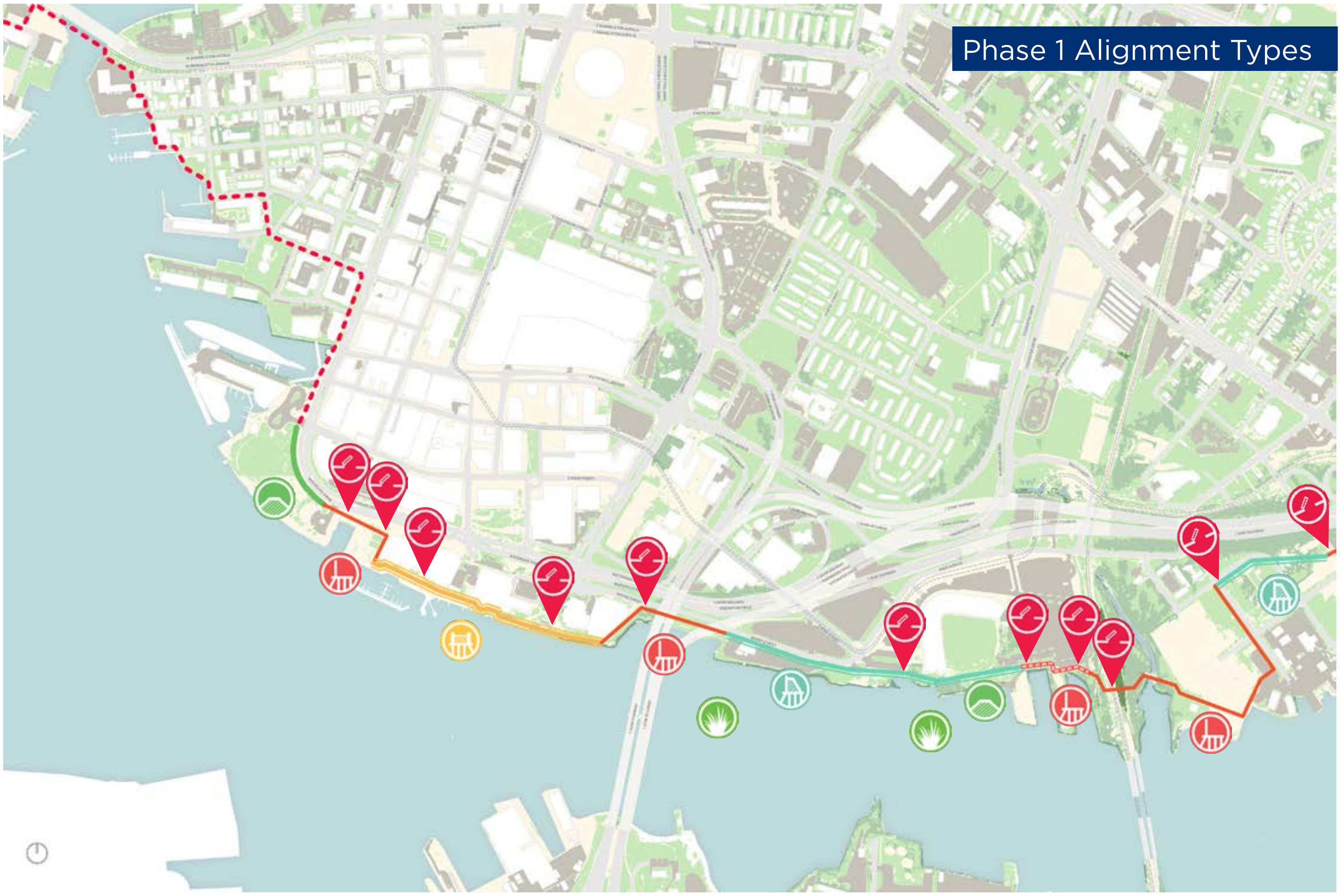
4.5	Census Tract 42
3.6	Census Tract 41
3.4	Census Tract 48
2.8	Census Tract 47
2.3	Census Tract 43
2.2	Census Tract 35.01
1.5	**Very High Social Vulnerability**
1.0	**High Social Vulnerability**
0	**Low Social Vulnerability**
-0.4	Census Tract 49
-1.0	**Low Social Vulnerability**
-1.5	**Very Low Social Vulnerability**

CDC Social Vulnerability Index

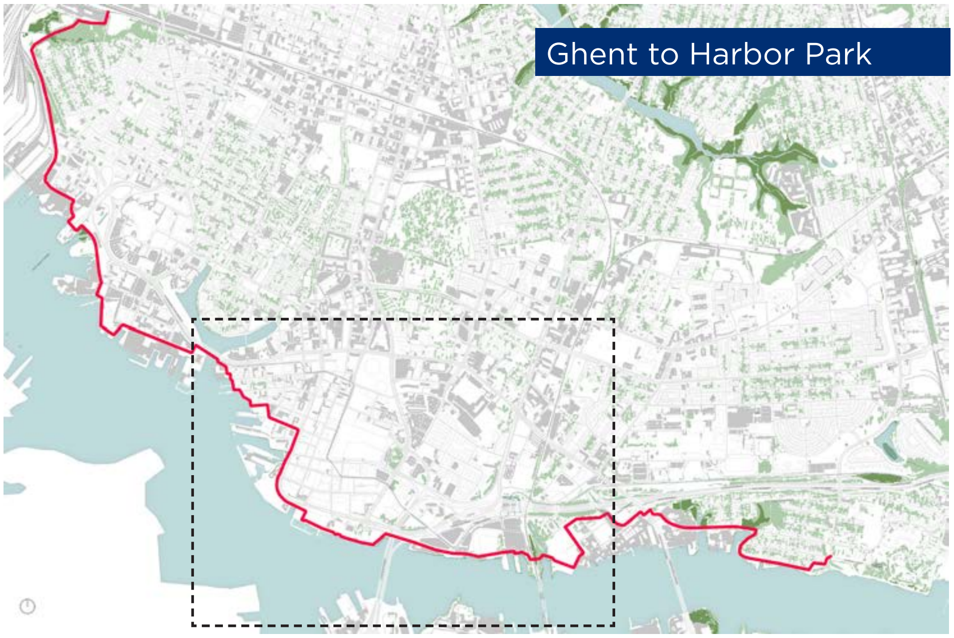
VIMS ADAPTVA SOCIAL VULNERABILITY INDEX

The Virginia Institute of Marine Science (VIMS) analyzes social and environmental factors to help emergency planners identify communities which will most likely need support leading up to, during, and following a hazardous event. The census tracts protected by the Phase 1A Hybrid Barrier System are all rated as vulnerable beyond the “Very High Social Vulnerability” index of 1.5.

NORFOLK'S GHENT TO HARBOR PARK HYBRID BARRIER SYSTEM

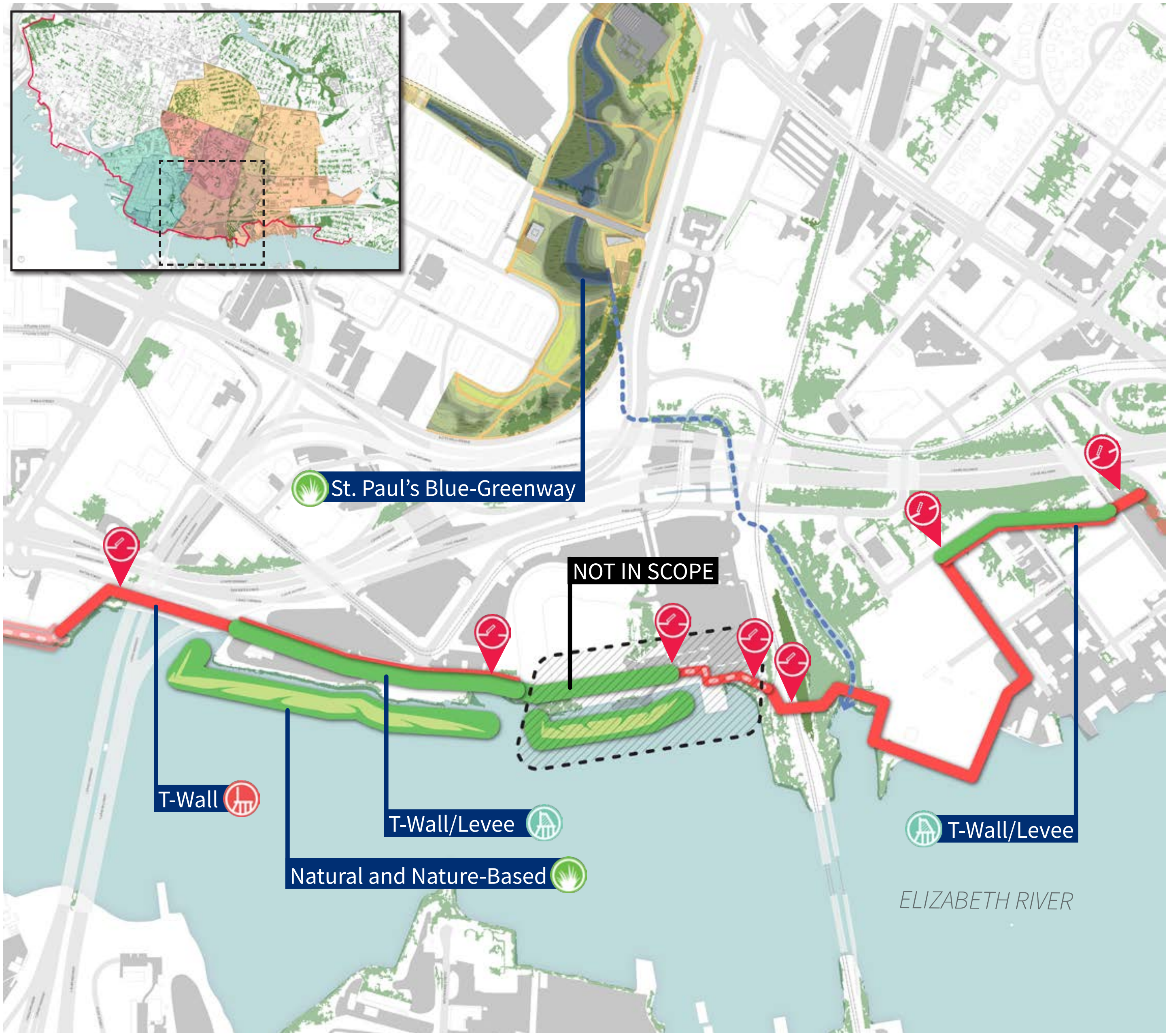


- **T-WALL**
- **BIN WALL**
- **LEVEE**
- **T-WALL/LEVEE**
- **NATURAL AND NATURE-BASED**
- **GATE**



FLOOD PROTECTION PLAN WITH VIGNETTES

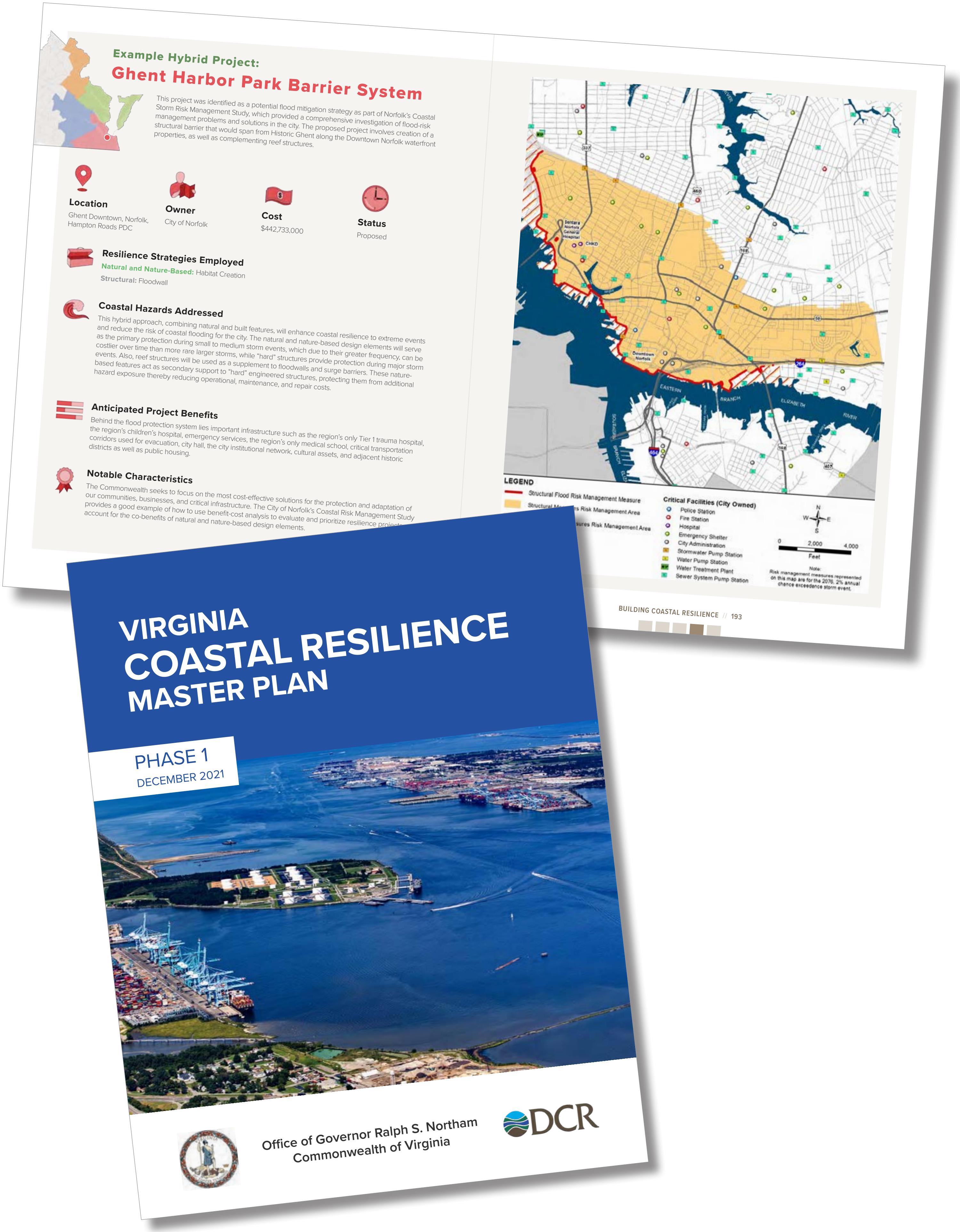
Systems and Project Phases



T-WALL

T-WALL/LEVEE

NATURAL AND NATURE-BASED



Example Hybrid Project:

Ghent Harbor Park Barrier System

This project was identified as a potential flood mitigation strategy as part of Norfolk's Coastal Storm Risk Management Study, which provided a comprehensive investigation of flood-risk management problems and solutions in the city. The proposed project involves creation of a structural barrier that would span from Historic Ghent along the Downtown Norfolk waterfront properties, as well as complementing reef structures.

Location
Ghent Downtown, Norfolk,
Hampton Roads PDC

Owner
City of Norfolk

Cost
$442,733,000

Status
Proposed

Resilience Strategies Employed

Natural and Nature-Based: Habitat Creation
Structural: Floodwall

Coastal Hazards Addressed

This hybrid approach, combining natural and built features, will enhance coastal resilience to extreme events and reduce the risk of coastal flooding for the city. The natural and nature-based design elements will serve as the primary protection during small to medium storm events, which due to their greater frequency, can be costlier over time than more rare larger storms, while "hard" structures provide protection during major storm events. Also, reef structures will be used as a supplement to floodwalls and surge barriers. These nature-based features act as secondary support to "hard" engineered structures, protecting them from additional hazard exposure thereby reducing operational, maintenance, and repair costs.

Anticipated Project Benefits

Behind the flood protection system lies important infrastructure such as the region's only Tier 1 trauma hospital, the region's children's hospital, emergency services, the region's only medical school, critical transportation corridors used for evacuation, city hall, the city institutional network, cultural assets, and adjacent historic districts as well as public housing.

Notable Characteristics

The Commonwealth seeks to focus on the most cost-effective solutions for the protection and adaptation of our communities, businesses, and critical infrastructure. The City of Norfolk's Coastal Risk Management Study provides a good example of how to use benefit-cost analysis to evaluate and prioritize resilience projec account for the co-benefits of natural and nature-based design elements.

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VIRGINIA
COASTAL RESILIENCE
MASTER PLAN

PHASE 1
DECEMBER 2021

Office of Governor Ralph S. Northam
Commonwealth of Virginia

DCR

VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION: VIRGINIA COMMUNITY FLOOD PREPARDNESS FUND GRANT

Round 3

Application

City of Norfolk

CSRM Phase 1A – Ghent-Downtown-Harbor Park Flood Barrier System

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Norfolk

Category of Grant Being Applied for: Project

NFIP/DCR Community Identification Number (CID): 510104

Name of Authorized Official: Dr. Larry H. Filer II

Signature of Authorized Official: DocuSigned by: C45AA22E7D6047B... 4/7/2022 | 6:47 AM PDT

Mailing Address: 810 Union St, Suite 1101

City: Norfolk **State:** VA **Zip:** 23510

Telephone Number: 757-664-4242 **Email Address:** city.manager@norfolk.gov

Contact Person (If different from authorized official): Matthew Simons, AICP, CFM, Coastal Resiliency Manager, City Manager's Office of Resilience

Mailing Address: 501 Boush Street, Suite B

City: Norfolk **State:** VA **Zip:** 23510

Telephone Number: 757-334-8622 Cell Phone Number: 757-513-8185

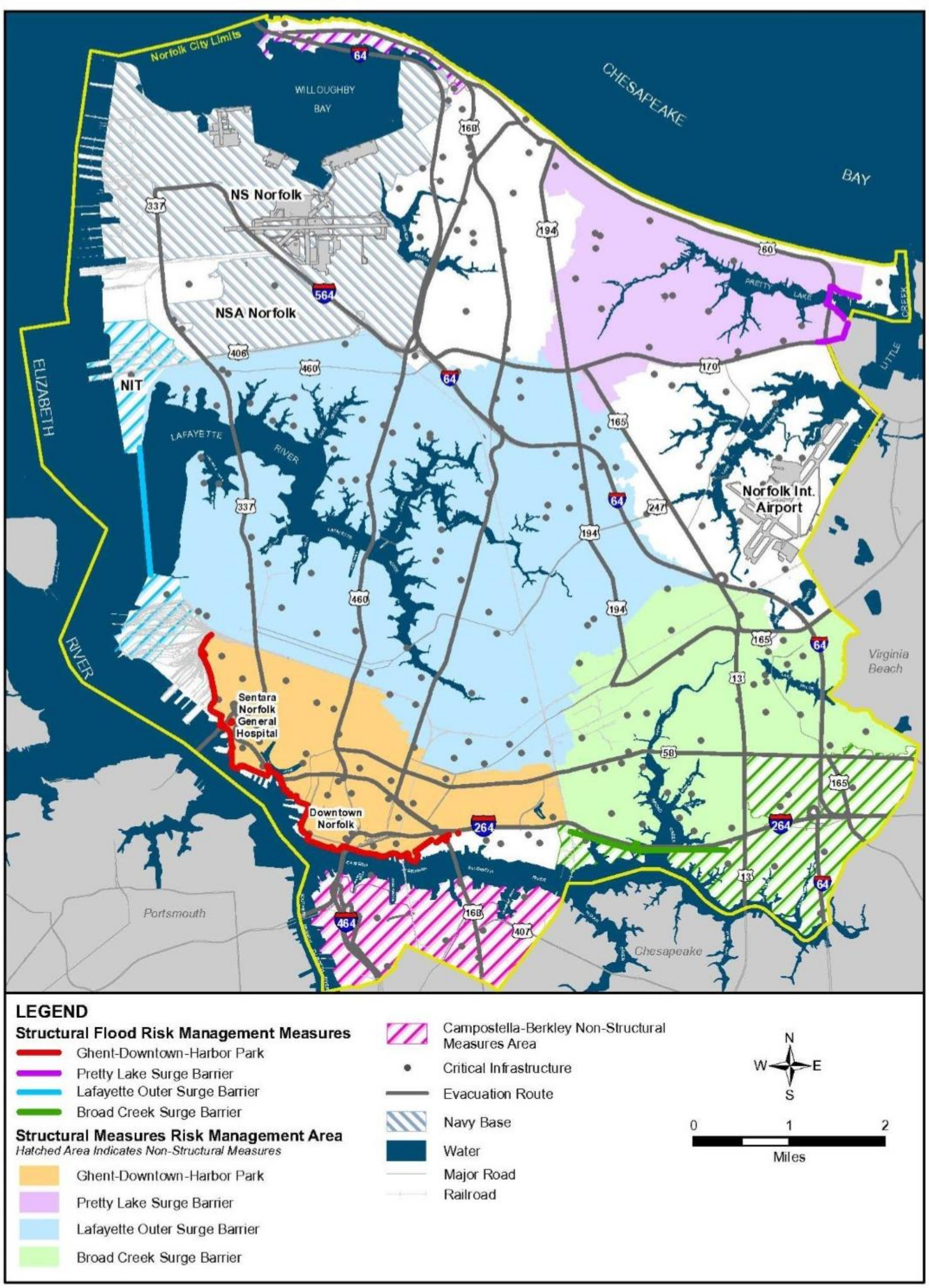
Email Address: matthew.simons@norfolk.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X_ No ____

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
☑ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☑ Living shorelines and vegetated buffers.
☑ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☑ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Location of Project (Include Maps): Entire project encompasses various locations surrounding Norfolk (see map below).



Area of Focus for Grant Application: Project Area – Ghent-Downtown-Harbor Park Area (in red) to the east of the Berkley Bridge

Figure 1 - First Feature Overview Map

NFIP Community Identification Number (CID#): 510104

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): VE, AE, Shaded X (500 year), X (low to moderate)

Flood Insurance Rate Map Number(s) (If Applicable): 51010400056H, 51010400057H, 51010400058H, 51010400059H

Total Cost of Project – Ghent-Downtown-Harbor Park Phase 1 (FY23 – FY32): $627,668,000

Total Cost of Phase 1A – Berkley Bridge to Campostella Road (FY23 – FY25): **$160,731,286**

Total Amount Requested (Phase 1A): $28,127,975

THE CITY OF NORFOLK

Appendix B: Scoring Criteria for Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**The City of Norfolk**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	☑
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	☑
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		☑ **Yes** ☐ **No**
Applicant Name: The City of Norfolk		
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	**0**
☐ Wetland restoration, floodplain restoration ☑ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	**0**
1.b. any other nature-based approach	**40**	**0**
All hybrid approaches whose end result is a nature-based solution	**35**	**35**
All other projects	**25**	**0**
7. Is the project area socially vulnerable? (**Based on ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	**15**
High Social Vulnerability (1.0 to 1.5)	**12**	**0**

Moderate Social Vulnerability (0.0 to 1.0)	**8**	**0**
Low Social Vulnerability (-1.0 to 0.0)	**0**	**0**
Very Low Social Vulnerability (Less than -1.0)	**0**	**0**
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	**0**
No	**0**	**0**
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	**10**
No	**0**	**0**
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	**5**
No	**0**	**0**
11. Does this project provide "community scale" benefits?		
Yes	**20**	**20**
No	**0**	**0**
Total Points		**85**

Executive Summary:

The City of Norfolk requests **$28,127,975** from the Virginia Community Flood Preparedness Fund (CFPF) to support 17.5% of the total costs to construct the first phase (Phase 1A) of the **Ghent-Downtown-Harbor Park Flood Protection Barrier System**. Phase 1A of the project will protect the most vulnerable populations within the Norfolk, assisted housing residents of the St. Paul's Transformation Area, which includes thousands of residents living in the Tidewater Gardens, Young Terrace, and Calvert Square low-income housing communities.

The project will construct a hybrid flood barrier system, consisting of a green levee extending eastward from the I-264 Berkley Bridge, beyond Harbor Park with hybrid I-/T-walls terminating at the soon to be completed Ohio Creek Watershed flood protection project - $112M HUD-funding resilience project to protect the historic African American community of Chesterfield Heights and assisted housing residents of Grandy Village.

Norfolk is identified globally as a pioneer for pushing the bounds of coastal and social resilience with bold action-oriented initiatives and incorporating the City's strategy of resilience-equity. As Norfolk continues to "Design the Coastal Community of the Future," Phase 1A is Norfolk's biggest step to-date towards merging these Resilience and Equity missions.

Phase 1A of the Ghent-Downtown-Harbor Park Flood Protection Barrier System is a new-start project in a $1.7B Coastal Storm Risk Management (CSRM) flood protection system being constructed in partnership with the Norfolk District of the U.S. Army Corps of Engineers (USACE). The Norfolk CSRM project was Authorized by Congress in the Water Resources Development Act, signed into law by the President in 2020.

With the passage of President Biden's Infrastructure Investment and Jobs Act (IIJA), USACE announced $399M of IIJA funding to support construction of the Norfolk CSRM, beginning with Phase 1A of the Ghent-Downtown-Harbor Park Flood Protection Barrier System. The City of Norfolk, as the nonfederal sponsor, is required to assemble a 35% nonfederal match prior to the commencement of each project phase.

Phase 1A will require $56M of nonfederal funds prior to the start of FY23. The City of Norfolk intends to meet its nonfederal obligation to USACE through a 50/50 split with the Commonwealth. A full award of this grant request would satisfy this requirement and allow Norfolk to complete the 3-year $160.7M project. There is a 10-year plan outlined in this application to fund the other phases of the Ghent-Downtown-Harbor Park Flood Protection Barrier System, and to fund the other major flood protection projects of the City-wide CSRM system. Phase 1A will provide protection from coastal storm surge flooding through construction of structural and non-structural flood protection. This phase provides the most natural and nature-based features (NNBFs) of any coastal flood protection project within the system and within any single project within the City's history.

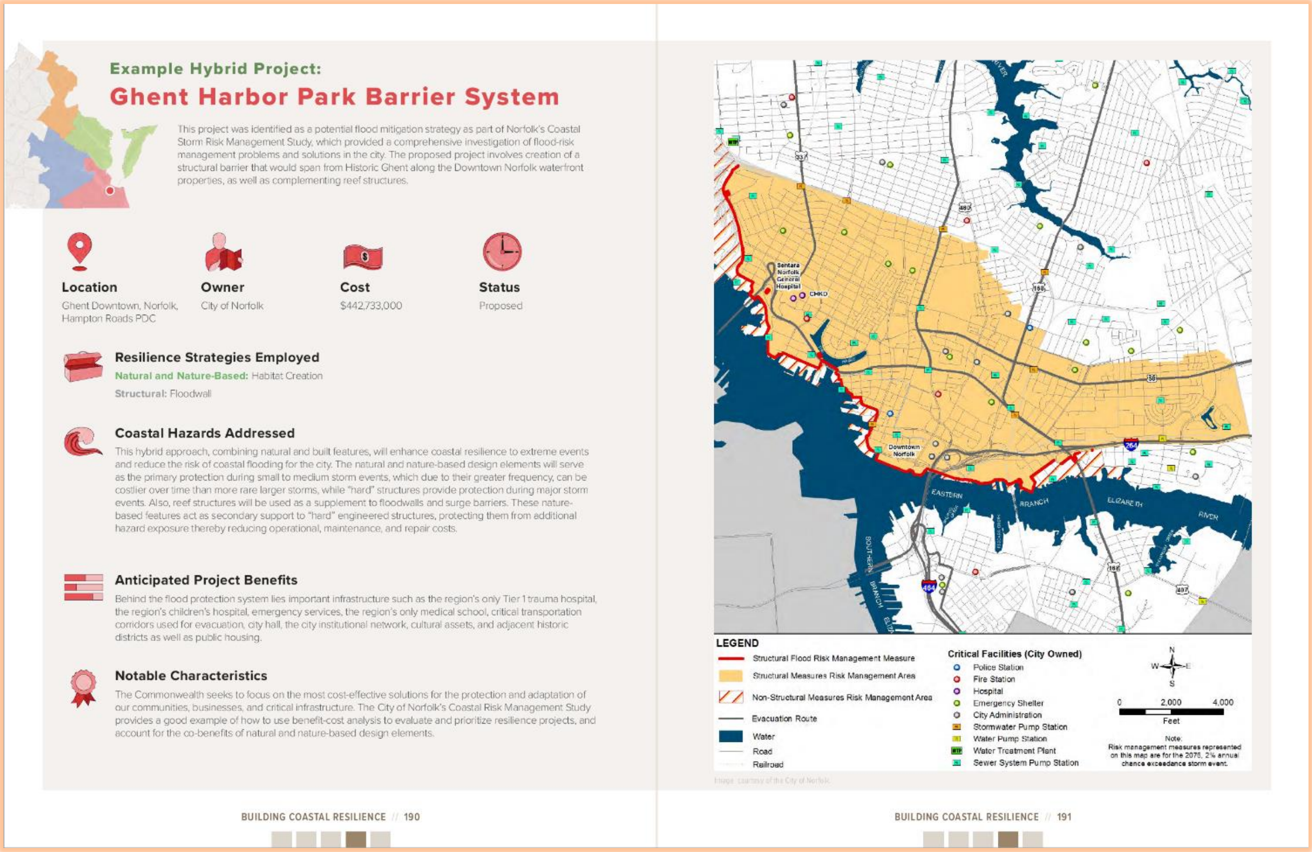
The project is designed to meet the guidance of the Commonwealth's Executive Orders 24 & 45, with the flood protection provided beyond the minimum sea level rise guidance to year with 2100, with more than 8 feet of freeboard above the FEMA Base Flood Elevation included in the system design. The project has a Benefit-Cost Ratio of 3.3 with annual net benefits of protection calculated at more than $46M per year over the course of the project’s lifespan.

The principal benefit of this project is lives saved.

As the nation witnessed in 2021 when Hurricane Ida tracked over New Orleans on the 16th Anniversary of a hurricane Katrina, the post-Katrina USACE flood protection resulted in approximately 1,500 fewer lives being lost in Louisiana. Similarly, the City of Norfolk is committed to making Norfolk the most resilient urban coastal community in the world through these bold actions; before the big one strikes.

> *The Commonwealth seeks to focus on the most cost-effective solutions for the protection and adaptation of our communities, businesses, and critical infrastructure. The City of Norfolk’s Coastal Risk Management Study provides a good example of how to use benefit-cost analysis to evaluate and prioritize resilience projects, and account for the co-benefits of natural and nature-based design elements.*

- Virginia Coastal Resilience Master Plan, Ghent Harbor Park Barrier System (pg. 190).



Example Hybrid Project:

Ghent Harbor Park Barrier System

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Location	Owner	Cost	Status
Ghent Downtown, Norfolk, Hampton Roads PDC	City of Norfolk	$442,733,000	Proposed

Resilience Strategies Employed

Natural and Nature-Based: Habitat Creation

Structural: Floodwall

Coastal Hazards Addressed

This hybrid approach, combining natural and built features, will enhance coastal resilience to extreme events and reduce the risk of coastal flooding for the city. The natural and nature-based design elements will serve as the primary protection during small to medium storm events, which due to their greater frequency, can be costlier over time than more rare larger storms, while “hard” structures provide protection during major storm events. Also, reef structures will be used as a supplement to floodwalls and surge barriers. These nature-based features act as secondary support to “hard” engineered structures, protecting them from additional hazard exposure thereby reducing operational, maintenance, and repair costs.

Anticipated Project Benefits

Behind the flood protection system lies important infrastructure such as the region’s only Tier 1 trauma hospital, the region’s children’s hospital, emergency services, the region’s only medical school, critical transportation corridors used for evacuation, city hall, the city institutional network, cultural assets, and adjacent historic districts as well as public housing.

Notable Characteristics

The Commonwealth seeks to focus on the most cost-effective solutions for the protection and adaptation of our communities, businesses, and critical infrastructure. The City of Norfolk’s Coastal Risk Management Study provides a good example of how to use benefit-cost analysis to evaluate and prioritize resilience projects, and account for the co-benefits of natural and nature-based design elements.

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LEGEND

▬	Structural Flood Risk Management Measure
▨	Structural Measures Risk Management Area
▨	Non-Structural Measures Risk Management Area
▬	Evacuation Route
■	Water
—	Road
┄	Railroad

Critical Facilities (City Owned)

○	Police Station
○	Fire Station
○	Hospital
○	Emergency Shelter
○	City Administration
■	Stormwater Pump Station
■	Water Pump Station
WTP	Water Treatment Plant
■	Sewer System Pump Station

Note: Risk management measures represented on this map are for the 2075, 2% annual chance exceedance storm event.

Image courtesy of the City of Norfolk

BUILDING COASTAL RESILIENCE // 191

1. Project Information:

a. Overview of Norfolk’s social condition and flood risk background

The City of Norfolk is increasingly at risk from flooding and damage from coastal storms. Located in Southeastern Virginia, Norfolk is an urbanized, relatively flat, community with nearly all areas below elevation 15 feet (NAVD88). Established in 1682, Norfolk has a long and proud history as a national maritime trading, shipbuilding and military center. Today, a city of approximately 247,421, Norfolk is the commercial center of Hampton Roads which is a region of 1.7 million residents.

With a median household income of $53,253, Norfolk is defined as a low-income community compared to the rest of Virginia, which has a median household income of $76,448. Within the City’s population, 13% have a household income of less than $15,000. 8.9% of the City’s population has a household income of between $15,000 - $24,999. As a result, more than 20% of the City’s population is living beneath the Federal Poverty Standard of $26,500. The City is classified as moderately socially vulnerable, with an overall score of 0.59, as identified by ADAPT VA’s Social Vulnerability Index. The entire City is routinely impacted by flooding which is precipitated by various occurrences to include coastal flooding, stormwater impacts, and rainfall.

According to ADAPT VA’s Social Vulnerability Index, the project area is classified very high social vulnerability with scores ranging from 2.8 to 4.5 (Attachment A). It is paramount the City prioritize flood mitigation for Norfolk’s most vulnerable populations.

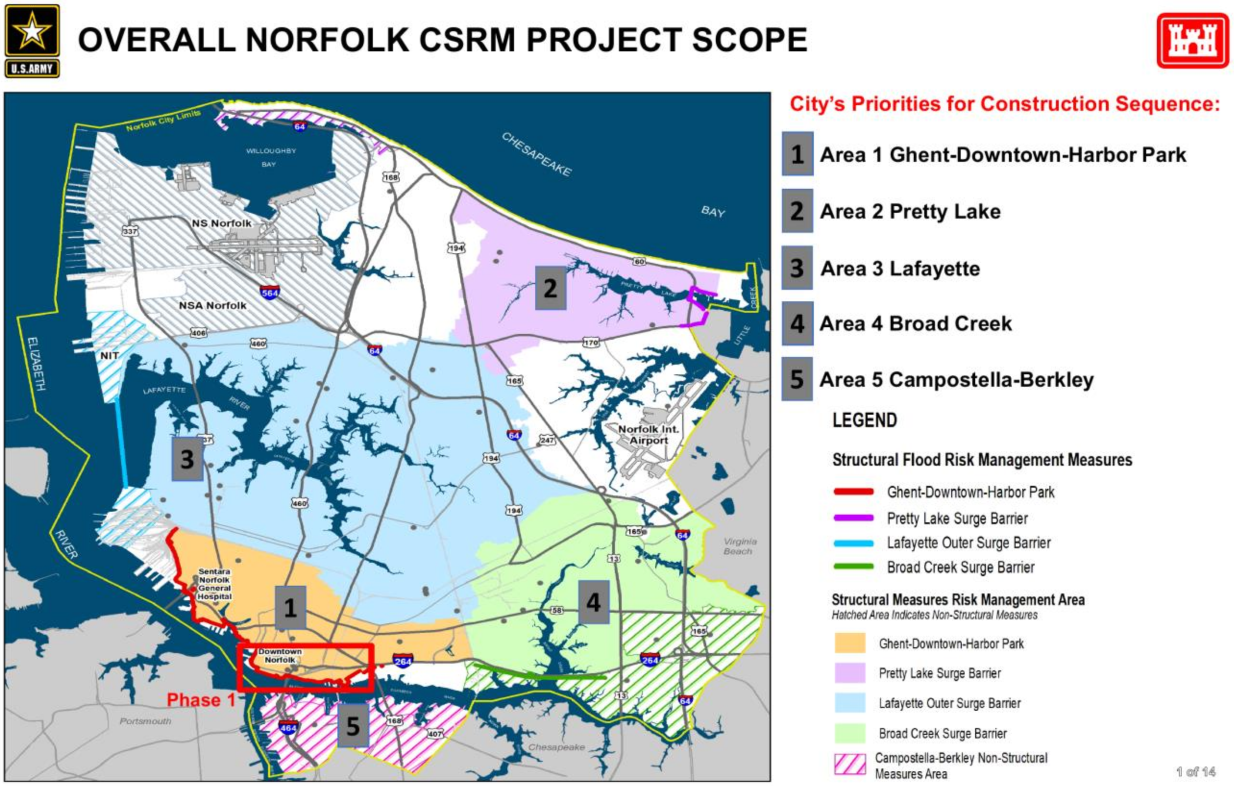
The low elevations and tidal connections to the Elizabeth River and Chesapeake Bay place a significant percentage of the city at risk of flooding from high tides, nor’easters, hurricanes and other storms. Exacerbating the flooding is the phenomenon of relative sea level rise (RSLR), which is the combination of water level rise and land subsidence. Norfolk is documented as having one of the highest rates of RSLR among Atlantic coastal communities.

b. *U.S. Army Corps of Engineers (USACE) and NACCS*

The U.S. Army Corps of Engineers’ (USACE) North Atlantic Comprehensive Coastal Study (NACCS), as well as studies by others, highlights the frequency of intense coastal storms and their associated water surface elevations. Add to this the predicted rate of RSLR, and it is clear that risks to the city are not static and will increasingly affect the city into the future. Economics are only a part of the picture. The USACE, along with the City of Norfolk, and engaged stakeholders, have also considered impacts to cultural resources, vulnerable populations, the environment, and national security, along with the more traditional economic evaluations.

In 2016, in response to increased flood risks, the USACE Norfolk District entered into an agreement with the City of Norfolk, the non-Federal Sponsor, to develop a Coastal Storm Risk Management integrated feasibility report and environmental impact statement (Norfolk CSRM IFR/EIS, or “Norfolk CSRM report”). The long-term strategy for resilience in Norfolk is a layered solution that includes elements executed by the non-Federal sponsor, other Federal agencies, the Commonwealth of Virginia or one of its agencies, and/or non-governmental organizations in addition to the recommendations for implementation by the USACE study. The Recommended Plan from the Norfolk CSRM report is the National Economic Development (NED) Plan and incorporates structural, nonstructural, and natural and nature-based features (NNBF) measures that will reduce future flood risk for the City of Norfolk.

Figure 2 below shows an overview of the project alignment throughout the City of Norfolk.



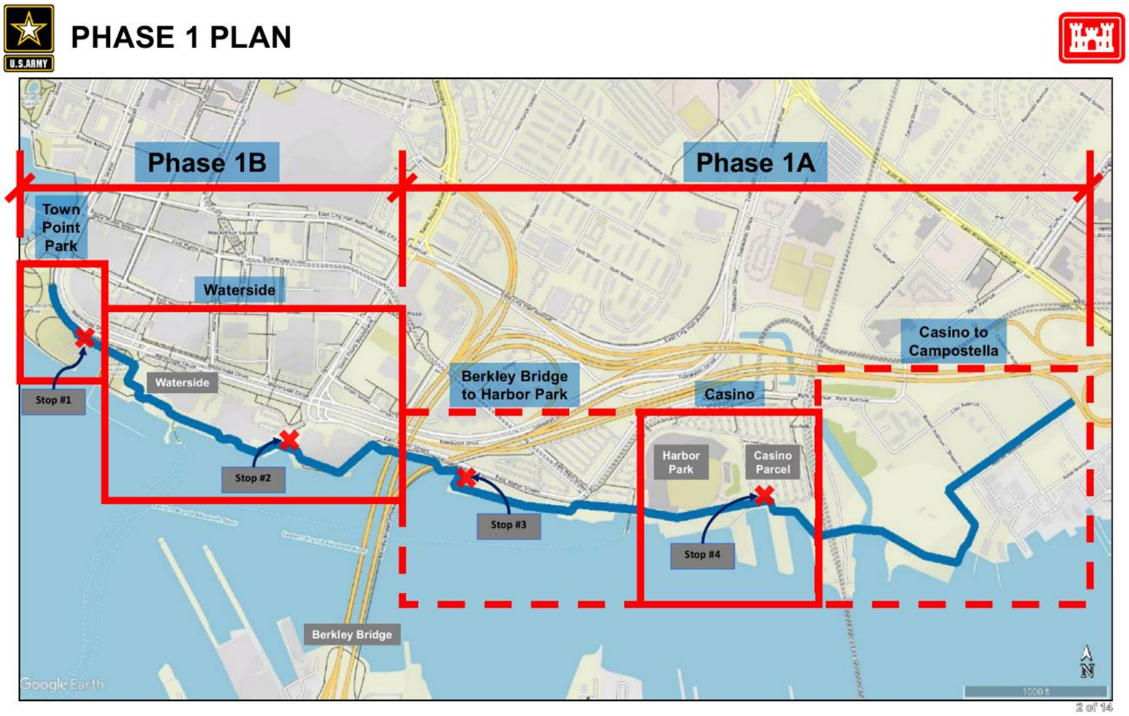
The Norfolk Coastal Storm Risk Management Study identified construction sequence areas as follows:

1. Area 1: Ghent-Downtown-Harbor Park
2. Area 2: Pretty Lake
3. Area 3: Lafayette River
4. Area 4: Broad Creek
5. Area 5: All Nonstructural areas; Campostella-Berkley, Willoughby Spit, and others.

In 2020, the project was authorized by Congress in the bipartisan Water Resources Development Act. On January 19, 2022, the United States Army Corps of Engineers (USACE) announced its plan for investing the $14 billion from President Biden's Bipartisan Infrastructure Law to strengthen port and waterway supply chains and bolster climate resilience. In this plan, the City of Norfolk will receive $249,331,000 to increase community resilience to flooding. On March 30, 2022, the United States Army Corps of Engineers (USACE) announced an additional $150,000,000 from President Biden's Infrastructure Investment & Jobs Act to support the Coastal Storm Risk Management (CSRM) project in the City of Norfolk. The project funding now totals $399,331,000 with an additional $215,000,000 required match of non-federal funds. The city will use the funding for the design and construction of storm surge barriers, levees, and pump stations to reduce storm risk as part of a large-scale extension of the Downtown Norfolk Floodwall. The federal funding allocation for developing complete plans and specifications for extension northwards to the Midtown Tunnel and west towards the Campostella Bridge as well as a surge barrier at the Hague.

As a non-federal sponsor of the project, the City of Norfolk is responsible for providing a 35% cost-share match. The City is prioritizing this project due to the tremendous impact the project will have on flood mitigation in the City. Accordingly, the project was identified in the 2021 Virginia Coastal Resilience Master Plan as an example hybrid project.

With the authorized federal funding, the City of Norfolk and USACE are focusing on the Phase 1A of the Ghent-Downtown-Harbor Park flood barrier system. The project will provide flood risk reduction in the economic core of the city by providing a continuous project alignment from West Ghent through the Harbor Park area. The project is selected as the priority of major construction based on the economic value of the area as well as important infrastructure such as the region's only Tier 1 trauma hospital, the region's children's hospital, emergency services, the region's only medical school, critical transportation corridors used for evacuation, city hall, city institutional network, cultural assets, and adjacent historic districts as well as well as assisted housing.



Protecting this economic, social and cultural center of Norfolk is called for in the citizen-led *Vision2100* plan for Norfolk. The CSRM IFR/EIS report and the DCR-approved Resilience Plan for Norfolk includes *Vision2100* as a key document that reinforced the overarching vision for how Norfolk will adapt to rising seas over the remainder of this century. This project area is identified for "Enhancing Economic Engines" as its adaptation strategy. The highest priority action for such areas calls for Norfolk to "Expand the flood protection system."

In coordination with the USACE Norfolk District, the City has selected the first feature to be fully designed in the PED phase, and the first feature bid for construction, to be a portion of the recommended structural protection for the Ghent-Downtown-Harbor Park measure. The floodwall segment to be developed into full designs includes the eastern end of the floodwall alignment. This segment runs to the west behind the Harbor Park Baseball Stadium, underneath the Berkley Bridge, and continues to the existing downtown Norfolk floodwall, as shown in Figure 2. This includes approximately 2,600 linear feet of berm, 4,000 linear feet of floodwall and one pump station based on the conceptual alignment from the IFR/EIS. Future references to this area will be called the Harbor Park to Downtown Berm and Floodwall.

This rendering is conceptual in nature and is provided for informational purposes only. It is a depiction of a design in progress and does not necessarily represent the final version of the project.

This alignment is a practical first element of construction for the following reasons:

- Real Estate considerations.
- The project will benefit the most vulnerable populations within Norfolk, meeting the City's goals of Resilience-Equity.

- Significant Natural and Nature-Based Features (NNBFs) are included in this initial phase, providing opportunities to incorporate innovative NNBF hybrid technologies being developed in concert with the GO Virginia-funded resilience accelerator, RISE Resilience Innovations.

BERKLEY BRIDGE – HARBOR PARK LEVEE

This rendering is conceptual in nature and is provided for informational purposes only. It is a depiction of a design in progress and does not necessarily represent the final version of the project.

The Scope of Work and Proposed Budget reflects the planned efforts to complete remaining feasibility level analyses required prior to the start of construction, collect required data, progress the development of Plans and Specifications for the Harbor Park to Downtown Berm and Floodwall, coordinate with project stakeholders, and complete project environmental compliance items.

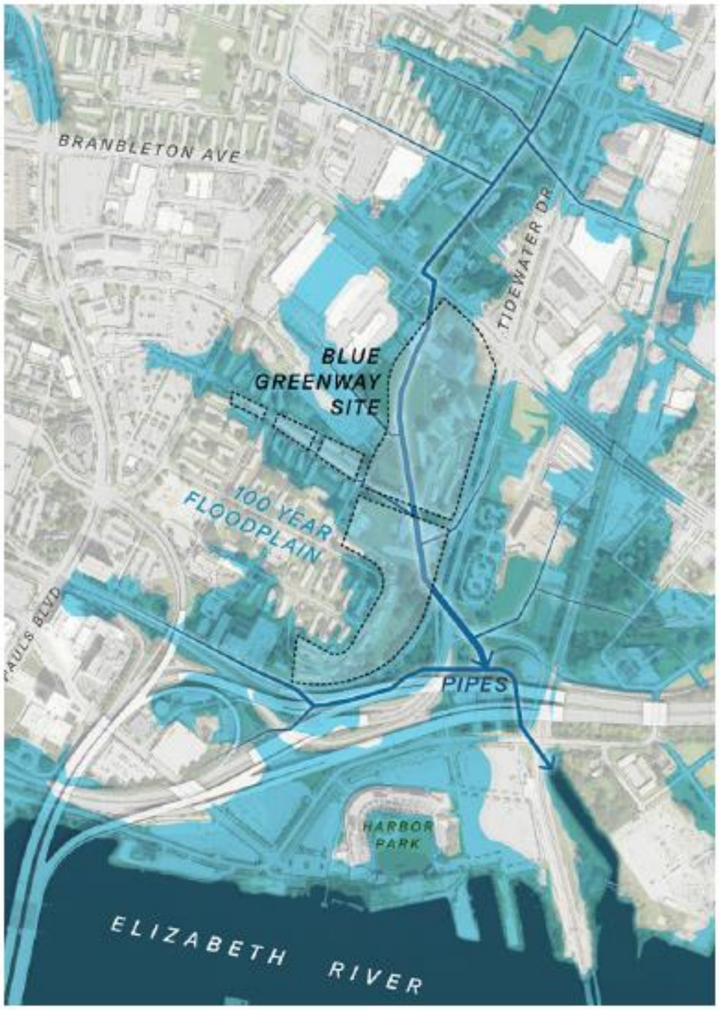
Major PED efforts to be completed before construction can occur include (Harbor Park to Downtown Berm and Floodwall footprint only):

- Topographic and utility surveys;
- Wetland, Mean High Water (MHW) line, and Mean Low Water (MLW) line delineations;
- Environmental permits;
- Refining the project alignment;
- Conducting geotechnical investigations;
- Conducting Phase I Hazardous Toxic and Radioactive Waste (HTRW) environmental site assessments on each affected parcel
- Surveying project areas for potential cultural resources;
- Completing interior drainage analysis and pump station sizing;
- Designing project elements and performing appropriate reviews, validations, and certifications;

- Finalizing Real Estate acquisition and/or Right-of-Entry agreements;
- Developing the Current Working Estimates (CWEs) and Independent Government Estimates (IGEs) for survey, design, and future construction contracts and
- Preparing bid packages for proposals.

This area has low lying elevation and is one of the most flooded areas of the city (see 100 Year Flood Plain and Existing Drainage System map below). Unfortunately, many of the flood events are underreported. This is an underreported area due to the high number of rentals in the area. The site is in Zone AE of the special flood hazard area as indicated on the FEMA flood insurance rate map for the City of Norfolk (CID 510104, FIRM/FIS eff. 2-17-17). The City of Norfolk has experienced flooding from all three types of storms (tropical storms, hurricanes, and nor'easters).

The storms that impact the City of Norfolk (and the greater Hampton Roads area) are occurring more frequently and are more intense based on the historical record data. The Sewells Point tide gauge shows that in the last 20 years storms are producing higher water surface elevations. This could also be result of sea level rise. The table displays the date of historical storm events where the water surface elevations reached over 4.0 feet NAVD 88, the type of storm, the peak water surfaces elevations, and cost. The peak water surface elevations were measured by the NOAA – Sewells Point tide gauge and reference to NAVD 88.



100 Year Flood Plain + Existing Drainage System
Flood risk aligns with historic creek

City of Norfolk Historical Storm Impacts: Table 3.9

Table 3.9 data provided by the National Flood Insurance Program.

	Storm Event: Date & Name	**Type of Storm**	**Peak Water Surface Elevations (NAVD88)**	**Cost**
1	August 1933 (No Name)	Hurricane	6.41	No data available
2	September 1933 (No Name)	Hurricane	4.51	No data available
3	September 1936 (No Name)	Hurricane	5.11	No data available
4	April 1956 (No Name)	Northeaster	4.71	No data available
5	March 1962 (Ash Wednesday)	Northeaster	5.61	No data available
6	April 1978 (No Name)	Northeaster	4.74	No data available
7	February 1998	Northeaster	4.93	$1,644,579
8	September 1999 (Floyd)	Hurricane	4.37	$1,234,972
9	September 2003 (Isabel)	Hurricane	6.28	$16,115,252
10	October-06	Northeaster	4.92	$923,711
11	November 2009 (Nor'Ida)	Northeaster	6.13	$23,382,942
12	December-09	Northeaster	4.50	$51,159
13	August 2011 (Irene)	Hurricane	5.94	$11,762,094
14	October 2012 (Sandy)	Hurricane	5.20	$2,581,008
15	October 2015 (Joaquin)	Hurricane	4.89	$330,054
16	September 2016 (Hermine)	Tropical Storm	4.55	$235,177
17	October 2016 (Matthew)	Hurricane	4.25	$4,951,161
Total:				$63,212,109

Figures 3.10 and 3.11 are plots of the water surface elevation (the predicted versus the verified water levels) measured at the NOAA – Sewells Point Gage, during some of the storm events shown in Table 3.9. The peaks shown in the figures are what is shown in the Table 3.9.

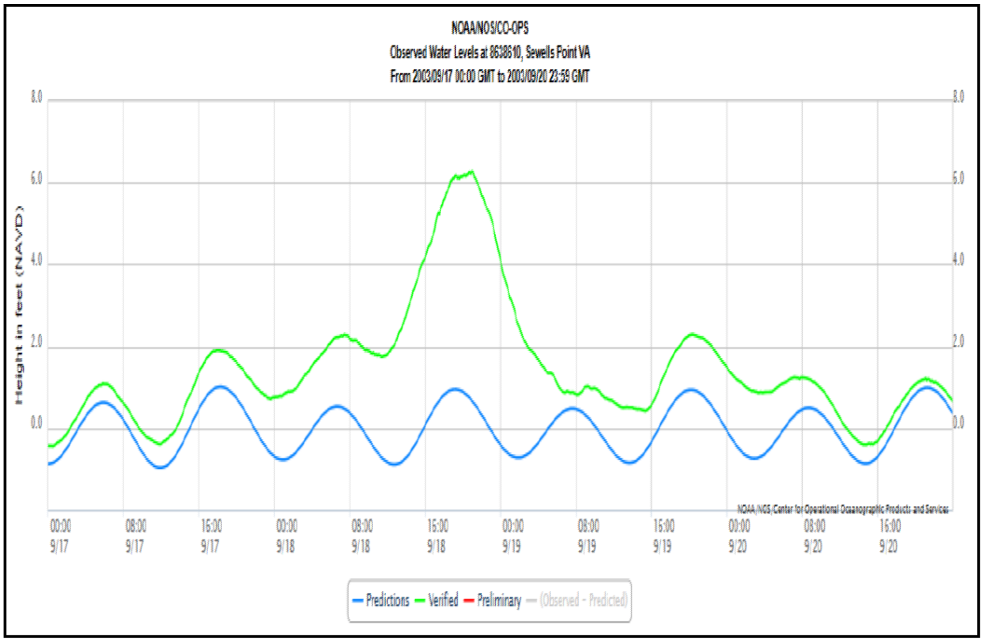


Figure 3.10. Predicted vs. Verified water levels during Hurricane Isabel in 2003.

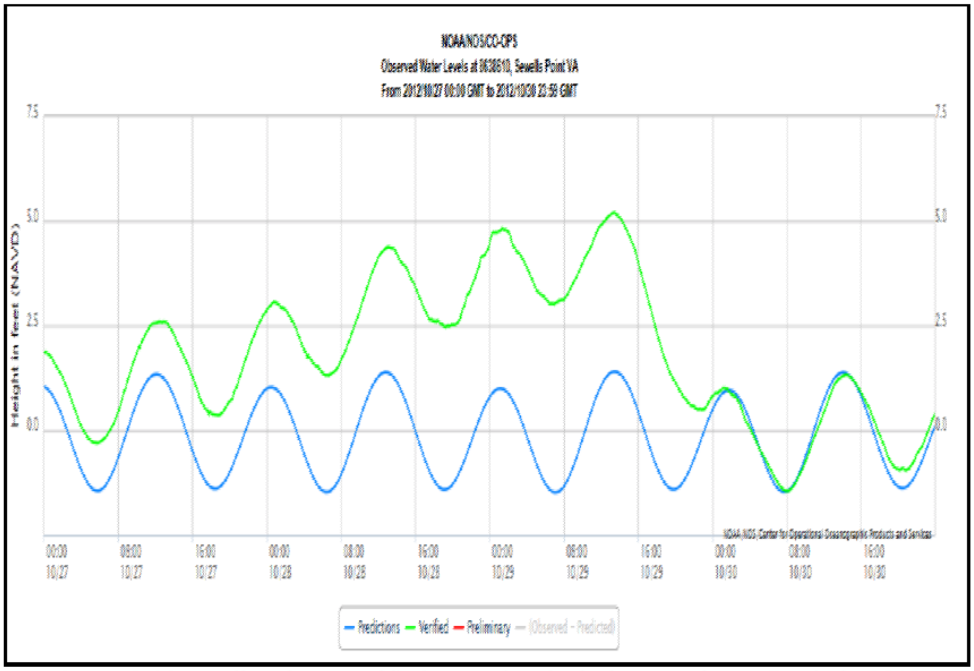


Figure 3.11. Predicted vs. Verified water levels during Hurricane Sandy in 2012.

2. Need for Assistance

The implementation of the floodwall will reduce impacts to critical infrastructure such as the industries mentioned above and ensure flood impacts are minimized.

Norfolk is home to the Port of Virginia's Norfolk International Terminals (NIT), one of Virginia's most significant economic assets with an impact of $60 billion in economic activity annually and port-related industries generating 374,000 jobs. The city is also home to multiple universities and key medical services supporting the region including Old Dominion University, Norfolk State University, Eastern Virginia Medical School, Sentara Norfolk General Hospital, and The Children's Hospital of the King's Daughters. Although the city has a formidable commercial, educational, militaristic, and healthcare focused industries, a significant amount of the city's population experiences severe economic hardship.

In comparison to other areas of Virginia, Norfolk is a low-income community, with median household income less than 80% of the statewide metric. The city has an average Social Vulnerability Index score of 0.59, ranking it as having Moderate Social Vulnerability as a whole. However, many of the densest population areas are concentrated in 25 census tracts listed as having High or Very High Social Vulnerability. An attached spreadsheet provides a summary of Social Vulnerability Index scores for each census tract in the city (Attachment B).

The entire project will provide city-wide impacts and the first proposed phase is focused on an area in which the annual median household income is $15,834 and categorized as Very High Social Vulnerability. In this area, 54% of households are identified as below the poverty level and there are 694 households without a vehicle (Attachment C).

In the project area, there are a myriad of residential and commercial structures that will be benefited by this project to include the St. Paul's Area. This Area is home to the region's highest concentration of assisted housing with 1,674 aging units that do not meet modern building standards in three adjacent family assisted housing communities. This area floods regularly, a problem worsened by increased frequency and duration of significant storm events. The City of Norfolk and Norfolk Redevelopment and Housing Authority are actively working to address these challenges through the St. Paul's Transformation project which is leveraging U.S. Department of Housing and Urban Development Choice Neighborhood Initiative (CNI) Implementation Grant for $30 million. The program will include a reimagined Newton's Creek that is daylighted to provide enhanced stormwater infiltration and storage as part of Phase 1A's interior drainage needs to support the St. Paul's Blue/Greenway, another highlighted example hybrid project from the Coastal Resilience Master Plan.

Tidal flooding on October 23, 1953, near Charlotte Street and Walke Street (NRHA)

Walke Street at Charlotte Street, Mid 20th Century and 2019 (NRHA, Google)

Recent flooding in Newton’s Creek Historic Footprint within the Tidewater Gardens assisted housing community.

Alternatives

The City and USACE Norfolk District analyzed, developed, and recommended a myriad of alternative measures to the recommended plan. The measures were combined into alternative plans that would provide coastal storm risk management for large portions of Norfolk. To meet the objectives of the study all areas of the city were investigated for coastal storm risk management solutions. The formulation strategy sought a comprehensive project that would allow Norfolk to maintain critical infrastructure, evacuation routes, and cohesive neighborhoods. Also, by formulating a comprehensive, citywide alternative, socially vulnerable neighborhoods will receive the same, or similar, levels of risk reduction as wealthy or more valuable property areas.

Four types of alternatives were formulated: the No Action, the Structural Only, the Nonstructural Only, and the Structural / Nonstructural Combination Alternatives.

In all, ten alternative plans were developed; plus the No Action Alternative.

Each alternative plan has its own economic valuations based on its component measures. These alternative plans include some measures that were later found to be not cost-justified, at which point re-formulation of the focused array was necessary; plans are shown in the table below.

Focused Array of Alternatives					
Alternative Plan	**Total Avg. Annual Costs ($1000's)**	**Annual Benefits ($1000's)**	**Annual Net Benefits ($1000's)**	**BCR**	**Total Project Cost ($1000's)**
Alternative 1 (No Action)	$0	$0	$0	$0	$0
Alternative 2a - Structural Only (LR-1a)	$52,000	$123,000	$71,000	2.4	$ 1,369,000
Alternative 2b - Structural Only (LR-1b)	$49,000	$ 123,000	$75,000	2.5	$ 1,278,000
Alternative 2c - Structural Only (LR-2 S)	$37,000	$ 83,000	$46,000	2.3	$978,000
Alternative 3- Nonstructural Only (All reaches)	$88,000	$ 152,000	$64,000	1.7	$ 2,319,000
Alternative 4a - Combination Structural and Nonstructural (LR-1a)	$72,000	$ 162,000	$90,000	2.2	$ 1,903,000
Alternative 4b - Combination Structural and Nonstructural (LR-1b)	$69,000	$ 162,000	$93,000	2.7	$ 1,811,000
Alternative 4c - Combination Structural and Nonstructural (LR-2 S)	$64,000	$ 163,000	$99,000	2.6	$1,688,000
Alternative 4d - Combination Structural and Nonstructural (LR-1a), Berkley and Campostella Nonstructural	$72,000	$ 162,000	$90,000	2.3	$1,891,000
Alternative 4e - Combination Structural and Nonstructural (LR-1b), Berkley and Campostella Nonstructural	$68,000	$ 162,000	$94,000	2.4	$ 1,799,000
Alternative 4f - Combination Structural and Nonstructural (LR-2 S), Berkley and Campostella Nonstructural	$64,000	$ 163,000	$100,000	2.6	$ 1,676,000

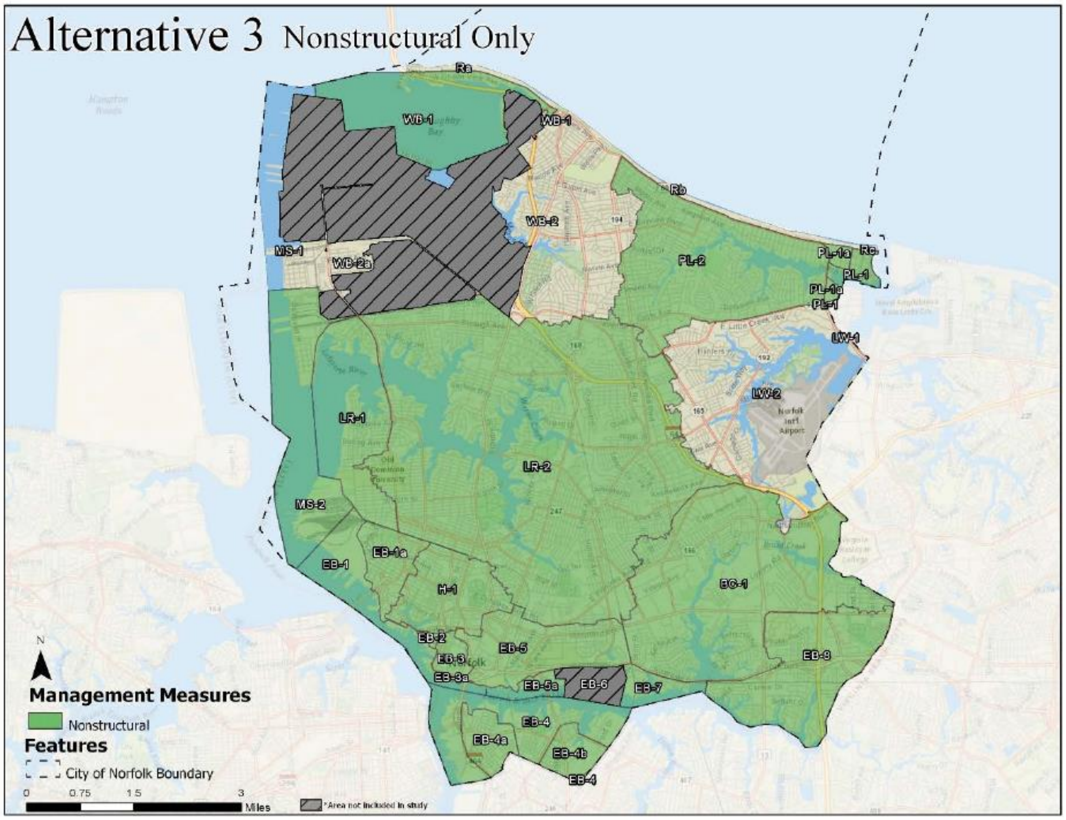
Final Array of Alternatives

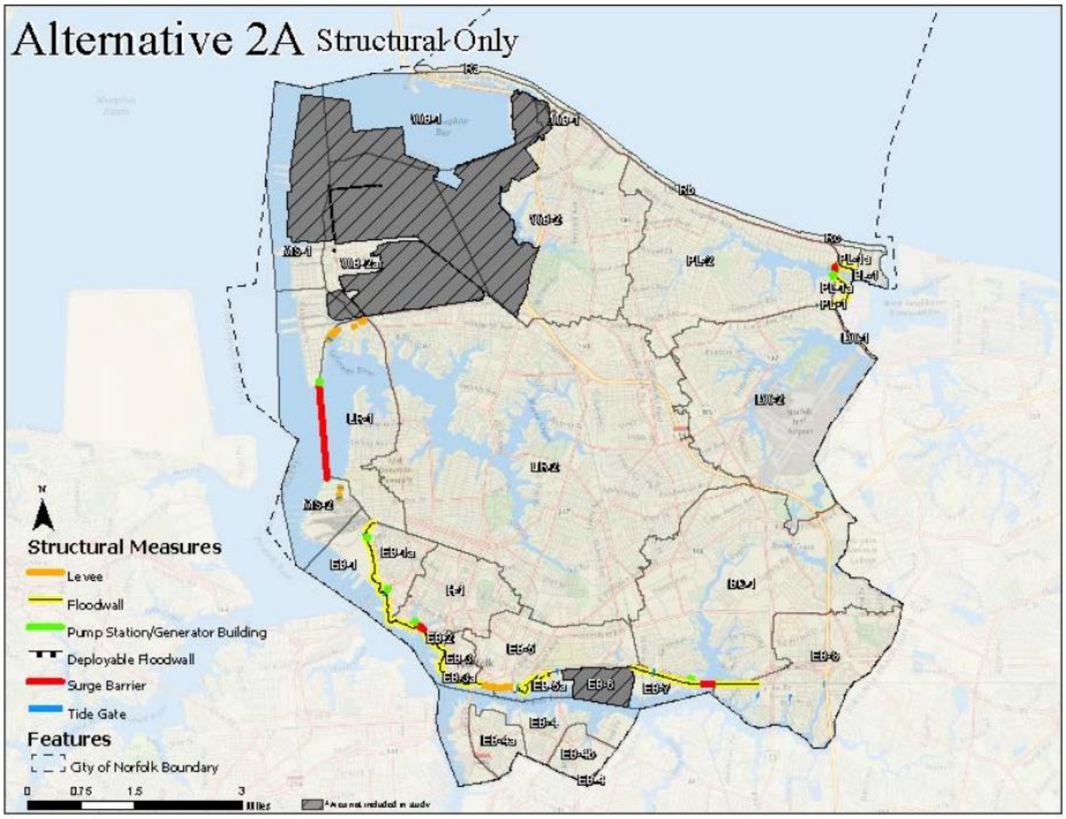
Alternative Plan	Description	Total Avg. Annual Costs ($1000's)	Annual Benefits ($1000's)	Annual Net Benefits ($1000's)	BCR	Total Project Cost ($1000's)
Alternative 1	No Action	0	0	0	0	0
Alternative 2a	Structural Only in All Reaches with the Outer Lafayette SSB, NNBF	$46,000	$136,000	$91,000	3.0	$1,231,000
Alternative 3	Nonstructural and Ringwalls Only in All Reaches	$108,000	$143,000	$35,000	1.3	$2,933,000
Alternative 4d	Structural and Nonstructural Combination, Outer Lafayette SSB, Campostella/Berkley Nonstructural, NNBF	$66,000	$168,000	$102,000	2.5	$1,787,000

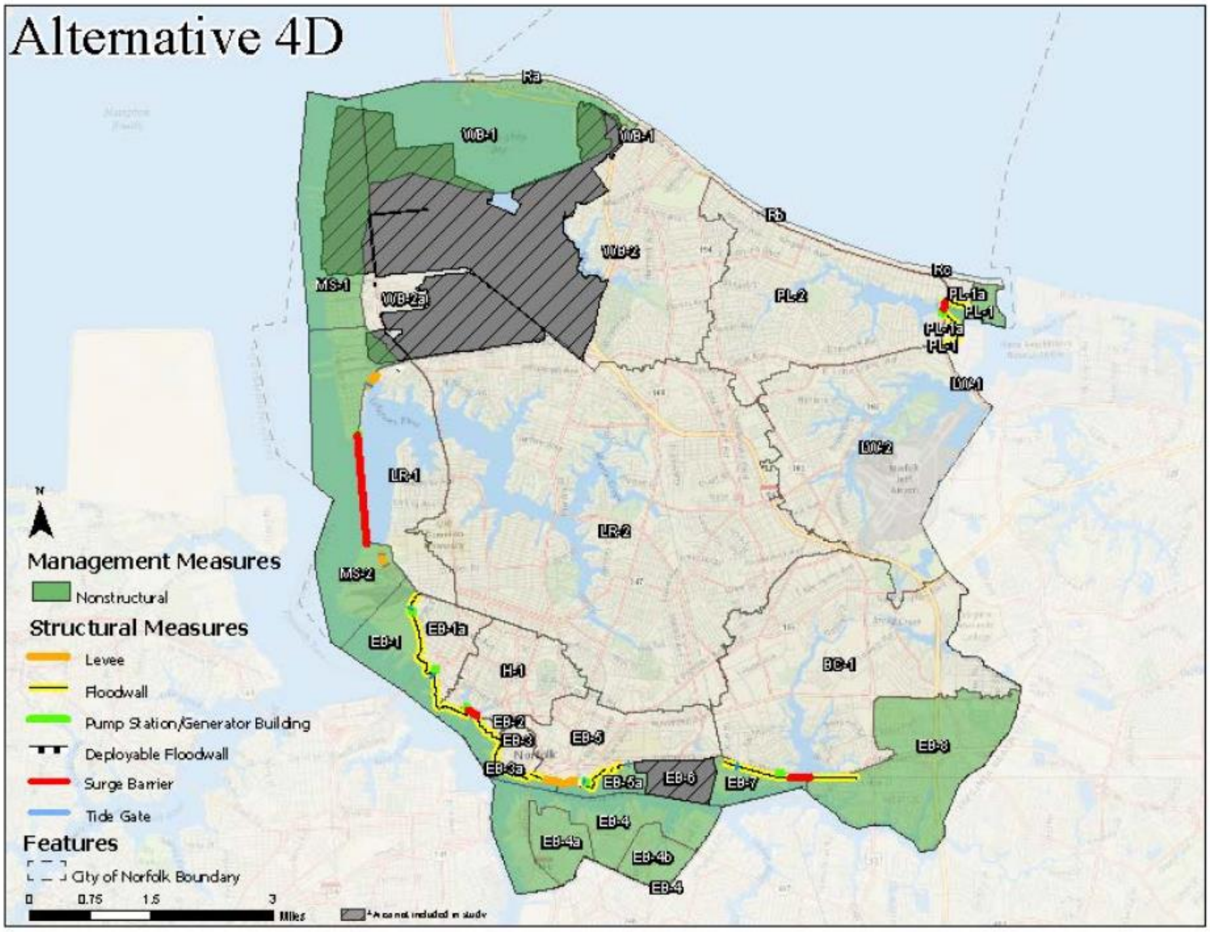
Measures in Each Alternative Plan

Alternative Plan	Description
Alternative 1	No Action
Alternative 2a	PL-2S, LR-1aS, EBS, BC-1S
Alternative 3	BC-1N, EB-1N, EB-1aN, EB-2N, EB-3N, EB-3aN, EB-4N, EB-4aN, EB-4bN, EB-5N, EB-5aN, EB-7N, EB-8N, H-1N, LR-1N, LR-2N, MS-2N, PL-1N, PL-1aN, PL-2N, WB-1N
Alternative 4d	PL-2S, LR-1aS, EBS, BC-1S, EB-1N, EB-4N, EB-4aN, EB-4bN, EB-5aN, EB-7N, EB-8N, MS-2N, PL-1N, WB-1N

The following environmental consequences were each analyzed individually against the Final Array of Alternatives (No Action, Structural Only Alternative, Nonstructural Alternative, 4d Recommended Plan): land use, geology and soils, coastal hydraulics, water quality, floodplains, wetlands and mudflats, submerged aquatic vegetation, terrestrial wildlife and upland vegetation, benthic resources, plankton, fish and fishery resources, special status species, passage/trapping effects, turbidity, vessel interactions, cumulative effects, cultural resources, recreational resources, visual resources, socioeconomics, hazardous materials and wastes, safety, transportation and navigation, utilities, noise, and climate change (see Chapter 11 of the Norfolk CSRM study).


Alternative 3 Nonstructural Only
Ra
WB-1
WB-1
Rb
WB-2
MS-1
WB-2a
PL-2
PL-1a
Rc
PL-1
PL-1a
PL-1
LW-1
LW-2
Norfolk Int'l Airport
LR-1
LR-2
MS-2
EB-1
EB-1a
H-1
BC-1
EB-2
EB-3
EB-3a
EB-5
EB-5a
EB-6
EB-7
EB-8
EB-4
EB-4a
EB-4b
EB-4
N
Management Measures
🟩 Nonstructural
Features
City of Norfolk Boundary
0 0.75 1.5 3 Miles
▨ *Area not included in study


Alternative 2A Structural Only
Ra
WB-1
WB-1
Rb
WB-2
MS-1
WB-2a
PL-2
Rc
PL-1a
PL-1
PL-1a
PL-1
LW-1
LW-2
LR-1
LR-2
MS-2
EB-1
EB-1a
H-1
BC-1
EB-2
EB-3
EB-3a
EB-5
EB-5a
EB-6
EB-7
EB-8
EB-4
EB-4a
EB-4b
EB-4
N
Structural Measures
Levee
Floodwall
Pump Station/Generator Building
Deployable Floodwall
Surge Barrier
Tide Gate
Features
City of Norfolk Boundary
0 0.75 1.5 3 Miles
▨ *Area not included in study



This study considered a range of nonstructural and structural measures to reduce the risk of storm damage in the study area. Through an iterative planning process, potential coastal storm risk management measures were identified, evaluated, and screened. Those remaining were developed into defined coastal storm risk management alternatives that composed a focused array of alternatives. The alternatives and measures of the focused array then underwent further screening and comparison to reduce the list of alternatives to final array of alternatives. Based on an evaluation of the costs and benefits of the final array of alternatives, including potential environmental impacts, Alternative 4d was identified as the **Tentatively Selected Plan (TSP)**. The TSP is the identified plan at the 3% ACE water level. After identification of the TSP, the plan was evaluated at the 10% and the 1.4% ACE water levels to better optimize the plan for costs and benefits.

3. Goals and Objectives:

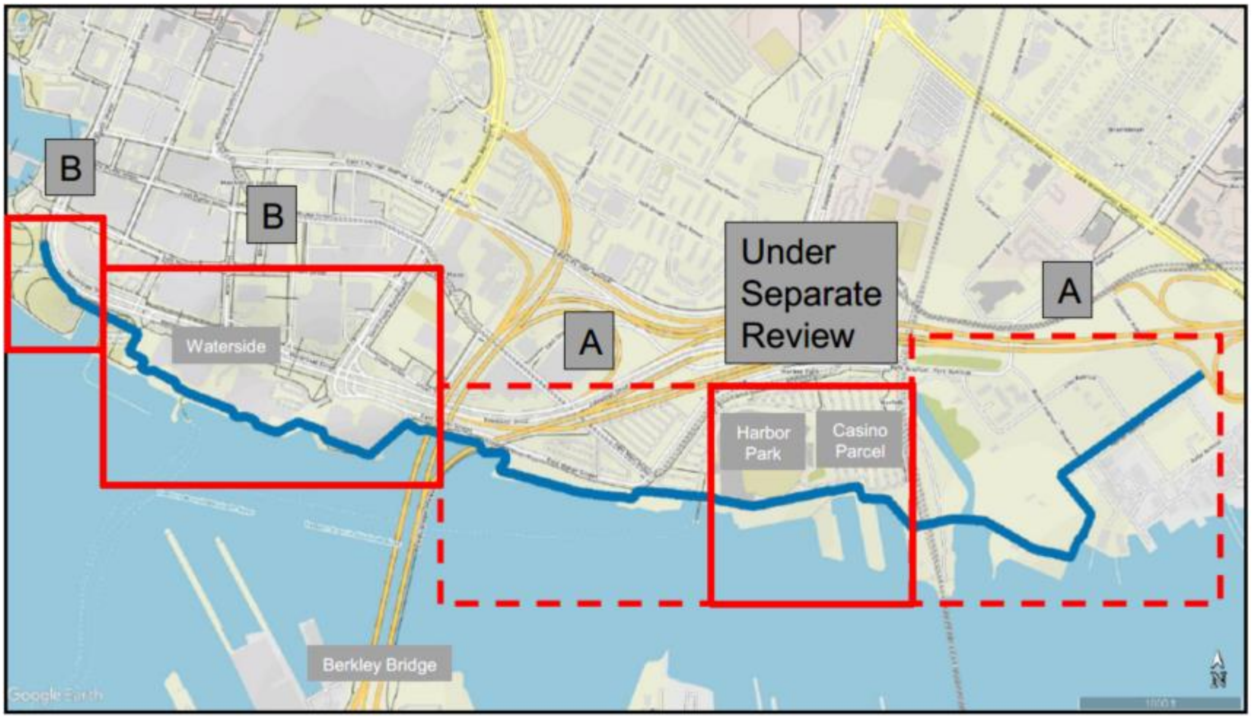
Within the Recommended NED Plan, Alternative 4d of the Norfolk CSRM IFR/EIS recommends multiple floodwalls, surge barriers, tide gates, levees, pump stations and nonstructural measures such as home elevations, buyouts, and basement fills.

> *Phase 1A of the Ghent-Downtown-Harbor Park Barrier System Addresses the first project segment with a hybrid green levee living shoreline focus, providing projection for the most socially vulnerable population within Norfolk.*

This project covers the majority of Harbor Park in Downtown Norfolk along with areas of the City to the east of Harbor Park. Surrounding areas are characterized by a protective floodwall measure that runs from the West Ghent neighborhood to just past the Harbor Park area. Within the Harbor Park area, a levee will be constructed that ties in the eastern extent of the Harbor Park and future development area for a casino to and a levee with living shorelines within the western extent of Phase 1A; interior drainage analyses were developed. There is sufficient right-of-way to allow the construction of this feature where in other parts walls are used because of limited space.

The proposed project offers numerous unparalleled benefits for the residents, existing infrastructure, and transportation. Through the mitigation of ongoing flooding impacts, these elements will be protected through the creation of the protective flood measures.

Map overview of Phase 1:



4. Approach, Milestones, and Deliverables:

The City of Norfolk and USACE have determined a strategic schedule for the project. Focusing on the first phase of the comprehensive project will yield definitive deliverables in alignment with the scope of work. The City and USACE will execute the project in 3 years. The draft Project Partnership Agreement (PPA) is prepared. The PPA will identify all sources of nonfederal match, including this grant once awarded, and then the PPA will be signed with project commencement by the start of FY23 (October 1). The PPA is unable to be signed until all funding sources are confirmed.

The first 15 months will include finalizing 100% design for the entire project phase. This effort also includes the process of securing contractor, value engineering process, independent cost estimate, independent external peer review, and a constructability review all prior to the request for proposal (RFP) process and bids being received. Construction is scheduled to begin in January 2024 and all work completed by September 30, 2025. Milestones will be tracked through quarterly reports and ongoing project status updates which define the funding expended, project accomplishments and activities, and anticipated next steps to meet the project implementation deadline.

Each design milestone will incur a deliverable at 35%, 65%, 100% from USACE Norfolk District and the City. Quality control assessment reports will be provided for each milestone. The anticipated schedule is defined below:

Deliverable	Description	Date
35% Submittal & Value Engineering	Plans, outline specifications, design analysis, cost estimate	10/5/22 - 12/27/22
65% Submittal	Plans, redline specifications, design analysis, cost estimate, draft 1354, bid schedule	10/5/22 - 5/4/23
100% Submittal	Plans, typed specifications, design analysis, cost estimate, draft 1354, bid schedule	5/5/23 - 11/5/23
Backcheck Submittal	Includes revisions to all design documents until comments are closed	
Virginia DEQ Submittal Documents	Prepare and submit the required documents for DEQ review after the 65% resolution meeting	8/3/23 - 10/31/23
Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Design Submittal	The value of BCOES reviews is based on minimizing problems during the construction phase through effective checks performed by knowledgeable, experienced personnel prior to advertising for a contract. Biddability, constructability, operability, environmental, and sustainability requirements must be emphasized throughout the planning and design processes for all programs and projects, including during planning and design charrettes. This will help to ensure that the government's contract requirements are clear, executable, and readily understandable by private sector bidders or	11/6/23- 12/26/23

	proposers. It will also help ensure that the construction may be done efficiently and in an environmentally sound manner, and that the construction activities and projects are sufficiently sustainable. Finally, effective BCOES reviews of design and contract documents will reduce risks of cost and time growth, unnecessary changes and claims, as well as support safe, efficient, sustainable operations and maintenance by the facility users and maintenance organization after construction is complete.	
Ready To Advertise (RTA) Submittal	At RTA, the design analysis is not a contract document, but rather a final documentation of the basis of design for the Resident Engineer, and digital archival document for Engineering Division. The design analysis should be developed from Concept Design to include a discussion of any new or unfamiliar products, critical product features, critical milestones that may require designer consultation, items of particular customer interest revealed in design meetings, shop drawings of particular interest or criticality, anticipated difficult construction features.	12/27/23-12/30/23
Geotechnical report	Outlines the content of subsurface investigations, geotechnical design reports, geotechnical design analyses, and geotechnical data for inclusion in design and contract documents.	12/27/23-12/30/23
Construction	Site work begins until completion.	1/1/24- 8/31/25

The City of Norfolk is partnering with the USACE to complete the project and has developed a strategy for implementation. Supporting funds for the project include federal funding and local state/government funding. The federal funding is provided through the appropriated funding from the Infrastructure Investment and Jobs Act (IIJA). To continue to move the project forward, the Commanding U.S. Army Colonel of the USACE Norfolk District provided the City with a letter of funding confirmation (Attachment D).

The City of Norfolk's Office of Resilience has an extensive history of successfully managing state and federal grant funds for resilience projects. As a major city, the City of Norfolk manages a large operating budget, including a fee to address and support resilience projects, and demonstrates excellent in fiscal responsibility. The City of Norfolk has exemplary and committed staff members to support, implement, and execute grants on schedule and within budget. This project will be managed through the City of Norfolk's Office of Resilience and the USACE Norfolk District.

In addition to Resilience's staff and consultants, the team members will include Norfolk staff from the Department of Public Works. Proposed team members are noted below:

Table 1 – City of Norfolk and USACE Project Team

Name	Title	Department
Kyle Spencer, GISP, CFM	Acting Chief Resilience Officer	Resilience
Matthew Simons, AICP CFM	Coastal Resiliency Manager	Resilience
Stephanie Daniel	Management Analyst	Resilience
John White	City Stormwater Engineer	Stormwater
Tammy Halstead, PE	Civil Engineer IV	Public Works
Richard Klein, PE	Chief, Programs and Civil Works Branch	USACE Norfolk District
Walt Trinkala	Project Manager/Engineer	USACE Norfolk District
Jack Wall	Project Manager	USACE Norfolk District
Matthew McKeehan, PE	Levee Safety Program Mgr.	USACE Norfolk District
Dan Hughes	Planning Resource Section Chief	USACE Norfolk District
Kathy Purdue	Environmental	USACE Norfolk District
John Haynes	Cultural Resources	USACE Norfolk District
Doug Hessler	GIS	USACE Norfolk District
Robin Williams	H&H Chief	USACE Norfolk District
Wayne Miller	Structural, Chief	USACE Norfolk District
Todd Waldman	District Counsel	USACE Norfolk District
Mark Haviland	PAO, Chief	USACE Norfolk District

5. Relationship to Other Projects:

The project is directly tied to the City of Norfolk and USACE's Coastal Storm Risk Management Study (CSRM) that was finalized in 2019. The recommendations for this project are derived from the extensive feasibility study conducted by the USACE. Furthermore, this project is the beginning of a comprehensive City-wide effort to implement the CSRM recommendations to reduce the ongoing challenges of flooding. In September 2021, the City of Norfolk was awarded funding from the first round of the Community Flood Preparedness Grant Fund to support additional coastal process calculations and value engineering efforts for the continued design of infrastructure features identified in the Norfolk Coastal Storm Risk Mitigation (CSRM) Feasibility Study and Integrated EIS (FS/EIS).

6. Nonfederal Sponsor Responsibilities and Operations & Maintenance:

As the non-Federal project partner, the City of Norfolk must comply with all applicable Federal laws and policies and other requirements, including but not limited to:

A. In a cost sharing coordination with the Federal Government, who shall provide 65% of the initial project cost, provide 35% of the costs of project construction:
   1. Provide all lands, easements, rights of way and relocations (LERR), including suitable borrow areas, uncontaminated with hazardous and toxic wastes, and perform or ensure performance of any relocations determined by the Federal Government to be necessary for the initial construction, operation, and maintenance of this project.

   2. Perform, or cause to be performed, any investigations for hazardous substances as are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law (PL) 96-510, as amended, 42 U.S.C. 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the construction, operation, and maintenance of the Project. However, for lands that the Federal Government determines to be subject to the navigational servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the non-Federal project partner with prior specific written direction, in which case the non-Federal project partner shall perform such investigations in accordance with such written direction.
   3. Coordinate all necessary cleanup and response costs of any CERCLA-regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the construction, operation, or maintenance of the project.
   4. Cost-share of the cost of mitigation and data recovery activities associated with historic preservation, that are in excess of 1 percent of the total amount authorized to be appropriated for the project.

B. For fifty years, operate, maintain, repair, replace, and rehabilitate the completed project, or functional portion of the project, at no cost to the Government, in a manner compatible with the project’s authorized purposes and in accordance with applicable Federal and State laws and any specific directions prescribed by the Government in the Operations, Maintenance, Replacement, Repair and Rehabilitation (OMRR&R) manual and any subsequent amendments thereto.

C. Provide the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal project partner, now or hereafter, owns or controls for access to the project for the purpose of inspection, and, if necessary after failure to perform by the non- Federal project partner, for the purpose of completing, operating, maintaining, repairing, replacing, or rehabilitating the project. No completion, operation, maintenance, repair, replacement, or rehabilitation by the Federal Government shall operate to relieve the non-Federal project partner of responsibility to meet the non-Federal project partner's obligations, or to preclude the Federal Government from pursuing any other remedy at law or equity to ensure faithful performance.

D. Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, replacement, and rehabilitation of the project and any project-related betterments, except for damages due to the fault or negligence of the United States or its contractors.

E. Keep, and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the Project in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal regulations (CFR) Section 33.20.

F. As between the Federal Government and the non-Federal project partner, the non-Federal project partner shall be considered the operator of the project for the purpose of CERCLA liability. To the maximum extent practicable, operate, maintain, repair, replace and rehabilitate the project in a manner that will not cause liability to arise under CERCLA.

G. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1790, Public Law 91-646, as amended by Title IV of the Surface Transportation and Unifom1 Relocation Assistance Act of 1987 (Public Law 100-17),and the Unifom1 Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way, required for the construction, operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

H. Comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense directive 5500.11 issued pursuant thereto, as well as Army regulation 600- 7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army."

I. Participate in and comply with applicable Federal flood plain management and flood insurance programs and comply with the requirements in Section 402 of the Water Resources Development Act of 1986, as amended.

J. Not less than once each year inform affected interests of the extent of storm risk management afforded by the project.

K. Publicize flood plain information in the area concerned and provide this information to zoning and other regulatory agencies for their use in preventing unwise future development in the flood plain and in adopting such regulations as may be necessary to prevent unwise future development and to ensure compatibility with the degree of storm risk management provided by the project.

L. Prevent obstructions of or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) which might hinder its operation and maintenance, or interfere with its proper function, such as any new development on project lands or the addition of facilities which would degrade the benefits of the project.

M. Provide and maintain necessary access roads, parking areas, and other public use facilities, open and available to all on equal terms.

N. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended, and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended, which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal project partner has entered into a written agreement to furnish its required cooperation for the project or separable element.

O. Quarterly and after storm events, perform surveillance of the project to determine project maintenance or repair needs and provide the results of such surveillance to the Federal Government.

The City of Norfolk is actively preparing for ongoing and lifetime maintenance costs of the project. Annual Operations and Maintenance (O&M) costs for the entire Ghent-Downtown-Harbor Park Barrier System are anticipated to cost $585,000 annually (2019 estimate). The O&M costs of the project will be financed by the City of Norfolk through increased allocations to the City's general fund beginning in fiscal year 2026.

> *Accordingly, portions of the proposed project will experience reduced annual O&M costs over the lifespan of the project due to the construction of NNBF's such as oyster reefs, which will reduce the impacts of wind generated wave hazards by approximately 20%-50% according to the CSRM feasibility study completed by the USACE.*

A Project Partnership Agreement between the City of Norfolk and USACE will be in place to establish the requirement for annual and ongoing O&M appropriations. O&M costs for determining were based on parametric costs developed in the North Atlantic Coast Comprehensive Study (NACCS). Parametric costs were then adjusted based on the length and type of measure. The following assumptions were applied to operation and maintenance estimates:

- $2 per linear foot plus $10,000 per drain for floodwalls and levees.
- 0.5% of total costs for wetlands and living shorelines.
- 1% of total costs for groins, breakwaters, and revetments.
- 0.5% of total costs for storm surge barriers.
- 1% of total costs for beach restoration with renourishment interval of 4 years.

After computation of the total costs, costs were annualized using the FY2017 (October 2016) discount rate of 2.875% for a 50-year life cycle of the project. Repair, replacement, and rehabilitation cost will be completed during optimization phase and are not expected to impact plan selection.

Once the project has been constructed and turned over, USACE will provide an operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) manual which will be written specifically for the City of Norfolk. The City will have the primary responsibility for operating and maintaining the project. The intent of the manual is to provide the City with some clear and comprehensive guidance on the operation and maintenance of levees, floodwalls, and other flood control structures. It will describe how to plan and prepare for high water and storm events, and lays out steps to take during emergencies that will help reduce the threat of flooding. The manual will also explain the types of assistance that the U.S. Army Corps of Engineers can provide to a community before, during, and after a flood. Monitoring and inspections will occur to ensure that the project functions as designed and that the local sponsor confirms to all OMRR&R recommendations and requirements that will assist in functionality of the project.

USACE will inspect the project each year with the City of Norfolk. USACE conducts two types of levee and floodwall inspections: Routine Inspection and Periodic Inspection. Routine Inspection is a visual inspection to verify and rate levee/floodwall system operation and maintenance. It is typically conducted each year for all levees/floodwalls in the USACE Levee Safety Program. Periodic Inspection is a comprehensive inspection conducted by a USACE multidisciplinary team that includes the local sponsor and is led by a professional engineer. USACE typically conducts this inspection every five years on the federally authorized levees in the USACE Levee Safety Program.

Periodic Inspections include three key steps: (1) Data collection - A review of existing data on operation and maintenance, previous inspections, emergency action plans and flood fighting records; (2) Field inspection - Similar to the visual inspection for a Routine Inspection, but with additional features; (3) Final report development - A report including the data collected, field inspection findings, an evaluation of any changes in design criteria from the time the levee was constructed, and additional recommendations as warranted, such as areas that need further evaluation. Both Routine and Periodic Inspections result in a final inspection rating for operation and maintenance. The rating is based on the levee/floodwall inspection checklist, which includes 125 specific items dealing with the operation and maintenance of levee embankments, floodwalls, interior drainage, pump stations, and channels. Each levee/floodwall segment receives an overall segment inspection rating of Acceptable, Minimally Acceptable, or Unacceptable. USACE also shares the results with FEMA, to help inform decisions about levee accreditation for flood insurance purposes. The inspection ratings are available in the National Levee Database.

7. Criteria*:*

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?**

   The City of Norfolk is an independent city in the Commonwealth of Virginia.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**

   The City of Norfolk submitted a Resilience Plan package in July 2021 and received approval of the plan from Virginia Department of Conservation and Recreation on August 11, 2021 (Attachment E).

3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**

   The City of Norfolk is an independent city in the Commonwealth of Virginia.

4. **Has the applicant provided evidence of an ability to provide the required match funds?**

   Yes, the required match is provided by federal and local funding with details included as an attachment.

5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**

   The project benefit for the entire city is unparalleled. With the first phase of implementation funding that is requested in this application, it will establish Norfolk's commitment to foster and encourage resilience. The expected impacts of implementing this effort will create 27,236 feet of floodwall protection, 7,200 lf. of NNBF living shoreline, 5,250 lf. of NNBF Oyster Reef, and 3,800 lf. of mitigation linear shoreline in addition to t-walls, pump stations, surge barriers, miter gates, and tide (sluice) gates. This will provide the City with essential flood protection as flooding events continue to increase in frequency and intensity.

8. Budget Narrative

Based upon multiple metrics, the project area is defined as a low-income area. As a result, the City of Norfolk seeks 17.5% grant funding to support the construction of Phase 1A of the Ghent-Downtown-Harbor Park flood barrier system. The City proposes to fund 82.5% match through a combination of local funds (17.5%) and federal funds (65%) recently awarded to the City of Norfolk for this project. In January 2022, the U.S. Army Corps of Engineers (USACE) announced that $249,331,000 of federal funding has been appropriated from Infrastructure Investments and Jobs Act (IIJA) for Phase 1A of this CSRM project. On March 30, 2022, USACE announced that the remaining $150,000,000 of federal support needed to complete all of the Ghent-Downtown-Harbor Park Barrier System (CSRM Phase 1 – ph. 1A through 1D) has been appropriated in the USACE FY23 work plan (Attachment F).

The City of Norfolk and its State partners must provide the necessary 35% match ($215,024,385) to unlock the $399,331,000 appropriated from USACE for this project ($614,335,385 total).

Phase 1A is the discrete 3-year first start project which is the subject of this CFPF grant application. The costs to finish design and construction for Phase 1A is $160,731,286. The City of Norfolk is requesting $28,127,975 (17.5%) to be matched with the same amount from the City of Norfolk to meet the City’s 35% nonfederal match obligation by the start of Fiscal Year 2023. All match funding will go towards developing final USACE-approved designs, and construction. The tables below summarize project costs. Funds proposed as match are authorized through existing approved budgets and verified on the attached, signed City Manager Transmittal Form outlining grant and match funds for the current Community Flood Preparedness Fund grant cycle. Upon award of grant funds, the City sets up a special revenue account that includes approved match funds and cash funds to cover awarded grant funding until reimbursement is received. This allows Norfolk to move through projects without delays for reimbursement requests.

Cost Breakdown

Project Tasks	Grant Funds (17.5%)	Match Funds (82.5%)	Total
Task I Final Design	$667,500	$3,146,786	$3,814,286
Task II Construction	$27,460,475	$129,456,525	$156,917,000
Total Project Costs:	$28,127,975	$132,603,311	$160,731,286

	Budget Categories:	**Project Tasks**		
		Task 1: Final Design	**Task 2:** Construction	**TOTAL:**
Direct Costs	Personnel	$0	$0	$0
	Fringe Benefits	$0	$0	$0
	Travel	$0	$0	$0
	Equipment	$0	$0	$0
	Supplies	$0	$0	$0
	Contractual	$3,814,286	$156,917,000	$160,731,286
	Other:	$0	$0	$0
Total Direct Costs:		$3,814,286	$156,917,000	$160,731,286
Indirect Costs:		$0	$0	$0
Total Grant Funding:		$667,500	$27,460,475	$28,127,975
Matching Funds:		$3,146,786	$129,456,525	$132,603,311
Total Budget:		$3,814,286	$156,917,000	$160,731,286

Budget Breakdown:

100% of estimated total project costs provided (low-income geographic area designation)

Task I: Final Design ($3,814,286): The City will work with USACE to complete the project design along with the selected consultant(s). The City is requesting $667,500 from the fund to support this effort. USACE will adhere to required procurement processes and regulations to procure a qualified consultant to assist the City with this effort. USACE tracks all expenses in a near identical way as a typical contractor. All services from USACE and their contractors will be reported to DCR as contractual expenses. Given that the City of Norfolk and federal match for this grant is well above the minimum required by the CFPF grant manual, the City of Norfolk will not be submitting any request for CFPF match credit from work-in-kind expenditures. However, the City of Norfolk will track all work-in-kind expenses (personnel, etc.) for submission to the federal government, and will agree to provide this information to DCR upon request.

Task II: Construction ($156,917,000): The City of Norfolk and USACE will fund project construction in six project reaches as delineated below (listed from West to East). The City is requesting $27,460,475 from the fund to support this effort. These construction reaches are not constructed sequentially; construction may begin simultaneously, and construction activities will likely overlay.

1. **Phase 1a | Berkley Bridge Levee:** Construction will commence with the creation of a levee, T-wall, closures, and living shorelines. A levee will be a standard berm/levee geometry of a 10-foot wide crest covered with 6 inches of aggregate base, 3H: 1V side slopes, and 2 feet of riprap on the waterside. An inspection or key trench is excavated into existing ground along the berm/levee alignment. The inspection trench is 10 feet wide at the bottom with 1H: 1V sides slopes. For a berm/levee height less than 6 feet, the depth of the inspection trench is equal to the height of the levee. For a berm/levee height of 6 feet or greater, the depth of the inspection trench is 6 feet. The inspection trench is backfilled with compacted embankment fill material, which is also used to construct the levee. T-Walls will be traditional concrete stem walls with pile supported bases. Gate closures are designed into a floodwall system where passage through the floodwall is needed during non-flooding periods. Typically gate closures are designed to accommodate automobile traffic where a floodwall is designed across a roadway. Gate closures can also be designed for pedestrian traffic. The gates are closed during flooding periods and so disruptions to traffic should be considered. The existing Norfolk floodwall utilizes gate closures and the closures envisioned for this study are likely to be similar in design and function. Living Shorelines will provide erosion protection for coastal flood defense structures while creating new habitat and improving ecological functions of the Elizabeth River. The levee will transition to a T-wall/L-wall at the Berkley Bridge Pump Station, directly beside the southwest corner of Harbor Park ballfield.

2. **Phase 1a | Berkley Bridge Pump Station**: A pump station will be constructed in the project area. Upgrades to the subsurface drainage system as well as construction of coastal flood protection will necessitate the installation of pump stations to discharge stormwater into the Elizabeth River.

Drainage system upgrades and additional water storage areas aim to reduce the need for pumping and the number of pump stations needed.

3. **Phase 1a | Harbor Park and Railroad Gate:** As the levee transitions to a T-wall/L-wall structure at the Berkley Bridge Pump Station, the T-wall/L-wall extends eastward along the backside of the Harbor Park ballfield. This portion of Phase 1A will be located on private property currently under development. As part of the current development, the developer has sought to construct this portion of the flood protection system ahead of the USACE. As such, the developer is working directly with USACE and the City of Norfolk to construct this portion of the flood protection system on their site. This portion of the project is not part of this grant application and is shown in the attached exhibits as “Not in Scope.” No portion of the CFPF grant would be utilized for this portion of the Phase 1A system. The eastern edge of this private development terminates at the Norfolk Amtrak station. This is where the Phase 1A system would tie into the developer’s private flood protection system. At this location the flood protection system will cross the Amtrak rail line, and rail lines owned/operated by Norfolk Southern with a large at-rail flood gate crossing. This gate crossing will be a significant structure that leads to eastward to Newton’s Creek.

4. **Phase 1a | Newton’s Creek Closure:** Construction will continue with the creation of a tide gate and T-wall. A tide gate structure will be integrated into the coastal flood protection. It will restore ecological function to the wetlands and protect the site from tidal events.

5. **Phase 1a | Newton’s Creek Pump Station**: A pump station will be constructed in the project area. Upgrades to the subsurface drainage system as well as construction of coastal flood protection will necessitate the installation of pump stations to discharge stormwater into the Elizabeth River. Drainage system upgrades and additional water storage areas aim to reduce the need for pumping and the number of pump stations needed.

6. **Phase 1a | Newton’s Creek to Campostella:** This effort will include the construction of T-Walls and closures. T-Walls will be traditional concrete stem walls with pile supported bases. Gate closures are designed into a floodwall system where passage through the floodwall is needed during non-flooding periods. Typically gate closures are designed to accommodate automobile traffic where a floodwall is designed across a roadway. Gate closures can also be designed for pedestrian traffic. The gates are closed during flooding periods and so disruptions to traffic should be considered. The existing Norfolk floodwall utilizes gate closures and the closures envisioned for this study are likely to be similar in design and function.

THE CITY OF NORFOLK

Attachments

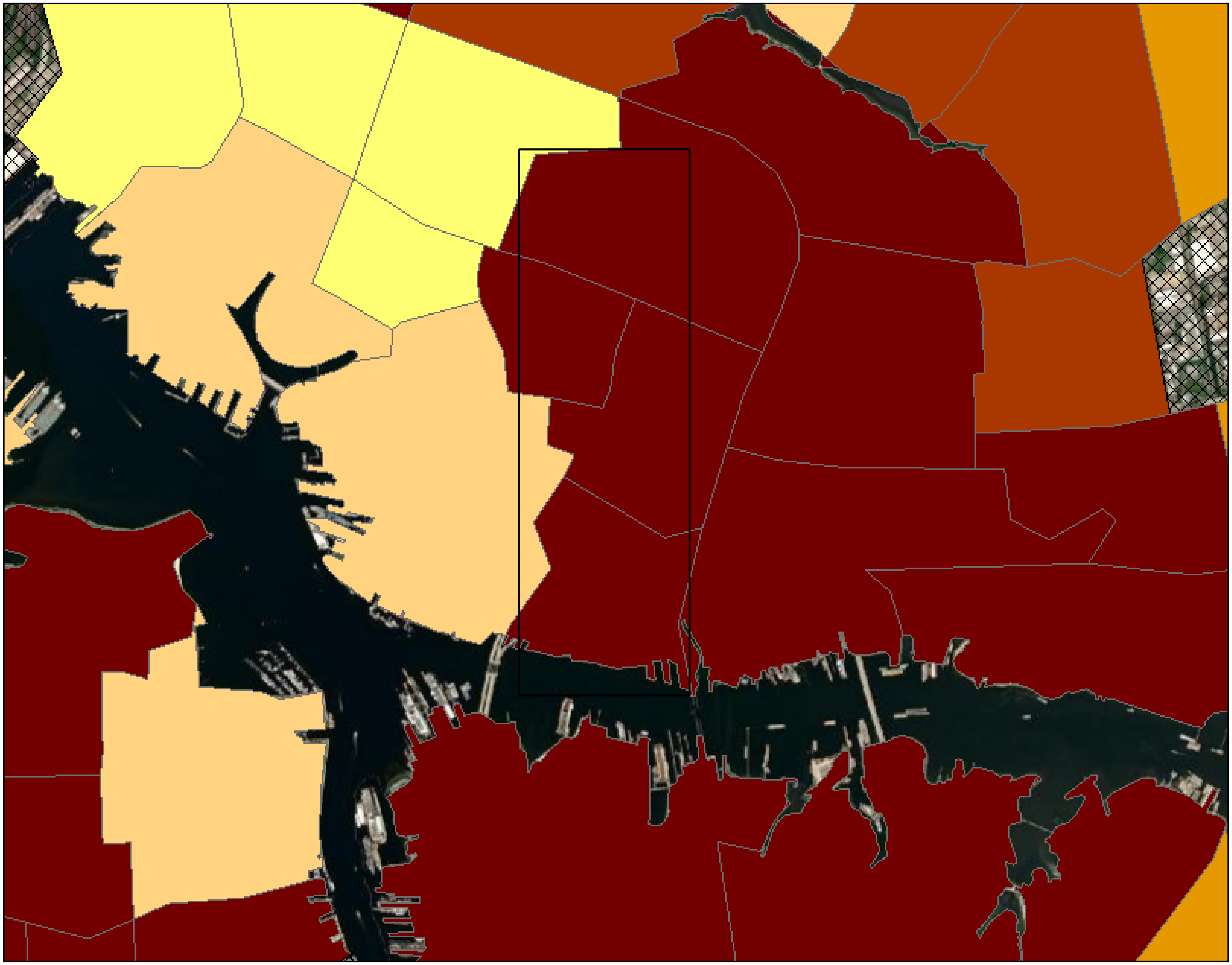
THE CITY OF NORFOLK

Attachment A

EBS 1

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- 🟧 Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟫 High Social Vulnerability
- 🟥 Very High Social Vulnerability
- ⊠ Not inlcuded in the analysis



March 28, 2022

1:36,112

0 0.2 0.4 0.8 mi

0 0.35 0.7 1.4 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPTVA

Key Facts

City of Norfolk

Area: 54.25 square miles

KEY FACTS

247,421

Population

31.3

Median Age

2.4

Average Household Size

$53,253

Median Household Income

EDUCATION

12%

No High School Diploma

25%

High School Graduate

33%

Some College

30%

Bachelor's/Grad/Pr of Degree

BUSINESS

7,274

Total Businesses

123,760

Total Employees

EMPLOYMENT

63%

White Collar

22%

Blue Collar

15%

Services

9.7%

Unemployment Rate

INCOME

$53,253

Median Household Income

$27,724

Per Capita Income

$41,051

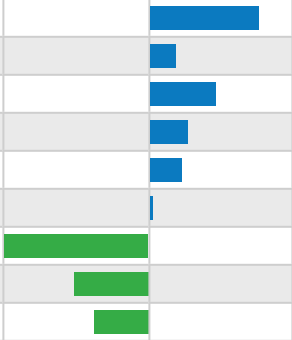
Median Net Worth

Households By Income

The largest group: $50,000 - $74,999 (20.1%)

The smallest group: $200,000+ (3.6%)

Indicator ▲	Value	Diff
<$15,000	13.7%	+7.3%
$15,000 - $24,999	8.9%	+1.7%
$25,000 - $34,999	11.3%	+4.4%
$35,000 - $49,999	12.4%	+2.5%
$50,000 - $74,999	20.1%	+2.1%
$75,000 - $99,999	13.1%	+0.2%
$100,000 - $149,999	11.8%	-9.5%
$150,000 - $199,999	5.3%	-4.9%
$200,000+	3.6%	-3.6%



Bars show deviation from Chesapeake city

This infographic contains data provided by Esri, Esri and Data Axle. The vintage of the data is 2021, 2026.

Source: This infographic contains data provided by Esri, Esri, Esri and Data Axle. The vintage of the data is 2021, 2026, 2021.

THE CITY OF NORFOLK

Attachment B

Norfolk Social Vulnerability Index Score

Census Tract Name	Social Vulnerability Index Score
Census Tract 25, Norfolk city, Virginia	1.69
Census Tract 27, Norfolk city, Virginia	1.71
Census Tract 29, Norfolk city, Virginia	1.37
Census Tract 31, Norfolk city, Virginia	1.40
Census Tract 34, Norfolk city, Virginia	2.33
Census Tract 35.01, Norfolk city, Virginia	2.25
Census Tract 41, Norfolk city, Virginia	3.62
Census Tract 42, Norfolk city, Virginia	4.47
Census Tract 43, Norfolk city, Virginia	2.28
Census Tract 44, Norfolk city, Virginia	1.37
Census Tract 45, Norfolk city, Virginia	1.83
Census Tract 46, Norfolk city, Virginia	2.34
Census Tract 47, Norfolk city, Virginia	2.84
Census Tract 48, Norfolk city, Virginia	3.44
Census Tract 50, Norfolk city, Virginia	1.66
Census Tract 51, Norfolk city, Virginia	2.44
Census Tract 57.01, Norfolk city, Virginia	1.20
Census Tract 59.01, Norfolk city, Virginia	1.22
Census Tract 69.02, Norfolk city, Virginia	1.63
Census Tract 20, Norfolk city, Virginia	1.48
Census Tract 26, Norfolk city, Virginia	0.15
Census Tract 28, Norfolk city, Virginia	0.50
Census Tract 32, Norfolk city, Virginia	1.08
Census Tract 33, Norfolk city, Virginia	1.38
Census Tract 57.02, Norfolk city, Virginia	1.17
Census Tract 58, Norfolk city, Virginia	1.33
Census Tract 62, Norfolk city, Virginia	0.90
Census Tract 64, Norfolk city, Virginia	0.89
Census Tract 70.02, Norfolk city, Virginia	1.28
Census Tract 9.01, Norfolk city, Virginia	0.26
Census Tract 1, Norfolk city, Virginia	-0.42
Census Tract 11, Norfolk city, Virginia	0.00
Census Tract 12, Norfolk city, Virginia	-0.48
Census Tract 13, Norfolk city, Virginia	0.29
Census Tract 14, Norfolk city, Virginia	0.75
Census Tract 15, Norfolk city, Virginia	-0.51
Census Tract 16, Norfolk city, Virginia	0.55
Census Tract 17, Norfolk city, Virginia	0.28
Census Tract 2.01, Norfolk city, Virginia	0.01
Census Tract 2.02, Norfolk city, Virginia	0.38

Census Tract 21, Norfolk city, Virginia	-0.27
Census Tract 22, Norfolk city, Virginia	-0.93
Census Tract 23, Norfolk city, Virginia	-1.28
Census Tract 24, Norfolk city, Virginia	-1.16
Census Tract 3, Norfolk city, Virginia	-0.21
Census Tract 30, Norfolk city, Virginia	-0.08
Census Tract 36, Norfolk city, Virginia	-1.10
Census Tract 37, Norfolk city, Virginia	-1.29
Census Tract 38, Norfolk city, Virginia	-1.31
Census Tract 4, Norfolk city, Virginia	-0.08
Census Tract 40.01, Norfolk city, Virginia	-1.96
Census Tract 40.02, Norfolk city, Virginia	-0.95
Census Tract 49, Norfolk city, Virginia	-0.44
Census Tract 5, Norfolk city, Virginia	0.15
Census Tract 55, Norfolk city, Virginia	0.11
Census Tract 56.01, Norfolk city, Virginia	0.24
Census Tract 56.02, Norfolk city, Virginia	0.23
Census Tract 59.02, Norfolk city, Virginia	0.26
Census Tract 59.03, Norfolk city, Virginia	0.26
Census Tract 6, Norfolk city, Virginia	0.12
Census Tract 60, Norfolk city, Virginia	0.58
Census Tract 61, Norfolk city, Virginia	0.60
Census Tract 65.01, Norfolk city, Virginia	0.43
Census Tract 65.02, Norfolk city, Virginia	-0.56
Census Tract 66.01, Norfolk city, Virginia	-0.18
Census Tract 66.02, Norfolk city, Virginia	0.33
Census Tract 66.03, Norfolk city, Virginia	0.10
Census Tract 66.04, Norfolk city, Virginia	0.69
Census Tract 66.05, Norfolk city, Virginia	0.64
Census Tract 66.06, Norfolk city, Virginia	-0.03
Census Tract 66.07, Norfolk city, Virginia	0.54
Census Tract 68, Norfolk city, Virginia	-0.07
Census Tract 69.01, Norfolk city, Virginia	0.57
Census Tract 7, Norfolk city, Virginia	-0.17
Census Tract 70.01, Norfolk city, Virginia	0.01
Census Tract 8, Norfolk city, Virginia	-0.31
Census Tract 9.02, Norfolk city, Virginia	-0.32
Norfolk Average Social Vulnerability Index Score	**0.59**

THE CITY OF NORFOLK

Attachment C

Key Facts

Tidewater Harbor Park Newton's Creek East

City of Norfolk

Area: 0.81 square miles

KEY FACTS

3,818

Population

25.6

Median Age

2.8

Average Household Size

$15,834

Median Household Income

EDUCATION

35%

No High School Diploma

31%

High School Graduate

26%

Some College

8%

Bachelor's/Grad/Prof Degree

BUSINESS

139

Total Businesses

2,497

Total Employees

EMPLOYMENT

47%

White Collar

25%

Blue Collar

28%

Services

18.5%

Unemployment Rate

INCOME

$15,834

Median Household Income

$10,625

Per Capita Income

$9,541

Median Net Worth

Households By Income

The largest group: <$15,000 (48.1%)

The smallest group: $150,000 - $199,999 (0.0%)

Indicator ▲	Value	Diff
<$15,000	48.1%	+34.4%
$15,000 - $24,999	15.3%	+6.4%
$25,000 - $34,999	10.8%	-0.5%
$35,000 - $49,999	8.1%	-4.3%
$50,000 - $74,999	12.0%	-8.1%
$75,000 - $99,999	2.3%	-10.8%
$100,000 - $149,999	2.1%	-9.7%
$150,000 - $199,999	0.0%	-5.3%
$200,000+	1.3%	-2.3%

Bars show deviation from Norfolk city

This infographic contains data provided by Esri, Esri and Data Axle. The vintage of the data is 2021, 2026.

Source: This infographic contains data provided by Esri, Esri, Esri and Data Axle. The vintage of the data is 2021, 2026, 2021.

Demographic and Income Comparison Profile

Tidewater Harbor Park Newton's Creek East
Area: 0.81 square miles

Prepared by Esri

Census 2010 Summary	
Population	3,871
Households	1,354
Families	912
Average Household Size	2.71
Owner Occupied Housing Units	169
Renter Occupied Housing Units	1,185
Median Age	24.2
2021 Summary	
Population	3,818
Households	1,303
Families	865
Average Household Size	2.77
Owner Occupied Housing Units	175
Renter Occupied Housing Units	1,128
Median Age	25.6
Median Household Income	$15,834
Average Household Income	$30,271
2026 Summary	
Population	3,786
Households	1,286
Families	852
Average Household Size	2.78
Owner Occupied Housing Units	182
Renter Occupied Housing Units	1,104
Median Age	26.1
Median Household Income	$17,187
Average Household Income	$33,167
Trends: 2021-2026 Annual Rate	
Population	-0.17%
Households	-0.26%
Families	-0.30%
Owner Households	0.79%
Median Household Income	1.65%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

March 21, 2022

Demographic and Income Comparison Profile

Tidewater Harbor Park Newton's Creek East
Area: 0.81 square miles

Prepared by Esri

2021 Households by Income	Number	Percent
<$15,000	627	48.1%
$15,000 - $24,999	199	15.3%
$25,000 - $34,999	141	10.8%
$35,000 - $49,999	105	8.1%
$50,000 - $74,999	157	12.0%
$75,000 - $99,999	30	2.3%
$100,000 - $149,999	27	2.1%
$150,000 - $199,999	0	0.0%
$200,000+	17	1.3%
Median Household Income	$15,834	
Average Household Income	$30,271	
Per Capita Income	$10,625	

2026 Households by Income	Number	Percent
<$15,000	582	45.3%
$15,000 - $24,999	203	15.8%
$25,000 - $34,999	148	11.5%
$35,000 - $49,999	108	8.4%
$50,000 - $74,999	163	12.7%
$75,000 - $99,999	33	2.6%
$100,000 - $149,999	30	2.3%
$150,000 - $199,999	0	0.0%
$200,000+	19	1.5%
Median Household Income	$17,187	
Average Household Income	$33,167	
Per Capita Income	$11,552	

Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

March 21, 2022

Tidewater Harbor Park Newton's Creek East
Area: 0.81 square miles

Prepared by Esri

2010 Population by Age	Number	Percent
Age 0 - 4	538	13.9%
Age 5 - 9	462	11.9%
Age 10 - 14	350	9.0%
Age 15 - 19	329	8.5%
Age 20 - 24	306	7.9%
Age 25 - 34	475	12.3%
Age 35 - 44	362	9.4%
Age 45 - 54	402	10.4%
Age 55 - 64	269	7.0%
Age 65 - 74	189	4.9%
Age 75 - 84	130	3.4%
Age 85+	61	1.6%

2021 Population by Age	Number	Percent
Age 0 - 4	459	12.0%
Age 5 - 9	417	10.9%
Age 10 - 14	381	10.0%
Age 15 - 19	329	8.6%
Age 20 - 24	292	7.6%
Age 25 - 34	496	13.0%
Age 35 - 44	394	10.3%
Age 45 - 54	311	8.1%
Age 55 - 64	314	8.2%
Age 65 - 74	213	5.6%
Age 75 - 84	150	3.9%
Age 85+	63	1.6%

2026 Population by Age	Number	Percent
Age 0 - 4	455	12.0%
Age 5 - 9	400	10.6%
Age 10 - 14	353	9.3%
Age 15 - 19	322	8.5%
Age 20 - 24	305	8.1%
Age 25 - 34	481	12.7%
Age 35 - 44	407	10.8%
Age 45 - 54	309	8.2%
Age 55 - 64	288	7.6%
Age 65 - 74	240	6.3%
Age 75 - 84	162	4.3%
Age 85+	62	1.6%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

2010 Race and Ethnicity	Number	Percent
White Alone	69	1.8%
Black Alone	3,730	96.4%
American Indian Alone	5	0.1%
Asian Alone	2	0.1%
Pacific Islander Alone	3	0.1%
Some Other Race Alone	15	0.4%
Two or More Races	47	1.2%
Hispanic Origin (Any Race)	98	2.5%

2021 Race and Ethnicity	Number	Percent
White Alone	78	2.0%
Black Alone	3,644	95.4%
American Indian Alone	5	0.1%
Asian Alone	2	0.1%
Pacific Islander Alone	4	0.1%
Some Other Race Alone	21	0.5%
Two or More Races	65	1.7%
Hispanic Origin (Any Race)	122	3.2%

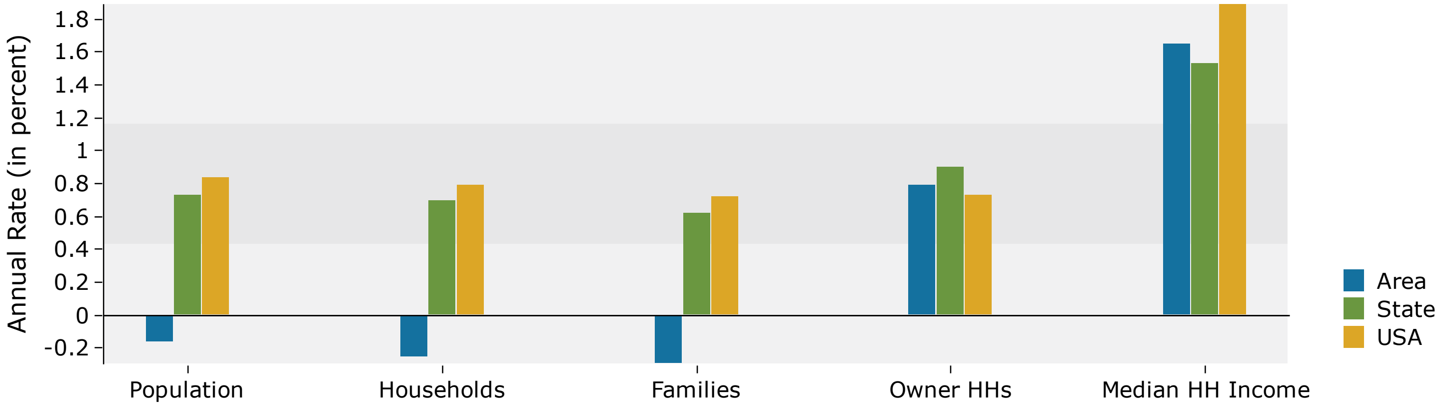
2026 Race and Ethnicity	Number	Percent
White Alone	77	2.0%
Black Alone	3,612	95.4%
American Indian Alone	5	0.1%
Asian Alone	2	0.1%
Pacific Islander Alone	4	0.1%
Some Other Race Alone	21	0.6%
Two or More Races	65	1.7%
Hispanic Origin (Any Race)	122	3.2%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

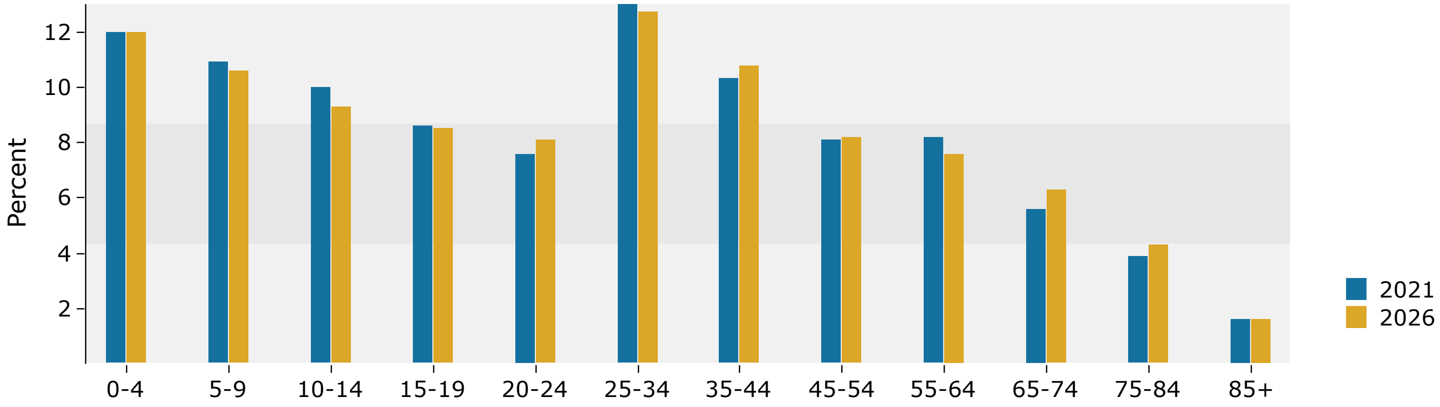
Tidewater Harbor Park Newton's Creek East
Area: 0.81 square miles

Prepared by Esri

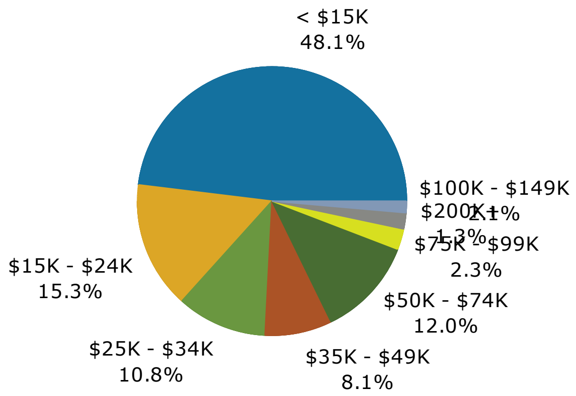
Trends 2021-2026



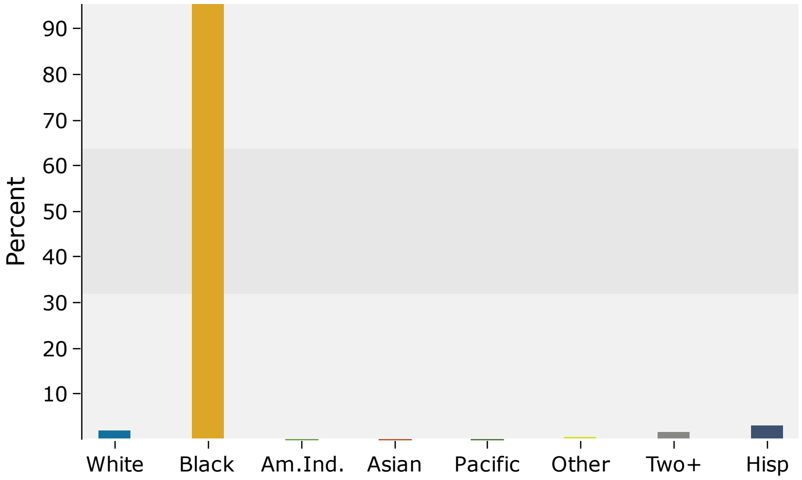
Population by Age



2021 Household Income

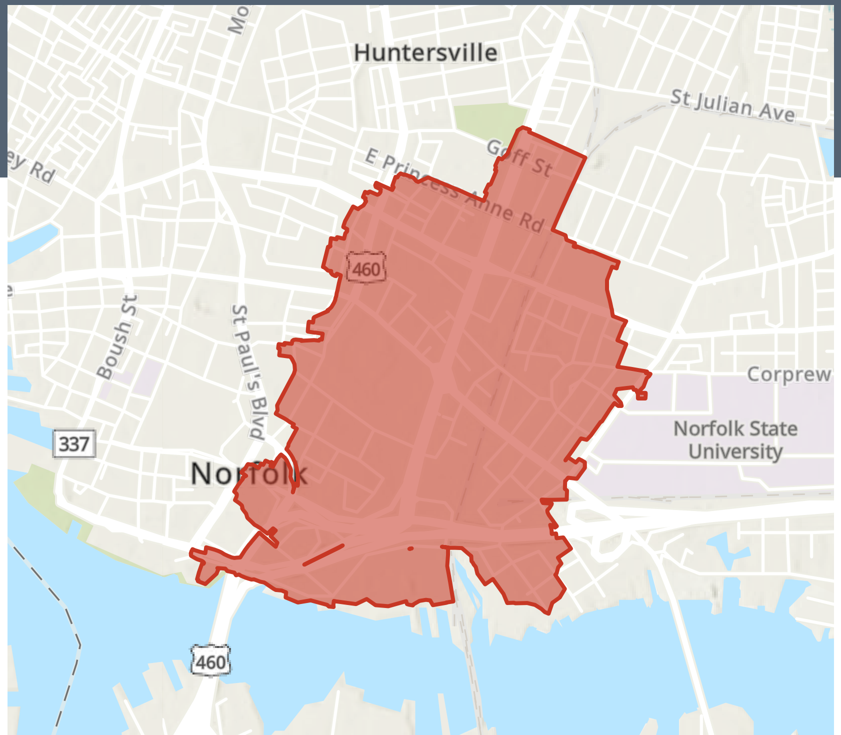


2021 Population by Race



Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

March 21, 2022



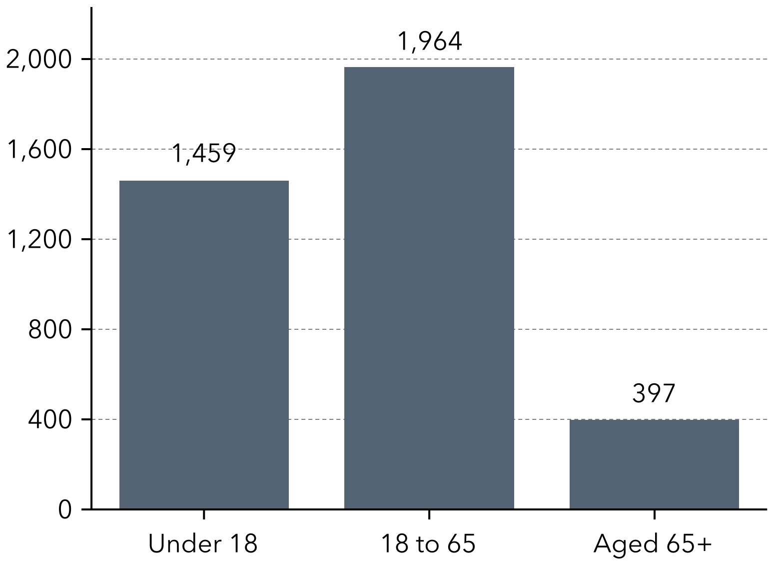
AT RISK POPULATION PROFILE

Tidewater Harbor Park Newton's Creek East

Area: 0.81 square miles

Population	Households	Avg Size Household	Median Age	Median Household Income	Median Home Value	Wealth Index	Housing Affordability	Diversity Index
3,818	1,303	2.77	25.6	$15,834	$222,321	22	43	15

POPULATION BY AGE



AT RISK POPULATION

Households With Disability	Population 65+	Households Without Vehicle
516	424	694

POVERTY AND LANGUAGE

Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English
54%	751	0

POPULATION AND BUSINESSES

Daytime Population	Total Businesses	Total Employees
4,610	139	2,497

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,264	1,766	413	3,443
Spanish	27	171	0	198
Spanish & English Well	27	42	0	69
Spanish & English Not Well	0	129	0	129
Spanish & No English	0	0	0	0
Indo-European	0	2	5	7
Indo-European & English Well	0	2	5	7
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	0	0	0	0
Asian-Pacific Isl & English Well	0	0	0	0
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	0	31	0	31
Other Language & English Well	0	31	0	31
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

Source: Esri forecasts for 2021, U.S. Census Bureau 2015-2019 American Community Survey (ACS) Data,

Version 1.8

Source: This infographic contains data provided by Esri, Esri, American Community Survey (ACS), Esri and Data Axle. The vintage of the data is 2021, 2026, 2015-2019, 2021.

Community Profile

Tidewater Harbor Park Newton's Creek East

Area: 0.81 square miles

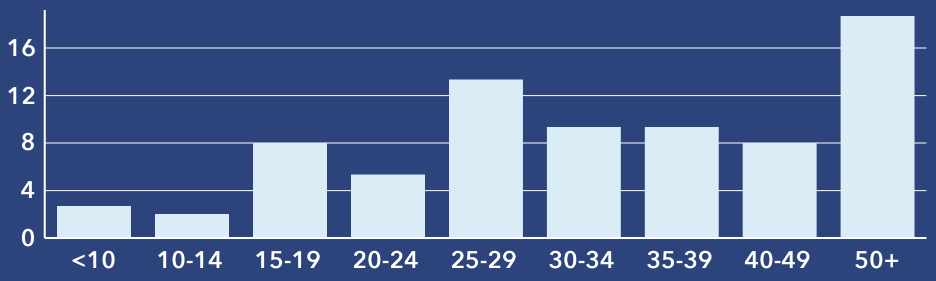
City of Norfolk

COMMUNITY PROFILE

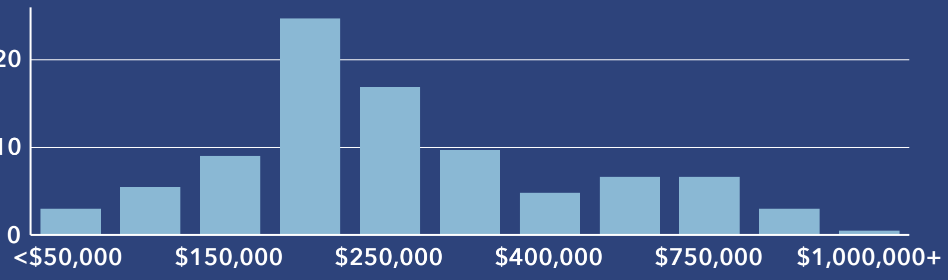
Population Total	Population Growth	Average HH Size	Diversity Index	Median Age	Median HH Income	Median Home Value	Median Net Worth	Under 18	Ages 18-65	Aged 66+
3,818	-0.1%	2.77	14.5	25.6	$15,834	$222,321	$9,541	38.2%	51.5%	8.8%

Services	Blue Collar	White Collar
34.8%	25.1%	40.1%

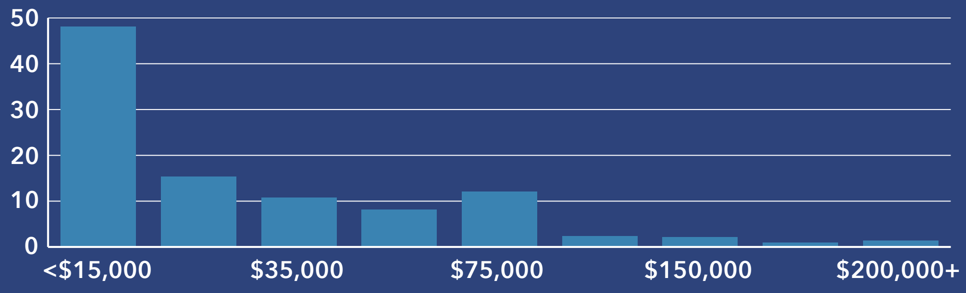
Mortgage as Percent of Salary



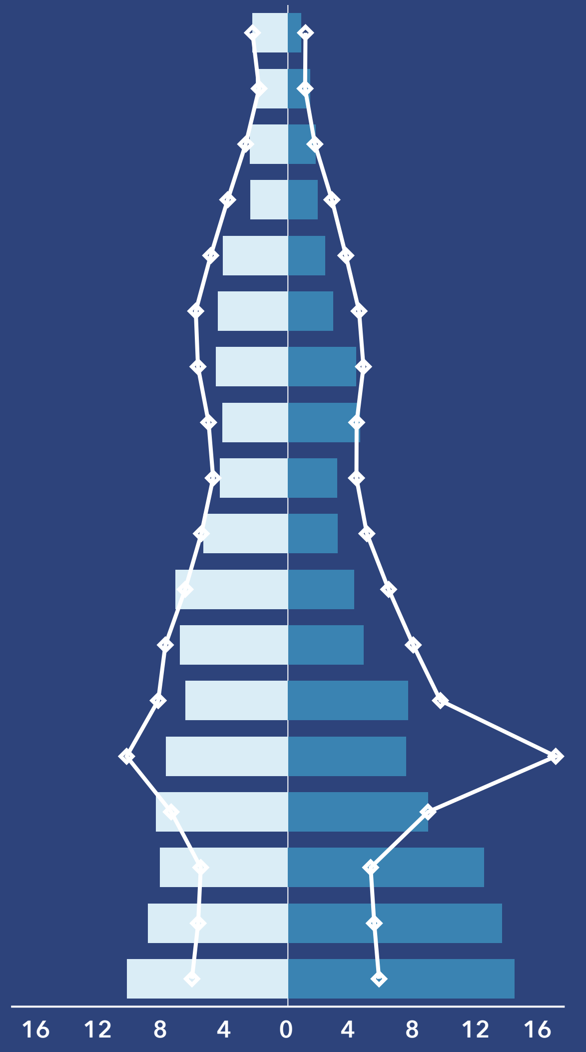
Home Value



Household Income

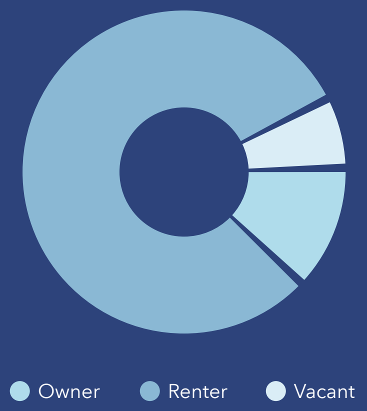


Age Profile: 5 Year Increments

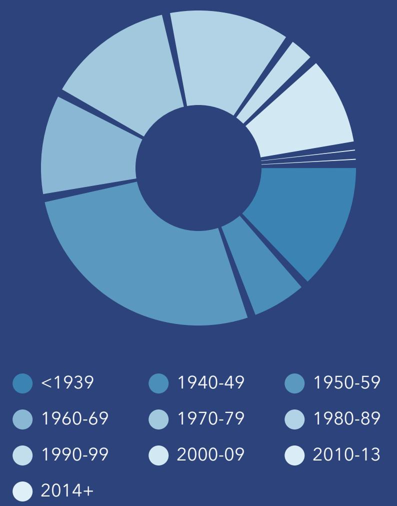


Dots show comparison to Norfolk city

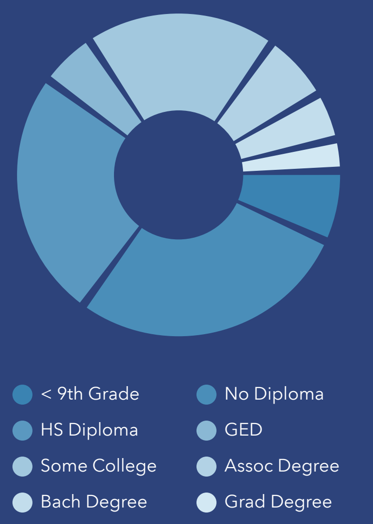
Home Ownership



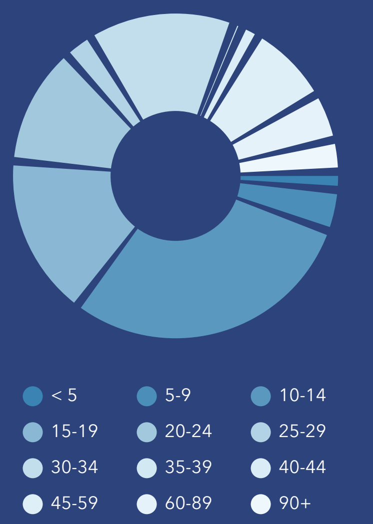
Housing: Year Built



Educational Attainment



Commute Time: Minutes



esri
THE SCIENCE OF WHERE

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026. Version 1.2

Source: This infographic contains data provided by Esri, American Community Survey (ACS). The vintage of the data is 2021, 2015-2019, 2026.

THE CITY OF
NORFOLK

Attachment D

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

DEPARTMENT OF THE ARMY
NORFOLK DISTRICT CORPS OF ENGINEERS
FORT NORFOLK 803 FRONT STREET
NORFOLK, VIRGINIA 23510-1096

Executive Office

Dr. Larry Filer
City Manager
City of Norfolk
810 Union Street, Suite 1101
Norfolk, Virginia 23510

Subject: City of Norfolk Coastal Storm Risk Management (CSRM) Project

Dear Dr. Filer,

The purpose of this letter is to provide you and your staff an update on the Corps of Engineers funding plan for the City of Norfolk CSRM Project. The project has a total estimate of approximately $1.78 billion and would be cost shared between the Corps and the City at percentages of 65% Federal, 35% Non-Federal.

We are in the third year of the Preconstruction Engineering and Design (PED) phase, with a budget of $8.3 million. The Federal share of 65% is fully funded by allocations we have received to date of $5.4 million. The non-Federal (City) share of the PED phase is approximately $2.9 million.

As you know for the Construction phase, the project received approval for $399.3 million of Infrastructure Investment and Jobs Act (IIJA) funding, in the FY 2022, IIJA Construction Work Plan, copy attached. Last month the project received an initial allocation of $100,000 from the IIJA funding to support the transition to the construction phase. Receipt of the initial funding amount is a prerequisite for entering into the Project Partnership Agreement (PPA) between the Corps and the City. One of the important next steps is to develop the PPA.

While we continue to await IIJA program guidance that would address procedures for additional funding allocations, we do expect the IIJA program will be treated as a supplemental program, with funds managed by our Headquarters and issued to the Norfolk District on an as-needed basis. In this regard my staff will continue to work with the City staff to develop an appropriate Federal – Non-Federal multi-year funding schedule that will match the City's financial capabilities. The Federal – Non-Federal funding schedule will be a supporting document to the PPA package.

Please refer questions regarding the Norfolk CSRM project to Mr. Walter Trinkala, Project Manager, at (757) 201-7715 or email Walter.a.Trinkala@usace.army.mil.

Sincerely,

Brian P. Hallberg

Digitally signed by Brian P. Hallberg
Date: 2022.04.03 22:57:22 -04'00'

BRIAN P. HALLBERG, PMP
Colonel, U.S. Army
Commanding

ARMY CIVIL WORKS PROGRAM
INFRASTRUCTURE INVESTMENT AND JOBS ACT, 2022
CONSTRUCTION SPEND PLAN - ADDENDUM

State	Division	Business Program 1/	Program Name	FY22	Summary of Work to Be Accomplished with Allocation	Addendum	Summary of Work to Be Accomplished with Allocation
NM	SPD	EI	RURAL ARIZONA, NEVADA, MONTANA, IDAHO, NEW MEXICO, UTAH, AND WYOMING, AZ, NV, MT, ID, NM, UT & WY	2,800,000	Remove debris and contaminants from storm flows and incorporated flood projection measures in Rio Rancho, NM.		
NM	SPD	EI	RURAL ARIZONA, NEVADA, MONTANA, IDAHO, NEW MEXICO, UTAH, AND WYOMING, AZ, NV, MT, ID, NM, UT & WY	1,500,000	Design and construct water tanks in the Village of Cuba, NM.		
NY	NAD	EI	NEW YORK CITY WATERSHED, NY	1,500,000	Execute PPAs to implement NYC Watershed Projects		
OH	LRD	FDRR	MAGNOLIA LEVEE, BOLIVAR DAM, OH			7,700,000	Initiate, physically complete and fiscally close out project
OH	LRD	EI	OHIO & NORTH DAKOTA ENVIRONMENTAL INFRASTRUCTURE, OH & ND (SECTION 594)			2,497,000	Execute and complete multiple Environmental Infrastructure projects in the State of Ohio
OH & ND	LRD	EI	OHIO & NORTH DAKOTA ENVIRONMENTAL INFRASTRUCTURE, OH & ND (SECTION 594)	7,000,000	Execute and complete multiple Environmental Infrastructure projects in the State of Ohio		
PA	LRD	EI	ALLEGHENY COUNTY, PA	3,358,000	Sec 313 - Allegheny County - ALCOSAN - Spring Garden Sewershed 1 of 3		
PA	LRD	NIH	UPPER OHIO, ALLEGHENY AND BEAVER COUNTIES, PA	857,708,000	Phyically complete all construction work at Montgomery Lock and Dam	77,000,000	Design and physically complete construction at Emsworth Lock and Dam
PR	SAD	AER	CANO MARTIN PENA ECOSYSTEM RESTORATION, PR	163,287,000	Physically complete and fiscally close out project.		
PR	SAD	NHD	SAN JUAN HARBOR IMPROVEMENT, PR	45,561,000	Initiate, physically complete and fiscally close out project.		
SC	SAD	EI	ENV INFRASTRUCTURE SPRING ST/FISHBURNE ST DRAINAGE, CHARLESTON, SC			4,000,000	Initiate the implement stormwater control measures and storm sewer improvements at the Spring Street/Fishburne Street drainage project in Charleston, South Carolina.
TX	SPD	EI	EL PASO COUNTY, TX (SEC 219)	3,825,000	Construction for the Clardy Fox Pump Station		
TX	SPD	EI	EL PASO COUNTY, TX (SEC 219)	4,050,000	Design and Construction of Northgate Diversion Channel		
TX	SWD	NHD	BRAZOS ISLAND HARBOR, TX			68,000,000	Initiate, physically complete, and fiscally closeout the construction project.
TX	SWD	FDRR	CENTRAL CITY, UPPER TRINITY RIVER, TX	403,000,000	Complete design and award first construction contract		
TX	SWD	NHD	GALVESTON HARBOR CHANNEL EXTENSION, HOUSTON - GALVESTON NAVIGATION CHANNELS, TX			10,781,000	Initiate, physically complete, and fiscally closeout the construction project.
TX	SWD	NHD	HOUSTON SHIP CHANNEL, TX	142,515,000	Initiate and complete construction of Segment 3 - Barbour's Cut Channel		
TX	SWD	EI	WATERLOO GREENWAY PO (CREEK DELTA), TX	2,500,000	Waterloo Greenway PO (Creek Delta) Construction		
TX	SWD	EI	WATERLOO GREENWAY PO (CREEK DELTA), TX			6,525,000	Waterloo Greenway PO (Creek Delta) Construction
TX	SWD	AER	WESTSIDE CREEKS ECOSYSYSTEM RESTORATION, SAN ANTONIO, TX	75,042,000	Initiate, physically complete, and fiscally closeout the construction project, including all future monitoring and adaptive management.		
UT	SPD	EI	RURAL ARIZONA, NEVADA, MONTANA, IDAHO, NEW MEXICO, UTAH, AND WYOMING, AZ, NV, MT, ID, NM, UT & WY	50,000	Upgrade well house for safety complianced in Southbear Lake, UT		
VA	LRD	EI	EASTERN SHORE AND SOUTHWEST VIRGINIA, VA	281,295	Complete Design		
VA	LRD	EI	EASTERN SHORE AND SOUTHWEST VIRGINIA, VA	2,200,000	Initiate Construction of Wastewater Infrastructure Plan		
VA	NAD	FDRC	CITY OF NORFOLK, VA	249,331,000	Complete Plans and Specs for the project and initiate construction of the project.	150,000,000	Funding would be used for the remaining segments of phase 1, the downtown Norfolk to Ghent floodwalls with gates at The Hague, for continuing designs for phases within other portions of the city, and starting on the non-structural flood neighbor components of the project.
VA	NAD	NHD	NORFOLK HARBOR AND CHANNELS, VA (DEEPENING)	69,331,000	Physically complete and fiscally close out project.	72,371,000	Physically complete and fiscally close the project to include the dredging of Meeting Area #1 widener at Thimble Shoal Channel West ($40M) and complete the remaining features of the project ($32.371M), including the Atlantic Ocean Channel and Channel to Newport News.
VI	SAD	FDRR	SAVAN GUT PHASE II, ST. THOMAS, VI	51,710,000	Initiate, physically complete and fiscally close out project.		
VT	NAD	EI	LAKE CHAMPLAIN WATERSHED INITIATE,VT	250,000	Lake Champlain Sec 542 Projects- General Management		
WA	NWD	AER	COLUMBIA RIVER FISH MITIGATION, WA, OR & ID	36,016,000	Fund the highest priority work as determined the expert panel established in response to the Sept 1, 2021 interim injunction order, in the effort to yield a no jeapordy opinion for Chinook salmon and Steelhead.		
WA	NWD	FDRR	HOWARD HANSON DAM, WA			220,000,000	Complete PED and initiate construction.
WI	LRD	EI	NORTHERN WISCONSIN ENVIRONMENTAL ASSISTANCE, WI	450,000	Continue City of Superior - Hill Avenue Interceptor Rehabilitation Project		
WI	LRD	EI	NORTHERN WISCONSIN ENVIRONMENTAL ASSISTANCE, WI	625,000	Continue City of Bayfield - Apostle Islands Marina Breakwall Restoration Project		

THE CITY OF
NORFOLK

Attachment E

Matthew J. Strickler
Secretary of Natural and Historic Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Nathan Burrell
Deputy Director of Government and Community Relations

Darryl M. Glover
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Thomas L. Smith
Deputy Director of Operations

August 9, 2021

Matt Simons, AICP CZA CFM
Principal Planner and Floodplain Administrator
Department of Planning and Community Development
810 Union St, Suite 508
Norfolk, VA 23510

RE: City of Norfolk Resilience Plan Second Submission - CFPF

Dear Mr. Simons:

Thank you for providing an overview of your Resilience Plan, and informing DCR of the various plans that the City of Norfolk will be utilizing to fulfill the Resilience Plan submission requirements. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the June 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on August 8, 2024.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

   a. Project-based: Nine watersheds—each with a defined geographic area, analysis of community social and environmental characteristics, types of flooding, and a tailored flood resilience strategy divided into 15 project areas, each with discrete projects identified.

   b. Projects focused on flood control and resilience included city-wide and various coastal projects and a specific project in Chesterfield Heights.

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

   a. Natural and nature-based flood management measures are identified for use in projects throughout the city in the *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*, the *Combined Coastal and Precipitation Flooding Master Plan*, the *Hampton Roads Mitigation Plan* and *A Green Infrastructure Plan for Norfolk: Building Resilient Communities*.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**

    a. All parts of a locality: Locality divided into 9 watersheds, with 90 planning districts covering the entirety of the jurisdictional boundary.

    b. Social vulnerability: Social implications of flood hazards and analysis of populations at-risk documented in the USACE *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*, the *Combined Coastal and Precipitation Flooding Master Plan* and in *PlaNorfolk 2030*.

    c. Demographic Analysis: Demographic Analysis conducted by USACE, utilizing U.S. Census Bureau, Bureau of Labor and Statistics, Virginia Employment Commision, and other information from local planning agencies, and incorporated into the *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**

    a. Coordination with other projects, plans, and activities: Contains the planning processes and frameworks which outline local and regional plans used by the City and address resilience; and how they have been integrated for flood adaptation planning.

    b. Clearly articulated timeline or phasing for plan implementation: 5 year timeline presented in the *Combined Coastal and Precipitation Flooding Master Plan*. Phased time-line for completion found within *PlaNorfolk 2030, Vision2100*, and *A Green Infrastructure Plan for Norfolk: Building Resilient Communities*. Phased approach for project implementation contained within the Fugro Atlantic *Norfolk Preliminary City-wide Coastal Flooding Mitigation Concept Evaluation and Master Plan Development*. Program phases clearly articulated and an impact statement completed in USACE *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

    a. Technically backed water-resources analysis, sea level rise projections, storm surge, and climate change incorporated into the strategic approach presented in the *Hampton Roads Hazard Mitigation Plan,* the *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*.

VA DCR looks forward to working with you as you work to make the City of Norfolk a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl Glover, DCR

Resilience Planning Overview for the City of Norfolk

In response to the resilience planning requirements of the **Community Flood Preparedness Fund** ("the CFPF" or "Fund") outlined within the 2021 CFPF Grant Manual (Appendix G: Elements of Resilience Plans), the City of Norfolk ("the City") has prepared the following Resilience Planning Overview of formal and relevant plans utilized for resilience planning efforts by the City to prioritize potential projects and to assist the City is its efforts to secure funding for such critical resilience plans, studies and projects.

The **Elements of Resilience Plans** taken from Appendix G of the 2021 CFPF Grant Manual, from which communities are expected to highlight the stated resilience planning contents as they related to CFPF grant applications, are as follows:

1. *It is project-based with projects focused on flood control and resilience.*
2. *It incorporates nature-based infrastructure to the maximum extent possible.*
3. *It includes considerations of all parts of a locality regardless of socioeconomics or race.*
4. *It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.*
5. *Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.*

Norfolk's resilience planning elements are not contained within an adopted "stand alone" plan. However, Norfolk's utilizes various plans within a resilience repertoire, which altogether serve multiple needs for various audiences; from technical to public-facing to operational. This Resilience Planning Overview will expressly identify to the grant reviewer, and to the public, how various resilience planning documents of the City of Norfolk satisfy all the CFPF Resilience Plan elements.

The following plans for the City of Norfolk will contribute to this Resilience Planning Overview:

- ***plaNorfolk2030*** (2013, as amended)
- ***Vision2100*** (2016)
- ***Hampton Roads Hazard Mitigation Plan*** (2017)
- ***Combined Coastal and Precipitation Flooding Master Plan*** (2017)
  - Appendix A: ***Norfolk Preliminary City-wide Coastal Flooding Mitigation Concept Evaluation and Master Plan Development*** **(Fugro Atlantic)**
  - Appendix B: ***City-wide Drainage and Watershed Master Plan*** **(Timmons Group)**
- ***A Green Infrastructure Plan for Norfolk*** (2018, as amended)
- ***USACE Coastal Storm Risk Management (CSRM) Feasibility Study and Environmental Impact Statement*** (2019)
- ***Zoning Ordinance of the City of Norfolk*** (2018, as amended)
- ***Development of an Urban Resilience Analysis Framework with Application to Norfolk, VA*** (2016)

Responses are provided below in red based on the various Norfolk plans for the following example resilience elements outlined in Appendix G of the 2021 CFPF Grant Manual:

- ***Equity based strategic polices for local government-wide flood protection and prevention.***
  The ***Hampton Roads Hazard Mitigation Plan*** recommends the highest priority of protection to be reserved towards protection projects for severe repetitive loss areas (Mitigation Actions 8 &

11) in Norfolk. Research in Norfolk has shown that these areas are often places where the most vulnerable residents are housed.

Additionally, Mitigation Action 12 recommends Norfolk begin risk/hazard mitigation efforts equitably by first implementing a major flood control project within the historically black community of Chesterfield Heights; implementation of a $112M HUD project awarded through the National Disaster Resilience Competition (construction currently underway).

- **Proposed projects that enables communities to adapt to and thrive through natural or human hazards.**
  The ***Combined Coastal and Precipitation Flooding Master Plan*** (Norfolk's "Flooding Master Plan") is based on a major multi-year study effort supported by technical analyses and recommendations from Fugro Atlantic within the ***Norfolk Preliminary City-wide Coastal Flooding Mitigation Concept Evaluation and Master Plan Development*** (the "Fugro report"). The Flooding Master Plan is also supporting by a thorough analysis and priority ranking technical guide of the City's drainage conveyance system, ***City-wide Drainage and Watershed Master Plan*** by Timmons Group.

  Together, with this technical supporting documentation, the Flooding Master Plan provides the framework for Norfolk to intelligently review and prioritize flood protections project to enable Norfolk to adapt and thrive to current and future flood threats.

- **Documentation of existing social, economic, natural, and other conditions present in the local government.**
  Sandia National Laboratories provided an analysis framework (***Development of an Urban Resilience Analysis Framework with Application to Norfolk, VA)*** for conceptualizing the resilience needs for Norfolk, including vulnerability assessments for critical infrastructure with the context of local economic and logistical impacts. The findings of which have been incorporated into other resiliency plans such as the USACE Coastal Storm Risk Management Study.

  The ***USACE Coastal Storm Risk Management*** (CSRM) ***Feasibility Study and Environmental Impact Statement*** presents a robust analysis of the best recommendations for City-wide flood protection measures for the City of Norfolk. This report includes 10% engineered designs for the various flood protection measures recommended throughout the entire community, and a preliminary Environmental Impact Statement is included outlining the existing social, economic, natural conditions, vulnerabilities and stressors within the natural and social environment, as well as proposed impacts. See the various CSRM appendices for these detailed conditions and impact reports.

- **Review of the vulnerabilities and stressors, both natural and social in the local government.**
  See CSRM comment above. Additional overview of the vulnerabilities and stressors can be found in the ***Hampton Roads Hazard Mitigation Plan***.

- **Forward-looking goals, actionable strategies, and priorities through as seen through an equity-based lens.**
  Norfolk remains committed to presenting all action plans through an equity-based lens, as found within the actionable strategies of ***A Green Infrastructure Plan for Norfolk*** and the ***Hampton Roads Hazard Mitigation Plan***. Both plans are tactical, and recommendation are based on a 5-year forward-looking outlay. Recommendations of the Fugro report are based on a 50-year outlay, and recommendations of ***Vision2100*** geared towards the year 2100.

- **Strategies that guides growth and development away from high-risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.**
  Vision2100 is serves a land use guide for the City. The plan divides Norfolk up into four main areas by which the City will focus new investments and make necessary steps to prepare for a changing environment:
  - ✓ Purple: Low Flood Risk / Low Degree of Civic Assets: Establishing Neighborhoods of the Future
  - ✓ Green: Low Flood Risk / High Degree of Civic Assets: Designing New Urban Centers
  - ✓ Yellow: High Flood Risk / Low Degree of Civic Assets: Adapting to Rising Waters
  - ✓ Red: High Flood Risk / High Degree of Civic Assets: Enhancing Economic Engines (protect!)

- **Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by *ConserveVirginia* or similar data driven tools.**
  Vision2100 provides the framework for selecting the areas suitable for conservation easements. The ***Norfolk Zoning Ordinance*** provides the mechanism for purchasing land conservation easement credits from the Coastal Resilience Overlay through transferring Resilient Quotient points to the Upland Resilience Overlay (requires extinguishment of a density unit – developable dwelling unit). The conservation easement, while recorded on the deed and kept on file with the Planning Department, can be held by the property owner, the Zoning Ordinance also permits it to be placed in a land trust.

- **Identification of areas suitable for property buyouts in frequently flooded areas.**
  See ***Vision2100*** "Yellow" areas (High Flood Risk / Low Degree of Civic Assets: Adapting to Rising Waters) and Coastal Resilient Overlay areas on the Norfolk Zoning Map.

- **Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as "lifelines" by FEMA.**
  A list of all critical facilities is contained within the *Norfolk Emergency Operations Manual* (2020). See Mitigation Action 5 from ***Hampton Roads Hazard Mitigation Plan***: "Purchase and install generators or other continuous power sources for critical facilities and infrastructure. This action may include, but is not limited to pump stations, EOC (Emergency Operations Center), shelters, underpasses and important traffic signals." The critical facilities list is available upon request.

- **Identified ecosystems/wetlands/floodplains suitable for permanent protection.**
  See ***A Green Infrastructure Plan for Norfolk***, this includes an *Action Plan Appendix for Threatened and Endangered Species* within critical floodplain habitats, as well as a detailed ecological inventory with recommendations for floodplain protection measures within an connected open space corridor network.

- **Identified incentives for restoring riparian and wetland vegetation.**
  - The City's Public Works Division of Stormwater Management offers the **Stormwater Fee Reduction Program** for homeowners and businesses who opt to implement water quality improvements on their private property including riparian buffer and shoreline management improvement.
  - **Environmental Conservation Consulting** – Norfolk annually funds a contract to coordinate with residential property owners for implementation of water quality improvements on their private property including riparian buffer and shoreline management improvement through a cost-share program. Property owners get a percentage of the project paid through the contractor via the Environmental Conservation Consulting services contract.
  - Norfolk regularly applies for grants to partner with community organizations for implementation of green infrastructure of public lands – projects are reviewed by the **Watershed Management Task Force** to ensure that projects are furthering the goals and objectives of the adopted ***Green Infrastructure Plan for Norfolk***.

- **A framework for implementation, capacity building and community engagement.**
  The **Watershed Management Task Force** and the recently created Program for Public Information committee are two groups made up of joint staff/citizen/technical expert members, which collectively drive the City's ongoing programing for green infrastructure projects and flood mitigation messaging. Capital Improvement Project funding recommendations from the ***Green Infrastructure Plan for Norfolk*** are also reviewed monthly by the Watershed Management Task Force.

- **Strategies for creating knowledgeable, inclusive community leaders and networks.**
  The 12-member Norfolk Coastal Management Review Board (CMRB) provides recommendations to the 7-member Erosion Advisory Commission, which is partially comprised of members of the CMRB. The CMRB is made up of elected leaders, civic league presidents/community leaders and technical experts from the Virginia Institute of Marine Science, Virginia Marine Resources Commission, Army Corp of Engineers, Old Dominion University Department of Ocean, Earth and Atmospheric Sciences, and city technical staff, providing workshops, seminars and project assessments of coastal mitigation and erosion projects; specifically intended to build grassroots technical capabilities and citizen champions within the community. The Norfolk CMRB and Erosion Advisory Commission is established by City Code and guided by the City's adopted Sand Management Plan.

- **A community dam safety inventory and risk assessment posed by the location and condition of dams.**
  Not applicable in Norfolk – not at dam risk.

- **A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.**

  This general characterization is well documented within the general/comprehensive plan for the City of Norfolk – ***plaNorfolk2030***. This includes dozens of resiliency recommendations for flood risk reduction and communication.

- **Strategies to address other natural hazards that would cause, affect or result from flooding events including:**
  - **Earthquakes.**
  - **Storage of hazardous materials**
  - **Landslides/mud/debris flow/rock falls.**
  - **Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely.**
  - **Preparations for severe weather events including tropical storms or other severe storms, including winter storms.**

  The ***Hampton Roads Hazard Mitigation Plan*** is a FEMA-accredited all-hazards plan.

THE CITY OF NORFOLK

Attachment F

ARMY CIVIL WORKS PROGRAM
INFRASTRUCTURE INVESTMENT AND JOBS ACT, 2022
CONSTRUCTION SPEND PLAN - ADDENDUM

State	Division	Business Program 1/	Program Name	FY22	Summary of Work to Be Accomplished with Allocation	Addendum	Summary of Work to Be Accomplished with Allocation
NM	SPD	EI	RURAL ARIZONA, NEVADA, MONTANA, IDAHO, NEW MEXICO, UTAH, AND WYOMING, AZ, NV, MT, ID, NM, UT & WY	2,800,000	Remove debris and contaminants from storm flows and incorporated flood projection measures in Rio Rancho, NM.		
NM	SPD	EI	RURAL ARIZONA, NEVADA, MONTANA, IDAHO, NEW MEXICO, UTAH, AND WYOMING, AZ, NV, MT, ID, NM, UT & WY	1,500,000	Design and construct water tanks in the Village of Cuba, NM.		
NY	NAD	EI	NEW YORK CITY WATERSHED, NY	1,500,000	Execute PPAs to implement NYC Watershed Projects		
OH	LRD	FDRR	MAGNOLIA LEVEE, BOLIVAR DAM, OH			7,700,000	Initiate, physically complete and fiscally close out project
OH	LRD	EI	OHIO & NORTH DAKOTA ENVIRONMENTAL INFRASTRUCTURE, OH & ND (SECTION 594)			2,497,000	Execute and complete multiple Environmental Infrastructure projects in the State of Ohio
OH & ND	LRD	EI	OHIO & NORTH DAKOTA ENVIRONMENTAL INFRASTRUCTURE, OH & ND (SECTION 594)	7,000,000	Execute and complete multiple Environmental Infrastructure projects in the State of Ohio		
PA	LRD	EI	ALLEGHENY COUNTY, PA	3,358,000	Sec 313 - Allegheny County - ALCOSAN - Spring Garden Sewershed 1 of 3		
PA	LRD	NIH	UPPER OHIO, ALLEGHENY AND BEAVER COUNTIES, PA	857,708,000	Phyically complete all construction work at Montgomery Lock and Dam	77,000,000	Design and physically complete construction at Emsworth Lock and Dam
PR	SAD	AER	CANO MARTIN PENA ECOSYSTEM RESTORATION, PR	163,287,000	Physically complete and fiscally close out project.		
PR	SAD	NHD	SAN JUAN HARBOR IMPROVEMENT, PR	45,561,000	Initiate, physically complete and fiscally close out project.		
SC	SAD	EI	ENV INFRASTRUCTURE SPRING ST/FISHBURNE ST DRAINAGE, CHARLESTON, SC			4,000,000	Initiate the implement stormwater control measures and storm sewer improvements at the Spring Street/Fishburne Street drainage project in Charleston, South Carolina.
TX	SPD	EI	EL PASO COUNTY, TX (SEC 219)	3,825,000	Construction for the Clardy Fox Pump Station		
TX	SPD	EI	EL PASO COUNTY, TX (SEC 219)	4,050,000	Design and Construction of Northgate Diversion Channel		
TX	SWD	NHD	BRAZOS ISLAND HARBOR, TX			68,000,000	Initiate, physically complete, and fiscally closeout the construction project.
TX	SWD	FDRR	CENTRAL CITY, UPPER TRINITY RIVER, TX	403,000,000	Complete design and award first construction contract		
TX	SWD	NHD	GALVESTON HARBOR CHANNEL EXTENSION, HOUSTON - GALVESTON NAVIGATION CHANNELS, TX			10,781,000	Initiate, physically complete, and fiscally closeout the construction project.
TX	SWD	NHD	HOUSTON SHIP CHANNEL, TX	142,515,000	Initiate and complete construction of Segment 3 - Barbour's Cut Channel		
TX	SWD	EI	WATERLOO GREENWAY PO (CREEK DELTA), TX	2,500,000	Waterloo Greenway PO (Creek Delta) Construction		
TX	SWD	EI	WATERLOO GREENWAY PO (CREEK DELTA), TX			6,525,000	Waterloo Greenway PO (Creek Delta) Construction
TX	SWD	AER	WESTSIDE CREEKS ECOSYSYSTEM RESTORATION, SAN ANTONIO, TX	75,042,000	Initiate, physically complete, and fiscally closeout the construction project, including all future monitoring and adaptive management.		
UT	SPD	EI	RURAL ARIZONA, NEVADA, MONTANA, IDAHO, NEW MEXICO, UTAH, AND WYOMING, AZ, NV, MT, ID, NM, UT & WY	50,000	Upgrade well house for safety complianced in Southbear Lake, UT		
VA	LRD	EI	EASTERN SHORE AND SOUTHWEST VIRGINIA, VA	281,295	Complete Design		
VA	LRD	EI	EASTERN SHORE AND SOUTHWEST VIRGINIA, VA	2,200,000	Initiate Construction of Wastewater Infrastructure Plan		
VA	NAD	FDRC	CITY OF NORFOLK, VA	249,331,000	Complete Plans and Specs for the project and initiate construction of the project.	150,000,000	Funding would be used for the remaining segments of phase 1, the downtown Norfolk to Ghent floodwalls with gates at The Hague, for continuing designs for phases within other portions of the city, and starting on the non-structural flood neighbor components of the project.
VA	NAD	NHD	NORFOLK HARBOR AND CHANNELS, VA (DEEPENING)	69,331,000	Physically complete and fiscally close out project.	72,371,000	Physically complete and fiscally close the project to include the dredging of Meeting Area #1 widener at Thimble Shoal Channel West ($40M) and complete the remaining features of the project ($32.371M), including the Atlantic Ocean Channel and Channel to Newport News.
VI	SAD	FDRR	SAVAN GUT PHASE II, ST. THOMAS, VI	51,710,000	Initiate, physically complete and fiscally close out project.		
VT	NAD	EI	LAKE CHAMPLAIN WATERSHED INITIATE,VT	250,000	Lake Champlain Sec 542 Projects- General Management		
WA	NWD	AER	COLUMBIA RIVER FISH MITIGATION, WA, OR & ID	36,016,000	Fund the highest priority work as determined the expert panel established in response to the Sept 1, 2021 interim injunction order, in the effort to yield a no jeapordy opinion for Chinook salmon and Steelhead.		
WA	NWD	FDRR	HOWARD HANSON DAM, WA			220,000,000	Complete PED and initiate construction.
WI	LRD	EI	NORTHERN WISCONSIN ENVIRONMENTAL ASSISTANCE, WI	450,000	Continue City of Superior - Hill Avenue Interceptor Rehabilitation Project		
WI	LRD	EI	NORTHERN WISCONSIN ENVIRONMENTAL ASSISTANCE, WI	625,000	Continue City of Bayfield - Apostle Islands Marina Breakwall Restoration Project		

Appendix D: Checklist All Categories

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

THE CITY OF
NORFOLK

Required & Supporting Documents: Links

FIRM Maps: https://drive.google.com/drive/folders/1zISYqMWhmwSFTz1-5gWA61RVpD1GRy45?usp=sharing

USACE/City of Norfolk Project Maintenance Plan (Final Coastal Storm Risk Management Report): https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll7/id/8557

Moffatt & Nichol Downtown to Harbor Park Interior Drainage Hydrology & Hydraulic Analysis: https://drive.google.com/file/d/1JEzcGsRmS5ztu4v3-K6YXCPOkYVce7az/view?usp=sharing

St. Paul's Blue-Greenway Synthesis Document: https://drive.google.com/file/d/1pWfcUOUWzgMh9aDKC9_GdzcJ5QMcE8YD/view?usp=sharing

Comprehensive Plan (plaNorfolk2030): https://www.norfolk.gov/DocumentCenter/View/2483

Vision2100: https://www.norfolk.gov/DocumentCenter/View/27768

Hampton Roads Hazard Mitigation Plan: https://www.hrpdcva.gov/library/view/620/2017-hampton-roads-hazard-mitigation-plan-and-appendices/

Norfolk Floodplain Ordinance: https://www.norfolkva.gov/norfolkzoningordinance/#Norfolk-ZO/3_9_Overlay_Districts_and_Designations.htm#_Toc502655724?TocPath=Article%25203%253A%2520Zoning%2520Districts%257C3.9%2520Overlay%2520Districts%2520and%2520Designations%257C_____7

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AV

THE CITY OF NORFOLK

For CM Office use only:
DTS # ____________

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DOCUMENT TRANSMITTAL FORM

Use for All City Documents Which Require the City Manager's Staff Approval

DS
AMS

*** PLEASE INDICATE IF THERE IS A LEGITIMATE DUE DATE BY WHICH THE CITY MANAGER MUST RESPOND ***

Due Date: ____4/8/2022__ Return Completed Document To: __Stephanie Daniel, Office of Resilience_

DEPARTMENT	Resilience & Stormwater
A. TO BE COMPLETED FOR CONTRACTS, AGREEMENTS, RFPS, AND GRANTS:	
TITLE	DCR Community Flood Preparedness April 2022 Application (2 applications): Riverside Memorial Park Project and USACE Floodwall Project
PARTY (Company and principal's names with which the City is entering into the agreement.)	Virginia Department of Conservation and Recreation (DCR)
EFFECTIVE DATES (Start & end dates)	Upon award with 36-month performance period
TOTAL DOLLAR VALUE	**Riverside Memorial Park Project:** $1,900,000 ($1,520,000 grant request; $380,000 match) **USACE Floodwall Project:** $160,731,286 ($28,127,975 grant request; local match of $28,127,975 and federal match of $104,475,336)
FUNDING SOURCE (Operating or capital budget; budget year; grant or other source. Show account information)	**RIVERSIDE MEMORIAL PARK PROJECT FUNDING SOURCE:** STORMWATER **ACCOUNT:** 2300 35 4305 5583 FY23 ($380,000 for Riverside Memorial Park Project) **USACE FLOODWALL MATCH:** FY23 CIP Funding $28,127,975 and federal match of $104,475,336
TYPE (New or extension)	New Grant Application
SUMMARY OF SCOPE OF SERVICE/ PROGRAM	The City is applying for funds to support the City's USACE Floodwall Project Federal Authorization (Resilience) match requirement and for a project to support shoreline work at Riverside Memorial Park (Stormwater).
CALL OUTS (Indicate any unique circumstances regarding provisions such as procurement protest pending, emergency purchase or other time sensitivity, so forth, along with any other pertinent information)	The grant submission package is due electronically to DCR by 4/8/22 by 4pm EST.
B. TO BE COMPLETED FOR HUMAN RESOURCES DOCUMENTS:	
TYPE OF DOCUMENT:	N/A
BRIEF DESCRIPTION: N/A	

Certificate of Satisfaction: *I (We) hereby certify that all reasonable due diligence has been performed to sufficiently develop the contents and implications of the attached document in a manner to protect and account to the public.* ***Further, all City policies and procedures have been adhered to and therefore, I (we) recommend the City Manager execute this document.***

4/4/22
Document Owner — Date

DocuSigned by:
Richard Broad
EB3D3D3E47F1434...
4/5/2022 | 8:57 AM EDT
Department Head Signature — Date

Matt Simons
4/4/22
Document Owner — Date

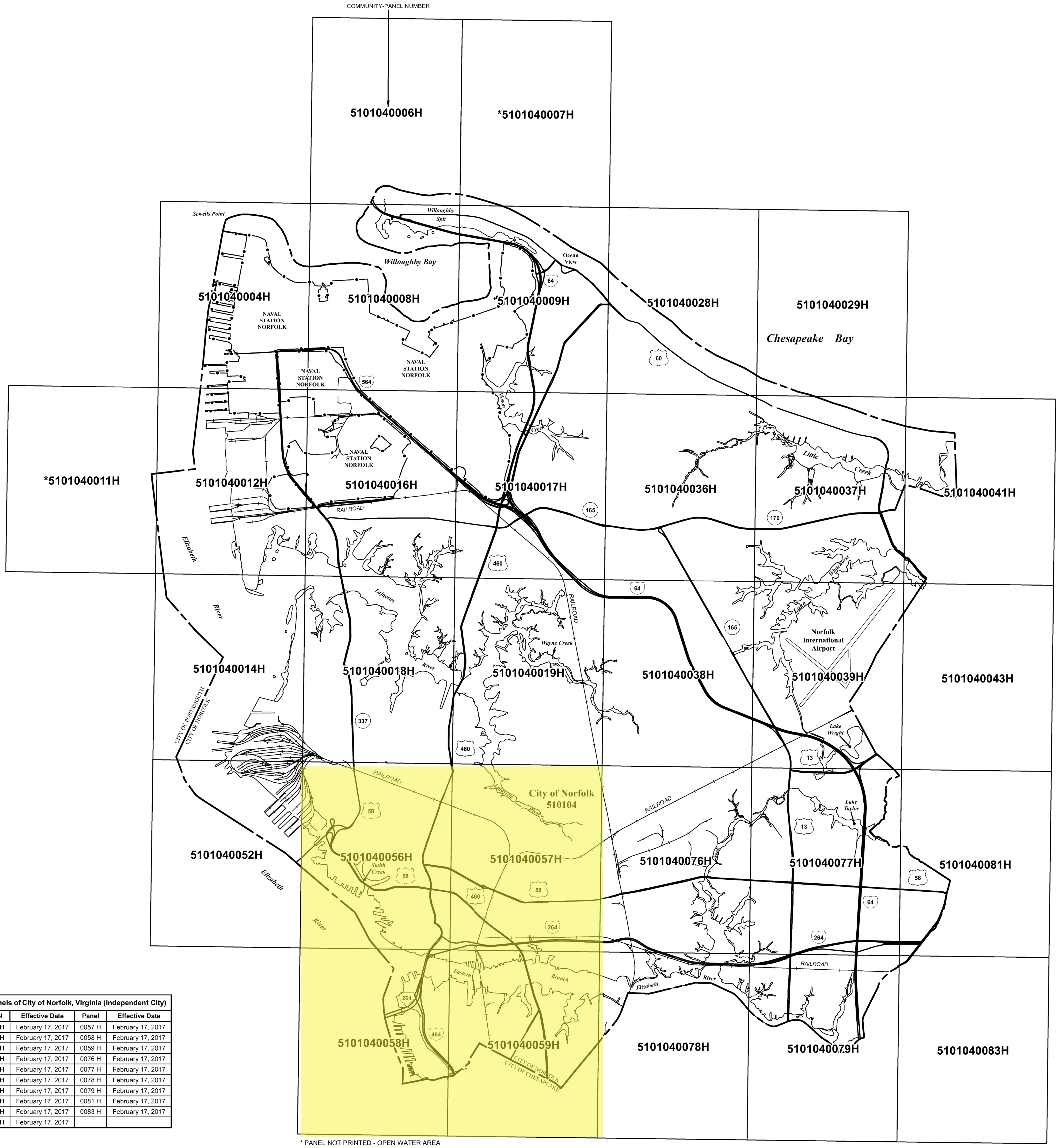
Kyle W. Spencer
4/4/22
Department Head Signature — Date

Review by DCM **Approve ☐** **Disapprove ☐**

DocuSigned by:
Patrick Roberts
AE9580A303EB478...
4/7/2022 | 7:35 AM EDT
Deputy City Manager — Date

Review by CM **Approve ☐** **Disapprove ☐**

DocuSigned by:
C45AA22E7D6047B...
4/7/2022 | 6:47 AM PDT
City Manager — Date



* PANEL NOT PRINTED - OPEN WATER AREA

MAP DATES

This FIRM Index displays the map date for each FIRM panel at the time that this Index was printed. Because this Index may not be distributed to unaffected communities in subsequent revisions, users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center (MSC) website at http://msc.fema.gov, or by calling the FEMA Map Information eXchange (FMIX) at 1-877-336-2627.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index.These may be ordered directly from the Map Service Center at the number listed above.

MAP REPOSITORY

(Maps available for reference only, not for distribution.)

Planning Department
810 Union Street, Suite 508
Norfolk, Virginia 23510

FIRM Panel Dates For Printed Panels of City of Norfolk, Virginia (Independent City)

Panel	Effective Date	Panel	Effective Date	Panel	Effective Date
0004 H	February 17, 2017	0028 H	February 17, 2017	0057 H	February 17, 2017
0006 H	February 17, 2017	0029 H	February 17, 2017	0058 H	February 17, 2017
0008 H	February 17, 2017	0036 H	February 17, 2017	0059 H	February 17, 2017
0009 H	February 17, 2017	0037 H	February 17, 2017	0076 H	February 17, 2017
0012 H	February 17, 2017	0038 H	February 17, 2017	0077 H	February 17, 2017
0014 H	February 17, 2017	0039 H	February 17, 2017	0078 H	February 17, 2017
0016 H	February 17, 2017	0041 H	February 17, 2017	0079 H	February 17, 2017
0017 H	February 17, 2017	0043 H	February 17, 2017	0081 H	February 17, 2017
0018 H	February 17, 2017	0052 H	February 17, 2017	0083 H	February 17, 2017
0019 H	February 17, 2017	0056 H	February 17, 2017		

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
NORFOLK,
VIRGINIA
INDEPENDENT CITY

MAP INDEX

PANELS PRINTED: 4, 6, 8, 9, 12, 14, 16, 17, 18, 19, 28, 29, 36, 37, 38, 39, 41, 43, 52, 56, 57, 58, 59, 76, 77, 78, 79, 81, 83

MAP NUMBER
510104IND0C

MAP REVISED
FEBRUARY 17, 2017

Federal Emergency Management Agency

CFPF, rr <cfpf@dcr.virginia.gov>

City of Norfolk Office of Resilience CFPF Round 3 grant submission - USACE Phase 1A

1 message

Simons, Matthew <Matthew.Simons@norfolk.gov> Fri, Apr 8, 2022 at 3:31 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "matthew.wells@dcr.virginia.gov" <matthew.wells@dcr.virginia.gov>

To whom it may concern,

Attached is a Community Flood Preparedness Fund Round 3 grant request for **$28,127,975** to support the first phase of a $1.8B Coastal Storm Risk Management flood protection project in partnership with the City of Norfolk and U.S. Army Corps of Engineers.

Let me know if you have any questions about the application.

Thank you.

Matthew Simons, AICP CFM

Coastal Resiliency Manager

City of Norfolk – Office of Resilience

757-334-8622 (cell)

City Hall Building

501 Boush Street, Suite B

Norfolk, VA 23510

Connect with us:

www.norfolk.gov

CID510104_CityofNorfolk_CFPF-1.pdf
13634K

VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION:

2022 VIRGINIA COMMUNITY FLOOD PREPARDNESS FUND GRANT

Application

Riverside Memorial Cemetery Shoreline Restoration

Department of Public Works

Division of Environmental Stormwater Management

2233 McKann Ave

Norfolk, VA 23505

THE CITY OF NORFOLK

Contents

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation

Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Norfolk

Category of Grant Being Applied for (check one):

____Capacity Building/Planning

__X___Project

_____Study

NFIP/DCR Community Identification Number (CID) **510104**

If a state or federally recognized Indian tribe, Name of tribe______________________________

Name of Authorized Official: **Dr Larry H. Filer II**

Signature of Authorized Official: DocuSigned by: C45AA22E7D6047B... 4/7/2022 | 6:47 AM PDT

Mailing Address (1): 810 Union St

Mailing Address (2): Suite 1101

City: Norfolk State: VA Zip: 23510

Telephone Number: 757-664-4242 Cell Phone Number: (____)______________________________

Email Address: city.manager@norfolk.gov

Contact Person (If different from authorized official): Justin Shafer

Mailing Address (1): 2233 McKann Ave

Mailing Address (2): ____

City: Norfolk **State: VA** **Zip: 23509**

Telephone Number: 757-823-4048 **Cell Phone Number: 757-282-8383**

Email Address: justin.shafer@norfolk.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes _X__ No ___

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☑ Wetland restoration.

☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☑ Living shorelines and vegetated buffers.

☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☑ Stream bank restoration or stabilization.

☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.
☐
☐

☐ **Location of Project (Include Maps):**
Campostella-Berkley Area of Norfolk adjacent to Riverside Memorial Cemetery_______

NFIP Community Identification Number (CID#):(See appendix F____510104 ____________

Is Project Located in an NFIP Participating Community? ☑Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑Yes ☐ No

Flood Zone(s) (If Applicable): ____AE____

Flood Insurance Rate Map Number(s) (If Applicable): ___5101040059H_________________

Total Cost of Project: ______$1,900,000_____________________________________

Total Amount Requested ____$1,520,000_______________________

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**City of Norfolk**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	
Project Eligible for Consideration		**☑ Yes** **☐ No**

Applicant Name:	**City of Norfolk**		
Scoring Information			
Criterion		**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)			
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.			
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.		**50**	
☑ Wetland restoration, floodplain restoration ☑ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☑ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.		**45**	**45**
1.b. any other nature-based approach		**40**	
All hybrid approaches whose end result is a nature-based solution		**35**	
All other projects		**25**	
7. Is the project area socially vulnerable? (**Based on [ADAPT VA's Social Vulnerability Index Score.)](#)**			
Very High Social Vulnerability (More than 1.5)		**15**	**15**
High Social Vulnerability (1.0 to 1.5)		**12**	
Moderate Social Vulnerability (0.0 to 1.0)		**8**	
Low Social Vulnerability (-1.0 to 0.0)		**0**	
Very Low Social Vulnerability (Less than -1.0)		**0**	

8. Is the proposed project part of an effort to join or remedy the community’s probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	
No	**0**	0
Total Points		**75**

VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION:

VIRGINIA COMMUNITY FLOOD PREPARDNESS FUND GRANT

Narrative

Riverside Memorial Cemetery Shoreline Restoration

Department of Public Works
Division of Environmental Stormwater Management
2233 McKann Ave
Norfolk, VA 23505

Riverside Memorial Cemetery Shoreline Stabilization

Scope of Work and Budget Narratives

Project Information

The City of Norfolk seeks support for stabilization and restoration of a highly eroded bank and shoreline along the Riverside Memorial Cemetery in the Campostella-Berkley area of Norfolk, Virginia (Figure 1). The cemetery was established by a private company in 1910 and purchased by the City of Norfolk in 1971. It has a long history of use by residents of the surrounding community. Early in its history, a monument company was also operated at the cemetery and many ornate statues and monuments can be seen around the cemetery, including the Langley Angel. With elevations up to 15 foot NAVD, Riverside Memorial Cemetery has some of the highest ground elevations in Hampton Roads and during World War II a lookout tower was established at the site to monitor activity along the Elizabeth River. The unnamed creek on the eastern side of the cemetery, hereafter identified as Campostella Creek, was historically a large wetland complex with small creeks draining areas deeper in Campostella-Berkley. The angle of the creek's mouth creates a naturally protected harbor and the adjacent Eastern Branch of the Elizabeth River grew into a major industrial/commercial hub or the region, so over time the wetlands were dredged to create deeper water for industrial activity such as boat building and repair. 1937 aerial imagery (Figure 2) shows approximately half of the current creek having been dredged, with areas closer to the cemetery and further south into the headwaters still retaining wide swaths of wetlands. Further dredging, marine industrial activity, and wind-driven waves from the expanded creek mouth resulted in further loss of wetlands and eventually of the bank up to the cemetery over the following decades. In recent years detailed review of the site in hopes of restoring the shoreline revealed how badly many areas along the bank had eroded, with some vertical or even undercut, threatening numerous graves in the cemetery above.

The 44 acre cemetery is an important community asset to Norfolk and particularly to the surrounding neighborhoods of Campostella-Berkley. Campostella Creek drains south through Campostella and drains a 78 acre watershed that includes residential neighborhoods, an elementary school, several recreation centers, numerous industrial sites, and upcoming mixed used developments aimed at revitalizing the area, such as Sycamore Plaza near the headwater of the creek. The community within the watershed, completely within US Census Tract 51, is an at-risk community with very high social vulnerability (SVI Score = 2.4). Norfolk overall is a low-income community compared to the rest of the state, with a city-wide median household income of $53,253 versus a state-wide median household income of $76,448, and median household income in the project area is far lower at $28,671. The community is also noted to be at high risk for exposure to potential hazardous or toxic materials (Exposure Score = 1.3) and restoration of wetlands in the creek may help to filter pollutants for both community and environmental health.

To address the severe erosion of the cemetery bank and restore the wetland shoreline lost over time, Norfolk proposes to utilize primarily nature-based solutions such as living shoreline techniques, bank fill and grading, green block technology, and planted armored matting. Very limited grey techniques such as rock revetment may be required on several stretches of bank, but the project is projected to be over 95% nature-based solutions. Over 1500 linear feet of shoreline will be stabilized and nearly an acre of historical wetland restored, with front edge protection and sloped design to help protect it from adjacent

Figure 1- Project Area Map

Figure 2- 1937 Aerial Photo of Project Area

impacts. The combined effort will protect and enhance a valuable community asset, provide coastal erosion protection into the future, enhance both aesthetics and wildlife habitat, and improve water quality of a creek through the Campostella neighborhood and the Elizabeth River as a whole with an estimated reduction of hundreds of pounds per year of nitrogen and sediment, as well as thousands of pounds of fine sediments. Restored marshes will also help to slow and absorb tidal flood water forced into the narrow creek during major storm events.

Need for Assistance:

While Norfolk is one of the most populated cities in Virginia and a major hub for commerce, military facilities, and other services, much of its population faces severe economic hardship. Compared to Virginia as a whole, Norfolk is a low-income community, with median household income less than 80% of the statewide metric. The city has an average Social Vulnerability Index score of 0.59, ranking it as having Moderate Social Vulnerability as a whole, however many of the densest population areas are concentrated in 25 census tracts listed as having High or Very High Social Vulnerability, including Census Tract 51 in which the proposed project is located. Attached documents provide additional community demographic, economic, and vulnerability information for Census Tract 51 (Appendix D).

While the City of Norfolk manages a robust budget, including a fee to address operation and maintenance of its stormwater system, the combined impacts of climate change and aging infrastructure are placing stress on the City’s ability to address all high priority needs in a timely manner. City departments regularly seek grant and loan support to increase the amount of work accomplished at any given time, leveraging Capital Improvement Funds as matching funds and professional engineers, project managers, scientists, and other staff to manage projects and outside funding sources. As a major city within Virginia, Norfolk’s staff have all necessary resources to move projects to completion, with a heightened focus for any awarded grants and loans to stay on budget and schedule.

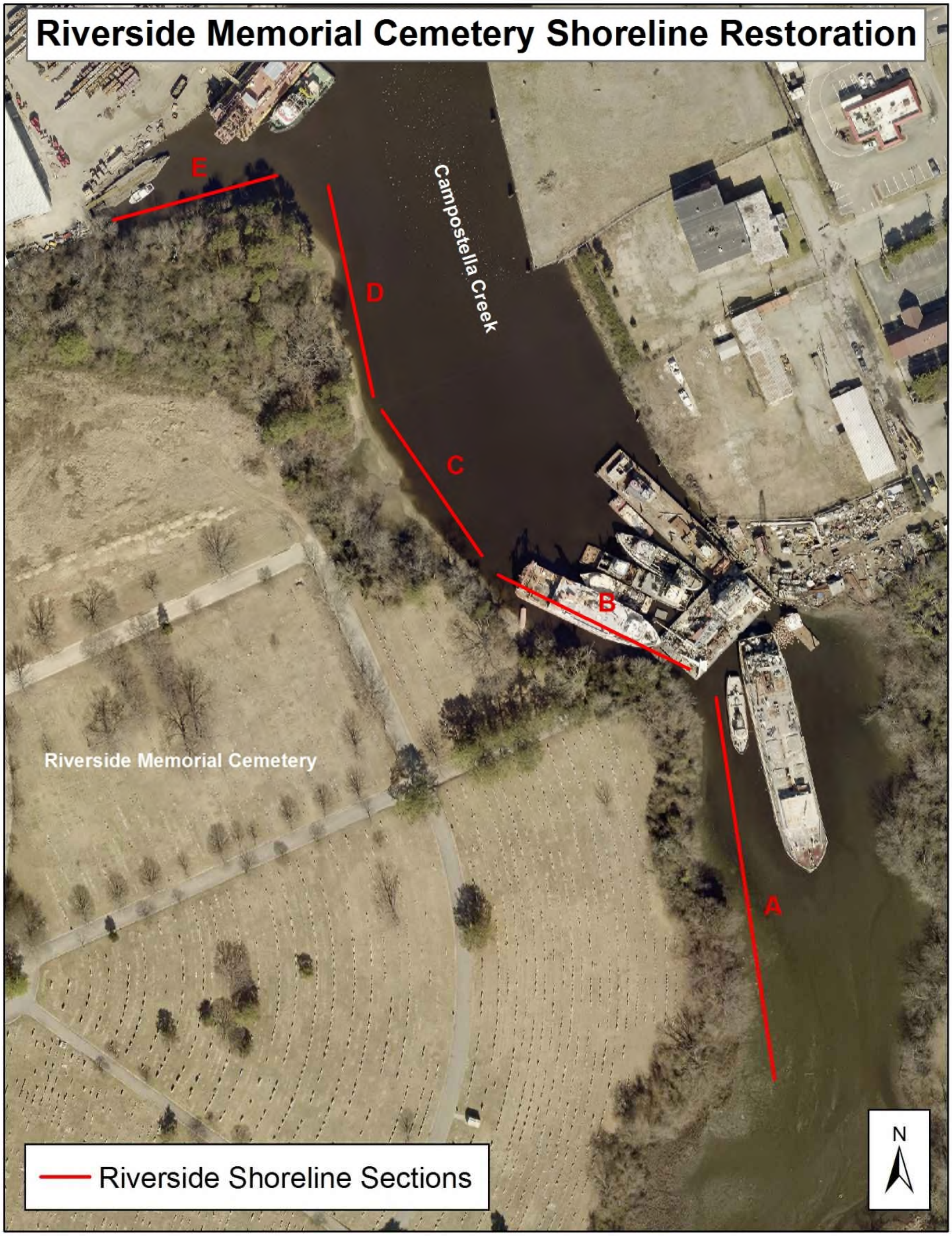
Goals and Objectives:

Norfolk proposes to stabilize the eroding bank at Riverside Memorial Cemetery with various approaches depending on severity of slope and to restore the tidal marsh with a hybrid living shoreline to reduce tidal impacts. These actions will mitigate the immediate risk to the cemetery and provide resilience into the future, while also absorbing flood waters as they move into the creek during large storm events. The project would also provide valuable water quality and wildlife habit improvements in the Campostella Creek and the Eastern Branch of the Elizabeth River. Based off a 30% design, survey, and environmental assessment of the site (see attachments in Appendix D) and follow-up discussions including changes to the 30% design, the project can be broken into seven sections (Figure 3) based off bank height and slope, which averages 10’ in height and ranges from 16% to 400% in slope. Table 1 provides shoreline length and average height for each section.

Table 1 – Project Shoreline Section

Shoreline Section	Section Length (ft)	Average Bank Height (ft)
A	500	10
B	400	10
C	275	9
D	180	9
E	170	8

Figure 3- Project Sections



Section A faces southeast, is exposed to little fetch, and is the furthest from major industrial activities. 1937 aerial photos (Figure 2 above) indicate this area had a stable vegetated slope and wide salt marsh at the time. A low riprap or oyster block sill will be constructed between 25 to 40 feet from the toe of slope as a channelward sill, followed by sand fill to raise elevation above the mudflat allowing replanting of low and high marsh species. Sand fill will raise elevation at the toe of slope and the bank will be further stabilized using green wall technologies such as Envirolok vegetated geobags. Inclusion of vegetated geobags rather than planted pavers was a modification from the 30% design to incorporate greater green alternatives. As the shoreline turns north towards Section B, the offshore sill will become larger and bank stabilization will transition to a more hardened structural approach, such as Flexmat vegetated pavers.

Section B faces east to northeast. This portion of the cemetery bank sit closest to the channel of Campostella Creek and is exposed to a moderate fetch from the north. Heavy marine industrial activity is common in the channel from facilities on the opposite side of the creek. Very little vegetated wetlands or mudflats remain across much of this section and historical aerials indicate it had been heavily dredged close to shore by the late 1930s. Two of the most critical slopes along the entire site are found here, nearly vertical with ongoing undercutting and top of bank erosion. Improvements to this section will include a high nearshore riprap sill or revetment, with limited marsh restoration behind the portion closest to the channel to minimize narrowing of the creek at this point. To reduce future impacts on the bank, a more solid structural protection such as Flexamat will be used. Soil fill at top of bank will be required in several areas to provide further protection for threatened gravesites. Where tree removal is necessary to accomplish this, additional plantings will be called for to restore the vegetated buffering and ensure continued tranquility at the cemetery. As the shoreline turns to face north as it meets Section C, the marsh will be widened and bank stabilization will be softened.

Section C faces northeast to east. Despite some dredging of the creek by the late 1930s, historical aerial photos show a 200’ wide salt marsh. Although a significant mudflat remains, erosion from a fetch to the north, heavy marine industrial activity, and a stormwater flume outfall have caused loss of most vegetated wetlands. A large marsh, over 100 feet deep at its widest point from toe of slope, will be re-established through this section of shoreline. The width will allow a large high marsh to be restored closer to the slope, ensuring a long life for the system in the face of sea level rise. A low riprap or oyster block sill will be used to secure the channelward edge. A concrete flume in the center of this section currently serves as an outfall for precipitation runoff for a large portion of the cemetery. Over time the bank surrounding and at the end of this flume has eroded back. Fill will be used to extend the bank and re-establish the slope in this area, then a manhole and pipe will be used to direct water from the road above. A riprap channel will protect the marsh below from runoff. To either side of the outfall, existing slopes are relatively stable and no improvements are expected once sand fill for the marsh raises the toe elevation. As Section C transitions to Sections B and D to either side, requirements for both sill height and slope stabilization will increase.

Section D face east and is subject to wind driven waves from the mouth of the creek and to marine industrial impacts from adjacent properties. Historical aerials show an extensive marsh, similar to Section C; however, the creek has been widened significantly in this section over time and less mudflat or vegetated wetlands remain. The bank is generally more stable through this section, with a forested slope above a lower eroding toe. To protect from wind and boat driven waves, a larger riprap sill will be utilized through this section, with a 20 to 30 foot wide marsh restored behind. Sand fill will tie into a structural slope stabilization such as Flexamat or Envirolok. As the shoreline turns to face north towards Section E, the restored shoreline will narrow and slope protection will transition to heavier Flexamat or riprap revetment.

Section E faces north into a narrow, 100 foot wide side channel, where heavy marine industrial activity is common. Like Section D, this portion of the creek has been heavily modified since the 1930s. A forested slope sits above a heavily eroding and undercut toe. Small pockets of wetlands and mudflat remain. Due to the narrow, heavily used channel riprap revetment or heavy Flexamat will be used to stabilize the toe of slope. A small area of wetland restoration may be possible in the western corner at the end of the creek, but otherwise marsh planting will be limited along this section.

Across the entire site, tree and understory planting will be utilized wherever possible on restored slopes to provide long-term stabilization and greening of the site. Along the offshore sill, piles will be driven as needed or required by permit to mark the location of these hard structures for marine industrial operators and recreational boaters. Where possible or required by permit, any existing marsh or shellfish habitat will be protected or incorporated into the project design.

Approach, Milestones, and Deliverables:

The design for the proposed improvements is underway and expected to be complete by end of 2022, with permit approval potentially extending into early 2023 depending on interagency coordination. The City hopes to issue requests for bids in spring 2023, allowing for the project to begin construction by fall of 2023. No major obstacles are expected for construction, but work may be required from both land and water, so construction could extend over several years across the various sections of the project. Although material and supplies continue to have longer-than-usual lead times under current economic conditions, the City anticipates the project could be fully completed within the required 36 months from signing of agreement, regardless of any delays. Table 2 below provides a summary of the proposed schedule and milestones.

Table 2 - Project Schedule and Milestones

Date	Milestone Activity
March 2023	Project Fully Designed, Approved, and Permitted
May 2023	Request for Bids Initiated
August 2023	Bids Reviewed and Contract Process Initiated
November 2023	Notice to Proceed Issued
September 2025	Construction Complete

The project is being managed through the Department of Public Works- Division of Environmental Storm Water Management. Hazen and Sawyer, an on-call engineering consultant for the City is designing the project and will be retained for construction management assistance. In addition to Norfolk Storm Water staff and consultants, study team members would include Norfolk staff from the Department of Recreation, Parks, and Open Space, the Department of Planning, and the Office of Resilience. Coordination will be conducted with adjacent property owners regarding any necessary modifications to ensure industrial activities can continue in a reasonable manner. Proposed internal team members are noted in Table 3 below and additional consultants, outside team members or interviewees would be sought as needed.

Table 3 – City of Norfolk Project Team

John White, PE	Storm Water Engineer	Public Works
Reynaldo Hernandez, PE	Sr Design/Construction Project Manager	Public Works
Justin Shafer, CFM	Green Infrastructure Project Manager	Public Works
Ted Dudley	Bureau of Cemeteries Manager	Parks and Recreation
Steven Traylor, CA	City Forester	Parks and Recreation
Seamus McCarthy, CFM	Environmental Services Manager	Planning
Kyle Spencer	Chief Resilience Officer (Acting)	Resilience

Relationship to Other Projects:

Stabilization and restoration of shorelines are major components of both water quality and resilience efforts in Norfolk. Norfolk has seen significant fill, dredging, and armoring of coastal areas through time, with many of these efforts resulting in eroding shoreline. Reconnection of floodplains, restoration of wetlands and other aquatic habitats, and modifications to address current and future tidal impacts are often possible in these deteriorated areas, allowing for nature-based solutions rather than repeat of past mistakes. The multiple benefits of these solutions reduce flooding and erosion, improve water quality, enhance wildlife habitat, and provide recreation and aesthetic amenities.

Norfolk has been successful in offsetting City funds with grants, loans, and partnerships to support shoreline restoration efforts. Funders and partners for past and ongoing projects include Virginia Department of Environmental Quality, National Fish and Wildlife Foundation, US Army Corps of Engineers, Chesapeake Bay Foundation, Elizabeth River Project, and many others. Norfolk has a strong history of completing large grant and loan supported projects within both budget and schedule. While material, labor, or weather delays do occur, by initiating design and permitting ahead and applications for this support, Norfolk provides more time for potential construction delays within the timeframe of a given grant or loan.

Maintenance Plan:

The City of Norfolk – Division of Environmental Storm Water Management maintains three full time crews dedicated to maintenance of best management practices, ditches, and shorelines. Crew members are trained in use of equipment and techniques to manage vegetation, grading, and hard structures. City engineers and inspectors monitor all shoreline projects annually and a PM program requires routine or identified maintenance quarterly. Additional monitoring will be provided at this location by Department of Parks and Recreation- Division of Cemeteries staff, to ensure the long-term protection of grave sites. Storm Water fees that fund the Division’s operating budget and Capital Improvement Program will be used as necessary to ensure successful operation and maintenance of the facility well into the future.

Criteria:

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

The City of Norfolk is an independent city in the Commonwealth of Virginia.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

The City of Norfolk submitted a Resilience Plan package in July 2021 and received approval of the plan from Virginia Department of Conservation and Recreation on August 11, 2021. An overview with relevant links is attached.

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

The City of Norfolk is an independent city in the Commonwealth of Virginia.

4. Has the applicant provided evidence of an ability to provide the required match funds?

Match funds for the proposed project are in a currently approved Capital Improvement Plan. An attached Transmittal Form signed by Norfolk's City Manager identifies specific budget accounts and approval to apply funds towards grant match.

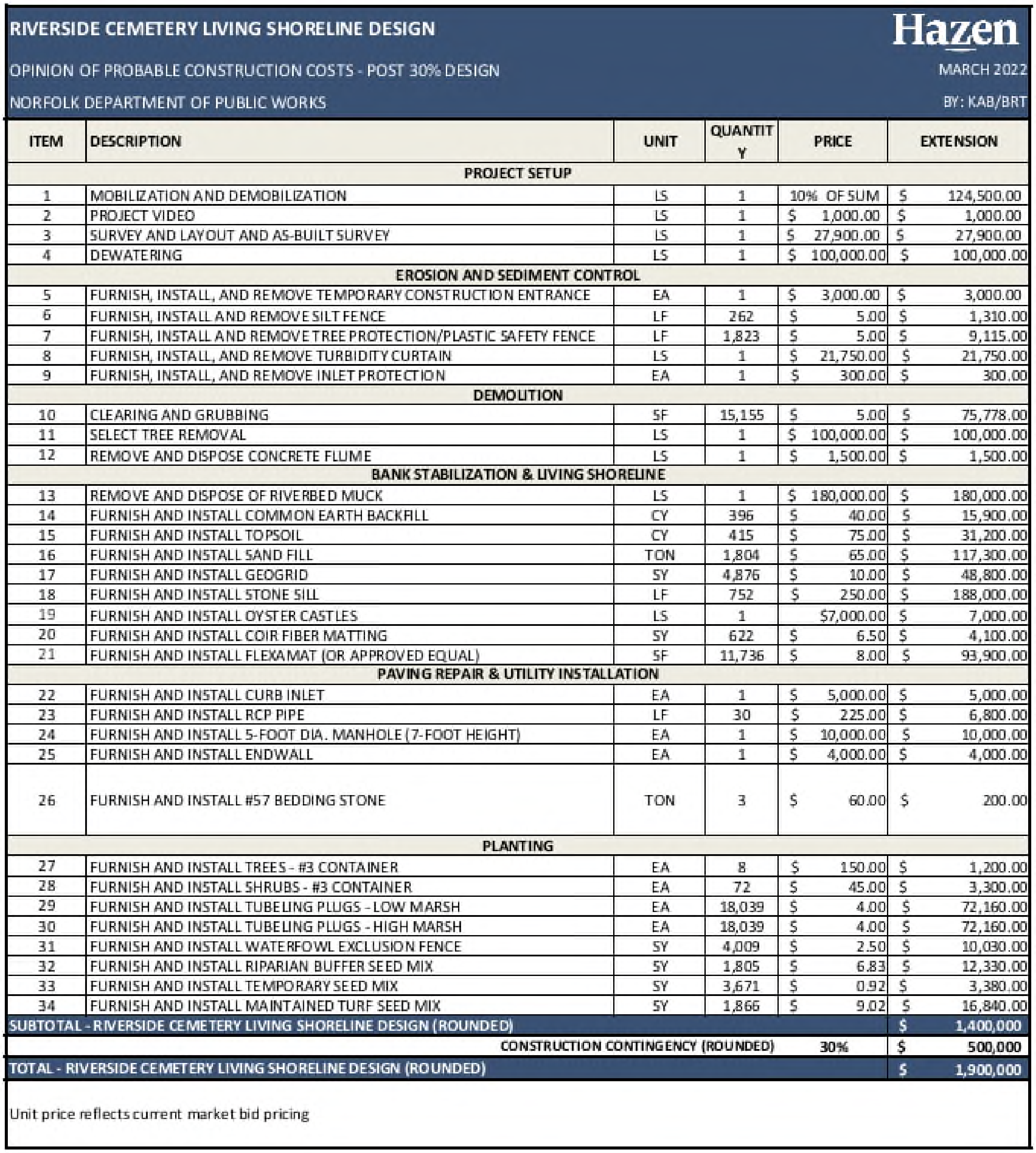
5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

The project will help to stabilize a high bank and wetland complex eroded over time through coastal and anthropogenic causes. Restored wetlands will also act as a buffer by absorbing tidal waters moving further into the community during major storm events. Resilience of both the Riverside Memorial Cemetery and Campostella community overall will be enhanced.

Budget Narrative:

The City of Norfolk seeks 80% grant funding to support the proposed shoreline restoration and bank stabilization at Riverside Memorial Cemetery. A recently updated opinion of probable cost of construction (OPCC), completed by design consultants Hazen & Sawyer after review of the 30% design phase, estimates the construction to cost $1,900,000. This includes a 30% contingency to address unexpected changes during the remainder of design and increasing costs of construction due to nationwide economic conditions. This cost will fund all necessary materials, supplies, and labor for a qualified contractor to construct the project after a competitive bid process. The City proposes to fund their 20% match of $380,000 through Storm Water Capital Improvement Program funds for water quality improvements. Design costs are encumbered through existing budget, so all match funding will go towards contracted work, along with the requested $1,900,000 in grant funds. Table 3 shows the consultant supplied OPCC. In addition to the direct funding as included match, Norfolk also commits to managing all remaining or necessary aspects of design, permitting, project management, and public outreach using existing qualified staff. No grant funds are sought for this nor match applied, leaving funds fully available for contracted construction work. Funds proposed as match are authorized through existing approved or upcoming proposed budgets and verified on the attached, signed City Manager Transmittal Form outlining grant and match funds for all Norfolk applications to the current Community Flood Preparedness Fund grant cycle. Upon award of grant funds, the City sets up a special revenue account that includes approved match funds and cash funds to cover awarded grant funding until reimbursement is received, allowing Norfolk to move projects forward without delays for reimbursement requests.

Table 3- Project Costs



RIVERSIDE CEMETERY LIVING SHORELINE DESIGN
OPINION OF PROBABLE CONSTRUCTION COSTS - POST 30% DESIGN
NORFOLK DEPARTMENT OF PUBLIC WORKS

Hazen
MARCH 2022
BY: KAB/BRT

ITEM	DESCRIPTION	UNIT	QUANTITY	PRICE	EXTENSION
PROJECT SETUP					
1	MOBILIZATION AND DEMOBILIZATION	LS	1	10% OF SUM	$ 124,500.00
2	PROJECT VIDEO	LS	1	$ 1,000.00	$ 1,000.00
3	SURVEY AND LAYOUT AND AS-BUILT SURVEY	LS	1	$ 27,900.00	$ 27,900.00
4	DEWATERING	LS	1	$ 100,000.00	$ 100,000.00
EROSION AND SEDIMENT CONTROL					
5	FURNISH, INSTALL, AND REMOVE TEMPORARY CONSTRUCTION ENTRANCE	EA	1	$ 3,000.00	$ 3,000.00
6	FURNISH, INSTALL AND REMOVE SILT FENCE	LF	262	$ 5.00	$ 1,310.00
7	FURNISH, INSTALL AND REMOVE TREE PROTECTION/PLASTIC SAFETY FENCE	LF	1,823	$ 5.00	$ 9,115.00
8	FURNISH, INSTALL, AND REMOVE TURBIDITY CURTAIN	LS	1	$ 21,750.00	$ 21,750.00
9	FURNISH, INSTALL, AND REMOVE INLET PROTECTION	EA	1	$ 300.00	$ 300.00
DEMOLITION					
10	CLEARING AND GRUBBING	SF	15,155	$ 5.00	$ 75,778.00
11	SELECT TREE REMOVAL	LS	1	$ 100,000.00	$ 100,000.00
12	REMOVE AND DISPOSE CONCRETE FLUME	LS	1	$ 1,500.00	$ 1,500.00
BANK STABILIZATION & LIVING SHORELINE					
13	REMOVE AND DISPOSE OF RIVERBED MUCK	LS	1	$ 180,000.00	$ 180,000.00
14	FURNISH AND INSTALL COMMON EARTH BACKFILL	CY	396	$ 40.00	$ 15,900.00
15	FURNISH AND INSTALL TOPSOIL	CY	415	$ 75.00	$ 31,200.00
16	FURNISH AND INSTALL SAND FILL	TON	1,804	$ 65.00	$ 117,300.00
17	FURNISH AND INSTALL GEOGRID	SY	4,876	$ 10.00	$ 48,800.00
18	FURNISH AND INSTALL STONE SILL	LF	752	$ 250.00	$ 188,000.00
19	FURNISH AND INSTALL OYSTER CASTLES	LS	1	$7,000.00	$ 7,000.00
20	FURNISH AND INSTALL COIR FIBER MATTING	SY	622	$ 6.50	$ 4,100.00
21	FURNISH AND INSTALL FLEXAMAT (OR APPROVED EQUAL)	SF	11,736	$ 8.00	$ 93,900.00
PAVING REPAIR & UTILITY INSTALLATION					
22	FURNISH AND INSTALL CURB INLET	EA	1	$ 5,000.00	$ 5,000.00
23	FURNISH AND INSTALL RCP PIPE	LF	30	$ 225.00	$ 6,800.00
24	FURNISH AND INSTALL 5-FOOT DIA. MANHOLE (7-FOOT HEIGHT)	EA	1	$ 10,000.00	$ 10,000.00
25	FURNISH AND INSTALL ENDWALL	EA	1	$ 4,000.00	$ 4,000.00
26	FURNISH AND INSTALL #57 BEDDING STONE	TON	3	$ 60.00	$ 200.00
PLANTING					
27	FURNISH AND INSTALL TREES - #3 CONTAINER	EA	8	$ 150.00	$ 1,200.00
28	FURNISH AND INSTALL SHRUBS - #3 CONTAINER	EA	72	$ 45.00	$ 3,300.00
29	FURNISH AND INSTALL TUBELING PLUGS - LOW MARSH	EA	18,039	$ 4.00	$ 72,160.00
30	FURNISH AND INSTALL TUBELING PLUGS - HIGH MARSH	EA	18,039	$ 4.00	$ 72,160.00
31	FURNISH AND INSTALL WATERFOWL EXCLUSION FENCE	SY	4,009	$ 2.50	$ 10,030.00
32	FURNISH AND INSTALL RIPARIAN BUFFER SEED MIX	SY	1,805	$ 6.83	$ 12,330.00
33	FURNISH AND INSTALL TEMPORARY SEED MIX	SY	3,671	$ 0.92	$ 3,380.00
34	FURNISH AND INSTALL MAINTAINED TURF SEED MIX	SY	1,866	$ 9.02	$ 16,840.00
SUBTOTAL - RIVERSIDE CEMETERY LIVING SHORELINE DESIGN (ROUNDED)					**$ 1,400,000**
	CONSTRUCTION CONTINGENCY (ROUNDED)			**30%**	**$ 500,000**
TOTAL - RIVERSIDE CEMETERY LIVING SHORELINE DESIGN (ROUNDED)					**$ 1,900,000**

Unit price reflects current market bid pricing

THE CITY OF NORFOLK

Appendix D:

Attachments

- Required Documents Checklist
- Site Map and Condition Photos
- 30% Site Plan and OPCC
- FIRMette
- AdaptVA SVI Map
- Project Area Demographic and Economic Data (Census Tract 51)
- Maintenance and Management Plan
- Authorization to Request Funding
- Approved Resilience Plan
- Links to Additional Required Documents

THE CITY OF NORFOLK

Scope of Work Narrative

Supporting Documentation	Included
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A

Budget Narrative

Supporting Documentation	Included
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

THE CITY OF NORFOLK

Riverside Memorial Cemetery Shoreline Restoration

Site Condition Photos

Photo 1: Graves Near Eroding Bank

Photo 2: Graves Near Eroding Bank

Photo 3: Graves Near Eroding Bank

Photo 4: Eroding Bank

Photo 5: Eroding Bank and Marsh

Photo 6: Eroding Bank

Photo 7: Eroding Bank and Marsh

Photo 8: Eroding Marsh

Photo 9: Eroding Shoreline and Marsh

City of Norfolk
Department of Public Works

NOT FOR CONSTRUCTION

RIVERSIDE CEMETERY LIVING SHORELINE

30% DESIGN SUBMITTAL
JANUARY 2022

RESPONSIBLE LAND DISTURBER (RLD) DESIGNATION

THE FOLLOWING PERSON KERRY BRAY (PRINT), ______ (SIGN), IS IDENTIFIED AS THE RESPONSIBLE LAND DISTURBER WHO WILL BE IN CHARGE OF AND RESPONSIBLE FOR CARRYING OUT THE LAND DISTURBING ACTIVITY. THIS PERSON MEETS THE APPLICABLE REQUIREMENTS OF VIRGINIA CODE SECTION 10.1–563 AND 10.1–566 BY VIRTUE OF THE FOLLOWING (CHECK THE CATEGORY THAT APPLIES):

______ RESPONSIBLE LAND DISTURBER CERTIFICATE

______ DCR CERTIFICATION FOR COMBINED ADMINISTRATOR, ADMINISTRATOR, PLAN REVIEWER, INSPECTOR, OR CONTRACTOR

__X__ VA PROFESSIONAL ENGINEER, LAND SURVEYOR, LANDSCAPE ARCHITECT, OR ARCHITECT

RLD CONTACT INFORMATION

NAME: KERRY BRAY

CERTIFICATION/REGISTRATION NUMBER: 53228

COMPANY: HAZEN AND SAWYER

MAILING ADDRESS: 4500 MAIN STREET, SUITE 500, VIRGINIA BEACH, VA 23462

TELEPHONE: (919) 863-9267 FAX: ______

EMAIL: KBRAY@HAZENANDSAWYER.COM

THIS DESIGNATION MAY ONLY BE CHANGED BY A PLAN COVER SHEET REVISION THAT MUST BE SUBMITTED TO THE CITY FOR VERIFICATION AND APPROVAL.

UPON AWARD OF THE CONTRACT AND BEFORE ANY LAND DISTURBING ACTIVITY CAN BEGIN, THE CONTRACTOR SHALL EXECUTE AND SUBMIT A RESPONSIBLE LAND DISTURBER NOTIFICATION FORM TO THE DEPARTMENT OF PLANNING, ENVIRONMENTAL SERVICES, ROOM 508, CITY HALL BUILDING, 810 UNION STREET, NORFOLK, VA 23510 TEL: (757) 664–4368. AWARD OF THE CONTRACT WILL RELIEVE THE ABOVE SIGNER OF ALL RESPONSIBILITY.

SITE DATA:

THIS PROJECT IS LOCATED ON CITY PROPERTY ALONG WATERS OF A TRIBUTARY TO THE ELIZABETH RIVER.

PROPERTY ADDRESSES:
1000 E INDIAN RIVER ROAD
NORFOLK, VA 23523
CITY OF NORFOLK: GPIN# 1437608648 & 1437613201

EXISTING LAND USE:
ZONING: OSP: OPEN SPACE AND PRESERVATION
DISTRICT: OPEN SPACE AND PRESERVATION
RIVER BASIN: ELIZABETH RIVER
FLOOD ZONE: AE

PROTECTED SHORELINE	TBD LINEAR FEET
RESTORED SHORELINE	TBD LINEAR FEET
CREATED TIDAL WETLANDS	TBD ACRES

THIS PROPERTY IS LOCATED WITHIN A CITY OF NORFOLK CBPA DESIGNATED INTENSELY DEVELOPED AREA (IDA).

THIS PROJECT LIES WITHIN THE COASTAL RESILIENCE OVERLAY.

LAND DISTURBANCE:

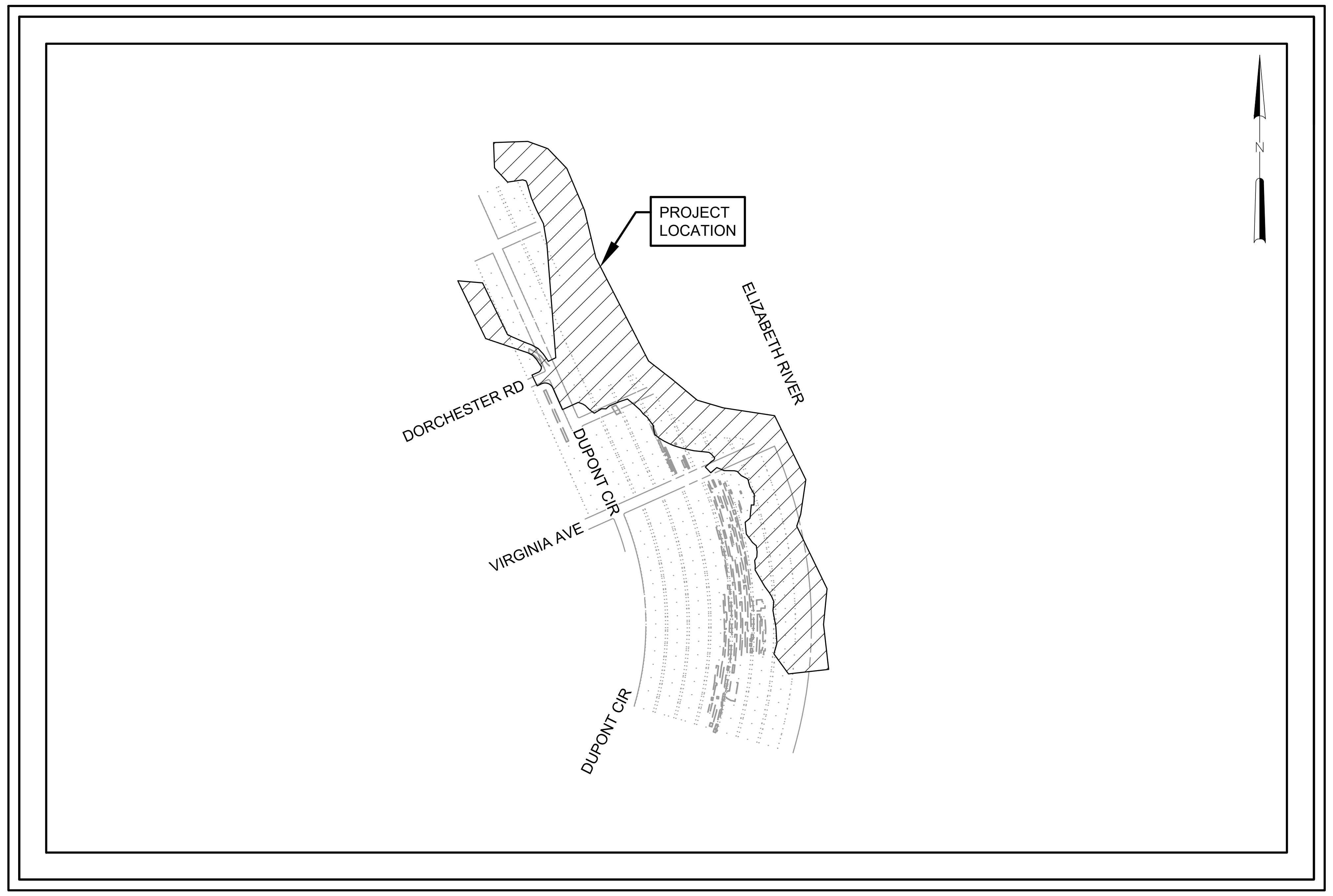
OWNERSHIP OF IMPROVEMENT	CITY OF NORFOLK
TYPE OF IMPROVEMENT	SHORELINE RESTORATION
EXISTING IMPERVIOUS COVER	0.06 ACRES
PROPOSED IMPERVIOUS COVER	0.06 ACRES
LIMITS OF DISTURBANCE	3.05 ACRES

GENERAL NOTE:

1. THE CONTRACTOR SHALL CONTACT THE CITY OF NORFOLK, BUREAU OF ENVIRONMENTAL SERVICES. 664-4368, AT LEAST 48 HOURS PRIOR TO ANY LAND DISTURBING ACTIVITY SO THAT LAND DISTURBING PERMIT CAN BE ISSUED AND A PRE-CONSTRUCTION CONFERENCE SCHEDULED.

RECORD DRAWING AND CERTIFICATION NOTE:

1. THE STORMWATER MANAGEMENT/BMP FACILITY AND ASSOCIATED STORMWATER CONVEYANCE SYSTEM(S) AS PROPOSED FOR THIS PROJECT WILL REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF A RECORD DRAWING (AS-BUILT) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE CO. RECORD DRAWING AND CONSTRUCTION CERTIFICATION IS REQUIRED TO BE RECORDED AND CHECKED BY A LICENSED SURVEYOR.



PROJECT AREA
SCALE 1" = 200'

STORMWATER NOTE:

1. CONTRACTOR TO CONTACT ENVIRONMENTAL STORM WATER MANAGEMENT AT 823-4089 (48-HOUR NOTICE) FOR PRE-CONSTRUCTION CONFERENCE AND INSPECTION REQUIREMENT WHEN A BMP IS PROPOSED AND/OR TIE-IN TO CITY STORM DRAIN SYSTEM.

TOLERANCE NOTES:

1. ALL STORM DRAINAGE SHALL BE INSTALLED WITHIN 0.10' (ONE TENTH OF ONE FOOT) OF THE ELEVATION SHOWN ON THE PLAN, OR AS SPECIFIED IN WRITING BY THE CITY.
2. MINIMUM STORM SEWER SLOPE SPECIFIED ON THE PLAN ARE ABSOLUTE MINIMUM. LESSER SLOPE WILL NOT BE ACCEPTED UNLESS IN WRITING BY THE CITY.
3. CONTRACTOR TO BE RESPONSIBLE FOR ALL CORRECTION COST (I.E. PLAN REVISION, PHYSICAL CORRECTION, ETC.) REQUIRED AS A RESULT OF INSTALLATION NOT MEETING THE TOLERANCE REQUIREMENT.
4. LAND DISTURBANCE: CONFIRM POST-DEVELOPMENT REDUCTION IN IMPERVIOUS COVER WITH THE ADDITION OF CLASS II RIPRAP AND STONE SILL.

CHESAPEAKE BAY PRESERVATION AREA NOTE:

1. THIS PROPERTY IS LOCATED IN THE CHESAPEAKE BAY PRESERVATION AREA (CBPA) AND IS SUBJECT TO CERTAIN DEVELOPMENT REQUIREMENTS AND LIMITATIONS. NO TREE REMOVAL, LAND DISTURBING ACTIVITY OR CONSTRUCTION ACTIVITY CAN BE COMMENCED WITHOUT PRIOR APPROVAL FROM THE CITY OF NORFOLK. PLEASE CONTACT THE BUREAU OF ENVIRONMENTAL SERVICES AT (757) 664-4368 FOR FURTHER INFORMATION.

LANDSCAPING NOTE:

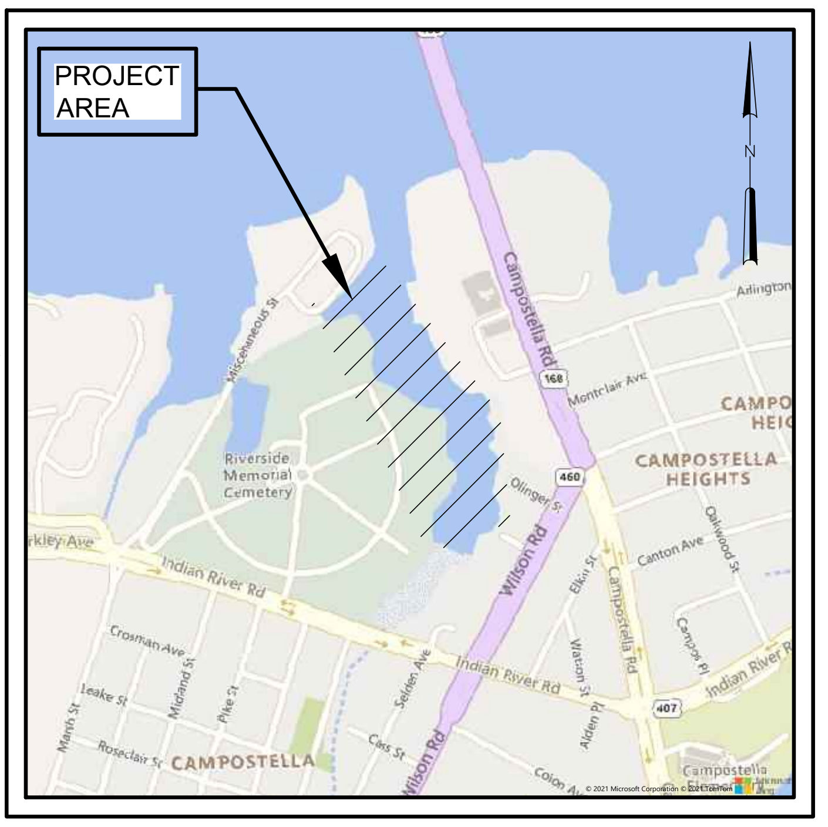
1. CONTACT JACK ERWIN AT (757) 664-4751 OR JACK.ERWIN@NORFOLK.GOV PRIOR TO INSTALLATION OF CBPA TREE MITIGATION.

APPROVAL

APPROVED ______ ______
DEPARTMENT OF PLANNING & COMMUNITY DEVELOPMENT SIGNATURE DATE

APPROVED ______ ______
ENGINEERING MANAGER SIGNATURE DATE

VICINITY MAP
SCALE 1" = 1000'



DA

DESCR

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

COVER SHEET

K. BRAY
S. KANE
A. DAVIS

DEPAR

30% DES

ER No:
G1.DWG
JAN 2022
SHEE G1

PLOT DATE: 1/28/2022 10:47 AM BY: BTHARRINGTON Saved by BTHARRINGTON Save date: 1/27/2022 6:56 PM

File: O:\31473-HRD\31473-008\CAD_BIM\GENL\G1 Saved by BTHARRINGTON Save date: 1/27/2022 6:56 PM

ABBREVIATIONS

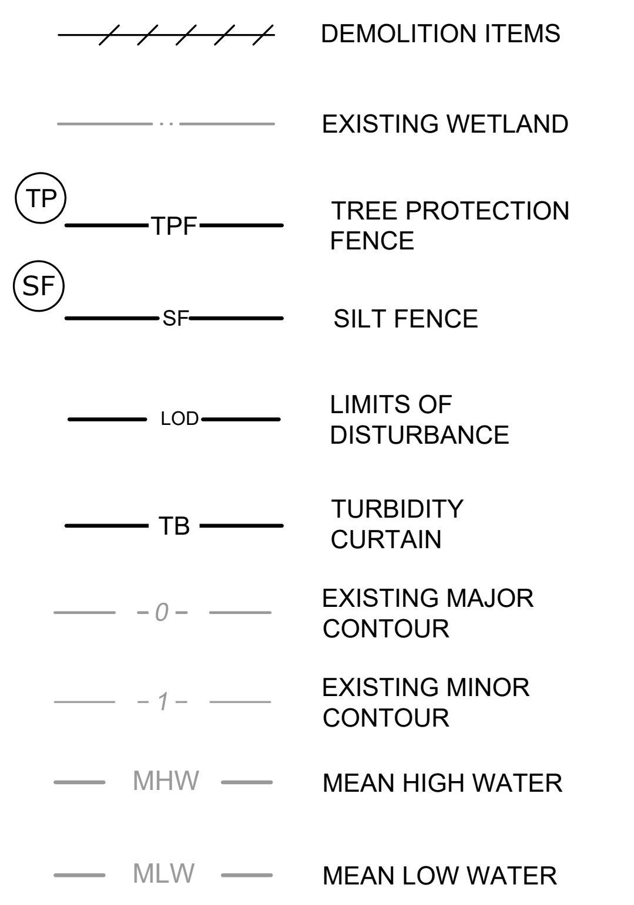
A	
AATUR	ABANDONED ACCORDING TO UTILITY RECORD
ABND	ABANDONED
AC	ASBESTOS CEMENT
ADDL	ADDITIONAL
ADJ	ADJUSTABLE
AGGR	AGGREGATE
ALT	ALTERNATE
APPROX	APPROXIMATE
ARV	AIR RELEASE VALVE
ASPH	ASPHALT
B	
B	BORING
BFV	BUTTERFLY VALVE
BITUM	BITUMINOUS
BLDG	BUILDING
BM	BENCH MARK
BOC	BACK OF CURB
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BV	BALL VALVE
C	
CB	CATCH BASIN
CE	CONSTRUCTION EASEMENT
CF	CUBIC FEET
C&G	CURB AND GUTTER
CI	CURB INLET (CATCH BASIN), CAST IRON
CL	CENTER LINE
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORP	CORPORATION
CORR	CORRIDOR
CY	CUBIC YARD
D	
DATUR	DATA ACCORDING TO UTILITIES RECORD
DI	DROP INLET, DUCTILE IRON
DIA (Ø)	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DIST	DISTRIBUTION
DWG	DRAWING
E	
E	EAST
EA	EACH
ECC	ECCENTRIC
EIP	EXIST IRON PIPE
EL OR ELEV	ELEVATION
ELEC	ELECTRIC OR ELECTRICAL
ENGR	ENGINEER
ENT	ENTRANCE
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQPT	EQUIPMENT
ESC	EROSION AND SEDIMENT CONTROL
EX/EXIST	EXISTING
F	
FH	FIRE HYDRANT
FL	FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE
FM	FORCE MAIN
FT	FEET
G	
G	GAS, GAS LINE, OR GRADE
GA	GAUGE
GB	GRADE BREAK
GAL	GALLON
GV	GATE VALVE
GW	GUY WIRE
H	
HORIZ	HORIZONTAL
HP	HIGH POINT
HWY	HIGHWAY
HSMH	HYDRODYNAMIC SEPARATOR MANHOLE
HYD	HYDRAULIC, HYDRANT
I	
I	IRON
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDED
INV	INVERT
J	
JT	JOINT
L	
L	LENGTH OR ANGLE
LF	LINEAR FEET
LG	LONG
LP	LIGHT POLE OR LOW POINT
M	
MAX	MAXIMUM
MCO	MAINLINE CLEANOUT
MFR	MANUFACTURER
MG	MATCH GRADE
MH	MANHOLE
MHW	MEAN HIGH WATER
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MLW	MEAN LOW WATER
MON	MONUMENT
N	
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NPW	NON POTABLE WATER
NTS	NOT TO SCALE
O	
OC	ON CENTER
OD	OUTSIDE DIAMETER
OVHD	OVERHEAD
P	
P	PAVEMENT
PL	PROPERTY LINE OR PLATE
PP	POWER POLE
PS	PUMPING STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
PVMT	PAVEMENT
Q	
QTY	QUANTITY
R	
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RED	REDUCER
REF	REFERENCE
REINF	REINFORCING
REQD	REQUIRED
REV	REVISE
RJ	RESTRAINED JOINT
RR	RAILROAD
RT	RIGHT
RW	RAW WATER
R/W	RIGHT OF WAY
S	
S	SOUTH
SAN	SANITARY
SBL	SURVEY BASELINE
SCH	SCHEDULE
SCO	SANITARY CLEAN OUT
SD	STORM OR SITE DRAIN
SECT	SECTION
SF	SILT FENCE
SF	SQUARE FEET
SFM	SANITARY FORCE MAIN
SFMV	SANITARY FORCE MAIN VALVE
SHT	SHEET
SI	SQUARE INCH
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
T	
TBD	TO BE DETERMINED
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TECH	TECHNICAL
TEL	TELEPHONE
THRU	THROUGH
TP	TREE PROTECTION
TPF	TREE PROTECTION FENCE
TPP	TREE PROTECTION PLANKING
TRANS	TRANSFORMER
TYP	TYPICAL
U	
UG	UNDERGROUND
UNK	UNKNOWN
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
W	
W	WEST, WIDTH OR WATER
W/	WITH
WET	WETLAND
WL	WATER LINE
W/O	WITHOUT
WV	WATER VALVE
WWF	WELDED WIRE FABRIC

DRAWING INDEX

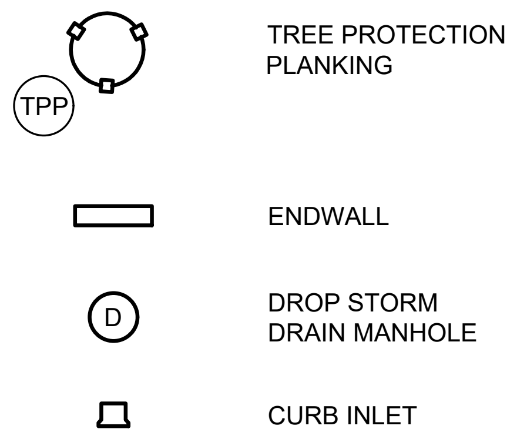
DRAWING NUMBER	DRAWING TITLE
GENERAL	
G1	COVER SHEET
G2	ABBREVIATIONS, INDEX, AND LEGEND
G3	TOPOGRAPHIC SURVEY OF RIVERSIDE CEMETERY - SHEET 1
G4	TOPOGRAPHIC SURVEY OF RIVERSIDE CEMETERY - SHEET 2
CIVIL	
C1	DEMOLITION AND EROSION AND SEDIMENT CONTROL PLAN - SHEET 1
C2	DEMOLITION AND EROSION AND SEDIMENT CONTROL PLAN - SHEET 2
C3	DEMOLITION AND EROSION AND SEDIMENT CONTROL PLAN - SHEET 3
C4	SITE AND GRADING PLAN - SHEET 1
C5	SITE AND GRADING PLAN - SHEET 2
C6	SITE AND GRADING PLAN - SHEET 3
CD1	STANDARD DETAILS

LEGEND

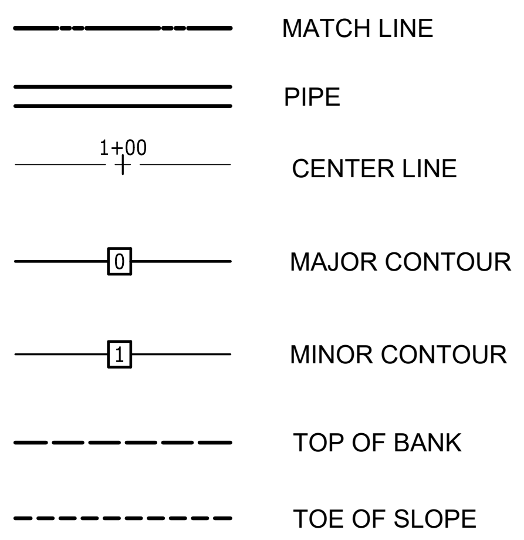
LINETYPES



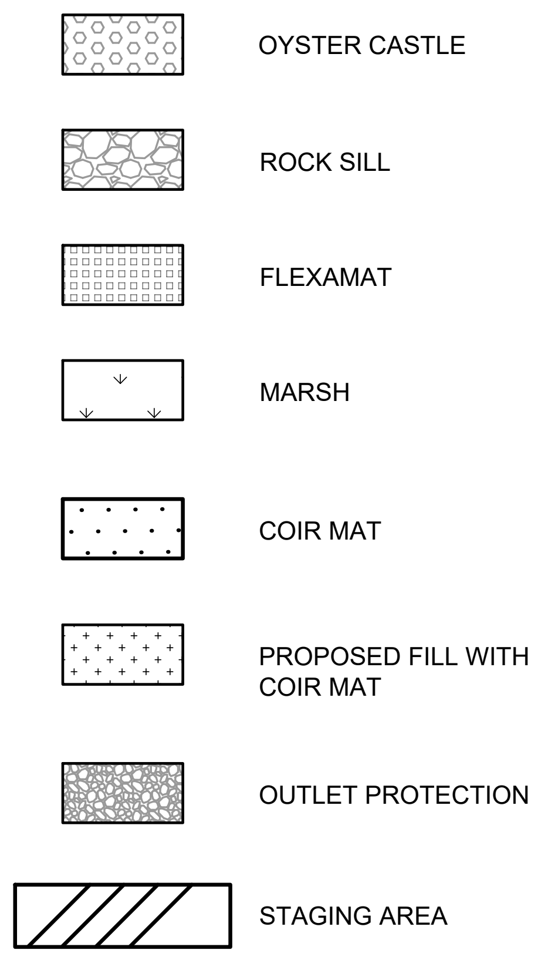
SYMBOLS



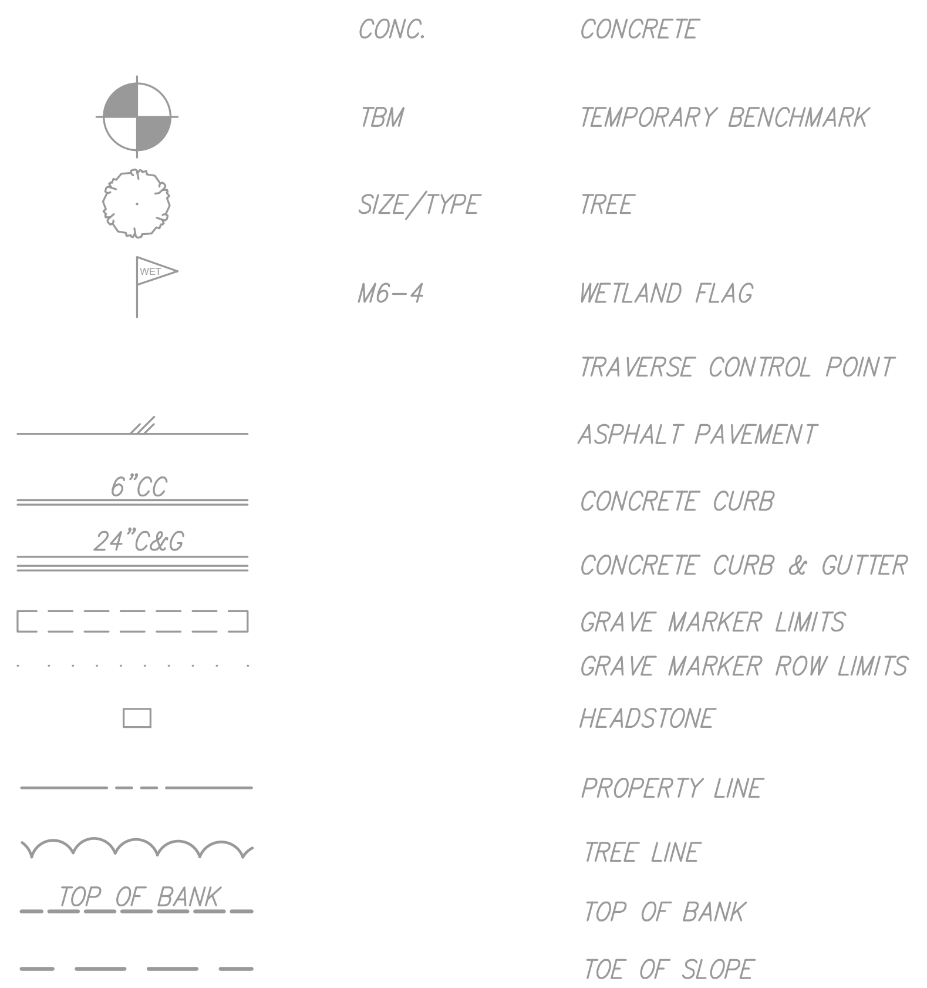
PROPOSED LINETYPES



PROPOSED HATCH



SURVEY LEGEND



REV.	DESCRIPTION	DATE	BY

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

ABBREVIATIONS, INDEX, AND LEGEND

DESIGNED BY: K. BRAY
DRAWN BY: S. KANE
CHECKED BY: A. DAVIS
APPROVED BY:
DATE:

DEPARTMENT OF PUBLIC WORKS
2233 McKANN AVENUE
NORFOLK, VA 23509

30% DESIGN
NOT FOR
CONSTRUCTION

ER No:
PCTS No:
FILE NAME: G2.DWG
DATE: JAN 2022
SCALE:

SHEET G2

PLOT DATE: 1/28/2022 10:47 AM BY: BTHARRINGTON Saved by BTHARRINGTON Save date: 1/28/2022 9:15 AM

File: O:\31473-HRD\31473-008\CAD_BIM\GENL\G2 Saved by BTHARRINGTON Save date: 1/28/2022 9:15 AM

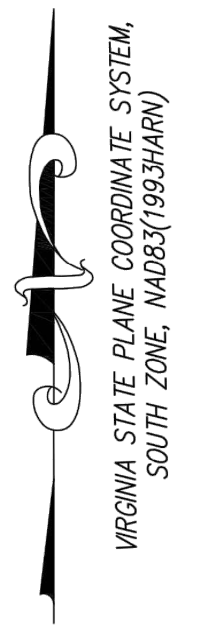
TOPOGRAPHIC SURVEY OF RIVERSIDE MEMORIAL PARK
NORFOLK, VIRGINIA
SCALE: 1"=25'
PMI PROJECT #21-416

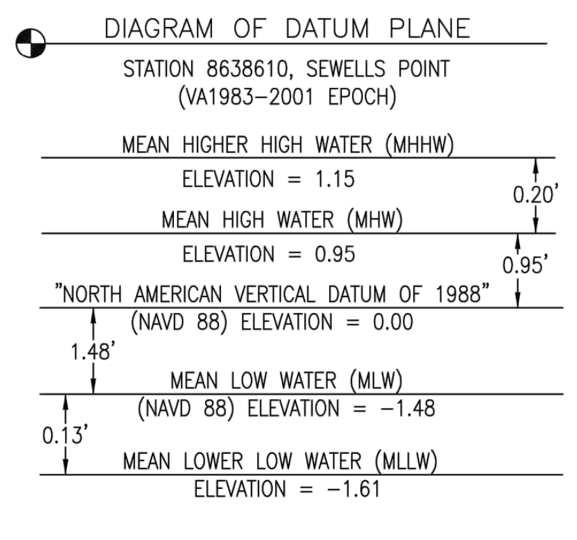
SURVEY NOTES:

1. THE MERIDIAN SOURCE OF THIS TOPOGRAPHIC SURVEY IS BASED ON THE CITY OF NORFOLK GEODETIC CONTROL NETWORK, VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM 1983/1993HARN (US SURVEY FEET).
2. ELEVATIONS REFER TO NAVD88(GEOID12a) ESTABLISHED FROM CITY OF NORFOLK CONTROL DISK BR014 (ELEVATION=13.73).
3. THIS SURVEY WAS PREPARED TO SHOW EXISTING FEATURES AS OF 11/17/2021 AND DOES NOT CERTIFY TO CHANGES TO SITE CONDITIONS WHICH OCCUR SUBSEQUENT TO THIS DATE AND OR TO PROPOSED IMPROVEMENTS.
4. THIS SURVEY DOES NOT CONSTITUTE A BOUNDARY SURVEY NOR A SUBDIVISION OF LAND.
5. PROPERTY AND RIGHT-OF-WAY LINES WERE ESTABLISHED USING A COMPILATION OF DEEDS OF RECORD, PLATS OF RECORD AND EXISTING FIELD MEASUREMENTS.
6. THIS SURVEY DOES NOT INTEND TO DEPICT ANY WETLANDS, HAZARDOUS WASTE AND ENVIRONMENTAL FEATURES THAT MAY AFFECT SAID PROPERTY EXCEPT AS SHOWN.
7. AN ELECTRONIC SWEEP OF THE AREAS USING QL-B DESIGNATION TECHNIQUES WAS PERFROMED WITH THIS SURVEY AND NO UNDERGROUND UTILITY DATA WAS FOUND.
8. THIS TOPOGRAPHY SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF IVAN LINEBERRY FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION; THAT THE PLAT, MAP, OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.

LEGEND

◐	TBM	TEMPORARY BENCHMARK
○	SIZE/TYPE	TREE
⚑	M6-4	WETLAND FLAG
		TRAVERSE CONTROL POINT
		ASPHALT PAVEMENT
6"CC		CONCRETE CURB
24"C&G		CONCRETE CURB & GUTTER
		GRAVE MARKER LIMITS
□		HEADSTONE
	CONC.	CONCRETE





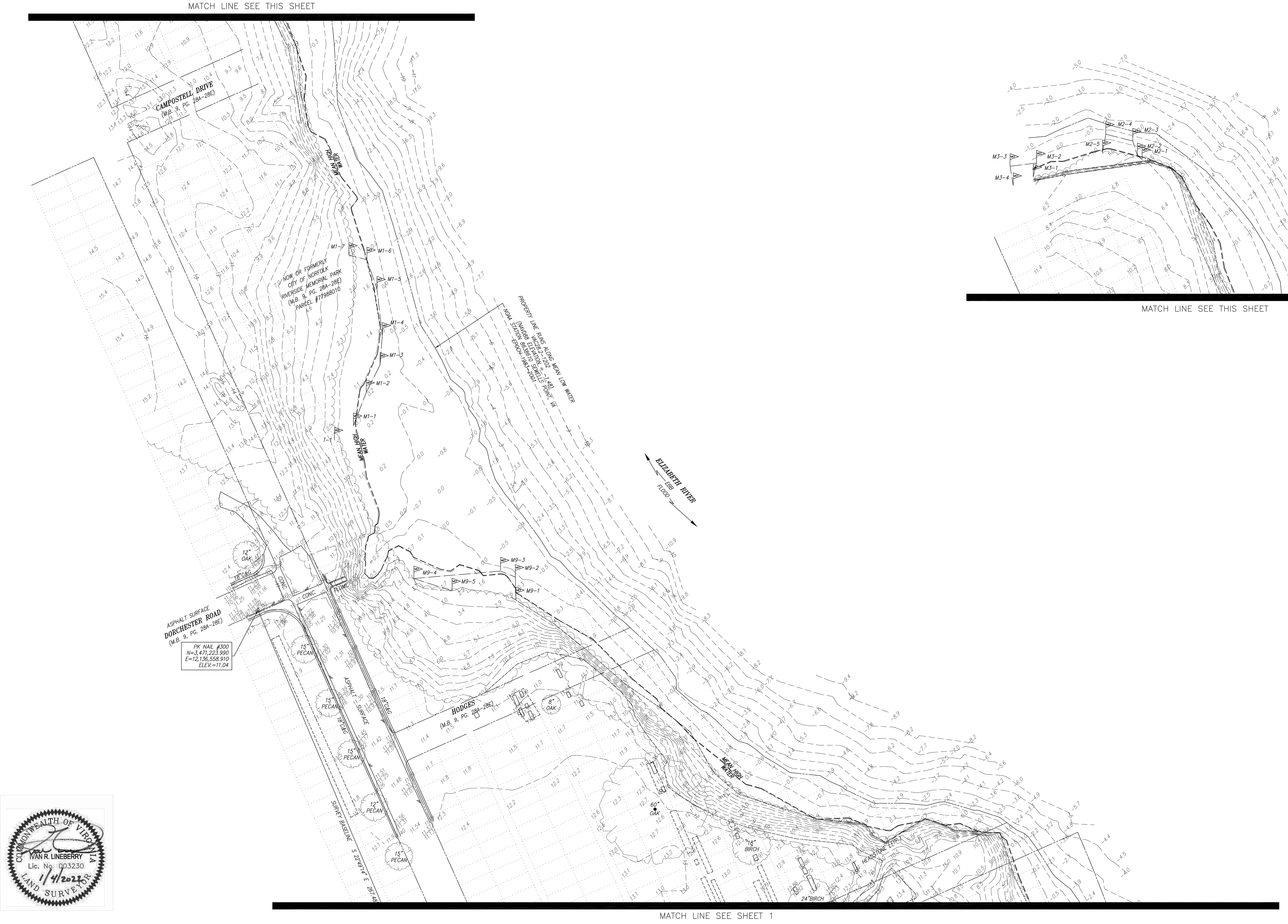
TOPOGRAPHIC SURVEY OF RIVERSIDE CEMETERY

NORFOLK, VIRGINIA
SCALE 1'=25'   JANUARY 4, 2022
SHEET 1 OF 2

PRECISION MEASUREMENTS, INC.
SURVEYORS - UAS - HYDROGRAPHIC - 3D LASER SCANNING
629 PHOENIX DRIVE, SUITE 100
VIRGINIA BEACH, VIRGINIA 23452
TEL.: (757) 368-0945
FAX: (757 368-9375
www.precisionmeasurements.com
VIRGINIA BEACH - NEWPORT NEWS - RICHMOND
CHANTILLY, VIRGINIA - BALTIMORE, MARYLAND
FORT LAUDERDALE, FLORIDA

0 25 50 75

GRAPHIC SCALE
1" = 25'



TOPOGRAPHIC SURVEY OF RIVERSIDE CEMETERY

NORFOLK, VIRGINIA
SCALE 1'=25'   JANUARY 4, 2022
SHEET 2 OF 2

PRECISION MEASUREMENTS, INC.
SURVEYORS – UAS – HYDROGRAPHIC – 3D LASER SCANNING
629 PHOENIX DRIVE, SUITE 100
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TEL.: (757) 368–0945
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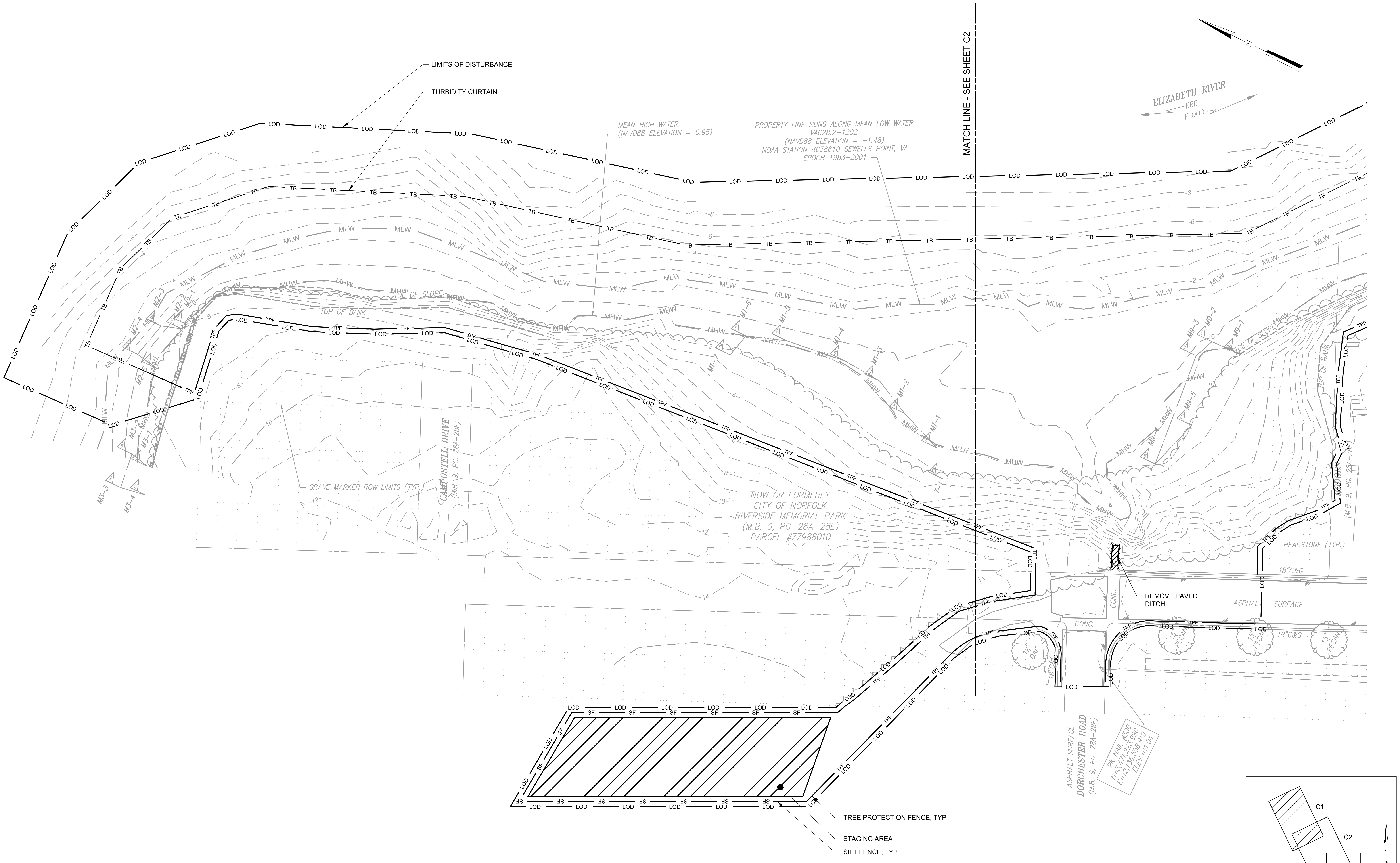
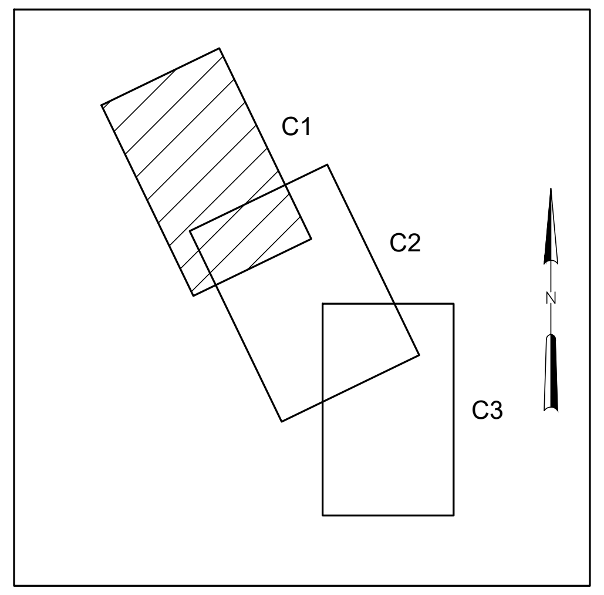
VIRGINIA BEACH – NEWPORT NEWS – RICHMOND
CHANTILLY, VIRGINIA – BALTIMORE, MARYLAND
FORT LAUDERDALE, FLORIDA

0 25 50 75
GRAPHIC SCALE
1" = 25'

IVAN R. LINEBERRY
Lic. No. 003230
1/4/2022



PLAN
SCALE: 1" = 20'



KEY PLAN

SCALE: 1" = 20'
20 10 0 20'

REV.	DESCRIPTION	DATE	BY

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

DEMOLITION AND EROSION AND SEDIMENT CONTROL PLAN - SHEET 1

DESIGNED BY: K. BRAY
DRAWN BY: B. THARRINGTON
CHECKED BY: A. DAVIS
APPROVED BY:
DATE:

DEPARTMENT OF PUBLIC WORKS
2233 McKANN AVENUE
NORFOLK, VA 23509

30% DESIGN
NOT FOR
CONSTRUCTION

ER No:	PCTS No:
FILE NAME: C1.DWG	
DATE: JAN 2022	SCALE: AS SHOWN
SHEET	C1

PLOT DATE: 1/28/2022 10:48 AM BY: BTHARRINGTON Saved by BTHARRINGTON Save date: 1/28/2022 9:19 AM

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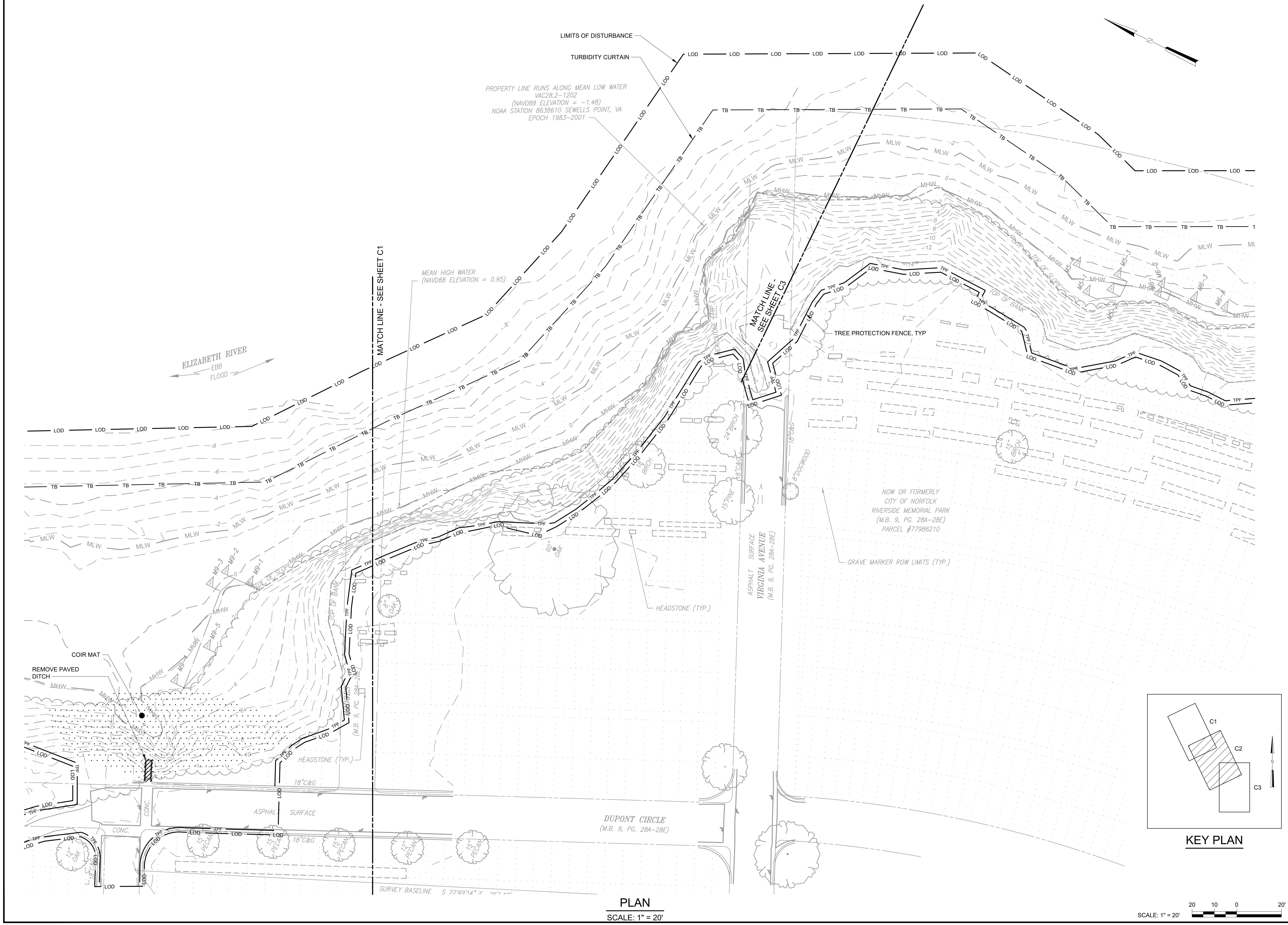

PLAN

SCALE: 1" = 20'

SCALE: 1" = 20'

20 10 0 20'

REV.	DESCRIPTION	DATE	BY

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

DEMOLITION AND EROSION AND SEDIMENT CONTROL PLAN - SHEET 2

DESIGNED BY: K. BRAY
DRAWN BY: B. THARRINGTON
CHECKED BY: A. DAVIS
APPROVED BY:
DATE:

DEPARTMENT OF PUBLIC WORKS
2233 McKANN AVENUE
NORFOLK, VA 23509

30% DESIGN
NOT FOR
CONSTRUCTION

ER No:	PCTS No:
FILE NAME: C2.DWG	
DATE: JAN 2022	SCALE: AS SHOWN

SHEET C2

PLOT DATE: 1/28/2022 10:49 AM BY: BTHARRINGTON Saved by BTHARRINGTON Save date: 1/27/2022 7:13 PM

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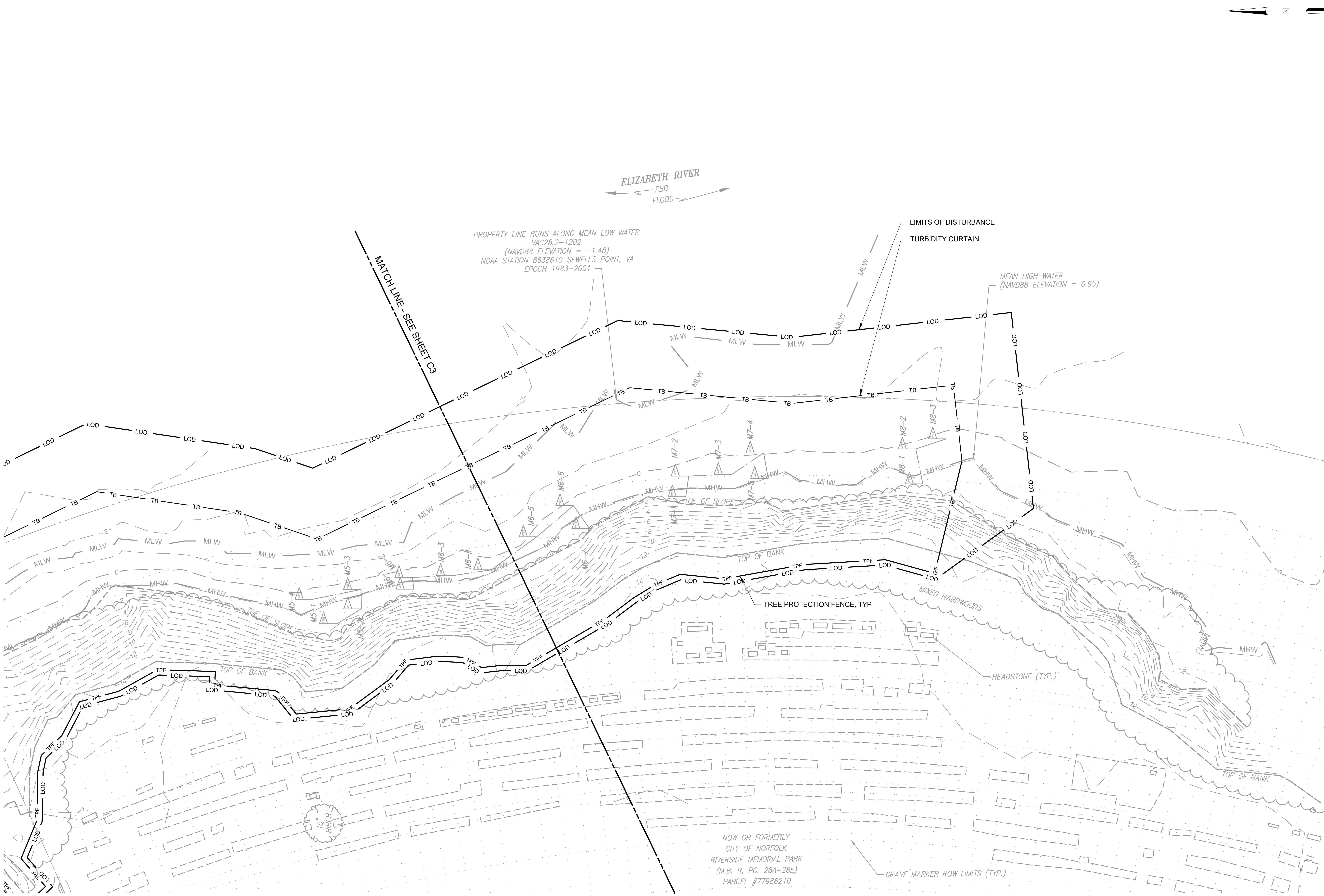
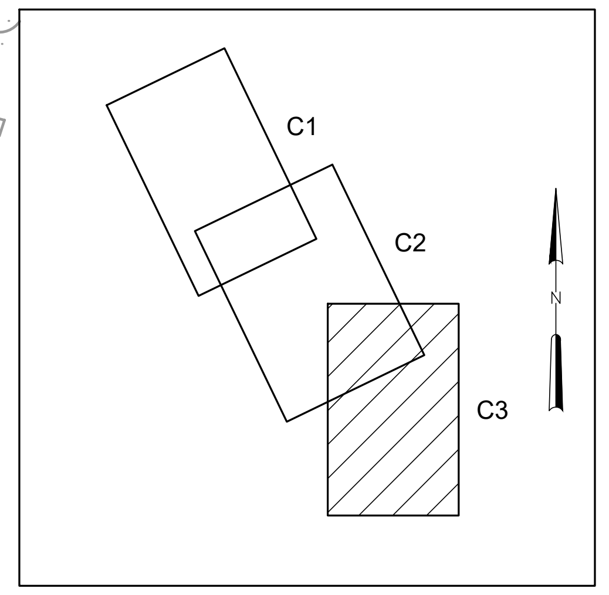


PLAN

SCALE: 1" = 20'



KEY PLAN

SCALE: 1" = 20'

REV.	DESCRIPTION	DATE	BY

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

DEMOLITION AND EROSION AND SEDIMENT CONTROL PLAN - SHEET 3

DESIGNED BY: K. BRAY
DRAWN BY: B. THARRINGTON
CHECKED BY: A. DAVIS
APPROVED BY: ______
DATE: ______

DEPARTMENT OF PUBLIC WORKS
2233 McKANN AVENUE
NORFOLK, VA 23509

30% DESIGN
NOT FOR
CONSTRUCTION

ER No:	PCTS No:
FILE NAME: C3.DWG	
DATE: JAN 2022	SCALE: AS SHOWN

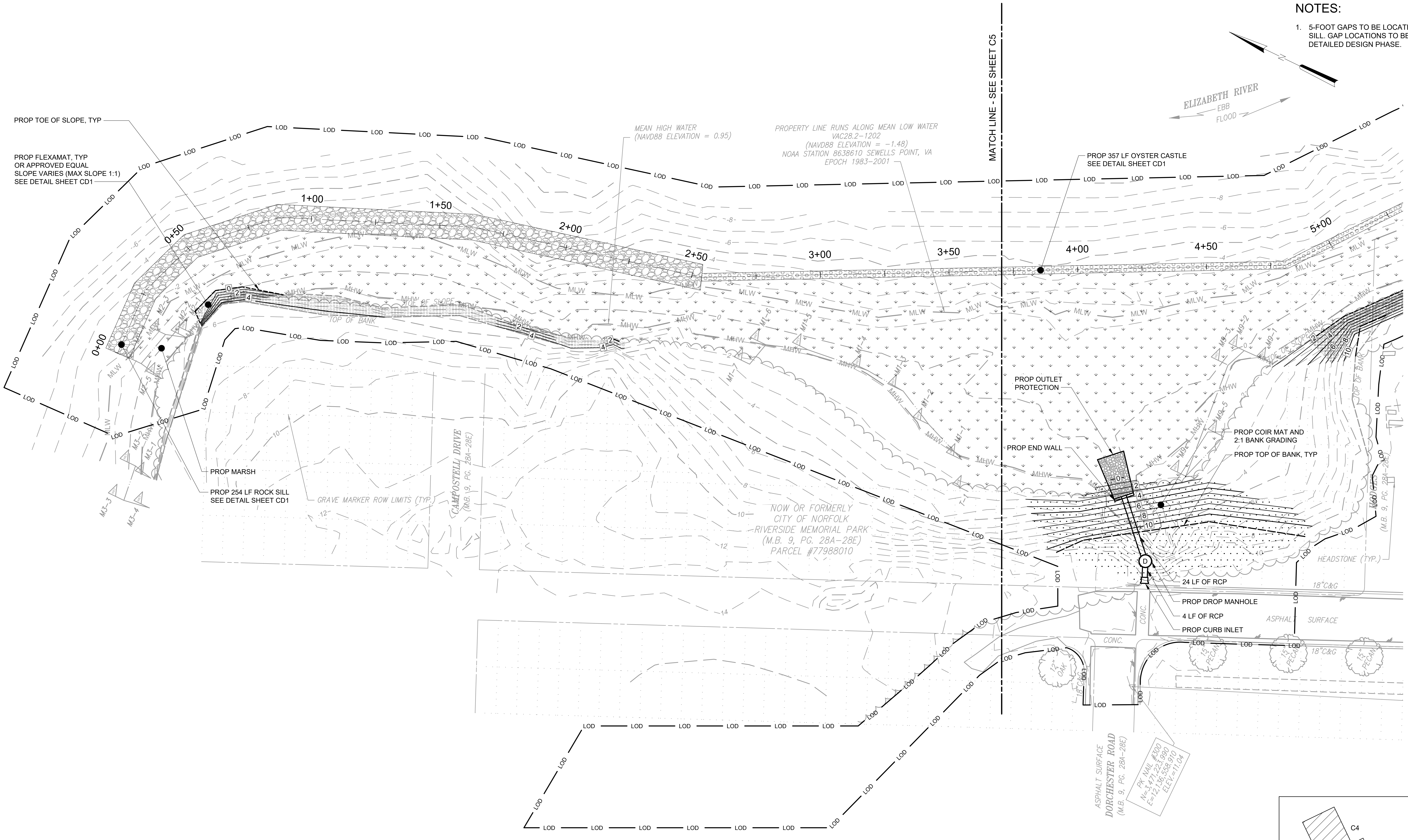
SHEET C3

PLOT DATE: 1/28/2022 10:49 AM BY: BTHARRINGTON Saved by BTHARRINGTON Save date: 1/27/2022 4:21 PM

File: O:\31473-HRD\31473-008\CAD_BIM\CIVIL\C3 Saved by BTHARRINGTON Save date: 1/27/2022 4:21 PM

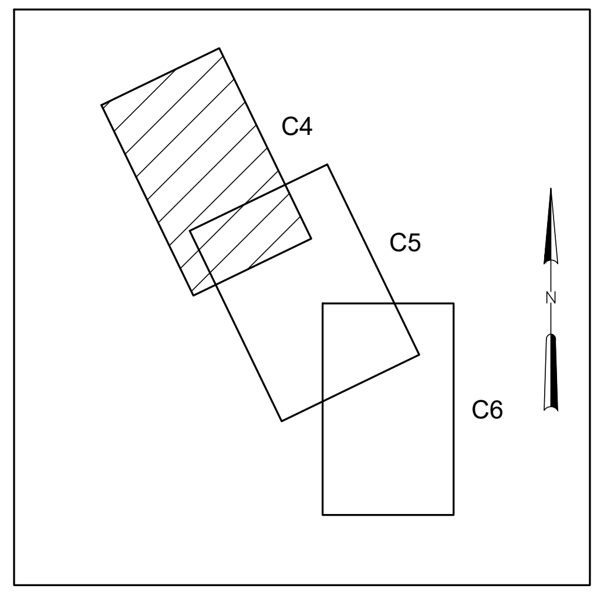
NOTES:

1. 5-FOOT GAPS TO BE LOCATED EVERY 100-FOOT OF SILL. GAP LOCATIONS TO BE DETERMINED DURING DETAILED DESIGN PHASE.



PLAN

SCALE: 1" = 20'



KEY PLAN

SCALE: 1" = 20'

REV. | DESCRIPTION | DATE | BY

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

CIVIL
SITE AND GRADING PLAN - SHEET 1

DESIGNED BY: K. BRAY
DRAWN BY: B. THARRINGTON
CHECKED BY: A. DAVIS
APPROVED BY:
DATE:

DEPARTMENT OF PUBLIC WORKS
2233 McKANN AVENUE
NORFOLK, VA 23509

30% DESIGN
NOT FOR
CONSTRUCTION

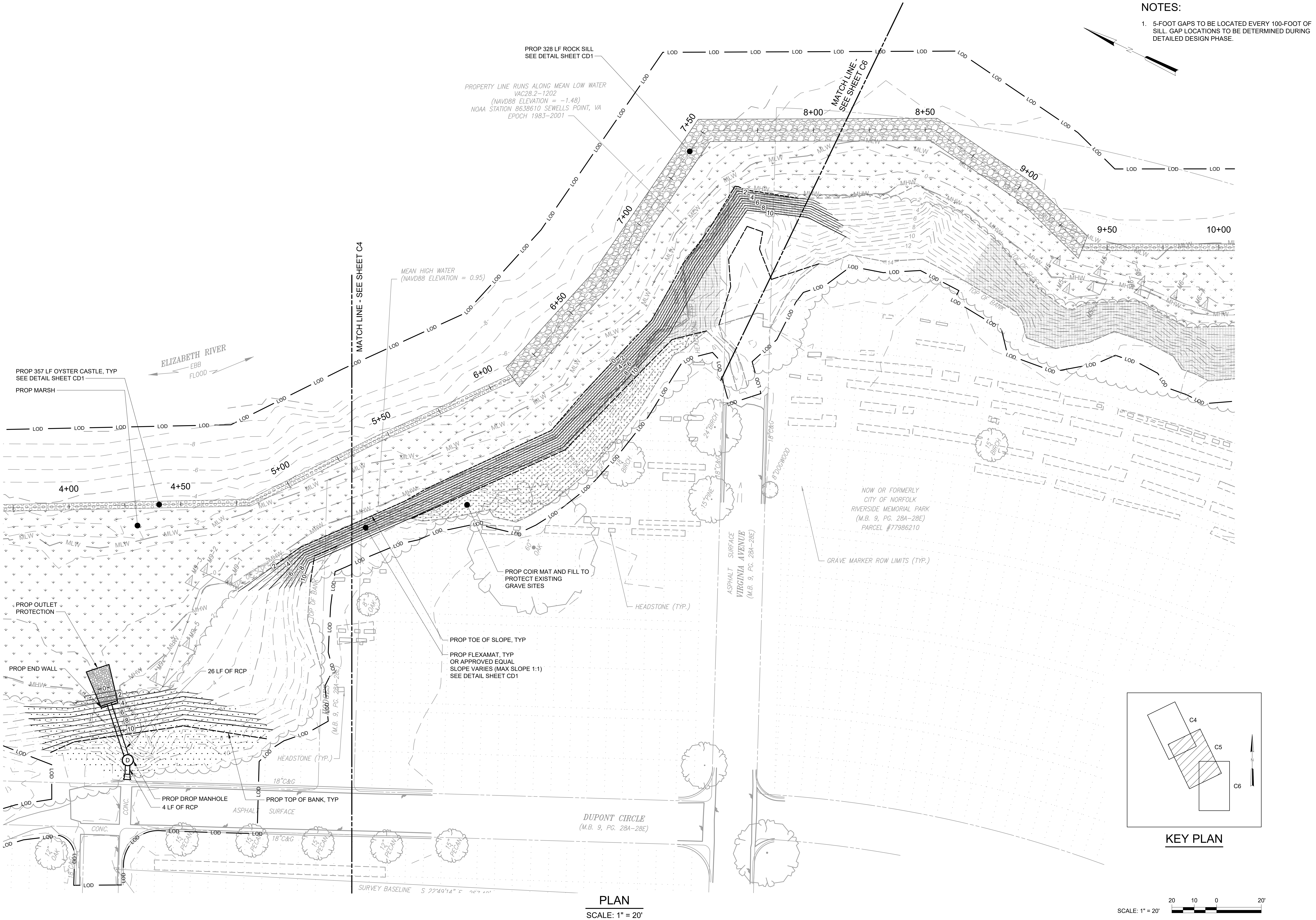
ER No:	PCTS No:
FILE NAME: C4.DWG	
DATE: JAN 2022	SCALE: AS SHOWN
SHEET C4	

PLOT DATE: 1/28/2022 10:50 AM BY: BTHARRINGTON Saved by BTHARRINGTON Save date: 1/28/2022 10:45 AM

File: O:\31473-HRD\31473-008\CAD_BIM\CIVIL\C4 Saved by BTHARRINGTON Save date: 1/28/2022 10:45 AM

NOTES:

1. 5-FOOT GAPS TO BE LOCATED EVERY 100-FOOT OF SILL. GAP LOCATIONS TO BE DETERMINED DURING DETAILED DESIGN PHASE.



KEY PLAN

PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'
20 10 0 20'

REV.	DESCRIPTION	DATE	BY

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

CIVIL
SITE AND GRADING PLAN - SHEET 2

DESIGNED BY: K. BRAY
DRAWN BY: B. THARRINGTON
CHECKED BY: A. DAVIS
APPROVED BY:
DATE:

DEPARTMENT OF PUBLIC WORKS
2233 McKANN AVENUE
NORFOLK, VA 23509

30% DESIGN
NOT FOR
CONSTRUCTION

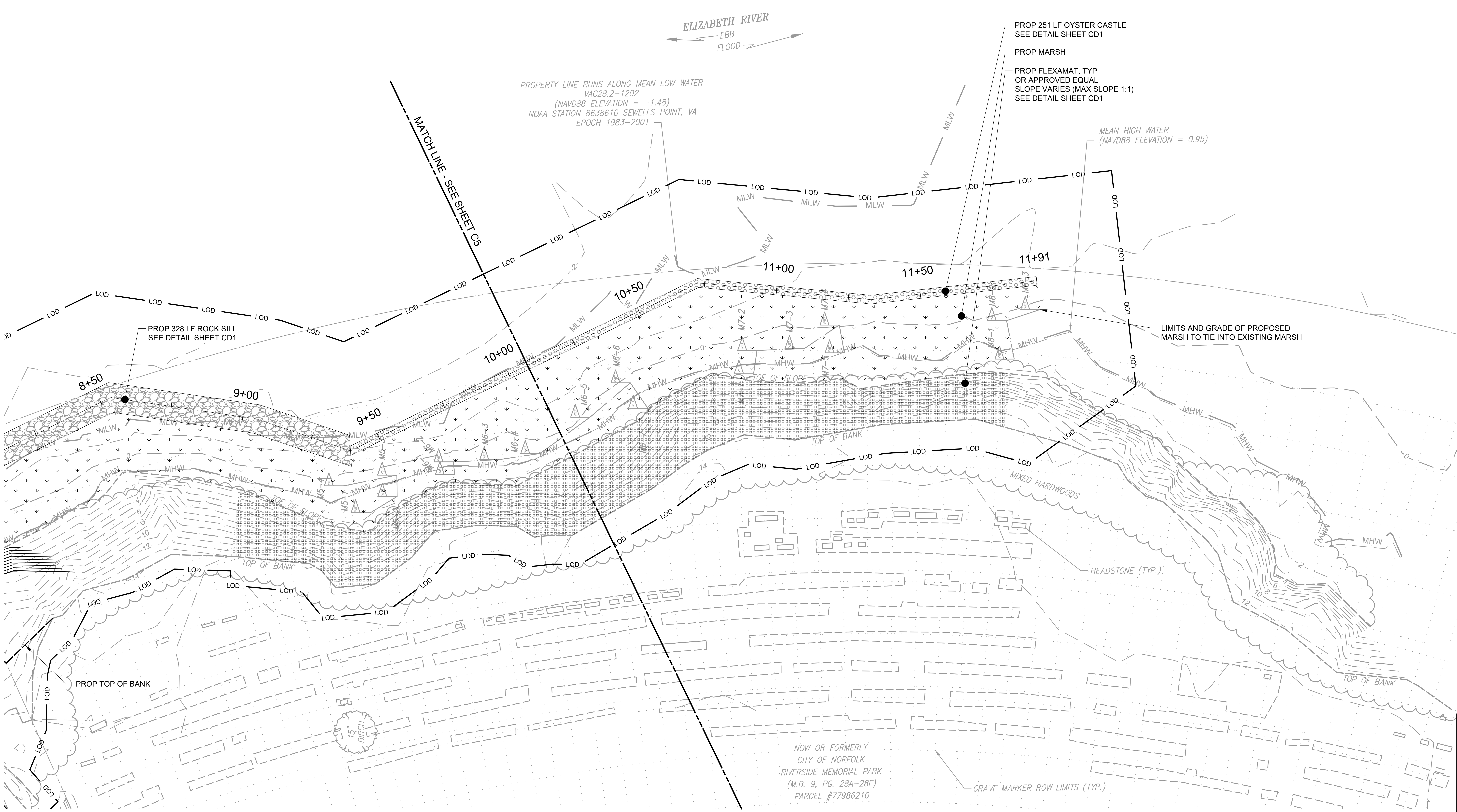
ER No: PCTS No:
FILE NAME: C5.DWG
DATE: JAN 2022 SCALE: AS SHOWN
SHEET C5

PLOT DATE: 1/28/2022 10:50 AM BY: BTHARRINGTON Saved by BTHARRINGTON Save date: 1/28/2022 10:45 AM

File: O:\31473-HRD\31473-008\CAD_BIM\CIVIL\C5 Saved by BTHARRINGTON Save date: 1/28/2022 10:45 AM

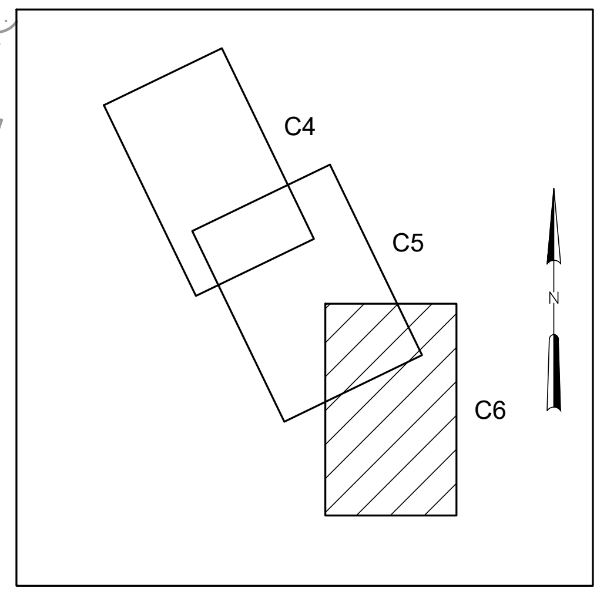
NOTES:

1. 5-FOOT GAPS TO BE LOCATED EVERY 100-FOOT OF SILL. GAP LOCATIONS TO BE DETERMINED DURING DETAILED DESIGN PHASE.



PLAN

SCALE: 1" = 20'



KEY PLAN

SCALE: 1" = 20'

20 10 0 20'

REV.	DESCRIPTION	DATE	BY

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

CIVIL
SITE AND GRADING PLAN - SHEET 3

DESIGNED BY: K. BRAY
DRAWN BY: B. THARRINGTON
CHECKED BY: A. DAVIS
APPROVED BY:
DATE:

DEPARTMENT OF PUBLIC WORKS
2233 McKANN AVENUE
NORFOLK, VA 23509

30% DESIGN
NOT FOR
CONSTRUCTION

ER No:
PCTS No:
FILE NAME: C6.DWG
DATE: JAN 2022
SCALE: AS SHOWN

SHEET C6

PLOT DATE: 1/28/2022 10:51 AM BY: BTHARRINGTON Saved by BTHARRINGTON Save date: 1/28/2022 10:44 AM

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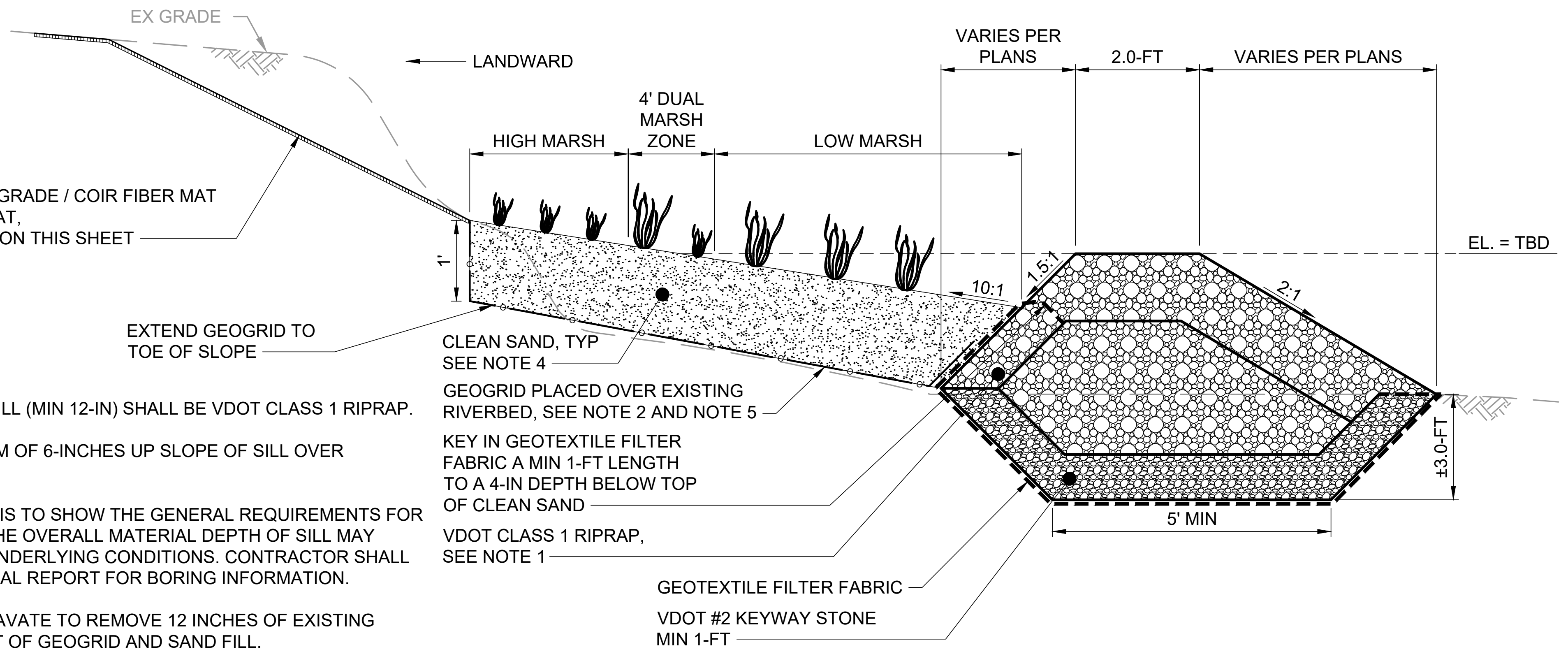
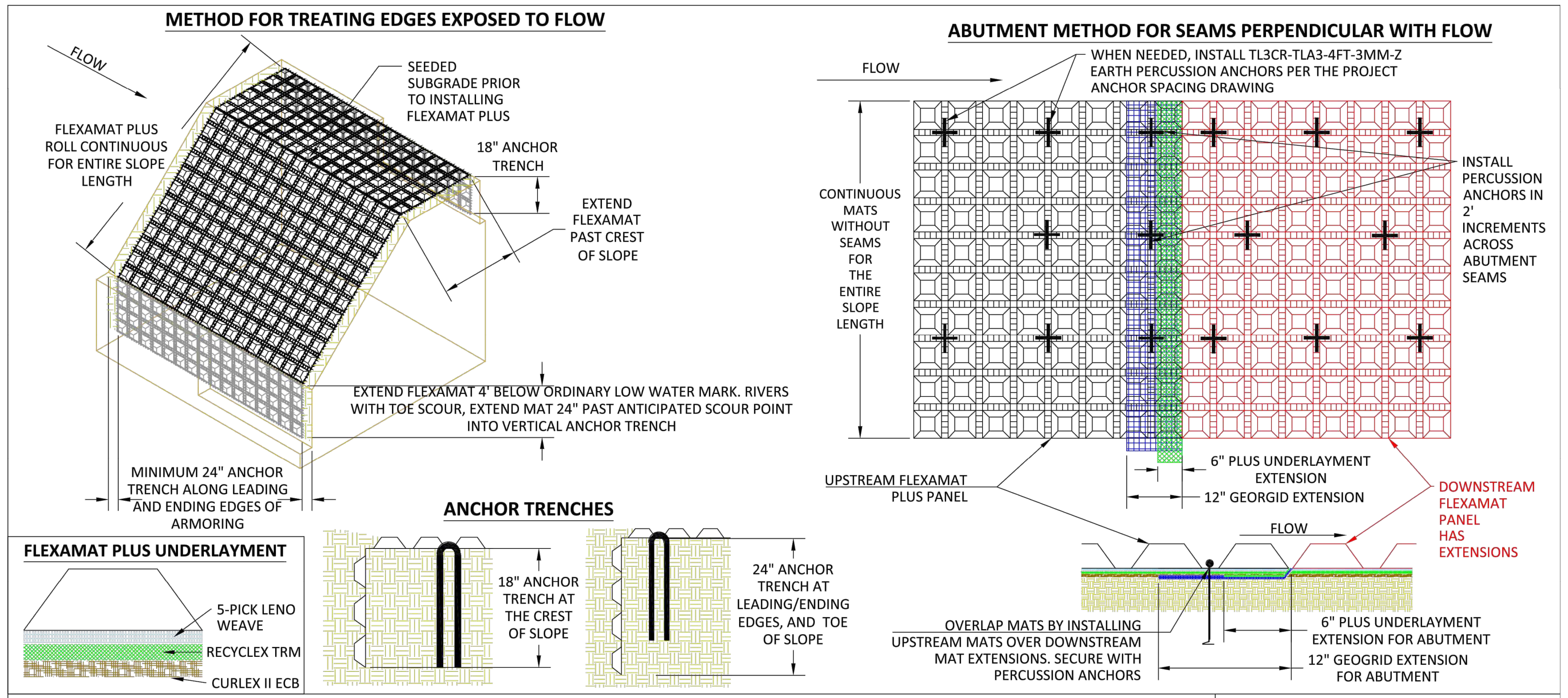


NOTES:

1. TOP LAYER OF RIPRAP ON SILL (MIN 12-IN) SHALL BE VDOT CLASS 1 RIPRAP.
2. EXTEND GEOGRID A MINIMUM OF 6-INCHES UP SLOPE OF SILL OVER GEOTEXTILE FABRIC.
3. THE INTENT OF THIS DETAIL IS TO SHOW THE GENERAL REQUIREMENTS FOR CONSTRUCTING THE SILL. THE OVERALL MATERIAL DEPTH OF SILL MAY VARY DEPENDING ON THE UNDERLYING CONDITIONS. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR BORING INFORMATION.
4. CONTRACTOR TO OVEREXCAVATE TO REMOVE 12 INCHES OF EXISTING MUCK PRIOR TO PLACEMENT OF GEOGRID AND SAND FILL.
5. GEOGRID TO BE TENSAR TRIAX TX7 OR APPROVED EQUAL.
6. SEE PLANTING PLAN FOR EXACT PLANTING ZONE EXTENTS.

STONE SILL

NTS



FLEXAMAT PLUS - RIVERBANK STEEP SLOPE ARMORING DETAIL

CONSTRUCTION NOTES:

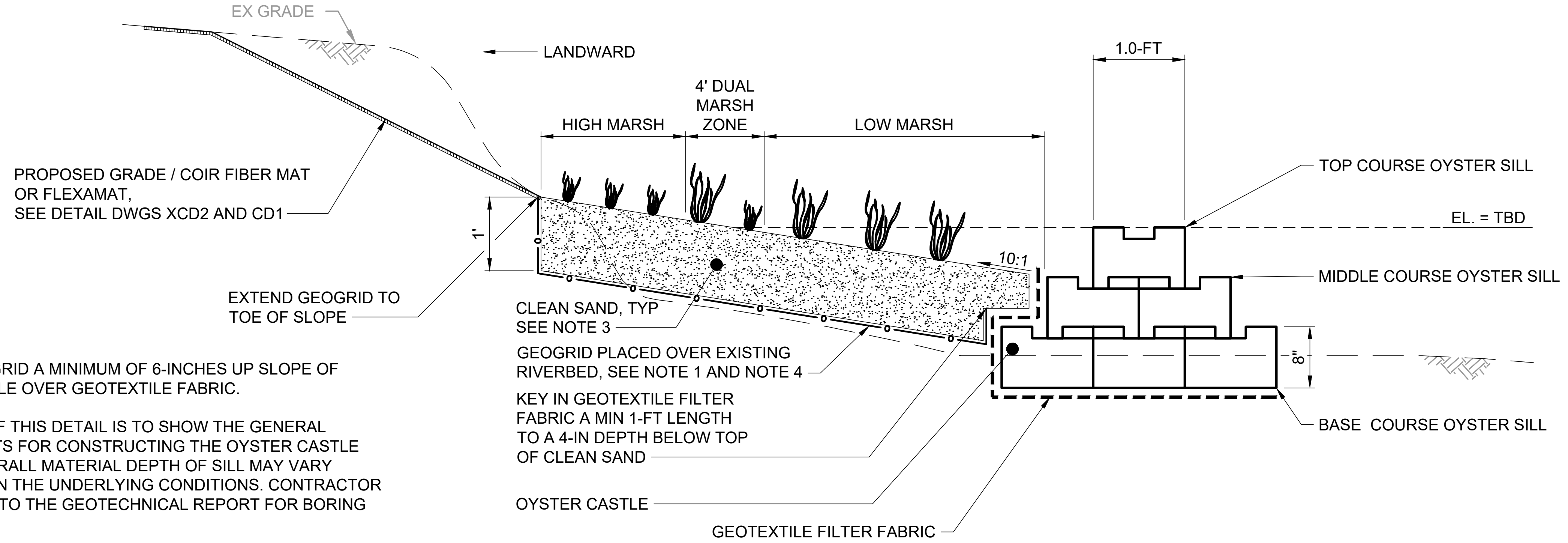
1. AN ENGINEER OR MANUFACTURER'S REPRESENTATIVE SHALL BE ONSITE FOR THE START OF THE INSTALLATION.
2. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND.
3. PRIOR TO INSTALLING MATS, SEED AND FERTILIZE OVER PREPARED SUBGRADE WITH SITE SPECIFIC MIX.
4. INSTALL FLEXAMAT ROLLS THAT ARE 15.5' WIDE WITH A 12" GEOGRID EXTENSION AND A 6" PLUS UNDERLAYMENT EXTENSION. INSTALLATION WILL START ON THE DOWNSTREAM END OF THE CHANNEL AND WORK TOWARDS THE UPSTREAM END OF THE INSTALLATION.
   - 4.1. THE TOP EDGE OF MAT SHALL EXTEND 3' PAST THE CREST OF SLOPE AND BE EMBEDDED 18".
   - 4.2. PRIOR TO INSTALLING UPSTREAM MATS ENSURE THE GEOGRID AND TRM EXTENSIONS ARE LAYING FLAT ON SUBGRADE. INSTALL UPSTREAM MATS OVER THE GEOGRID-PLUS EXTENSIONS OF DOWNSTREAM MATS.
   - 4.3. WHEN NEEDED, SECURE OVERLAPS USING TL3CR-TLA3-4FT-3MM-Z EARTH PERCUSSION ANCHORS PER THE ANCHOR SPACING DETAIL.
   - 4.4. WHEN NEEDED, INSTALL TL3CR-TLA3-4FT-3MM-Z EARTH PERCUSSION ANCHORS THROUGHOUT THE SLOPE PER THE ANCHOR SPACING DETAIL.
5. EXTEND FLEXAMAT 4' BELOW ORDINARY LOW WATER MARK. RIVERS WITH TOE SCOUR SHALL EMBED THE MAT 24" PAST THE ANTICIPATED SCOUR POINT. FILL AND COMPACT TERMINATION TRENCH WITH SUITABLE FILL.
6. LEADING AND ENDING EDGES OF THE ENTIRE FLEXAMAT SLOPE PROTECTION SHALL HAVE A MINIMUM 24" ANCHOR TRENCH. ANCHOR TRENCH SHALL EXTEND MINIMUM 24" BEYOND THE ANTICIPATED SCOUR POINT.

MOTZ ENTERPRISES, INC.

Flexamat
(513)772-6689
Info@Flexamat.com
Flexamat.com

Flexamat®
PERMANENT EROSION CONTROL

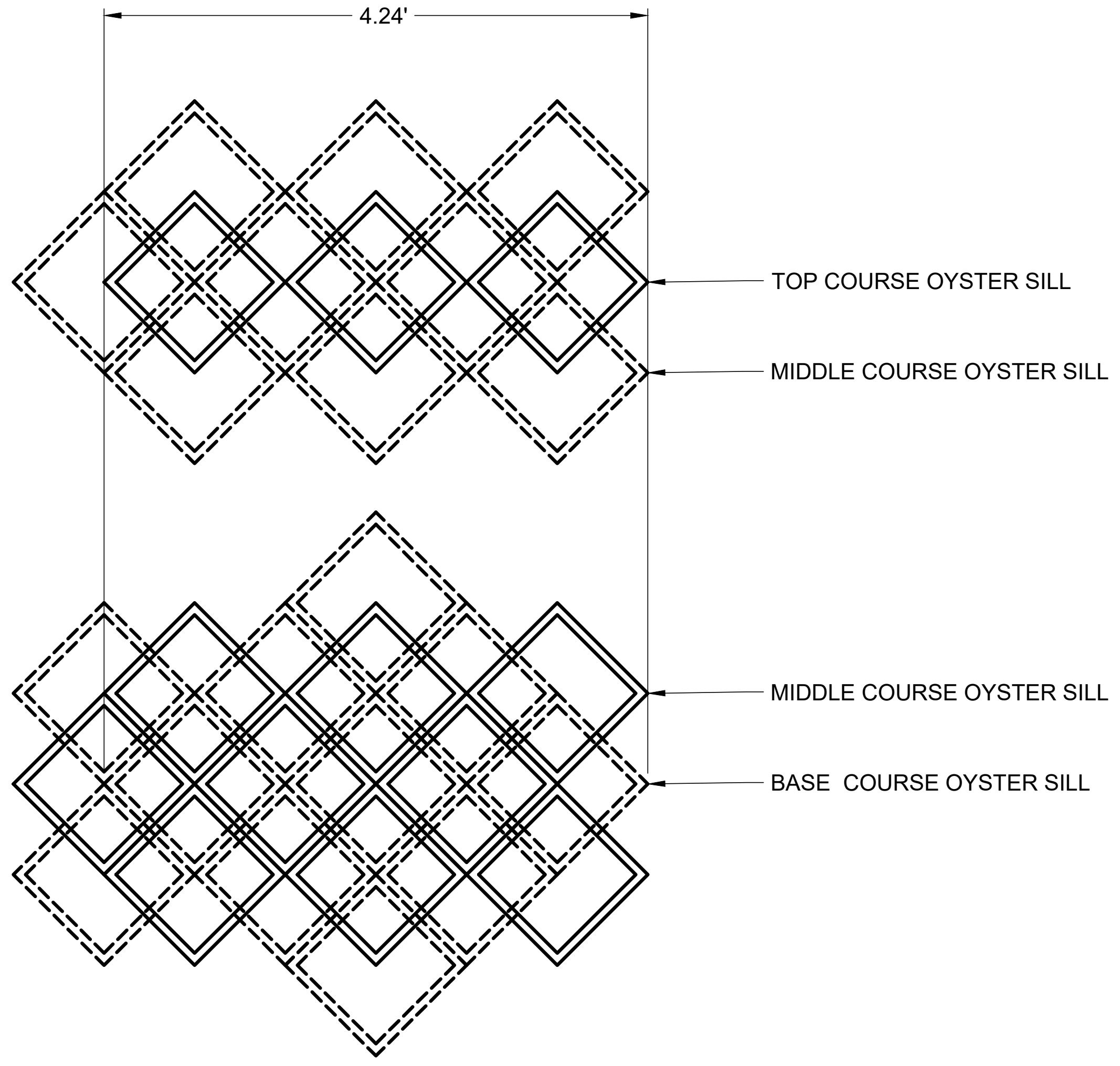
REV - 1



NOTES:

1. EXTEND GEOGRID A MINIMUM OF 6-INCHES UP SLOPE OF OYSTER CASTLE OVER GEOTEXTILE FABRIC.
2. THE INTENT OF THIS DETAIL IS TO SHOW THE GENERAL REQUIREMENTS FOR CONSTRUCTING THE OYSTER CASTLE SILL. THE OVERALL MATERIAL DEPTH OF SILL MAY VARY DEPENDING ON THE UNDERLYING CONDITIONS. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR BORING INFORMATION.
3. CONTRACTOR TO OVEREXCAVATE TO REMOVE 12 INCHES OF EXISTING MUCK PRIOR TO PLACEMENT OF GEOGRID AND SAND FILL.
4. GEOGRID TO BE TENSAR TRIAX TX7 OR APPROVED EQUAL.
5. SEE PLANTING PLAN FOR EXACT PLANTING ZONE EXTENTS.

SECTION VIEW



PLAN VIEW

OYSTER CASTLE

NTS

DA

DESCR

Hazen

HAZEN AND SAWYER
4500 MAIN STREET, SUITE 500
VIRGINIA BEACH, VIRGINIA 23462
PHONE: 757-497-0490

HAZEN PROJECT NO. 31473-008

NORFOLK DEPARTMENT OF PUBLIC WORKS
RIVERSIDE CEMETERY LIVING SHORELINE

CIVIL
STANDARD DETAILS

K. BRAY
S. KANE
A. DAVIS

DEPAR

30% DES

ER No:

CD1.DWG

JAN 2022
AS SHOWN

SHEE CD1

RIVERSIDE CEMETERY LIVING SHORELINE DESIGN

Hazen

OPINION OF PROBABLE CONSTRUCTION COSTS - POST 30% DESIGN

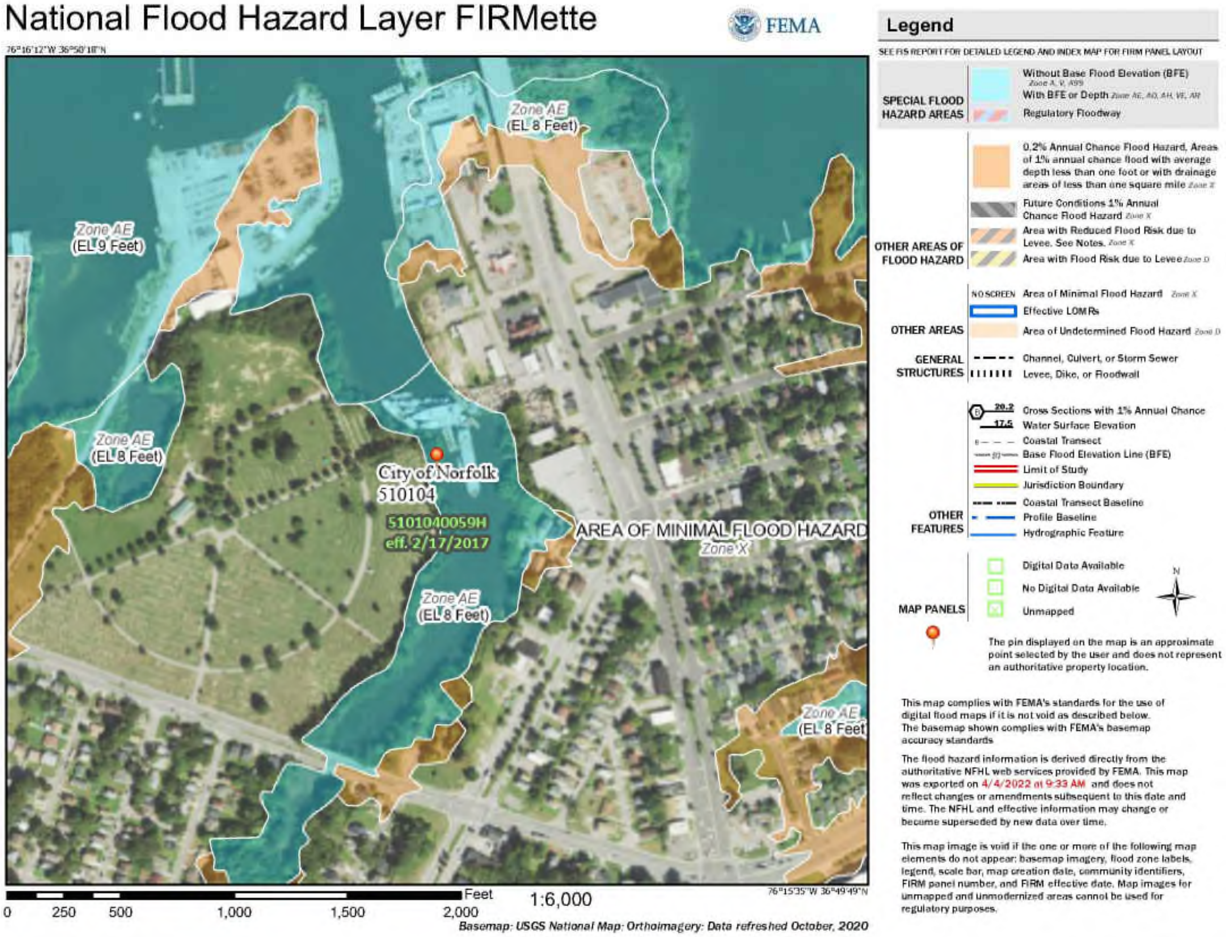
MARCH 2022

NORFOLK DEPARTMENT OF PUBLIC WORKS

BY: KAB/BRT

ITEM	DESCRIPTION	UNIT	QUANTITY	PRICE	EXTENSION
	PROJECT SETUP				
1	MOBILIZATION AND DEMOBILIZATION	LS	1	10% OF SUM	$ 124,500.00
2	PROJECT VIDEO	LS	1	$ 1,000.00	$ 1,000.00
3	SURVEY AND LAYOUT AND AS-BUILT SURVEY	LS	1	$ 27,900.00	$ 27,900.00
4	DEWATERING	LS	1	$ 100,000.00	$ 100,000.00
	EROSION AND SEDIMENT CONTROL				
5	FURNISH, INSTALL, AND REMOVE TEMPORARY CONSTRUCTION ENTRANCE	EA	1	$ 3,000.00	$ 3,000.00
6	FURNISH, INSTALL AND REMOVE SILT FENCE	LF	262	$ 5.00	$ 1,310.00
7	FURNISH, INSTALL AND REMOVE TREE PROTECTION/PLASTIC SAFETY FENCE	LF	1,823	$ 5.00	$ 9,115.00
8	FURNISH, INSTALL, AND REMOVE TURBIDITY CURTAIN	LS	1	$ 21,750.00	$ 21,750.00
9	FURNISH, INSTALL, AND REMOVE INLET PROTECTION	EA	1	$ 300.00	$ 300.00
	DEMOLITION				
10	CLEARING AND GRUBBING	SF	15,155	$ 5.00	$ 75,778.00
11	SELECT TREE REMOVAL	LS	1	$ 100,000.00	$ 100,000.00
12	REMOVE AND DISPOSE CONCRETE FLUME	LS	1	$ 1,500.00	$ 1,500.00
	BANK STABILIZATION & LIVING SHORELINE				
13	REMOVE AND DISPOSE OF RIVERBED MUCK	LS	1	$ 180,000.00	$ 180,000.00
14	FURNISH AND INSTALL COMMON EARTH BACKFILL	CY	396	$ 40.00	$ 15,900.00
15	FURNISH AND INSTALL TOPSOIL	CY	415	$ 75.00	$ 31,200.00
16	FURNISH AND INSTALL SAND FILL	TON	1,804	$ 65.00	$ 117,300.00
17	FURNISH AND INSTALL GEOGRID	SY	4,876	$ 10.00	$ 48,800.00
18	FURNISH AND INSTALL STONE SILL	LF	752	$ 250.00	$ 188,000.00
19	FURNISH AND INSTALL OYSTER CASTLES	LS	1	$7,000.00	$ 7,000.00
20	FURNISH AND INSTALL COIR FIBER MATTING	SY	622	$ 6.50	$ 4,100.00
21	FURNISH AND INSTALL FLEXAMAT (OR APPROVED EQUAL)	SF	11,736	$ 8.00	$ 93,900.00
	PAVING REPAIR & UTILITY INSTALLATION				
22	FURNISH AND INSTALL CURB INLET	EA	1	$ 5,000.00	$ 5,000.00
23	FURNISH AND INSTALL RCP PIPE	LF	30	$ 225.00	$ 6,800.00
24	FURNISH AND INSTALL 5-FOOT DIA. MANHOLE (7-FOOT HEIGHT)	EA	1	$ 10,000.00	$ 10,000.00
25	FURNISH AND INSTALL ENDWALL	EA	1	$ 4,000.00	$ 4,000.00
26	FURNISH AND INSTALL #57 BEDDING STONE	TON	3	$ 60.00	$ 200.00
	PLANTING				
27	FURNISH AND INSTALL TREES - #3 CONTAINER	EA	8	$ 150.00	$ 1,200.00
28	FURNISH AND INSTALL SHRUBS - #3 CONTAINER	EA	72	$ 45.00	$ 3,300.00
29	FURNISH AND INSTALL TUBELING PLUGS - LOW MARSH	EA	18,039	$ 4.00	$ 72,160.00
30	FURNISH AND INSTALL TUBELING PLUGS - HIGH MARSH	EA	18,039	$ 4.00	$ 72,160.00
31	FURNISH AND INSTALL WATERFOWL EXCLUSION FENCE	SY	4,009	$ 2.50	$ 10,030.00
32	FURNISH AND INSTALL RIPARIAN BUFFER SEED MIX	SY	1,805	$ 6.83	$ 12,330.00
33	FURNISH AND INSTALL TEMPORARY SEED MIX	SY	3,671	$ 0.92	$ 3,380.00
34	FURNISH AND INSTALL MAINTAINED TURF SEED MIX	SY	1,866	$ 9.02	$ 16,840.00
SUBTOTAL - RIVERSIDE CEMETERY LIVING SHORELINE DESIGN (ROUNDED)					**$ 1,400,000**
			CONSTRUCTION CONTINGENCY (ROUNDED)	**30%**	**$ 500,000**
TOTAL - RIVERSIDE CEMETERY LIVING SHORELINE DESIGN (ROUNDED)					**$ 1,900,000**

Unit price reflects current market bid pricing



National Flood Hazard Layer FIRMette

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- - - -	Channel, Culvert, or Storm Sewer
	❙❙❙❙❙❙❙	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2	Cross Sections with 1% Annual Chance
	17.5	Water Surface Elevation
	8 - - -	Coastal Transect
	—513—	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	— —	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

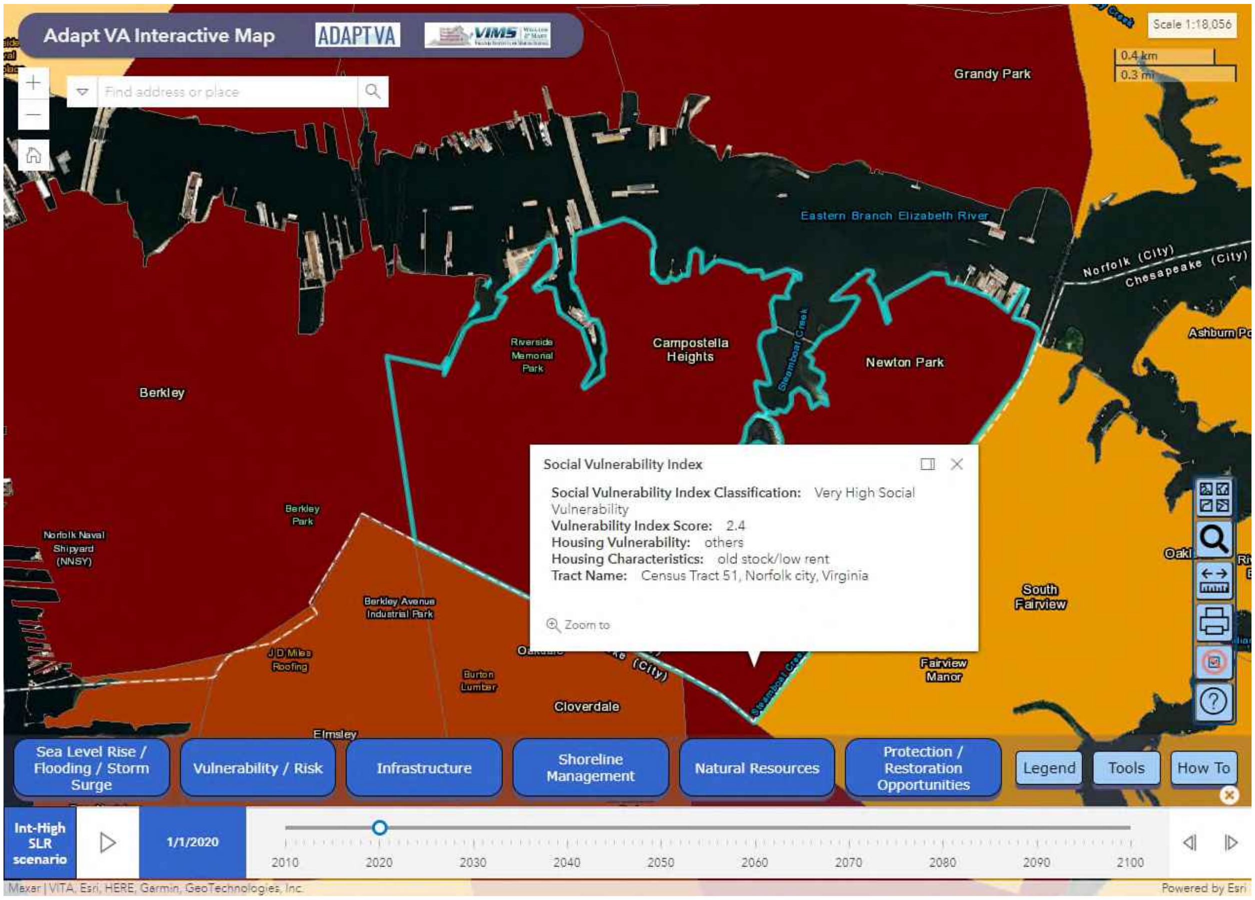
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/4/2022 at 9:33 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

THE CITY OF NORFOLK



Social Vulnerability Index

Social Vulnerability Index Classification: Very High Social Vulnerability
Vulnerability Index Score: 2.4
Housing Vulnerability: others
Housing Characteristics: old stock/low rent
Tract Name: Census Tract 51, Norfolk city, Virginia

Key Facts

517100051.00

517100051.00 (51710005100)

Geography: Census Tract

City of Norfolk

KEY FACTS

4,629

Population

27.3

Median Age

3.0

Average Household Size

$28,671

Median Household Income

EDUCATION

21%

No High School Diploma

30%

High School Graduate

32%

Some College

16%

Bachelor's/Grad/Prof Degree

BUSINESS

65

Total Businesses

854

Total Employees

EMPLOYMENT

55%

White Collar

23%

Blue Collar

22%

Services

9.9%

Unemployment Rate

INCOME

$28,671

Median Household Income

$14,100

Per Capita Income

$12,451

Median Net Worth

Households By Income

The largest group: <$15,000 (26.1%)

The smallest group: $200,000+ (0.0%)

Indicator ▲	Value	Diff
<$15,000	26.1%	+12.4%
$15,000 - $24,999	16.2%	+7.3%
$25,000 - $34,999	17.2%	+5.9%
$35,000 - $49,999	12.7%	+0.3%
$50,000 - $74,999	8.6%	-11.5%
$75,000 - $99,999	8.9%	-4.2%
$100,000 - $149,999	6.3%	-5.5%
$150,000 - $199,999	4.1%	-1.2%
$200,000+	0.0%	-3.6%

Bars show deviation from Norfolk city

This infographic contains data provided by Esri, Esri and Data Axle. The vintage of the data is 2021, 2026.

Source: This infographic contains data provided by Esri, Esri and Data Axle. The vintage of the data is 2021, 2026.

Demographic and Income Comparison Profile

517100051.00
517100051.00 (51710005100)
Geography: Census Tract

Prepared by Esri

	51710005100
Census 2010 Summary	
Population	4,522
Households	1,487
Families	1,057
Average Household Size	3.03
Owner Occupied Housing Units	464
Renter Occupied Housing Units	1,023
Median Age	24.4
2021 Summary	
Population	4,629
Households	1,519
Families	1,070
Average Household Size	3.04
Owner Occupied Housing Units	507
Renter Occupied Housing Units	1,012
Median Age	27.3
Median Household Income	$28,671
Average Household Income	$42,944
2026 Summary	
Population	4,655
Households	1,527
Families	1,073
Average Household Size	3.04
Owner Occupied Housing Units	534
Renter Occupied Housing Units	993
Median Age	28.5
Median Household Income	$30,328
Average Household Income	$47,790
Trends: 2021-2026 Annual Rate	
Population	0.11%
Households	0.11%
Families	0.06%
Owner Households	1.04%
Median Household Income	1.13%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

April 03, 2022

Demographic and Income Comparison Profile

517100051.00
517100051.00 (51710005100)
Geography: Census Tract

Prepared by Esri

	51710005100	
2021 Households by Income	**Number**	**Percent**
<$15,000	396	26.1%
$15,000 - $24,999	246	16.2%
$25,000 - $34,999	261	17.2%
$35,000 - $49,999	193	12.7%
$50,000 - $74,999	131	8.6%
$75,000 - $99,999	135	8.9%
$100,000 - $149,999	95	6.3%
$150,000 - $199,999	62	4.1%
$200,000+	0	0.0%
Median Household Income	$28,671	
Average Household Income	$42,944	
Per Capita Income	$14,100	
2026 Households by Income	**Number**	**Percent**
<$15,000	358	23.4%
$15,000 - $24,999	236	15.5%
$25,000 - $34,999	275	18.0%
$35,000 - $49,999	196	12.8%
$50,000 - $74,999	131	8.6%
$75,000 - $99,999	144	9.4%
$100,000 - $149,999	110	7.2%
$150,000 - $199,999	77	5.0%
$200,000+	0	0.0%
Median Household Income	$30,328	
Average Household Income	$47,790	
Per Capita Income	$15,685	

Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

April 03, 2022

Demographic and Income Comparison Profile

517100051.00
517100051.00 (51710005100)
Geography: Census Tract

Prepared by Esri

	51710005100	
2010 Population by Age	**Number**	**Percent**
Age 0 - 4	544	12.0%
Age 5 - 9	573	12.7%
Age 10 - 14	439	9.7%
Age 15 - 19	417	9.2%
Age 20 - 24	330	7.3%
Age 25 - 34	608	13.4%
Age 35 - 44	427	9.4%
Age 45 - 54	491	10.9%
Age 55 - 64	328	7.3%
Age 65 - 74	176	3.9%
Age 75 - 84	129	2.9%
Age 85+	60	1.3%

2021 Population by Age	**Number**	**Percent**
Age 0 - 4	494	10.7%
Age 5 - 9	477	10.3%
Age 10 - 14	444	9.6%
Age 15 - 19	428	9.2%
Age 20 - 24	315	6.8%
Age 25 - 34	627	13.5%
Age 35 - 44	523	11.3%
Age 45 - 54	387	8.4%
Age 55 - 64	446	9.6%
Age 65 - 74	296	6.4%
Age 75 - 84	131	2.8%
Age 85+	61	1.3%

2026 Population by Age	**Number**	**Percent**
Age 0 - 4	482	10.4%
Age 5 - 9	454	9.8%
Age 10 - 14	425	9.1%
Age 15 - 19	385	8.3%
Age 20 - 24	372	8.0%
Age 25 - 34	593	12.7%
Age 35 - 44	541	11.6%
Age 45 - 54	446	9.6%
Age 55 - 64	383	8.2%
Age 65 - 74	360	7.7%
Age 75 - 84	159	3.4%
Age 85+	55	1.2%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

April 03, 2022

Demographic and Income Comparison Profile

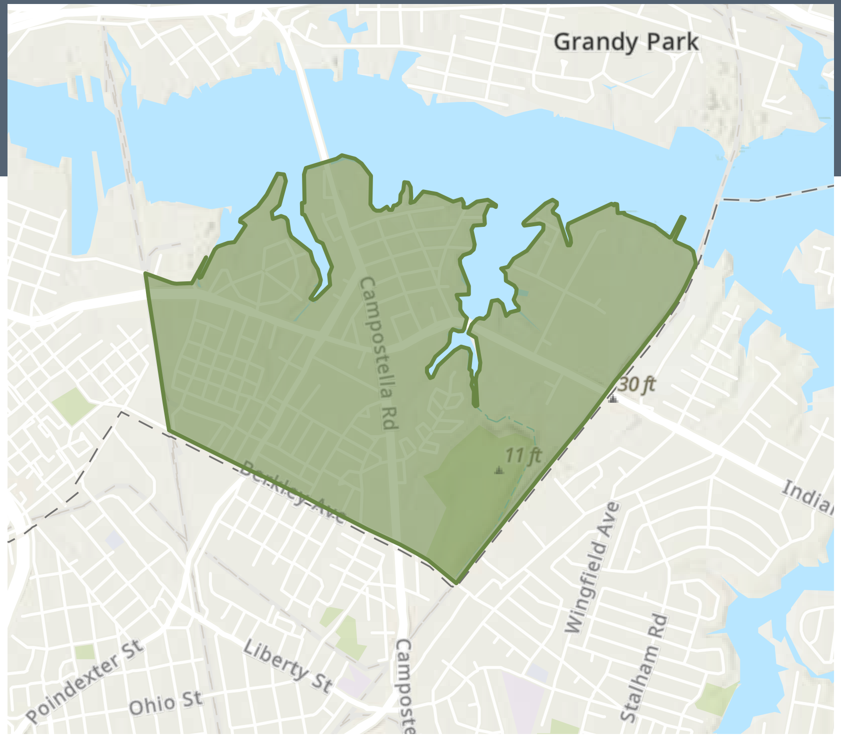
517100051.00
517100051.00 (51710005100)
Geography: Census Tract

Prepared by Esri

	51710005100	
2010 Race and Ethnicity	**Number**	**Percent**
White Alone	173	3.8%
Black Alone	4,208	93.1%
American Indian Alone	13	0.3%
Asian Alone	20	0.4%
Pacific Islander Alone	1	0.0%
Some Other Race Alone	37	0.8%
Two or More Races	70	1.5%
Hispanic Origin (Any Race)	116	2.6%
2021 Race and Ethnicity	**Number**	**Percent**
White Alone	206	4.5%
Black Alone	4,230	91.4%
American Indian Alone	14	0.3%
Asian Alone	27	0.6%
Pacific Islander Alone	2	0.0%
Some Other Race Alone	51	1.1%
Two or More Races	99	2.1%
Hispanic Origin (Any Race)	166	3.6%
2026 Race and Ethnicity	**Number**	**Percent**
White Alone	208	4.5%
Black Alone	4,254	91.4%
American Indian Alone	14	0.3%
Asian Alone	27	0.6%
Pacific Islander Alone	2	0.0%
Some Other Race Alone	51	1.1%
Two or More Races	99	2.1%
Hispanic Origin (Any Race)	166	3.6%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

April 03, 2022



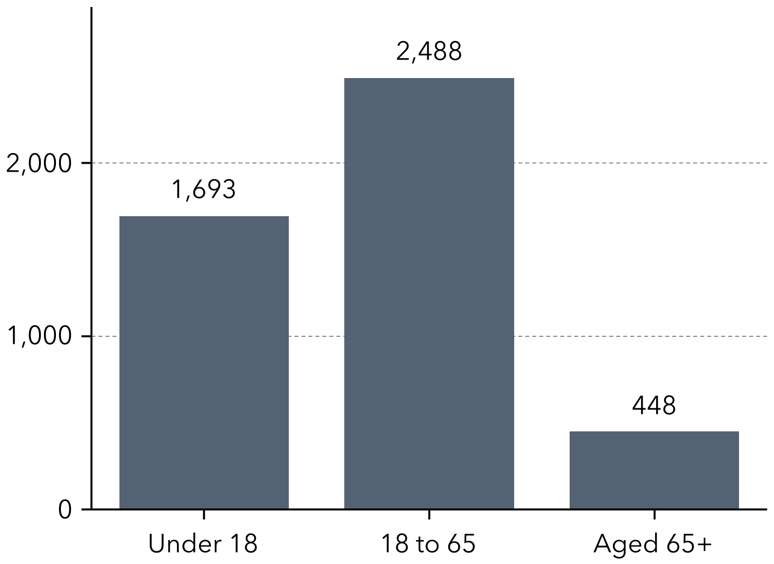
AT RISK POPULATION PROFILE

517100051.00

Geography: Census Tract

4,629	1,519	3.04	27.3	$28,671	$224,010	31	69	22
Population	Households	Avg Size Household	Median Age	Median Household Income	Median Home Value	Wealth Index	Housing Affordability	Diversity Index

POPULATION BY AGE



AT RISK POPULATION

374	488	369
Households With Disability	Population 65+	Households Without Vehicle

POVERTY AND LANGUAGE

40%	594	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

POPULATION AND BUSINESSES

4,041	65	854
Daytime Population	Total Businesses	Total Employees

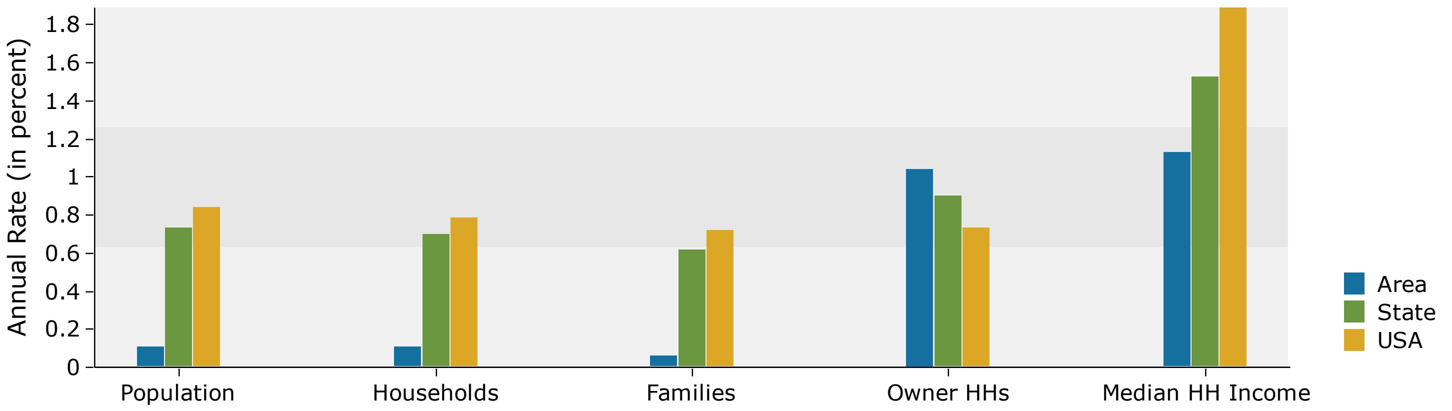
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**1,077**	**2,214**	**265**	**3,556**
Spanish	**0**	**10**	**0**	**10**
Spanish & English Well	0	10	0	10
Spanish & English Not Well	0	0	0	0
Spanish & No English	0	0	0	0
Indo-European	**0**	**0**	**0**	**0**
Indo-European & English Well	0	0	0	0
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**0**	**103**	**0**	**103**
Asian-Pacific Isl & English Well	0	103	0	103
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**32**	**64**	**0**	**96**
Other Language & English Well	32	64	0	96
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

Source: Esri forecasts for 2021, U.S. Census Bureau 2015-2019 American Community Survey (ACS) Data,

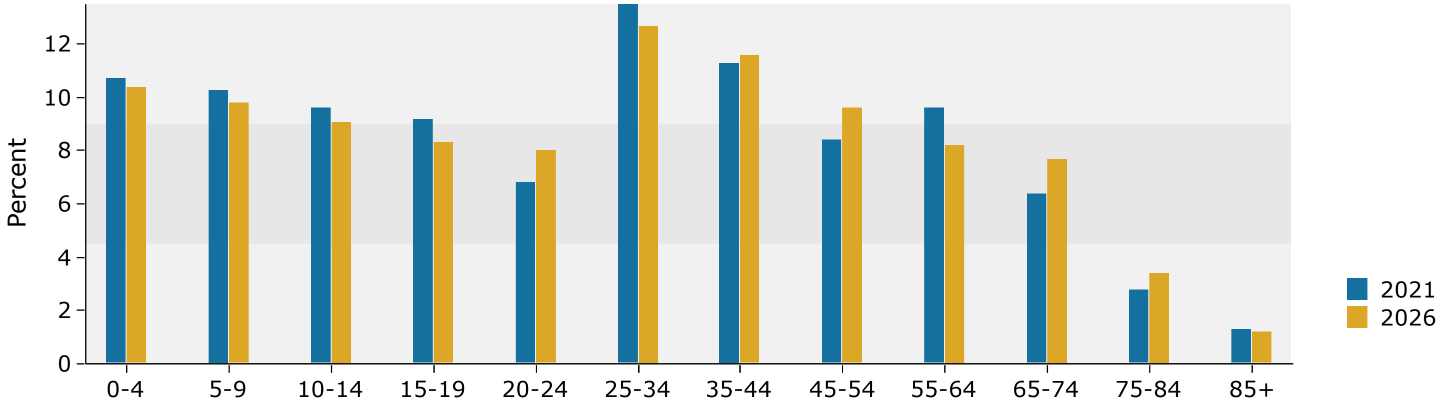
Source: This infographic contains data provided by Esri, American Community Survey (ACS), Esri and Data Axle. The vintage of the data is 2021, 2026, 2015-2019.

51710005100

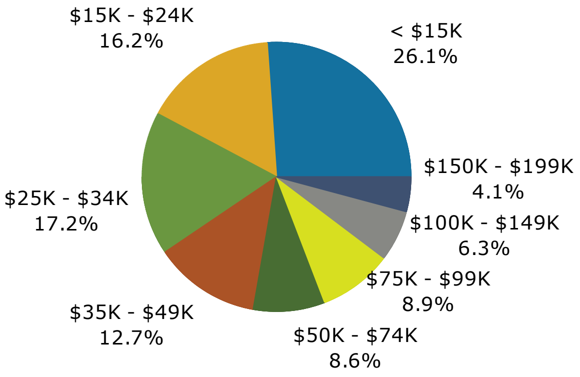
Trends 2021-2026



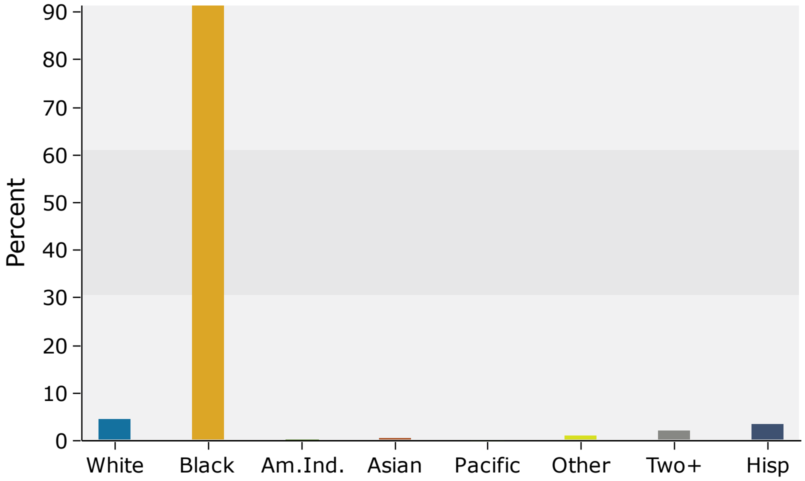
Population by Age



2021 Household Income



2021 Population by Race



Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026.

Community Profile

517100051.00

517100051.00 (51710005100)

Geography: Census Tract

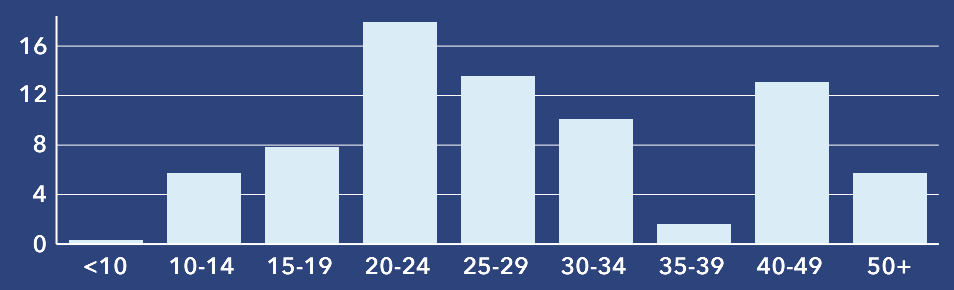
City of Norfolk

COMMUNITY PROFILE

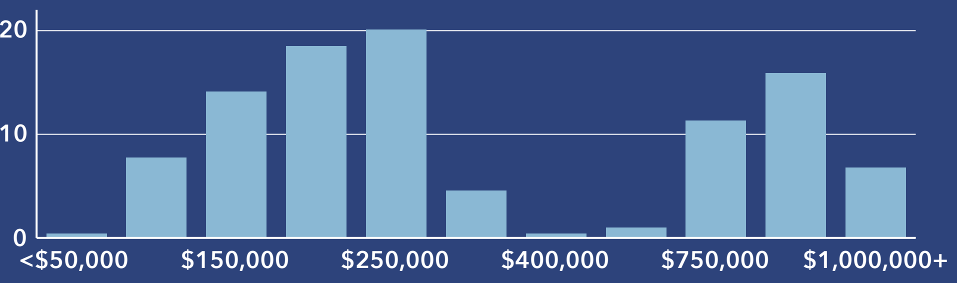
Population Total	Population Growth	Average HH Size	Diversity Index	Median Age	Median HH Income	Median Home Value	Median Net Worth	Under 18	Ages 18-65	Aged 66+
4,629	0.2%	3.04	22.1	27.3	$28,671	$224,010	$12,451	36.6%	53.7%	8.4%

Services	Blue Collar	White Collar
30.2%	23.1%	46.6%

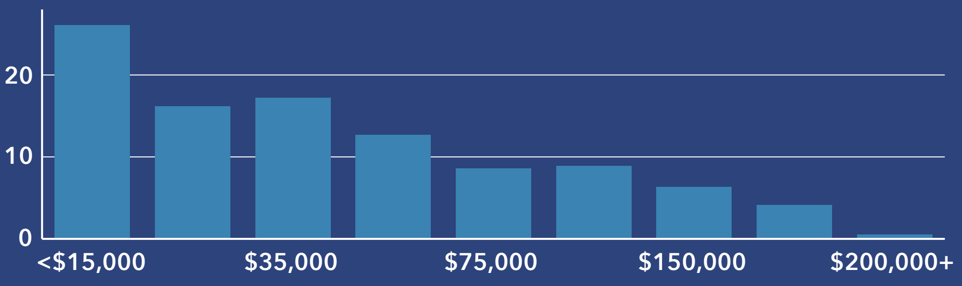
Mortgage as Percent of Salary



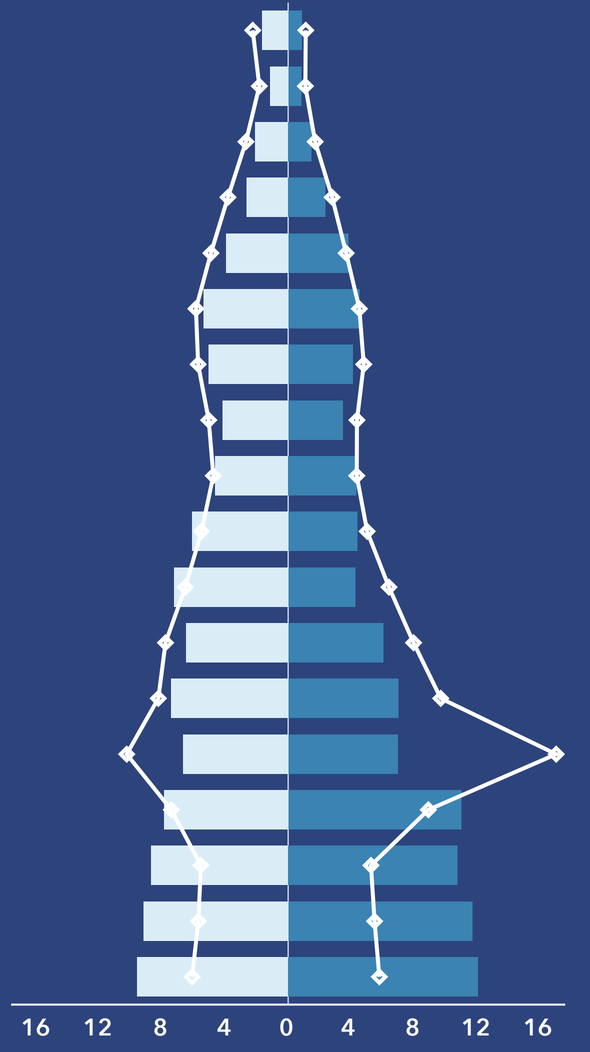
Home Value



Household Income

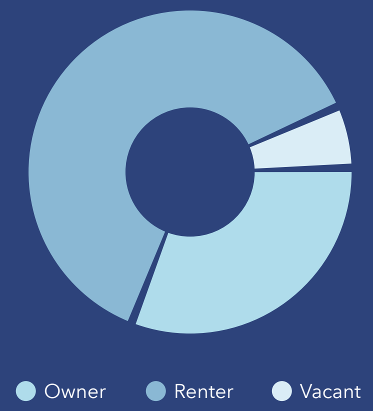


Age Profile: 5 Year Increments

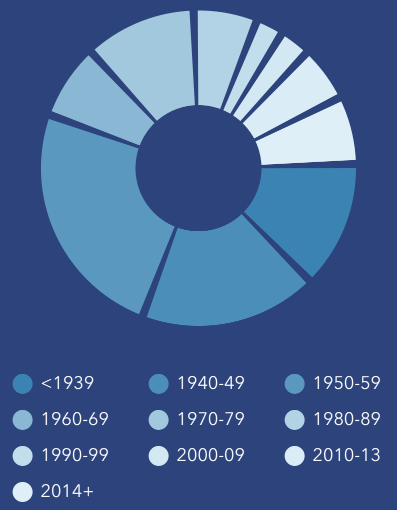


Dots show comparison to Norfolk city

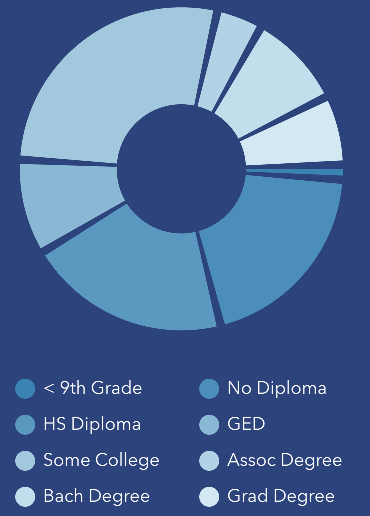
Home Ownership



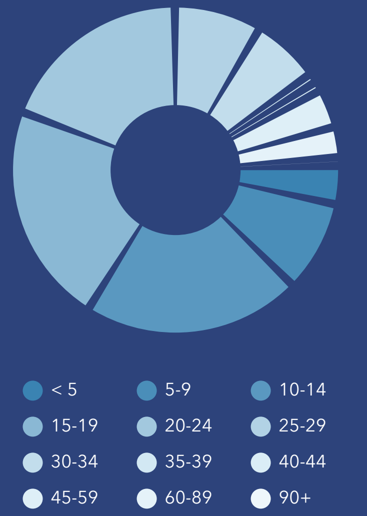
Housing: Year Built



Educational Attainment



Commute Time: Minutes



Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2021 and 2026. Version 1.2

Source: This infographic contains data provided by Esri, American Community Survey (ACS). The vintage of the data is 2021, 2015-2019, 2026.

THE CITY OF NORFOLK

Maintenance and Management Plan

Shoreline restoration projects often provide water quality benefits and are managed as best management practices (BMP) by the City of Norfolk. Department of Public Works- Division of Environmental Storm Water Management is responsible for most public BMPs, including living shorelines. Per Part I, Section B.2.(h) of the City's Municipal Separate Storm Sewer (MS4) permit and section 2.8 of Division of Environmental Storm Water Management's Program Plan, public BMPs are inspected and maintained annually or more often if needed based on inspections or resident concerns. Both documents are linked below. A Division SOP provides additional information and is provided below.

Three dedicated operations crews maintain vegetated features such as shorelines, ponds, and ditches and additional crews are available to assist with structural repairs. On-call contractors are also available for larger maintenance tasks. These crews and contractors are funded through a dedicated storm water fee. The project will be monitored monthly for the first year to ensure no erosion has started and will be inspected at least once per year afterwards. Any necessary repairs to the bank or shoreline vegetation, grading, or structures will be conducted by Division of Environmental Storm Water Management operations staff or on-call contractors.

Norfolk MS4 Permit

Norfolk Division of Environmental Storm Water Management Program Plan

SOP 654

DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENVIRONMENTAL
STORM WATER MANAGEMENT
STORM WATER BMP INSPECTIONS

DATE WRITTEN: March 8, 2005
DATE REVISED: June 28, 2017; September 18, 2018; November 25, 2019; February 10, 2020
PREPARED BY: Kyle Quick, Environmental Specialist; June Whitehurst, Environmental Programs Manager
REVIEWED BY: John M. White, Storm Water Engineer
FILE PATH: Enter Link Here

DISTRIBUTION: Operations Personnel

PURPOSE / OBJECTIVE:

To define guidelines for the inspection and enforcement for the installation and maintenance of all private and city-owned storm water structural best management practices (BMPs). BMPs reduce unwanted contaminants and/or the volume of storm water entering the City MS4 system and local waterways. BMPs are regularly inspected to ensure they are working as designed and maintained in such a manner to not cause flooding, become a nuisance, or impose a threat to health and safety.

RESPONSIBILITIES:

Division – The Department of Public Works, Division of Environmental Storm Water Management is the administrator of the MS4 VPDES Permit, VA0088650. Environmental staff ensures compliance with the VPDES permit associated with BMP inspections to the storm water system. State law requires BMPs to be inspected once every 5-years. The City's MS4 permit requires city-owned BMPs be inspected and maintained once per year.

Environmental Staff develop and maintain a list of BMPs within the geographic boundary of the City of Norfolk. This list is routinely updated following site plan review. Environmental staff conduct routine inspections of both private and public storm water BMPs.

OTHER:

BMPs are used to reduce pollution in and/or volume of storm water runoff, thereby protecting area waterways. Some examples of structural storm water BMPs include infiltration trenches, grass swales, detention basins, retention ponds, oil/grit separators, bioretention basins, manufactured BMPs, etc.

REQUIREMENTS:

1. BMPs are approved for installation after an extensive site plan review by a designated storm water engineer. All pertinent information pertaining to the BMPs are entered into the current BMP tracking database.

2. As part of the site plan approval process, a Declaration of Covenants for Storm and Surface Water Facility and System Maintenance (BMP Maintenance Agreement) should be signed and notarized by the owner or responsible party of the private property being developed to maintain the BMP after construction. That party will remain responsible for all maintenance until the property is sold; at which time the new owner is responsible for maintaining the BMP. A copy of the agreement is filed with the clerk of the court by the owner or responsible party. A copy of the agreement is also maintained in the site plan file at the Division.

3. Storm water management (SWM) facilities or BMPs are required to be installed in accordance with the approved plans, and manufacturers' specifications where applicable. The City of Norfolk Planning Department, Building Safety Bureau will inspect the installation of onsite stormwater piping and structures. The Department of Public Works, Environmental Storm Water Management

staff will inspect the installation of BMPs. Additionally, they also inspect stormwater piping and structures within the City Right-of-Way and piping that ties into the City's MS4 system. During construction, environmental staff will have completed the following procedures:

a. A pre-construction meeting will be scheduled to go over expectations. Pre-construction meetings will be documented.

b. Follow up inspections with the contractor will occur throughout the construction process to verify that the BMPs are installed in accordance with the approved plans. These inspections should take place before any backfilling occurs and should include pictures for documentation. If there is a tie-in to the city system, a storm water inspector will inspect the tie-in.

c. A construction record drawing ("As-built" submission) signed and sealed by a professional registered in Virginia will be reviewed by a storm water engineer or their designee to verify the SWM facilities have been installed per the approved plan.

d. A final inspection will be performed by the environmental staff to ensure that the BMP and contributing drainage areas are stabilized. The inspector will also ensure that the site is free of excessive litter or debris, sediment build up, or erosion, and no deviations from the approved construction record drawing.

e. Upon approval of the construction record drawing and the final inspection, the environmental staff will approve the release of the Certificate of Occupancy (if required) and approval to terminate bonds for stormwater improvements.

4. All privately-owned and city-owned BMP inspections are tracked in the current BMP tracking database. The database enables the Division to maintain inspection data and to ensure inspections are completed on a routine schedule.

5. When an inspection is conducted, the following items are checked to ensure that the BMP will consistently perform its water quality improvement and/or runoff reduction functions.

a. *Sediment Buildup*: Sediment buildup can reduce the effectiveness of the BMP by blocking inlets and outlets, reducing infiltration rates, and reducing effectiveness of pretreatment practices.

b. *Erosion*: Erosion can lead to reduced volume of the BMP and/or structural failure. Erosion is a common problem around inlets and outlets of BMPs, and may also be caused by roots of woody vegetation and animal burrows.

c. *Debris and Litter Removal*: Regular removal of litter and debris is essential to ensure the BMP is working properly. The BMP must be free from debris and litter in or around the BMP structure.

d. *Vegetation*: Vegetation must be established and maintained to guard against erosion and sediment buildup, and to maintain designed pollutant removal rates where applicable. Excessive vegetation clippings must be removed from the BMP and disposed of properly.

e. *Deviation from the Construction Record Drawing*: Verify a property owner, tenant, or other responsible party has not modified a post-construction BMP without written approval from the City of Norfolk Department of Public Works storm water engineer, or their designee.

   f. *Manufactured BMPs*: The owner or responsible party are required to maintain manufactured BMPs in accordance with the manufacturer's specifications, and to provide evidence of continued maintenance by copies of maintenance records and/or photographic proof.

   g. *Other Maintenance Concerns*: Refer to the Virginia Department of Environmental Quality Stormwater Design Specifications for other BMP maintenance concerns.

6. The environmental staff will complete an inspection report and track inspections in the current BMP tracking database. The responsible party will either be sent an email or a letter that lists the BMP maintenance discrepancies and includes a copy of the inspection report, if necessary. The responsible party will have a specified time-period to complete the maintenance after the report has been sent. A re-inspection will occur after the allotted time-period to ensure all corrections have been made. If the inspector has had no contact from the property owner, if letters have been returned, or if the discrepancies have not been addressed a Notice of Violation (NOV) may be sent or issued. If no progress occurs after the NOV has been issued, further legal actions should be taken. The City also holds the right to conduct the corrections after proper warning, and then charge the responsible party for any financial obligations. If the BMP is working properly and does not appear to have any maintenance discrepancies, a note will be made in the file and no report will be sent to the responsible party.

7. Routine maintenance for any City-owned BMP is conducted by the Division which is submitted in a service request and put into the work management tracking system. The City-owned BMPs must also follow all the guidelines established above.

8. The Norfolk Public Schools BMPs are inspected by the environmental staff, however, the school board facilities manager is the main point of contact for any discrepancies regarding BMP maintenance at school facilities. The school board is responsible for maintaining the BMPs and if major work is required beyond the capabilities of facilities personnel, then they will hire a contractor.

Approved:

____
John M. White
Storm Water Engineer
Public Works, Division of Environmental Storm Water Management

DS
AV

DS
TH

THE CITY OF NORFOLK

For CM Office use only:
DTS # ________________

DOCUMENT TRANSMITTAL FORM

DS
AMS

Use for All City Documents Which Require the City Manager's Staff Approval

*** PLEASE INDICATE IF THERE IS A LEGITIMATE DUE DATE BY WHICH THE CITY MANAGER MUST RESPOND ***

Due Date: ____4/8/2022__ Return Completed Document To: __Stephanie Daniel, Office of Resilience_

DEPARTMENT	Resilience & Stormwater
A. TO BE COMPLETED FOR CONTRACTS, AGREEMENTS, RFPS, AND GRANTS:	
TITLE	DCR Community Flood Preparedness April 2022 Application (2 applications): Riverside Memorial Park Project and USACE Floodwall Project
PARTY (Company and principal's names with which the City is entering into the agreement.)	Virginia Department of Conservation and Recreation (DCR)
EFFECTIVE DATES (Start & end dates)	Upon award with 36-month performance period
TOTAL DOLLAR VALUE	**Riverside Memorial Park Project:** $1,900,000 ($1,520,000 grant request; $380,000 match) **USACE Floodwall Project:** $160,731,286 ($28,127,975 grant request; local match of $28,127,975 and federal match of $104,475,336)
FUNDING SOURCE (Operating or capital budget; budget year; grant or other source. Show account information)	**RIVERSIDE MEMORIAL PARK PROJECT FUNDING SOURCE:** STORMWATER **ACCOUNT:** 2300 35 4305 5583 FY23 ($380,000 for Riverside Memorial Park Project) **USACE FLOODWALL MATCH:** FY23 CIP Funding $28,127,975 and federal match of $104,475,336
TYPE (New or extension)	New Grant Application
SUMMARY OF SCOPE OF SERVICE/ PROGRAM	The City is applying for funds to support the City's USACE Floodwall Project Federal Authorization (Resilience) match requirement and for a project to support shoreline work at Riverside Memorial Park (Stormwater).
CALL OUTS (Indicate any unique circumstances regarding provisions such as procurement protest pending, emergency purchase or other time sensitivity, so forth, along with any other pertinent information)	The grant submission package is due electronically to DCR by 4/8/22 by 4pm EST.
B. TO BE COMPLETED FOR HUMAN RESOURCES DOCUMENTS:	
TYPE OF DOCUMENT:	N/A
BRIEF DESCRIPTION: N/A	

Certificate of Satisfaction: *I (We) hereby certify that all reasonable due diligence has been performed to sufficiently develop the contents and implications of the attached document in a manner to protect and account to the public.* ***Further, all City policies and procedures have been adhered to and therefore, I (we) recommend the City Manager execute this document.***

4/4/22
Document Owner Date

DocuSigned by:
Richard Broad
EB3D3D3E47F1434...
4/5/2022 | 8:57 AM EDT
Department Head Signature Date

Matt Simons 4/4/22
Document Owner Date

Kyle W. Spencer 4/4/22
Department Head Signature Date

Review by DCM **Approve ☐** **Disapprove ☐**

DocuSigned by:
Patrick Roberts
AE9580A303FB478...
4/7/2022 | 7:35 AM EDT
Deputy City Manager Date

Review by CM **Approve ☐** **Disapprove ☐**

DocuSigned by:
C45AA22E7D6047B...
4/7/2022 | 6:47 AM PDT
City Manager Date

Matthew J. Strickler
Secretary of Natural and Historic
Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of
Administration and Finance

Nathan Burrell
Deputy Director of
Government and Community Relations

Darryl M. Glover
Deputy Director of
Dam Safety & Floodplain
Management and Soil & Water
Conservation

Thomas L. Smith
Deputy Director of
Operations

August 9, 2021

Matt Simons, AICP CZA CFM
Principal Planner and Floodplain Administrator
Department of Planning and Community Development
810 Union St, Suite 508
Norfolk, VA 23510

RE: City of Norfolk Resilience Plan Second Submission - CFPF

Dear Mr. Simons:

Thank you for providing an overview of your Resilience Plan, and informing DCR of the various plans that the City of Norfolk will be utilizing to fulfill the Resilience Plan submission requirements. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the June 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on August 8, 2024.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

    a. Project-based: Nine watersheds—each with a defined geographic area, analysis of community social and environmental characteristics, types of flooding, and a tailored flood resilience strategy divided into 15 project areas, each with discrete projects identified.

    b. Projects focused on flood control and resilience included city-wide and various coastal projects and a specific project in Chesterfield Heights.

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

    a. Natural and nature-based flood management measures are identified for use in projects throughout the city in the *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*, the *Combined Coastal and Precipitation Flooding Master Plan*, the *Hampton Roads Mitigation Plan* and *A Green Infrastructure Plan for Norfolk: Building Resilient Communities*.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**

    a. All parts of a locality: Locality divided into 9 watersheds, with 90 planning districts covering the entirety of the jurisdictional boundary.

    b. Social vulnerability: Social implications of flood hazards and analysis of populations at-risk documented in the USACE *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*, the *Combined Coastal and Precipitation Flooding Master Plan* and in *PlaNorfolk 2030*.

    c. Demographic Analysis: Demographic Analysis conducted by USACE, utilizing U.S. Census Bureau, Bureau of Labor and Statistics, Virginia Employment Commision, and other information from local planning agencies, and incorporated into the *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**

    a. Coordination with other projects, plans, and activities: Contains the planning processes and frameworks which outline local and regional plans used by the City and address resilience; and how they have been integrated for flood adaptation planning.

    b. Clearly articulated timeline or phasing for plan implementation: 5 year timeline presented in the *Combined Coastal and Precipitation Flooding Master Plan*. Phased time-line for completion found within *PlaNorfolk 2030, Vision2100*, and *A Green Infrastructure Plan for Norfolk: Building Resilient Communities*. Phased approach for project implementation contained within the Fugro Atlantic *Norfolk Preliminary City-wide Coastal Flooding Mitigation Concept Evaluation and Master Plan Development*. Program phases clearly articulated and an impact statement completed in USACE *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

    a. Technically backed water-resources analysis, sea level rise projections, storm surge, and climate change incorporated into the strategic approach presented in the *Hampton Roads Hazard Mitigation Plan,* the *Final Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study / Environmental Impact Statement*.

VA DCR looks forward to working with you as you work to make the City of Norfolk a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl Glover, DCR

Resilience Planning Overview for the City of Norfolk

In response to the resilience planning requirements of the **Community Flood Preparedness Fund** ("the CFPF" or "Fund") outlined within the 2021 CFPF Grant Manual (Appendix G: Elements of Resilience Plans), the City of Norfolk ("the City") has prepared the following Resilience Planning Overview of formal and relevant plans utilized for resilience planning efforts by the City to prioritize potential projects and to assist the City is its efforts to secure funding for such critical resilience plans, studies and projects.

The **Elements of Resilience Plans** taken from Appendix G of the 2021 CFPF Grant Manual, from which communities are expected to highlight the stated resilience planning contents as they related to CFPF grant applications, are as follows:

1. *It is project-based with projects focused on flood control and resilience.*
2. *It incorporates nature-based infrastructure to the maximum extent possible.*
3. *It includes considerations of all parts of a locality regardless of socioeconomics or race.*
4. *It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.*
5. *Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.*

Norfolk's resilience planning elements are not contained within an adopted "stand alone" plan. However, Norfolk's utilizes various plans within a resilience repertoire, which altogether serve multiple needs for various audiences; from technical to public-facing to operational. This Resilience Planning Overview will expressly identify to the grant reviewer, and to the public, how various resilience planning documents of the City of Norfolk satisfy all the CFPF Resilience Plan elements.

The following plans for the City of Norfolk will contribute to this Resilience Planning Overview:

- ***plaNorfolk2030*** (2013, as amended)
- ***Vision2100*** (2016)
- ***Hampton Roads Hazard Mitigation Plan*** (2017)
- ***Combined Coastal and Precipitation Flooding Master Plan*** (2017)
    - Appendix A: ***Norfolk Preliminary City-wide Coastal Flooding Mitigation Concept Evaluation and Master Plan Development*** **(Fugro Atlantic)**
    - Appendix B: ***City-wide Drainage and Watershed Master Plan*** **(Timmons Group)**
- ***A Green Infrastructure Plan for Norfolk*** (2018, as amended)
- ***USACE Coastal Storm Risk Management (CSRM) Feasibility Study and Environmental Impact Statement*** (2019)
- ***Zoning Ordinance of the City of Norfolk*** (2018, as amended)
- ***Development of an Urban Resilience Analysis Framework with Application to Norfolk, VA*** (2016)

Responses are provided below in red based on the various Norfolk plans for the following example resilience elements outlined in Appendix G of the 2021 CFPF Grant Manual:

- ***Equity based strategic polices for local government-wide flood protection and prevention.***
  The ***Hampton Roads Hazard Mitigation Plan*** recommends the highest priority of protection to be reserved towards protection projects for severe repetitive loss areas (Mitigation Actions 8 &

11) in Norfolk. Research in Norfolk has shown that these areas are often places where the most vulnerable residents are housed.

Additionally, Mitigation Action 12 recommends Norfolk begin risk/hazard mitigation efforts equitably by first implementing a major flood control project within the historically black community of Chesterfield Heights; implementation of a $112M HUD project awarded through the National Disaster Resilience Competition (construction currently underway).

- **Proposed projects that enables communities to adapt to and thrive through natural or human hazards.**
  The ***Combined Coastal and Precipitation Flooding Master Plan*** (Norfolk's "Flooding Master Plan") is based on a major multi-year study effort supported by technical analyses and recommendations from Fugro Atlantic within the ***Norfolk Preliminary City-wide Coastal Flooding Mitigation Concept Evaluation and Master Plan Development*** (the "Fugro report"). The Flooding Master Plan is also supporting by a thorough analysis and priority ranking technical guide of the City's drainage conveyance system, ***City-wide Drainage and Watershed Master Plan*** by Timmons Group.

  Together, with this technical supporting documentation, the Flooding Master Plan provides the framework for Norfolk to intelligently review and prioritize flood protections project to enable Norfolk to adapt and thrive to current and future flood threats.

- **Documentation of existing social, economic, natural, and other conditions present in the local government.**
  Sandia National Laboratories provided an analysis framework (***Development of an Urban Resilience Analysis Framework with Application to Norfolk, VA)*** for conceptualizing the resilience needs for Norfolk, including vulnerability assessments for critical infrastructure with the context of local economic and logistical impacts. The findings of which have been incorporated into other resiliency plans such as the USACE Coastal Storm Risk Management Study.

  The ***USACE Coastal Storm Risk Management*** **(CSRM)** ***Feasibility Study and Environmental Impact Statement*** presents a robust analysis of the best recommendations for City-wide flood protection measures for the City of Norfolk. This report includes 10% engineered designs for the various flood protection measures recommended throughout the entire community, and a preliminary Environmental Impact Statement is included outlining the existing social, economic, natural conditions, vulnerabilities and stressors within the natural and social environment, as well as proposed impacts. See the various CSRM appendices for these detailed conditions and impact reports.

- **Review of the vulnerabilities and stressors, both natural and social in the local government.**
  See CSRM comment above. Additional overview of the vulnerabilities and stressors can be found in the ***Hampton Roads Hazard Mitigation Plan***.

- **Forward-looking goals, actionable strategies, and priorities through as seen through an equity-based lens.**
  Norfolk remains committed to presenting all action plans through an equity-based lens, as found within the actionable strategies of ***A Green Infrastructure Plan for Norfolk*** and the ***Hampton Roads Hazard Mitigation Plan***. Both plans are tactical, and recommendation are based on a 5-year forward-looking outlay. Recommendations of the Fugro report are based on a 50-year outlay, and recommendations of ***Vision2100*** geared towards the year 2100.

- **Strategies that guides growth and development away from high-risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.**
  Vision2100 is serves a land use guide for the City. The plan divides Norfolk up into four main areas by which the City will focus new investments and make necessary steps to prepare for a changing environment:
  - ✓ Purple: Low Flood Risk / Low Degree of Civic Assets: Establishing Neighborhoods of the Future
  - ✓ Green: Low Flood Risk / High Degree of Civic Assets: Designing New Urban Centers
  - ✓ Yellow: High Flood Risk / Low Degree of Civic Assets: Adapting to Rising Waters
  - ✓ Red: High Flood Risk / High Degree of Civic Assets: Enhancing Economic Engines (protect!)

- **Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by *ConserveVirginia* or similar data driven tools.**
  Vision2100 provides the framework for selecting the areas suitable for conservation easements. The ***Norfolk Zoning Ordinance*** provides the mechanism for purchasing land conservation easement credits from the Coastal Resilience Overlay through transferring Resilient Quotient points to the Upland Resilience Overlay (requires extinguishment of a density unit – developable dwelling unit). The conservation easement, while recorded on the deed and kept on file with the Planning Department, can be held by the property owner, the Zoning Ordinance also permits it to be placed in a land trust.

- **Identification of areas suitable for property buyouts in frequently flooded areas.**
  See ***Vision2100*** "Yellow" areas (High Flood Risk / Low Degree of Civic Assets: Adapting to Rising Waters) and Coastal Resilient Overlay areas on the Norfolk Zoning Map.

- **Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as "lifelines" by FEMA.**
  A list of all critical facilities is contained within the *Norfolk Emergency Operations Manual* (2020). See Mitigation Action 5 from ***Hampton Roads Hazard Mitigation Plan***: "Purchase and install generators or other continuous power sources for critical facilities and infrastructure. This action may include, but is not limited to pump stations, EOC (Emergency Operations Center), shelters, underpasses and important traffic signals." The critical facilities list is available upon request.

- **Identified ecosystems/wetlands/floodplains suitable for permanent protection.**
  See ***A Green Infrastructure Plan for Norfolk***, this includes an *Action Plan Appendix for Threatened and Endangered Species* within critical floodplain habitats, as well as a detailed ecological inventory with recommendations for floodplain protection measures within an connected open space corridor network.

- **Identified incentives for restoring riparian and wetland vegetation.**
  - The City's Public Works Division of Stormwater Management offers the **Stormwater Fee Reduction Program** for homeowners and businesses who opt to implement water quality improvements on their private property including riparian buffer and shoreline management improvement.
  - **Environmental Conservation Consulting** – Norfolk annually funds a contract to coordinate with residential property owners for implementation of water quality improvements on their private property including riparian buffer and shoreline management improvement through a cost-share program. Property owners get a percentage of the project paid through the contractor via the Environmental Conservation Consulting services contract.
  - Norfolk regularly applies for grants to partner with community organizations for implementation of green infrastructure of public lands – projects are reviewed by the **Watershed Management Task Force** to ensure that projects are furthering the goals and objectives of the adopted ***Green Infrastructure Plan for Norfolk***.

- **A framework for implementation, capacity building and community engagement.**
  The **Watershed Management Task Force** and the recently created Program for Public Information committee are two groups made up of joint staff/citizen/technical expert members, which collectively drive the City's ongoing programing for green infrastructure projects and flood mitigation messaging. Capital Improvement Project funding recommendations from the ***Green Infrastructure Plan for Norfolk*** are also reviewed monthly by the Watershed Management Task Force.

- **Strategies for creating knowledgeable, inclusive community leaders and networks.**
  The 12-member Norfolk Coastal Management Review Board (CMRB) provides recommendations to the 7-member Erosion Advisory Commission, which is partially comprised of members of the CMRB. The CMRB is made up of elected leaders, civic league presidents/community leaders and technical experts from the Virginia Institute of Marine Science, Virginia Marine Resources Commission, Army Corp of Engineers, Old Dominion University Department of Ocean, Earth and Atmospheric Sciences, and city technical staff, providing workshops, seminars and project assessments of coastal mitigation and erosion projects; specifically intended to build grassroots technical capabilities and citizen champions within the community. The Norfolk CMRB and Erosion Advisory Commission is established by City Code and guided by the City's adopted Sand Management Plan.

- **A community dam safety inventory and risk assessment posed by the location and condition of dams.**
  Not applicable in Norfolk – not at dam risk.

- **A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.**

  This general characterization is well documented within the general/comprehensive plan for the City of Norfolk – ***plaNorfolk2030***. This includes dozens of resiliency recommendations for flood risk reduction and communication.

- **Strategies to address other natural hazards that would cause, affect or result from flooding events including:**
  - **Earthquakes.**
  - **Storage of hazardous materials**
  - **Landslides/mud/debris flow/rock falls.**
  - **Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely.**
  - **Preparations for severe weather events including tropical storms or other severe storms, including winter storms.**

  The ***Hampton Roads Hazard Mitigation Plan*** is a FEMA-accredited all-hazards plan.

Required Documents:
Links

FIRM Maps: https://drive.google.com/drive/folders/1zISYqMWhmwSFTz1-5gWA61RVpD1GRy45?usp=sharing

Comprehensive Plan (plaNorfolk2030): https://www.norfolk.gov/DocumentCenter/View/2483

Green Infrastructure Plan: https://www.norfolk.gov/DocumentCenter/View/38067

Vision2100: https://www.norfolk.gov/DocumentCenter/View/27768

Hampton Roads Hazard Mitigation Plan: https://www.hrpdcva.gov/library/view/620/2017-hampton-roads-hazard-mitigation-plan-and-appendices/

Norfolk Floodplain Ordinance: https://www.norfolkva.gov/norfolkzoningordinance/#Norfolk-ZO/3_9_Overlay_Districts_and_Designations.htm#_Toc502655724?TocPath=Article%25203%253A%2520Zoning%2520Districts%257C3.9%2520Overlay%2520Districts%2520and%2520Designations%257C_____7

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

City of Norfolk- Virginia Community Flood Preparedness Fund Grant Application

1 message

Shafer, Justin <Justin.Shafer@norfolk.gov> Fri, Apr 8, 2022 at 1:39 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Spencer, Kyle" <Kyle.Spencer@norfolk.gov>, "Simons, Matthew" <Matthew.Simons@norfolk.gov>, "Daniel, Stephanie F" <Stephanie.Daniel@norfolk.gov>

Good Afternoon,

On behalf of the City of Norfolk, please find attached a grant application submission for the Virginia Community Flood Preparedness Fund for review and consideration. Due to email size limits, a second application package will be submitted separately.

Please let us know if you have any questions. Thank you for your time and consideration.

Thank you,

Justin Shafer

Project Manager- Water Quality & Green Infrastructure

THE CITY OF NORFOLK

Department of Public Works

Div. of Environmental Storm Water Management

2233 McKann Ave

Norfolk, VA 23505

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Building Coastal and Flooding Resilience Capacity in Northampton County

Contents

Scope of Work Narrative

Northampton County, located on the Eastern Shore of Virginia, is a rural area that is highly vulnerable to rising seas and recurrent flooding- inland and coastal. This rural county has a population of just under 12,000 and has a small town feel where the residents take pride in their communities and the surrounding nature on which the local economy depends. The area is bounded by Accomack County to the north, the Chesapeake Bay to the west and coastal bays and barrier islands to the east with the highest elevation of 30-35 feet above sea level found along the spine of the peninsula. Numerous areas along the bayside and seaside as well as the many creeks that feed into these larger waterways experience sunny day flooding that is increasing with sea level rise. Additionally, with so much low-lying land and a highwater table, many inland regions also flood with increasingly heavy rain events. The region is expected to face accelerated sea level rise and an increase in storm intensity, including hurricanes and annual precipitation. Northampton County recognizes the need to increase resilience by mitigating and minimizing flooding vulnerability and is requesting funding to increase capacity to accomplish that.

Specifically in this proposal, we are seeking funds to

1. Increase staff resilience capacity by hiring a full-time Environmental Outreach and Certified Floodplain Manager (CFM) who will manage the day-to-day activities of such work, including serving as lead for public engagement support and leading the efforts to proactively seek funding from public sources- state and federal; and
2. Conduct an assessment of stormwater/drainage at identified location(s) within Northampton County to better understand the issues and next steps that are needed to allow solutions to be implemented.

Northampton County's seaside and bayside communities and villages, such as Cape Charles, Oyster and Willis Wharf, share many common characteristics and face similar challenges with sea level rise and storm surge flooding, while inland communities experience flooding during increasingly heavy storm and rain events. These frequent events impact road access, school schedules, increased farmland flooding, boat ramp access for working watermen and other essential functions.

Working waterfronts and agricultural villages are a legacy of the past that are still important to Northampton County's economy, and tourism, especially eco-tourism, is the fastest growing portion of our economy. Accessibility to nature for aquaculture and recreation through trails and water activities is important to the local community and attracts tourism. The County contains some of the last remaining stretches of undeveloped coastline on the East Coast and large portions of the County are protected through conservation – including two large public parks, the Eastern Shore of Virginia National Wildlife Refuge, and Kiptopeke State Park. Northampton County remains a rural gem, with the major industries of the area reliant on the abundant natural and cultural resources of the County – agriculture, aquaculture, and tourism.

The lands and waters of the County not only include important resources and habitat but also support the vibrant agriculture and seafood industry of the region as well as support the growing ecotourism industry. As a vital player in the local economy, agriculture, aquaculture and habitat resources must be responsibly managed and protected such that they continue to contribute to the economic resiliency of the region. The following demonstrate that importance:

- Of the 212 square miles, the most common land cover is wetlands making up 37.4% of the land surface. These wetlands provide important habitats for the region's various rare species as well as supporting a vibrant seafood industry in the region. Most of the wetlands are in the eastern portion of the county and are protected as conservation areas.

- Cropland is also an important use of land making up 28.9% of the land area.
- Collectively, wetlands and croplands, which make up two-thirds of the county's total land area, provide significant environmental value to the county.
- Agriculture, Forestry, Fishing and Hunting are some of the largest industry sectors in the County, making up 18.9% of all jobs and surpassing national averages.
- In 2017, aquaculture commodity sales in Northampton County topped $28 million. This makes Northampton County not only the leader in aquaculture sales in Virginia, but also along the entire East Coast.

In June 2021, the County adopted a Comprehensive Plan with an outlook to 2040, called *Your Northampton County* (https://www.co.northampton.va.us/government/departments_elected_offices/planning_permiting_enforcement/planning/comp_plan). The Comprehensive Plan recognizes the impact global forces such as climate change and sea level rise can have on its assets and defines the following goals:

- Build a more resilient community protected against the hazards of climate change
- Participate in regional energy and climate change planning
- All activities will plan for climate change resiliency
- Encourage the use of design techniques to slow water's rise and help absorb water into the landscape, such as living shorelines, rain gardens, and green roofs.
- Participate in the development and implementation of the Statewide Resiliency Master Plan.
- Under categories of Adapt to Climate Change and Minimize and Mitigate Environmental Hazards, the Implementation Matrix in the plan lists numerous needs for the County concerning sea level rise, flooding and stormwater management. Included in these projects are infrastructure assessments, environmental considerations such as marsh migration, and engagement with the communities.
- Inundation of roads is expected to be a growing problem as sea level is projected to rise and weather events become more severe. Northampton County must work with VDOT and A-NPDC to accomplish the recommendations found in the 2015 Infrastructure Inundation Vulnerability Assessment.
- Stormwater management is identified as a high priority.
- Flooding caused by hurricanes, northeasters, and tropical storms has proven to be the greatest natural hazard to people and property on the Eastern Shore of Virginia. A FEMA Flood Risk Report estimates that 212 square miles of the county's land area is within some Flood Hazard Area. Much of this land which is undeveloped consists of Coastal High Hazard Areas where a 1% annual chance of flooding exists as the result of storm induced wave action. Other portions of the county are in areas that require flood insurance because a 1% chance of annual flooding is possible. As of January 2016, there were 572 National Flood Insurance Program policies in the County, with 334 of those being in the unincorporated portions of the County.

Specific actions outlined in the Comprehensive Plan include:

- Review and update local floodplain regulations in accordance with the National Flood Insurance Program requirements.
- Proactively implement the Northampton County-specific strategies and projects in the Eastern Shore Hazard Mitigation Plan, as amended.
- Recommend the provision of independent back-up sources of power (e.g. gas generators) for commercial and institutional uses when primary power source is interrupted for an extended period.

- Participate in the “Advancing Ecosystem and Community Resilience” project through the Virginia Coastal Zone Management Program to identify the County’s resiliency needs, establish resilience priorities, and conceptualize potential projects.
- Provide education and outreach materials on hazard preparedness, food management, sea level rise, and recommended mitigation steps to homeowners and private businesses that have been identified as located in vulnerable areas.
- Preserve available open spaces adjacent to marsh lands to support marsh migration and inland retreat of the marshes under rising sea level.
- Review non-conforming lot and structure standards to encourage safe building and rebuilding in areas subject to sea level rise.
- Consider establishing a transfer of development rights (TDR) program to encourage density reductions in vulnerable areas
- Guide new development and locate critical facilities and infrastructure outside areas at a high risk for flooding, areas subject to inundation within 100 years (as identified by the National Oceanic and Atmospheric Administration), and other hazards.
- Utilize TNC’s Coastal Resilience Mapping portal to visualize food and sea-level rise risks, identify sustainable natural solutions for resiliency, and demonstrate historic coastline changes when considering land-use applications.

On Virginia’s Eastern Shore, assessment of the effects of global climate change on local natural resources and development of adaptation and resilience strategies began back in 2009 and culminated in formation of the (first of its kind in the region) Climate Adaptation Working Group (CAWG) that continues to work as an effective partnership. The CAWG consists of the following sectors and representatives:

- State and federal agencies – U. S. Fish and Wildlife Service, Virginia Department of Conservation and Recreation, Virginia Department of Wildlife Resources, NASA-Wallops Flight Facility, Virginia Department of Forestry, and Virginia Department of Environmental Quality’s Coastal Zone Management Program
- Local Government – County Board of Supervisors members, mayors, town and county planners, and A-NPDC planners
- Academic research partners (including the University of Virginia and the Virginia Institute of Marine Science)
- Virginia Eastern Shore Land Trust
- Special Assistant to the Governor on Coastal Adaptation and Protection (previous administration)
- The Nature Conservancy’s Virginia Coast Reserve

The CAWG has been meeting quarterly since 2011 and has worked on resilience projects collaboratively including creation of a living shoreline demonstration project on Occohannock Creek in Accomack County and creation of TNC’s online Virginia Eastern Shore Coastal Resilience (CR) Tool (maps.coastalresilience.org/virginia). Working with the CAWG, the County was recently focused on creating a list of resilience projects for inclusion in the Virginia Coastal Resilience Master Plan. This list will also be utilized by the CAWG, County, and localities to prioritize projects and prepare for upcoming funding opportunities in the Commonwealth and beyond.

The Comprehensive Plan outlines numerous steps the County wishes to take to increase resilience to flooding, both coastal and inland, but to begin acting on these steps, increased capacity in County staff is required. This position would work proactively with local landowners on flooding issues (wetland management, living shorelines, etc.) and would work on implementing the items prioritized in the Comprehensive Plan. An important part of this process taken on by this position will be to pursue additional public funding opportunities that will increase resilience and benefit the County. We anticipate future funding through the Infrastructure Investment and Jobs Act through agencies such as NOAA and NFWF as well as continued funding through the CFPF.

As a step forward in addressing inland flooding due to rainfall, the County is also requesting funds to complete a Stormwater Drainage Assessment for 1-2 localities. This(s) plan will serve as a blueprint for other localities within the County and inform the creation of a county-wide effort to address inland flooding. The Environmental Outreach and Certified Floodplain Manager position will oversee these projects once hired.

Vulnerability Assessment

Northampton County is expected to experience continued sea level rise, an environment in which tropical storms and hurricanes are more intense, and increased precipitation, all of which increases the vulnerability of the region to flooding. In the following, we assess the vulnerability to flooding from these environmental changes as well as the social vulnerability of the population using various online assessment tools.

- All of the fringing land areas on the peninsula will be inundated with 4-6 feet of water by the year 2100 under the high sea level rise scenario (TNC's Coastal Resilience (CR) Tool, maps.coastalresilience.org/virginia, Figure 2). Parts of the seaside and bayside communities, such as Oyster, Willis Wharf, Cape Charles and others, will become flooded.
- More pressing, by the year 2075, much of this area is predicted to be under 1-2 feet of water, including towns such as Cape Charles and areas just to its north surrounding Cherrystone Inlet and the Village of Oyster, among others. (TNC's CR Tool)
- Hotspots for inundation exist in extremely low-lying areas in the southern part of the county on the bayside and the northern portion, from Machipongo to the county line, on the seaside (TNC's CR Tool). An example of commonly occurring coastal flooding already threatening these communities is shown in the attached images (Photos 1-6).
- The estimated economic annual loss from coastal flooding in the year 2065 predicted under the high sea level rise scenario for the majority of the region is $1,000-$500,000 with many areas in the $500,000-$1M range and the $1M-$5M range (TNC's CR Tool, Figure 2).
- Using a threat index within the CR Tool, which incorporates "storm surge scenarios and landscape characteristics that exacerbate flood potential," the entirety of Northampton County is in the medium to high range.
- The majority Northampton County, except for the barrier and marsh islands, is made up of soil that is easily eroded by water, characterized as medium-high (along the spine and to the seaside) to high (from the spine to the bayside) erodibility. This information is found using the Coastal Resilience Evaluation and Siting Tool (CREST, resilientcoasts.org) from the National Fish and Wildlife Foundation (NFWF).
- The total amount of annual precipitation in the contiguous U.S. has increased over the past century. Figure 3, taken from the EPA website (https://www.epa.gov/climate-indicators/climate-change-indicators-us-and-global-precipitation) which is based on data from NOAA (NOAA, 2021), shows the difference in annual precipitation from 1901-2020 compared to the century average. Note that in the early century, more years fell below that average while in the last half of the century, annual precipitation is exceeding that average.
- Annual rainfall on the Eastern Shore of Virginia is expected to increase from 5-10% within the next 15-20 years. (FloodFactor.com, First Street Foundation).
- The amount of rain within a single storm event has increased in recent decades, due to warming of the atmosphere and oceans. Figure 4 shows the land area (y-axis) for which single storm events have contributed a large portion of the annual rainfall. As time has progressed into the late 20th and early 21st centuries, the amount of land where this is

> happening has been increasing. In fact, for the contiguous U.S., 9 of the top 10 years for extreme 1-day precipitation events have occurred in the last 26 years (NOAA, 2016).

To assess social vulnerability, we examined the ADAPTVA Vulnerability Viewer, which uses Census Tract data. Northampton County is classified as having moderate social vulnerability with a vulnerability index score of 0.9. The table below includes the characteristics as listed in this tool.

Classification	**Characteristics**
Socio-economic	Rural, high dependency on social security, moderate elderly population, moderately low income, moderately high nursing home population, moderately high minority population
Housing	high density, mobile homes, vacant homes, second homes, low rent and long-term renters
Hazardous/Toxic	Very high potential for hazardous/toxic exposure

The Centers for Disease Control (CDC) also produce a Social Vulnerability Index (https://svi.cdc.gov/map.html) for each county based on Census Tract data. This tool indicates that Northampton County has a moderate to high level of vulnerability. The main contributor to this high vulnerability is minority status and language; however, all categories ranked above the 55th percentile including socioeconomic, household composition and disability, and housing type and transportation. The table below outlines vulnerable population demographics from other online vulnerability mapping tools which use Census as well as other data sources.

Descriptor	**Characteristics**
Population	15% under the age of 5* 21% over the age of 64* 73% people of color* 11-14% with a disability+
Income	59% low income* 9% unemployed+
Resources	14-16% food insecure+ 18% without computer access+
Education	42% with less than a high school education*

* Source: Environmental Protection Agency, Environmental Justice, https://ejscreen.epa.gov/mapper/index.html?wherestr=Oyster%2C+VA

+ Source: PolicyMap.com

Northampton County is identified as low income based on the definition given in the Grant Manual that “any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income.” The U.S. Census Bureau (https://www.census.gov/quickfacts/fact/map/northamptoncountyvirginia,VA/INC110220) lists the median household income for Virginia as $76,398 and for Northampton County as $50,819; therefore the County is in the 66.5th percentile compared to all of Virginia.

Outcome(s)

The goal for the proposed funding is to increase the capacity of Northampton County to address flooding. The purpose of the funding is twofold:

1. Increase capacity within the existing and new county staff for an Environmental Outreach and Certified Floodplain Manager (CFM).

   Job description: Provides environmental technical support and administers the Northampton County Floodplain Ordinance for the Planning, Permitting and Enforcement Department.

   Duties:
   - Responsible for administering the floodplain ordinance
   - Reviews and analyzes stormwater issues countywide both tidal and in-land flooding
   - Prepares grant applications
   - Provides public outreach and community engagement for flooding and environmental issues including but not limited to coastal resiliency, wetlands, beaches and coastal primary sand dunes and additional resource protection areas.
   - Represents the County at stakeholder meetings.

2. Create an assessment of stormwater drainage needs for 1-2 defined localities to inform needed projects to increase the resilience of these localities to flooding hazards.
   - The County will hire a consulting firm to conduct stormwater drainage assessments and provide project design plans.
   - The assessments will lead to projects that will address flooding issues, increasing resilience to storm and rain events. Project designs outlined will provide details for funding applications.
   - Stormwater drainage assessments are needed county-wide, and the goal for the County is to implement assessments and projects throughout all areas. The assessments conducted for the first 1-2 localities will serve as a model for county-wide implementation.

Activities

The below timeline assumes funding will be dispersed in Fall 2022. Due to the difficulty in hiring professionals with specific qualifications (i.e. required certification and knowledge) in rural communities, we have allotted 9 months between advertising and having the position filled. If awarded, the county will repurpose current staff to move this project forward until the duties are sufficiently assigned. Once this position is filled, the staff member will begin engaging with the community, partners, and stakeholders to develop and fund projects to enhance the resilience of Northampton County to flooding.

Target Timeframe	Activity
Summer 2022 (pre-award)	Develop position description/duties for Environmental Outreach and Certified Floodplain Manager
Fall 2022	Recruit for the Environmental Outreach and Certified Floodplain Manager position
Winter 2022	Determine 1-2 localities for stormwater assessment
Summer 2023	Train new and existing staff to perform duties of Environmental Outreach and Certified Floodplain Manager position
Spring 2023	Release request for proposals for consulting firm to conduct the defined stormwater assessment(s)
Fall 2023	Hire and orient consulting firm
Winter 2023	Consulting firm begins stormwater assessment
Summer 2024	Stormwater assessment complete
Fall 2024	Plan next steps for implementation of stormwater recommendations

Required Application Components (Part IV from the Round 3 Grant Manual)

1. *Assess capacity needs and assets*
    - County assets, in the form of businesses, agriculture, industry, communities and infrastructure, are at risk due to flooding, and that risk is predicted to worsen in the future with climate change.
    - The County anticipates additional opportunities to fund projects that will address flooding and needs the capacity to respond to these opportunities. Awareness of coastal flooding issues is the focus of Virginia's Coastal Resilience Master Plan, and there are plans to expand it into a statewide flooding resilience master plan. Currently, Virginia has appropriated funds through the CFPF, and federal government funds will address climate resilience through the nationwide Infrastructure Investment and Jobs Act initiative.
    - As in many rural counties, the staff within the Northampton County Planning Division is not large, and each person takes on numerous duties to fulfill all County needs. The County currently does not have a Certified Floodplain Manager (CFM) on staff. Using the funds proposed here, the County will hire an Environmental Outreach and Certified Floodplain Manager. As part of the outreach, this position will work proactively with landowners on resilience issues, thus preventing loss of wetlands and using more nature-based resilience planning and implementation.
    - The County is aware that stormwater management plans and projects are needed throughout the County, but they lack the staff to conduct the assessments and implement projects. The County will prioritize localities in need of improvements and will use funds from this proposal to hire a consultant to conduct the assessments and plan designs for improvements for 1-2 localities. We anticipate this to be the first of many such projects, but realizing that we cannot tackle all localities at one time, will prioritize, fund, and implement them as resources allow. Using project and design plans outlined in the resulting assessment, the County will apply for additional funding to implement the needed improvements to stormwater drainage to ameliorate the impacts of rainwater flooding.

2. *Goals and objectives tied to improving flood protection and prevention in a whole community approach to resilience. Identify and describe the goals and objectives of the project.*
    - The overarching goal for this proposal is to increase capacity within Northampton County to address flooding issues. First, to enable the County to manage flooding projects, including funding, implementation, and community outreach, we propose to hire an Environmental Outreach and Certified Floodplain Manager. Secondly, the need currently exists for stormwater drainage improvements in communities throughout the County. We also intend to use funds from this proposal to create a stormwater management plan for 1-2 localities, anticipating that this will be an ongoing process to encompass all stormwater management needs in the County. The CFM will enable the County to take a whole community approach to flooding resilience and create an ongoing plan for tackling those issues.

3. *Stakeholder identification, outreach and education strategies.*

    Community outreach and education is a large part of the duties of the County Planning office for every type of planning need. Stakeholders (homeowners, business owners, contractors, etc.) all need information regarding the specific problem and activity affecting them.
4. *Implementation plan and timelines for specific elements of completion such as training, certifications, plan development, etc*.

    - Please see the Activities section on page 7 for these details.

5. *Parties responsible for capacity building and/or plan development process.*
    - Northampton County staff is responsible for hiring and assigning the duties of the Environmental Outreach and Certified Floodplain Manager and hiring a consulting firm to conduct a stormwater assessment for 1-2 localities identified by the County.
6. *Performance outputs and measures. Describe the expected results and benefits and how success will be measured.*
    - For this specific funding period, the outcomes will be the hiring of an Environmental Outreach and Certified Floodplain Manager and the creation of a stormwater management plan for 1-2 localities complete with needs and engineering plans.
    - Benefits from the funds requested go beyond the term of this funding, however. The intent is for the CFM position to be permanent, enabling the County to conduct future planning concerning flooding. This could include a Flooding Resilience Countywide Plan which will define projects that can be implemented using future funding opportunities, all of which the CFM can manage and execute.
    - The stormwater management plan created with this funding will define specific improvements needed such that funds can be sought and projects implemented.
    - The floodplain manager position will help the County acquire additional funding, such as through the CFPF or the Infrastructure Investment and Jobs Act, to implement proactive projects to increase flood resilience and prevent flooding.
7. *Plans for maintaining capacity, as necessary, over the long term.*
    - The Environmental Outreach and Certified Floodplain Manager duties and position are intended to be permanent and will be funded through public sources.

- Our goal is that the CFM will apply for future funding to assess and implement specific projects that increase flooding resilience.
- The Stormwater Drainage Assessment will identify projects for which funding will be sought for implementation. It will also inform the County in creating a county-wide stormwater plan.

Required Checklist Items (Appendix D from CFPF Manual)

- Link to current floodplain ordinance: https://codelibrary.amlegal.com/codes/northamptoncounty/latest/northampton_va/0-0-0-16924

- Current Hazard Mitigation plan: http://www.a-npdc.org/wp-content/uploads/2016/04/FullHMP2016.pdf

  Please note that the 2022 Eastern Shore Hazard Mitigation Plan rewrite is underway with the status at the following link https://a-npdc.org/accomack-northampton-planning-district-commission/coastal-resources/hazard-mitigation-planning/

- Current comprehensive plan: https://www.co.northampton.va.us/government/departments_elected_offices/planning_permiting_enforcement/planning/comp_plan

Figures and Photos

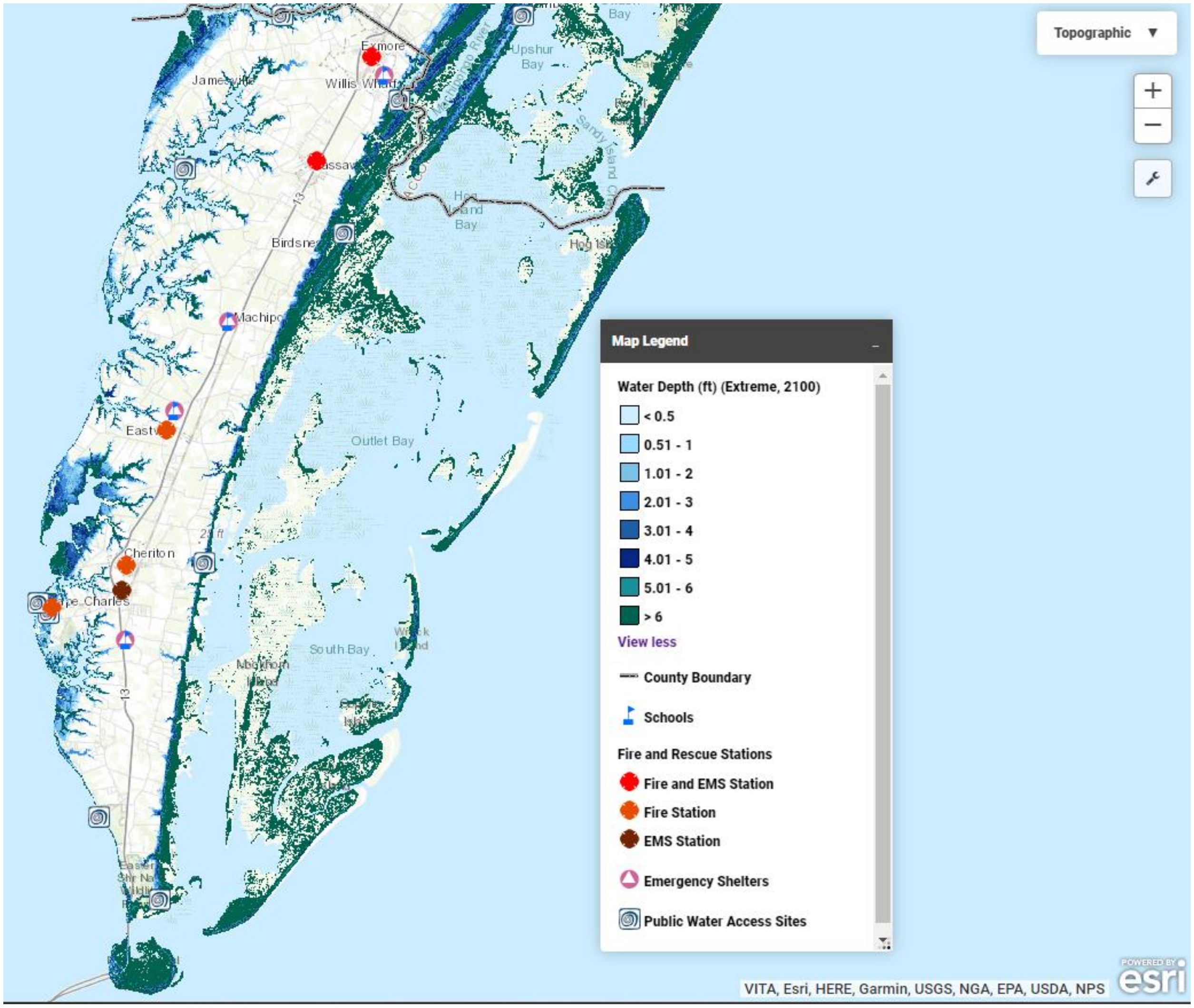


Figure 1: A plot of water depth on land areas due to sea level rise under an extreme sea level rise future scenario shown for the year 2100 as plotted by TNC's CR Too (maps.coastalresilience.org/virginia). Important community resources (fire and rescue stations and public boat ramps) are shown with icons.

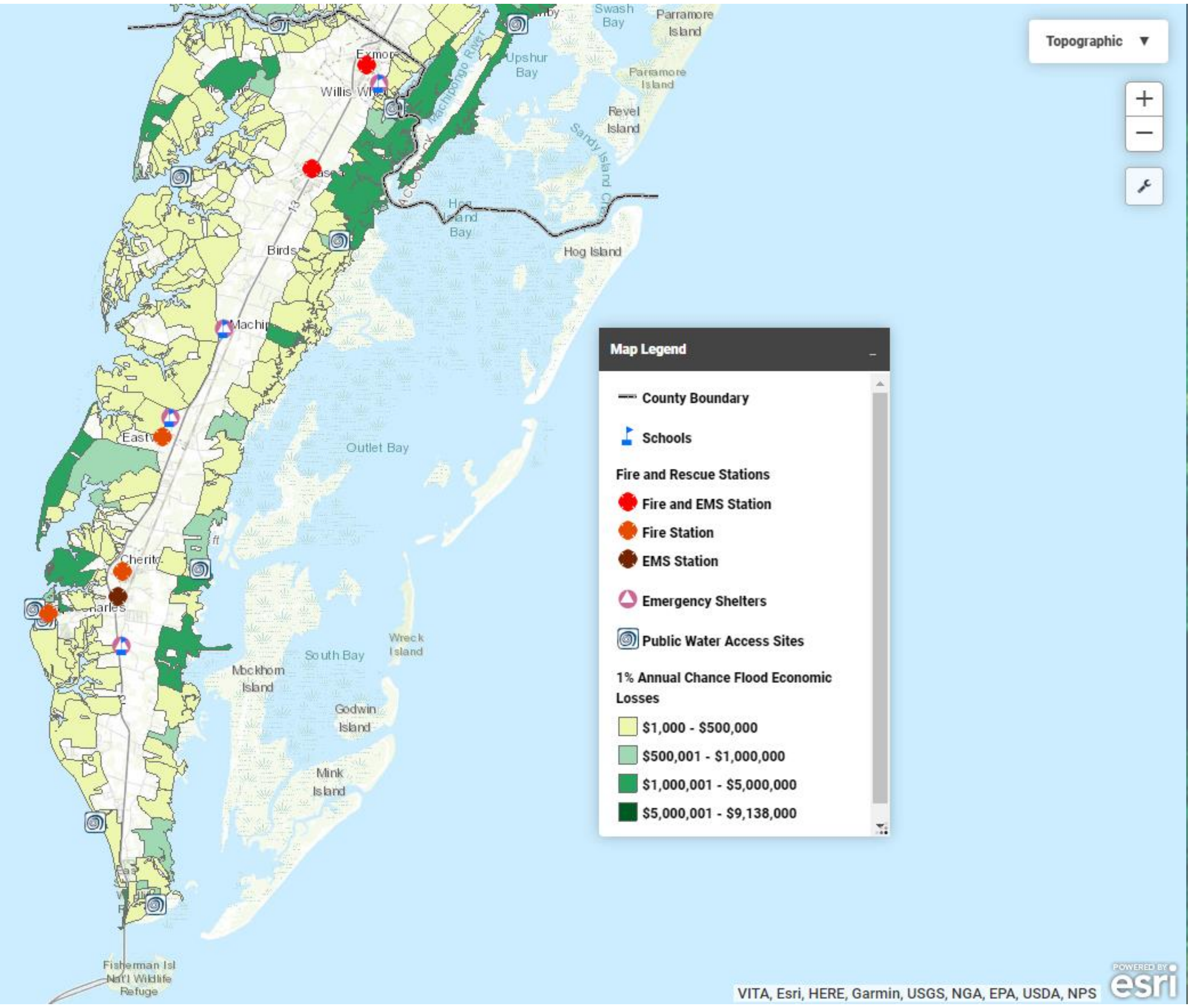


Figure 2: Shaded areas indicate areas with 1% annual chance of economic loss due to flooding (TNC's CR Tool; maps.coastalreseilience.org/virginia). The color of the shading indicates the amount of loss estimated. The data used in this analysis were generated using FEMA's HAZUS-MH risk analysis software and are derived from the maximum extent of modeled flooding at all locations across the Eastern Shore and are therefore not representative of any single flood event.

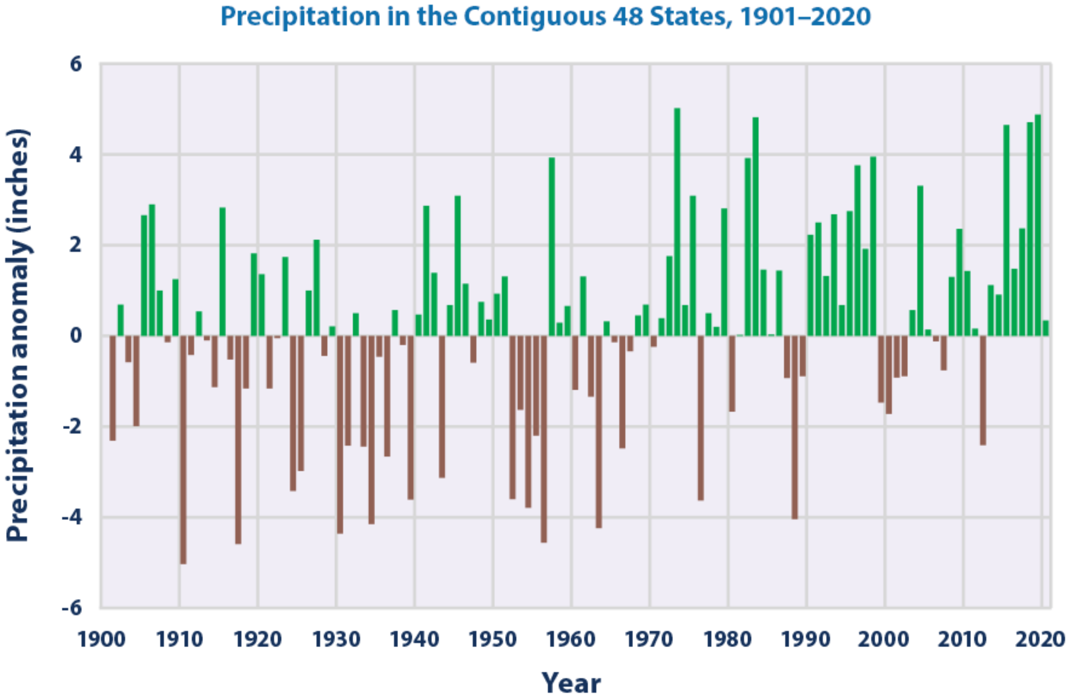


Figure 3: The total annual amount of precipitation in the contiguous 48 states has changed since 1901. This graph uses the 1901–2000 average as a baseline for depicting change. Choosing a different baseline period would not change the shape of the data over time. Image taken from the EPA website, https://www.epa.gov/climate-indicators/climate-change-indicators-us-and-global-precipitation (NOAA, 2021).

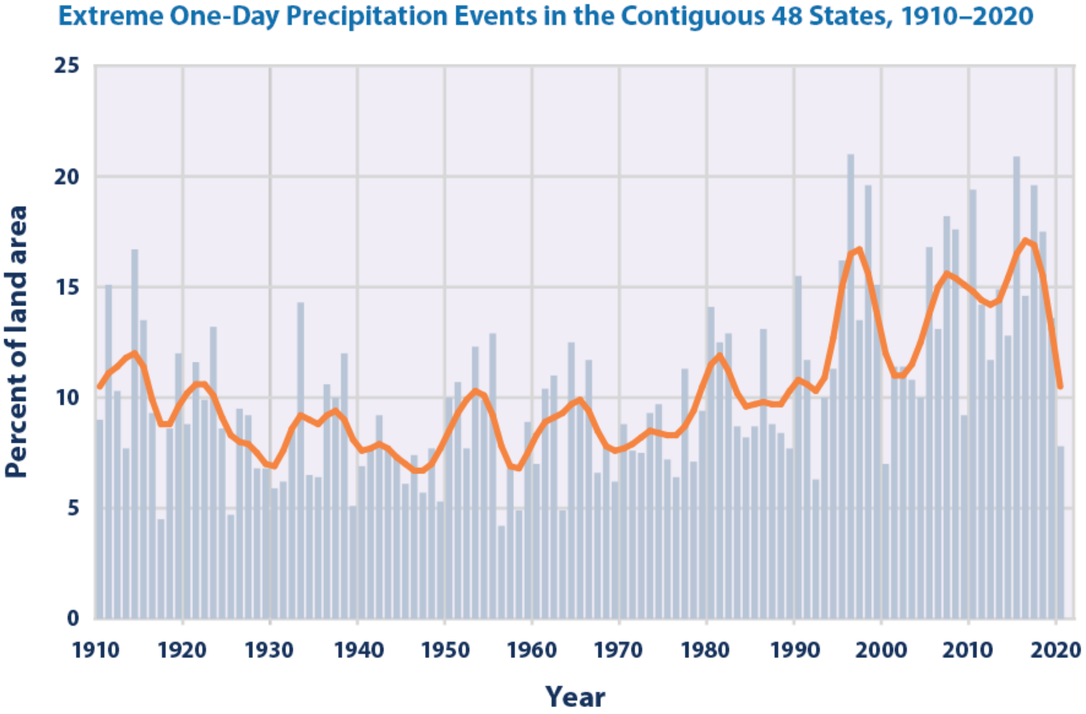


Figure 4: The percentage of the land area of the contiguous 48 states where a much greater than normal portion of total annual precipitation has come from extreme single-day precipitation events. The bars represent individual years, while the line is a nine-year weighted average. Image taken from the EPA website, https://www.epa.gov/climate-indicators/climate-change-indicators-heavy-precipitation (NOAA, 2021).

Photo 1: Flooding of Sunnyside Road and Broadwater Circle in the seaside community of Oyster due to storm surge.

Photo 2: Flooding of ditches and road on Church Neck Road, the only access to communities extending down Church Neck, due to rainfall and inadequate drainage.

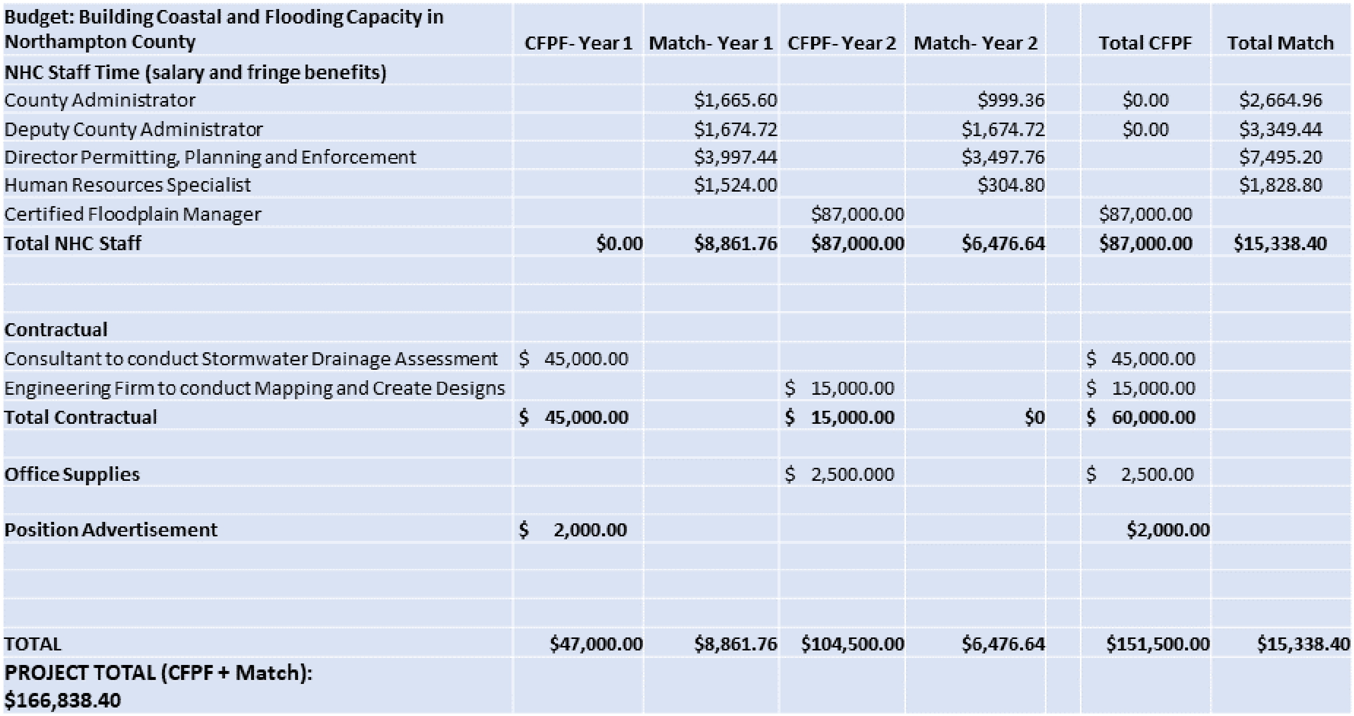

Photo 3: Flooding on Church Neck Road and adjacent farm fields from rainfall and inadequate drainage.

Photo 4: Flooding in the town of Nassawadox from rainfall and inadequate drainage.

Photo 5: Flooding of a farm field in the town of Nassawadox due to rainfall and inadequate drainage.

Photo 6: Flooding of a parking lot in the town of Nassawadox due to rainfall and inadequate drainage.

Budget Narrative



Budget: Building Coastal and Flooding Capacity in Northampton County	CFPF- Year 1	Match- Year 1	CFPF- Year 2	Match- Year 2		Total CFPF	Total Match
NHC Staff Time (salary and fringe benefits)							
County Administrator		$1,665.60		$999.36		$0.00	$2,664.96
Deputy County Administrator		$1,674.72		$1,674.72		$0.00	$3,349.44
Director Permitting, Planning and Enforcement		$3,997.44		$3,497.76			$7,495.20
Human Resources Specialist		$1,524.00		$304.80			$1,828.80
Certified Floodplain Manager			$87,000.00			$87,000.00	
Total NHC Staff	**$0.00**	**$8,861.76**	**$87,000.00**	**$6,476.64**		**$87,000.00**	**$15,338.40**
Contractual							
Consultant to conduct Stormwater Drainage Assessment	$ 45,000.00					$ 45,000.00	
Engineering Firm to conduct Mapping and Create Designs			$ 15,000.00			$ 15,000.00	
Total Contractual	**$ 45,000.00**		**$ 15,000.00**	**$0**		**$ 60,000.00**	
Office Supplies			$ 2,500.000			$ 2,500.00	
Position Advertisement	**$ 2,000.00**					**$2,000.00**	
TOTAL	**$47,000.00**	**$8,861.76**	**$104,500.00**	**$6,476.64**		**$151,500.00**	**$15,338.40**
PROJECT TOTAL (CFPF + Match): $166,838.40							

The total cost for this two-year project is $166,838.40 with $151,500.00 requested from the CFPF and $15,338.40 provided as match.

Staff time

Northampton County Staff (direct expenses):

- *Environmental Outreach and Certified Floodplain Manager* – Salary ($65,000) and employer cost (taxes, benefits and workers compensation, $22,000) for a total of $87,000. We anticipate that persons in this position would start working in Year 2 of the proposal.

Northampton County (match):

- *County Administrator* - Salary for time spent recruiting for the position, interviewing and hiring, management for the position as well as creating a Request for Proposal and hiring a consultant to conduct the stormwater assessment.
- *Deputy County Administrator* - Salary for time spent recruiting for the position, interviewing and hiring, management for the position as well as creating a Request for Proposal and hiring a consultant to conduct the stormwater assessment.
- *Director Permitting, Planning and Enforcement*- Salary for time spent recruiting for the position, interviewing and hiring, management for the position as well as creating a Request for Proposal and hiring a consultant to conduct the stormwater assessment.
- *Human Resources Specialist* – Salary for staff time spent hiring the new position.

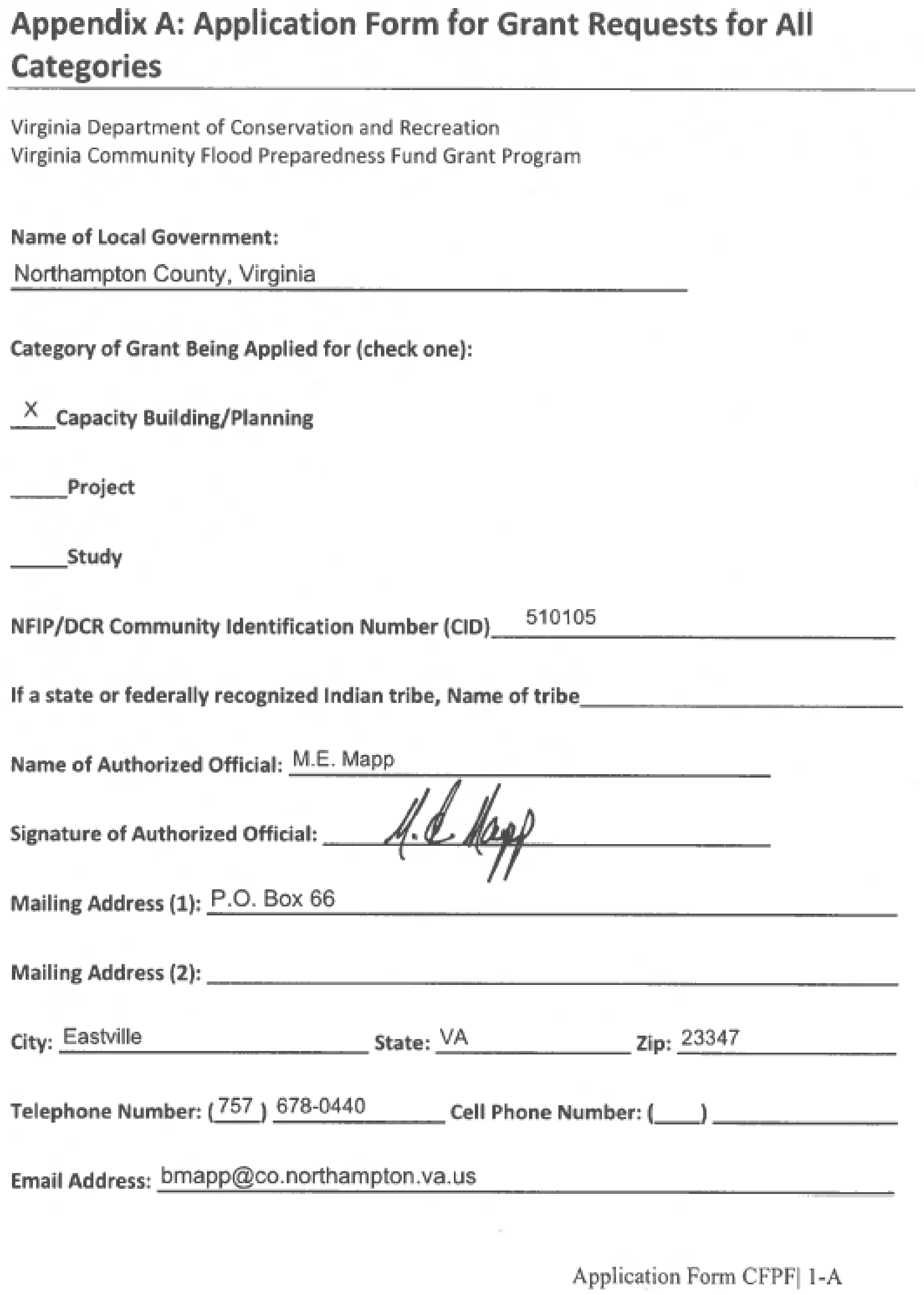
Contractual

Funds to contract an engineering/consulting firm for mapping and civil engineering services for stormwater/drainage study at identified location(s) within Northampton County ($45,000) to take place in Year 1. We estimate an additional $15,000 for design services taking place in Year 2.

Supplies (match)
Office and other supplies to allow Northampton County Staff to perform duties associated with this award.

Position Advertisement
Cost to advertise the Certified Floodplain Manager position.

Application Form (Appendix A from CFPF Manual)



Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Northampton County, Virginia

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

_____**Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510105

If a state or federally recognized Indian tribe, Name of tribe_______________

Name of Authorized Official: M.E. Mapp

Signature of Authorized Official: M.E. Mapp

Mailing Address (1): P.O. Box 66

Mailing Address (2): _______________

City: Eastville **State:** VA **Zip:** 23347

Telephone Number: (757) 678-0440 **Cell Phone Number:** (____) _______________

Email Address: bmapp@co.northampton.va.us

Application Form CFPF| 1-A

Contact Person (If different from authorized official): Charles Kolakowski

Mailing Address (1): P.O. Box 66

Mailing Address (2): ____

City: Eastville **State:** VA **Zip:** 23347

Telephone Number: (757) 678-0440 **Cell Phone Number:** (757) 442-1107

Email Address: ckolakowski@co.northampton.va.us

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☒ Floodplain Staff Capacity.

☒ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☐ Resource assessments, planning, strategies and development.
  - ○ Policy management and/or development.
  - ○ Stakeholder engagement and strategies.

Location of Project (Include Maps): Northampton County, Virginia

NFIP Community Identification Number (CID#):(See appendix F 510105

Application Form CFPF| 3-A

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☐ No

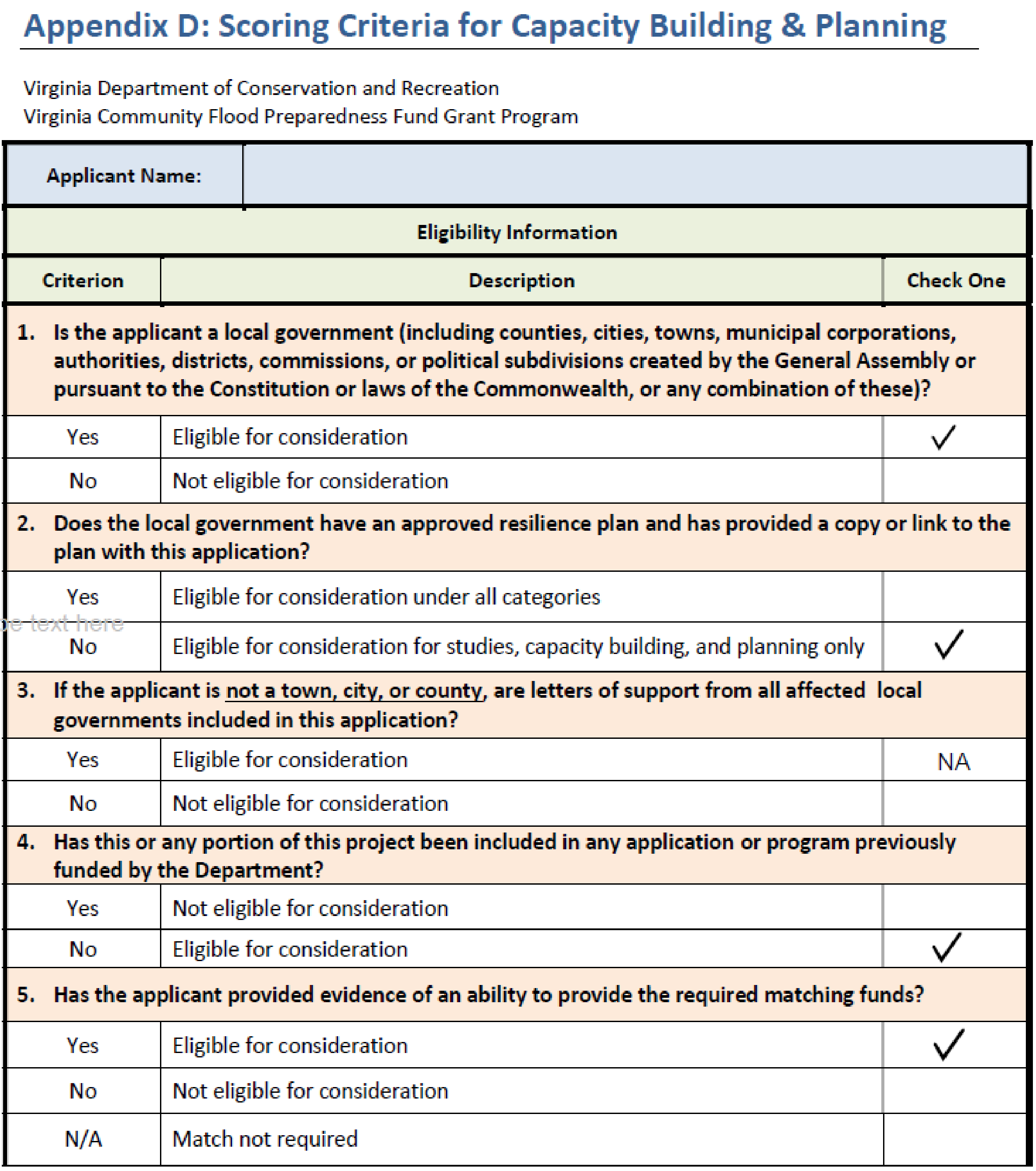
Flood Zone(s) (If Applicable): ______________________________

Flood Insurance Rate Map Number(s) (If Applicable): ______________________

Total Cost of Project: $166,838.40

Total Amount Requested $151,500.00

Scoresheet (Appendix D from CFPF manual)



Appendix D: Scoring Criteria for Capacity Building & Planning

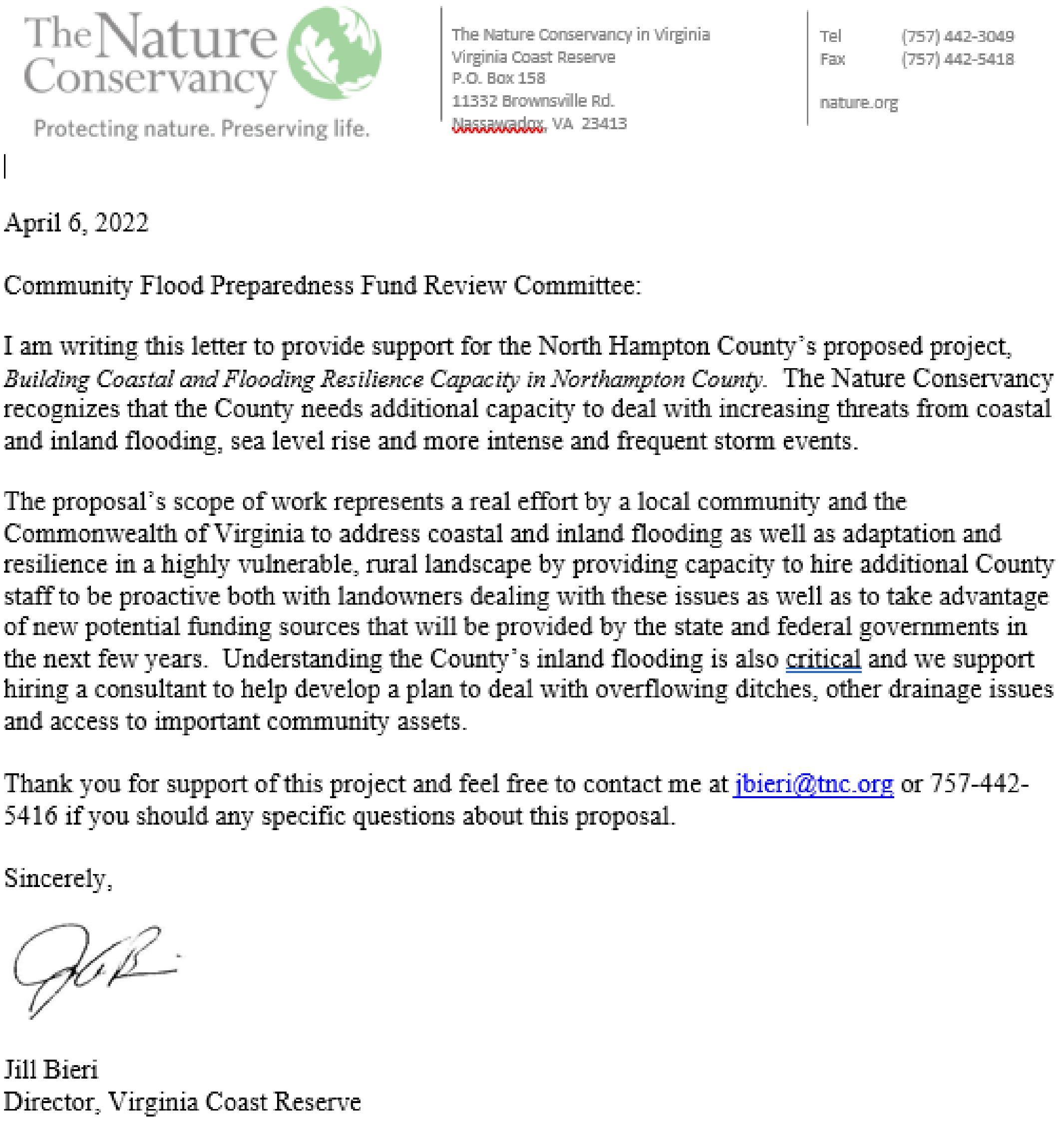
Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
	Eligibility Information	
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	✓
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	NA
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	✓
No	Not eligible for consideration	
N/A	Match not required	

Type text here

Capacity Building and Planning Eligible for Consideration		☑ **Yes** ☐ **No**
Applicant Name:		
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	
Development of a new resilience plan.	**55**	55
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development.	**40**	
Stakeholder engagement and strategies.	**25**	25
Goal planning, implementation and evaluation.	**25**	25
Long term maintenance strategy.	**25**	25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	8
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	✓
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		213

Support Letters



The Nature Conservancy
Protecting nature. Preserving life.

The Nature Conservancy in Virginia
Virginia Coast Reserve
P.O. Box 158
11332 Brownsville Rd.
Nassawadox, VA 23413

Tel (757) 442-3049
Fax (757) 442-5418

nature.org

April 6, 2022

Community Flood Preparedness Fund Review Committee:

I am writing this letter to provide support for the North Hampton County's proposed project, *Building Coastal and Flooding Resilience Capacity in Northampton County*. The Nature Conservancy recognizes that the County needs additional capacity to deal with increasing threats from coastal and inland flooding, sea level rise and more intense and frequent storm events.

The proposal's scope of work represents a real effort by a local community and the Commonwealth of Virginia to address coastal and inland flooding as well as adaptation and resilience in a highly vulnerable, rural landscape by providing capacity to hire additional County staff to be proactive both with landowners dealing with these issues as well as to take advantage of new potential funding sources that will be provided by the state and federal governments in the next few years. Understanding the County's inland flooding is also critical and we support hiring a consultant to help develop a plan to deal with overflowing ditches, other drainage issues and access to important community assets.

Thank you for support of this project and feel free to contact me at jbieri@tnc.org or 757-442-5416 if you should any specific questions about this proposal.

Sincerely,

Jill Bieri
Director, Virginia Coast Reserve

References

NOAA (National Oceanic and Atmospheric Administration). 2021. Climate at a Glance. Accessed February 2021. www.ncdc.noaa.gov/cag.

NOAA (National Oceanic and Atmospheric Administration). 2016. U.S. Climate Extremes Index. Accessed January 2016. www.ncdc.noaa.gov/extremes/cei.

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Grant application for Northampton County

1 message

Susan McGhee <smcghee@co.northampton.va.us> Fri, Apr 8, 2022 at 2:04 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Charles Kolakowski <ckolakowski@co.northampton.va.us>, Janice Williams <jwilliams@co.northampton.va.us>, Betsy Mapp <bmapp@co.northampton.va.us>

Please find attached our attached grant application for the current round of funding. Please let me know if there are any questions or if additional information is needed.

Sincerely,

Susan M. McGhee, PE, PMP

Director of Planning, Permitting & Enforcement

County of Northampton

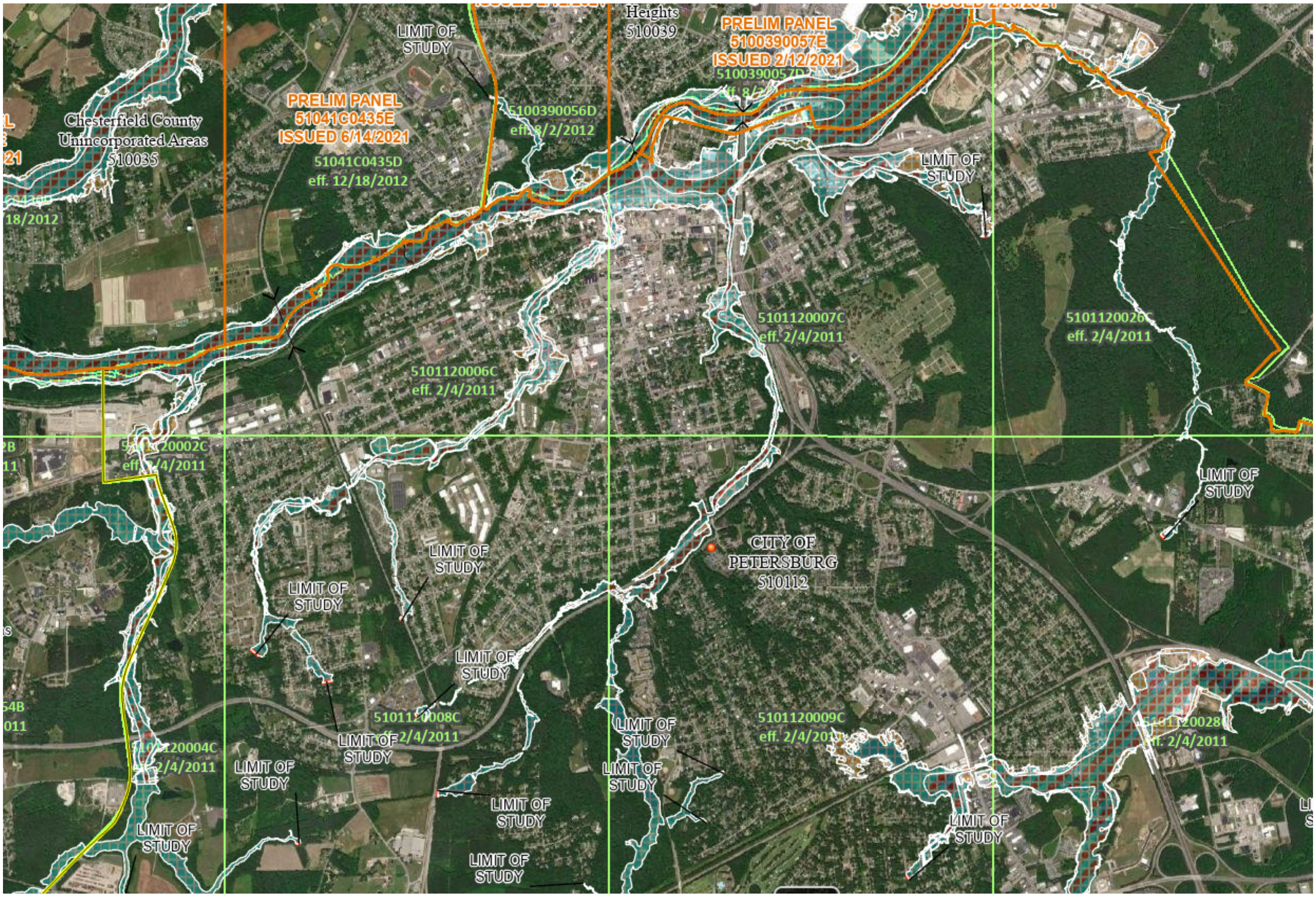
P.O. Box 538

Eastville, VA 23347

(757) 678-0443 ext. 541

CID510105_NorthamptonCounty_CFPF.pdf
2184K

COMMUNITY FLOOD PREPAREDNESS FUND
PROJECT GRANT APPLICATION



CITY OF PETERSBURG, VA
COMMUNITY ID #510112
SUBMITTED APRIL 8, 2022

City of Petersburg

Office of the City Manager
135 North Union Street
Petersburg, Virginia 23803

(804) 733-2301
Fax 732-9212
TDD 733-8003

April 8, 2022

Ms. Wendy Howard-Cooper
Director of Dam Safety and Floodplain Management
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

RE: Authorization of City of Petersburg CFPF Project Application

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

The City of Petersburg has assembled the attached Project grant application to request Community Flood Preparedness Fund assistance to include recovery, demolition, and revitalization of the Old Ramada Inn site in the heart of the City. Petersburg is the gateway to Virginia from the South via I-95 and I-85. The recovery, demolition, and revitalization of this site will meet many of the Department's criteria for a successful project including acquisition of property consistent with an overall comprehensive or regional plan, floodplain restoration, and a nature-based approach of removal of a commercial structure from the floodway and floodplain. The resulting land conversion from impervious area to conserved open space will provide a multitude of floodplain related benefits. Ancillary benefits to the City of Petersburg & the Petersburg Region are the economic benefits associated with removal of this "eyesore" that sits along the I-95 corridor at the gateway to the City.

The City has been struggling to address this property since its abandonment in 2012, exploring many avenues; however, one of the biggest barriers may be the proximity of the floodway and floodplain of Lieutenants Run. This source of funding perfectly aligns many symbiotic objectives. As the City is a documented low-income geographic area, and the project site is within a designated Qualified Opportunity Zone, with a high social vulnerability index score, the City respectfully requests full funding of this project and a waiver of match funds. Please accept this letter as my authorization of the request for CFPF assistant to enable the City to make significant progress toward Resilience and equitable management of our floodplains.

Sincerely,

Kenneth L Miller

Kenneth Miller
Interim City Manager

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

City of Petersburg

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

X **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510112

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Kenneth Miller

Signature of Authorized Official: Kenneth Miller

Mailing Address (1): 135 N Union Street

Mailing Address (2): ______________________

City: Petersburg **State:** Virginia **Zip:** 23803

Telephone Number: (804) 733-2300 **Cell Phone Number: (____)** ______________

Email Address: kmiller@petersburg-va.org

Contact Person (If different from authorized official): Darryl Walker

Mailing Address (1): 1340 E. Washington Street

Mailing Address (2): ______________________________

City: 510112 **State:** Virginia **Zip:** 23803

Telephone Number: (804) 733-2357 **Cell Phone Number:** (____) ________________

Email Address: dwalker@petersburg-va.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

☒ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☒ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☒ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): 380 E. Washington Street, Petersburg, VA 23803

NFIP Community Identification Number (CID#):(See appendix F 510112

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): AE

Flood Insurance Rate Map Number(s) (If Applicable): 5101120007C eff. 2/4/2011
51053C0175B eff. 6/16/2011

Total Cost of Project: $3,200,000

Total Amount Requested $3,200,000

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510112_CityofPetersburg_CFPF Round 3 Applications

2 messages

Aislinn Creel <Aislinn.Creel@timmons.com> Fri, Apr 8, 2022 at 3:40 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Darryl Walker <dwalker@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Joanne Williams <jwilliams@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Armesha Moody <amoody@petersburg-va.org>

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

On behalf of the City of Petersburg, please find attached two completed grant applications for the current cycle of Community Flood Preparedness Funds.

Due to file size limitations, please download the entire application packages, including scope and budget narratives and appendices, here: City of Petersburg CFPF Round 3 Applications

Should you have any questions on the application, please direct them to the City's Stormwater Program Manager, Darryl Walker (copied), or me. Thank you for your consideration.

Sincerely,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
Your Vision Achieved Through Ours

To send me files greater than 20MB click here.

Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg's two (2) applications for Round 3 of CFPF funding:

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
Your Vision Achieved Through Ours

To send me files greater than 20MB click here.

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2 attachments

CID510112_CityofPetersburg_CFPF-1 application only.pdf
3483K

CID510112_CityofPetersburg_CFPF-2 application only.pdf
3785K

Darryl Walker <dwalker@petersburg-va.org> Fri, Apr 8, 2022 at 3:59 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>, "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Joanne Williams <jwilliams@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Armesha Moody <amoody@petersburg-va.org>

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

We were not quite able to full complete the application for demolition of the Roper Building…we just got the attached demo estimate from staff this morning (per the attached email). Nonetheless, I wanted to send you **everything we have right now** – including a cover letter signed by our Interim City Manager – in hopes that we will be able to proceed as demolition of the Roper Building has been deemed **very important** to DCR.

Please review the attached…and if feasible let me know if/how we can proceed. Thank you!!

Respectfully submitted,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

I AM
PETERSBURG
VIRGINIA

From: Aislinn Creel <Aislinn.Creel@timmons.com>
Sent: Friday, April 8, 2022 3:40 PM
To: cfpf@dcr.virginia.gov
Cc: Darryl Walker <dwalker@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Joanne Williams <jwilliams@petersburg-va.org>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Armesha Moody <amoody@petersburg-va.org>
Subject: CID510112_CityofPetersburg_CFPF Round 3 Applications

[Quoted text hidden]

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---------- Forwarded message ----------
From: Bradley Shupp <bshupp@petersburg-va.org>
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: John Hines <jhines@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, Joanne Williams <jwilliams@petersburg-va.org>, Aislinn Creel <Aislinn.Creel@timmons.com>
Bcc:
Date: Fri, 8 Apr 2022 14:05:06 +0000
Subject: Re: CID 510112 - Resilience Plan

Good morning,

I have attached the demolition estimate for the Roper Brother building. During our walk through of the property and building it was found that the structure is currently being used by the police department. If you have any questions about this, please let me know.

Thank you,

Bradley Shupp
Property Maintenance Official
1340 East Washington Street
Petersburg, Virginia 23803
(c) 804-720-6255
(o) 804-733 -2409 ext. 4157
bshupp@petersburg-va.org

VIRGINIA BUILDING & CODE OFFICIALS ASSOCIATION

ᓚᘏᗢ

From: Bradley Shupp <bshupp@petersburg-va.org>
Sent: Thursday, April 7, 2022 9:47 AM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: John Hines <jhines@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

Darryl,

Can you give me a call when you can to discuss the Roper buildings?

Thank you,

Bradley Shupp
Property Maintenance Official
1340 East Washington Street
Petersburg, Virginia 23803
(c) 804-720-6255
(o) 804-733 -2409 ext. 4157
bshupp@petersburg-va.org

VIRGINIA BUILDING & CODE OFFICIALS ASSOCIATION

ᓚᘏᗢ

From: John Hines <jhines@petersburg-va.org>
Sent: Thursday, April 7, 2022 9:18 AM
To: Bradley Shupp <bshupp@petersburg-va.org>
Subject: FW: CID 510112 - Resilience Plan

Fyi

From: Darryl Walker
Sent: Wednesday, April 06, 2022 4:15 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Oh, one other note…I've also been working to get a demo cost for the Roper Building. Mr. Hines (Building Official, copied on this email) is working to connect with the Property Maintenance Official to try to provide this information; hopefully that will be coming very soon. 😊

From: Darryl Walker
Sent: Wednesday, April 6, 2022 4:00 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Hey Aislinn,

I took a look at the "Lakemont" application documents, and the only comment I have at this point is that the "Appendix C" PDF seems to be the one for the Old Ramada Inn instead of the Lakemont Projects. If this was just an oversight and you have the Lakemont Historic Flood Data/Images file done and ready to review, please provide.

Thanks again for your help,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

I AM
PETERSBURG
VIRGINIA

From: Darryl Walker
Sent: Wednesday, April 6, 2022 3:47 PM
To: Armesha Moody <amoody@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Excellent!! Thanks so much, Ms. Moody…there will probably be one or two additional letters coming your way soon for other CFPF Grant funding requests.

From: Armesha Moody <amoody@petersburg-va.org>
Sent: Wednesday, April 6, 2022 3:43 PM
To: Darryl Walker <dwalker@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

Good afternoon Mr. Walker,

Please see the attachment.

Regards,

Armesha Moody

Executive Assistant to the City Manager

135 North Union Street

Petersburg, Virginia 23803

Office: 804-733-2301

Email: amoody@petersburg-va.org

From: Darryl Walker <dwalker@petersburg-va.org>
Sent: Wednesday, April 6, 2022 2:03 PM
To: Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>; Armesha Moody <amoody@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

My apologies…disregard the previous attachment and use the attached file – thanks!

From: Darryl Walker
Sent: Wednesday, April 6, 2022 1:56 PM
To: Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>; Armesha Moody <amoody@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Good Afternoon Everyone,

Attached is a revised cover letter for the Old Ramada Inn Project…changed the signature section at the bottom (Joanne, did not see an amount in this letter, so nothing to change there).

I have copied Armesha Moody so that we may work to get this letter put on letterhead and signed by the Interim City Manager…hopefully by COB. If additional assistance is needed, please let me know.

Thanks much,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

From: Joanne Williams <jwilliams@petersburg-va.org>
Sent: Wednesday, April 6, 2022 1:50 PM
To: Darryl Walker <dwalker@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

I reviewed the Lakemont grant application and I just wanted to check that all elements of that project are included. Aislinn: I recall on a Zoom meeting that you mentioned additional pipes needed that extended beyond the core project. Is that work included in the grant application?

Thanks,

Joanne

From: Darryl Walker <dwalker@petersburg-va.org>
Date: Wednesday, April 6, 2022 at 1:40 PM
To: Joanne Williams <jwilliams@petersburg-va.org>, Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Aislinn…also note the attached response to your question regarding the Old Ramada Inn demo project viability in light of current ownership. Thanks!

From: Joanne Williams <jwilliams@petersburg-va.org>
Sent: Wednesday, April 6, 2022 11:51 AM
To: Aislinn Creel <Aislinn.Creel@timmons.com>; Darryl Walker <dwalker@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams

<awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Anthony Williams <awilliams@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

I reviewed the application for the Ramada Inn and all is good except the price. I spoke with Petersburg's City Attorney and the cost to purchase and demo has increased to $3.2M. Can the requested project cost of $2.6M be changed to $3.2M?

Thanks,

Joanne

From: Aislinn Creel <Aislinn.Creel@timmons.com>
Date: Friday, April 1, 2022 at 7:13 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Darryl/Joanne,

I am aware of some comments to the cover letter and that I need to update the signatory for the application for CFPF-1 Old Ramada Inn, so I've attached those two documents for your review.

Here is the link for the CFPF-2 Lakemont package: CFPF-2

Could you please kindly review and provide comment for both by COB Wednesday, April 6, so that I can make the revisions and consolidate the package for submittal before Friday? This should include obtaining Mr. Miller's signature on the Cover Letter and the application.

Thanks,

Aislinn

From: Aislinn Creel
Sent: Thursday, March 31, 2022 1:43 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; jhines@petersburg-va.org
Subject: RE: CID 510112 - Resilience Plan

Darryl,

Please follow this link to download CFPF Round 3 draft application components for the Old Ramada Inn site (380 E. Washington Street et al.): CFPF-1 Old Ramada Inn

The package includes as complete an application as I am able to assemble, given the information I have been provided to-date. Please note, the word document of the application which includes the cover and the scope and budget narratives has a few comments and one complete highlighted portion where input from the City would be beneficial.

Other items to note:

1. The application and the cover letter need to be signed by Mr. Turille
2. Please provide comments for the word document
3. Please review the Maintenance and Management Plan. We could consider using N/A in place of this document, but I will leave that up to the City's discretion and can revise accordingly.

Please provide comment/additional information as soon as possible.

Thanks,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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To send me files greater than 20MB click here.

From: Aislinn Creel
Sent: Monday, March 28, 2022 5:35 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>
Subject: FW: CID 510112 - Resilience Plan

Darryl,

I sent the initial Resilience Plan to Ms. Howard-Cooper since it will take her about a week to review, but if you have any comments or revisions please let me know, and I will make them at once! She wrote this, via email, in response to my question about whether it needed to go before Council: *"The plan can be a compilation of already adopted plans provided per instructions in Attachment G of the grant manual. If you are creating a new plan, it will need to be adopted by the community."* I will leave that decision up to the City.

Tomorrow, I will begin in earnest on the applications. Please provide any and all information in addition to what Joanne sent last week, specifically in regards to cost, about the old Ramada Inn building and the Roper Building. I also plan to reiterate the information from the BRIC grant for Lakemont, so if you can forward me any information you have from December that I might not have already, please do. Any information will help me to strengthen the City's applications.

Thanks,

Aislinn

From: Aislinn Creel
Sent: Monday, March 28, 2022 5:27 PM
To: cfpf@dcr.virginia.gov
Cc: Darryl Walker <dwalker@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>
Subject: CID 510112 - Resilience Plan

Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg's initial Resilience Plan and associated appendices for your review: City of Petersburg's Initial Resilience Plan.

On behalf of the City, we are looking forward to your comment.

Best regards,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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---

5 attachments

Cover Letter - Roper Building_Signed by ICM.pdf
104K

FEMA FIRMETTE_130 POCAHONTAS STREET_03-03-21.pdf
840K

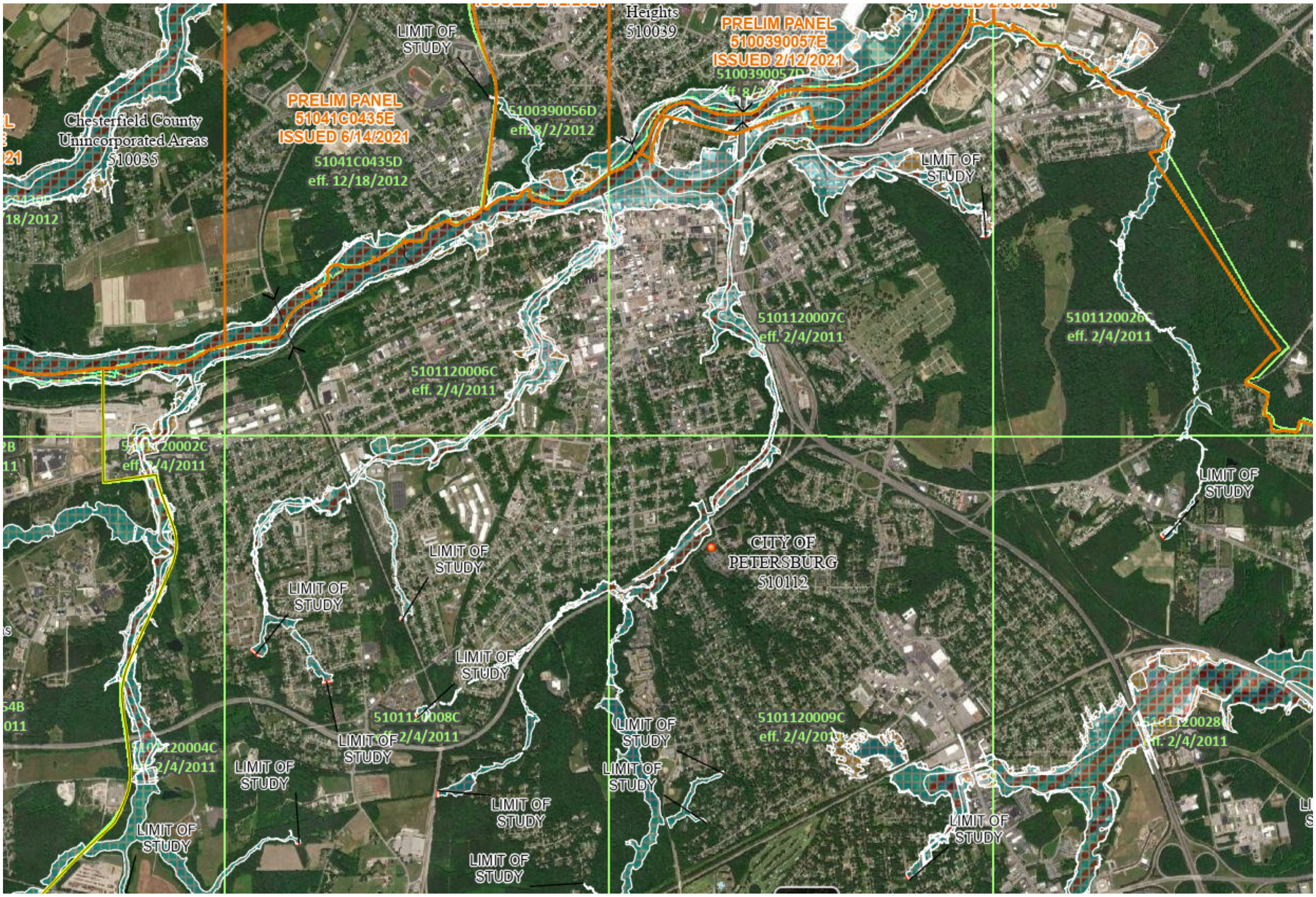
Roper Brother Demo Quote.doc
50K

Roper Brother Demo Quote.doc
46K

Re: CID 510112 - Resilience Plan.eml
894K

COMMUNITY FLOOD PREPAREDNESS FUND

LAKEMONT PROJECTS GRANT APPLICATION



CITY OF PETERSBURG, VA

COMMUNITY ID #510112

SUBMITTED APRIL 8, 2022

City of Petersburg

Office of the City Manager
135 North Union Street
Petersburg, Virginia 23803

(804) 733-2301
Fax 732-9212
TDD 733-8003

April 8, 2022

Ms. Wendy Howard-Cooper
Director of Dam Safety and Floodplain Management
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

RE: Authorization of City of Petersburg CFPF Project Application

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

The City of Petersburg has assembled the attached Project grant application to request Community Flood Preparedness Fund assistance to implement a flood prevention and protection project in the Lakemont Neighborhood. The project will result in the improvement of structural stormwater conveyance systems that will provide community scale benefits in an underserved section of the City.

The City has been relying on key partnerships and funding assistance to make progress in addressing historic and repetitive localized flooding in this neighborhood because of antiquated and insufficient storm sewer systems, and the Community Flood Preparedness Fund is an ideal opportunity to expand on previous partnerships that focused more on water quality and less on the management of the quantity of stormwater runoff. As the City is a documented low-income geographic area, and the project site is within a designated Qualified Opportunity Zone, with a very high social vulnerability index score, the City respectfully requests a waiver of the full match requirement. Please accept this letter as my authorization of the request for CFPF assistant to enable the City to make significant progress toward Resilience and equitable management of our floodplains.

Sincerely,

Kenneth L Miller

Kenneth Miller
Interim City Manager

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

City of Petersburg

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

X **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510112

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Kenneth Miller

Signature of Authorized Official: Kenneth Miller

Mailing Address (1): 135 N Union Street

Mailing Address (2): ____________________

City: Petersburg **State:** Virginia **Zip:** 23803

Telephone Number: (804) 733-2300 **Cell Phone Number:** (____) ____________

Email Address: kmiller@petersburg-va.org

Contact Person (If different from authorized official): Darryl Walker

Mailing Address (1): 1340 E. Washington Street

Mailing Address (2): ____

City: 510112 **State:** Virginia **Zip:** 23803

Telephone Number: (804) 733-2357 **Cell Phone Number:** (____) ____

Email Address: dwalker@petersburg-va.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☒ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Lakemont Neigbhorhood, Petersburg, VA 23803
refer to Appendix A for Detailed Maps of the Project Area

NFIP Community Identification Number (CID#):(See appendix F 510112

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☐ Yes ☒ No

Flood Zone(s) (If Applicable): N/A

Flood Insurance Rate Map Number(s) (If Applicable): 5101120007C eff. 2/4/2011
5101120026C eff. 2/4/2011

Total Cost of Project: $2,800,878

Total Amount Requested $2,624,498

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510112_CityofPetersburg_CFPF Round 3 Applications

2 messages

Aislinn Creel <Aislinn.Creel@timmons.com> Fri, Apr 8, 2022 at 3:40 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Darryl Walker <dwalker@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Joanne Williams <jwilliams@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Armesha Moody <amoody@petersburg-va.org>

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

On behalf of the City of Petersburg, please find attached two completed grant applications for the current cycle of Community Flood Preparedness Funds.

Due to file size limitations, please download the entire application packages, including scope and budget narratives and appendices, here: City of Petersburg CFPF Round 3 Applications

Should you have any questions on the application, please direct them to the City's Stormwater Program Manager, Darryl Walker (copied), or me. Thank you for your consideration.

Sincerely,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
Your Vision Achieved Through Ours

To send me files greater than 20MB click here.

Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg's two (2) applications for Round 3 of CFPF funding:

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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2 attachments

CID510112_CityofPetersburg_CFPF-1 application only.pdf
3483K

CID510112_CityofPetersburg_CFPF-2 application only.pdf
3785K

Darryl Walker <dwalker@petersburg-va.org> Fri, Apr 8, 2022 at 3:59 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>, "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Joanne Williams <jwilliams@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Armesha Moody <amoody@petersburg-va.org>

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

We were not quite able to full complete the application for demolition of the Roper Building…we just got the attached demo estimate from staff this morning (per the attached email). Nonetheless, I wanted to send you **everything we have right now** – including a cover letter signed by our Interim City Manager – in hopes that we will be able to proceed as demolition of the Roper Building has been deemed **very important** to DCR.

Please review the attached…and if feasible let me know if/how we can proceed. Thank you!!

Respectfully submitted,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

I AM
PETERSBURG
VIRGINIA

From: Aislinn Creel <Aislinn.Creel@timmons.com>
Sent: Friday, April 8, 2022 3:40 PM
To: cfpf@dcr.virginia.gov
Cc: Darryl Walker <dwalker@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Joanne Williams <jwilliams@petersburg-va.org>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Armesha Moody <amoody@petersburg-va.org>
Subject: CID510112_CityofPetersburg_CFPF Round 3 Applications

[Quoted text hidden]

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---------- Forwarded message ----------
From: Bradley Shupp <bshupp@petersburg-va.org>
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: John Hines <jhines@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, Joanne Williams <jwilliams@petersburg-va.org>, Aislinn Creel <Aislinn.Creel@timmons.com>
Bcc:
Date: Fri, 8 Apr 2022 14:05:06 +0000
Subject: Re: CID 510112 - Resilience Plan

Good morning,

I have attached the demolition estimate for the Roper Brother building. During our walk through of the property and building it was found that the structure is currently being used by the police department. If you have any questions about this, please let me know.

Thank you,

Bradley Shupp
Property Maintenance Official
1340 East Washington Street
Petersburg, Virginia 23803
(c) 804-720-6255
(o) 804-733 -2409 ext. 4157
bshupp@petersburg-va.org

ᓚᘏᗢ

From: Bradley Shupp <bshupp@petersburg-va.org>
Sent: Thursday, April 7, 2022 9:47 AM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: John Hines <jhines@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

Darryl,

Can you give me a call when you can to discuss the Roper buildings?

Thank you,

Bradley Shupp
Property Maintenance Official
1340 East Washington Street
Petersburg, Virginia 23803
(c) 804-720-6255
(o) 804-733 -2409 ext. 4157
bshupp@petersburg-va.org

ᓚᘏᗢ

From: John Hines <jhines@petersburg-va.org>
Sent: Thursday, April 7, 2022 9:18 AM
To: Bradley Shupp <bshupp@petersburg-va.org>
Subject: FW: CID 510112 - Resilience Plan

Fyi

From: Darryl Walker
Sent: Wednesday, April 06, 2022 4:15 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Oh, one other note…I've also been working to get a demo cost for the Roper Building. Mr. Hines (Building Official, copied on this email) is working to connect with the Property Maintenance Official to try to provide this information; hopefully that will be coming very soon. 😊

From: Darryl Walker
Sent: Wednesday, April 6, 2022 4:00 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Hey Aislinn,

I took a look at the "Lakemont" application documents, and the only comment I have at this point is that the "Appendix C" PDF seems to be the one for the Old Ramada Inn instead of the Lakemont Projects. If this was just an oversight and you have the Lakemont Historic Flood Data/Images file done and ready to review, please provide.

Thanks again for your help,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

I AM
PETERSBURG
VIRGINIA

From: Darryl Walker
Sent: Wednesday, April 6, 2022 3:47 PM
To: Armesha Moody <amoody@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Excellent!! Thanks so much, Ms. Moody…there will probably be one or two additional letters coming your way soon for other CFPF Grant funding requests.

From: Armesha Moody <amoody@petersburg-va.org>
Sent: Wednesday, April 6, 2022 3:43 PM
To: Darryl Walker <dwalker@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

Good afternoon Mr. Walker,

Please see the attachment.

Regards,

Armesha Moody

Executive Assistant to the City Manager

135 North Union Street

Petersburg, Virginia 23803

Office: 804-733-2301

Email: amoody@petersburg-va.org

From: Darryl Walker <dwalker@petersburg-va.org>
Sent: Wednesday, April 6, 2022 2:03 PM
To: Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>; Armesha Moody <amoody@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

My apologies…disregard the previous attachment and use the attached file – thanks!

From: Darryl Walker
Sent: Wednesday, April 6, 2022 1:56 PM
To: Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>; Armesha Moody <amoody@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Good Afternoon Everyone,

Attached is a revised cover letter for the Old Ramada Inn Project…changed the signature section at the bottom (Joanne, did not see an amount in this letter, so nothing to change there).

I have copied Armesha Moody so that we may work to get this letter put on letterhead and signed by the Interim City Manager…hopefully by COB. If additional assistance is needed, please let me know.

Thanks much,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

From: Joanne Williams <jwilliams@petersburg-va.org>
Sent: Wednesday, April 6, 2022 1:50 PM
To: Darryl Walker <dwalker@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

I reviewed the Lakemont grant application and I just wanted to check that all elements of that project are included. Aislinn: I recall on a Zoom meeting that you mentioned additional pipes needed that extended beyond the core project. Is that work included in the grant application?

Thanks,

Joanne

From: Darryl Walker <dwalker@petersburg-va.org>
Date: Wednesday, April 6, 2022 at 1:40 PM
To: Joanne Williams <jwilliams@petersburg-va.org>, Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Aislinn…also note the attached response to your question regarding the Old Ramada Inn demo project viability in light of current ownership. Thanks!

From: Joanne Williams <jwilliams@petersburg-va.org>
Sent: Wednesday, April 6, 2022 11:51 AM
To: Aislinn Creel <Aislinn.Creel@timmons.com>; Darryl Walker <dwalker@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams

<awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Anthony Williams <awilliams@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

I reviewed the application for the Ramada Inn and all is good except the price. I spoke with Petersburg's City Attorney and the cost to purchase and demo has increased to $3.2M. Can the requested project cost of $2.6M be changed to $3.2M?

Thanks,

Joanne

From: Aislinn Creel <Aislinn.Creel@timmons.com>
Date: Friday, April 1, 2022 at 7:13 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Darryl/Joanne,

I am aware of some comments to the cover letter and that I need to update the signatory for the application for CFPF-1 Old Ramada Inn, so I've attached those two documents for your review.

Here is the link for the CFPF-2 Lakemont package: CFPF-2

Could you please kindly review and provide comment for both by COB Wednesday, April 6, so that I can make the revisions and consolidate the package for submittal before Friday? This should include obtaining Mr. Miller's signature on the Cover Letter and the application.

Thanks,

Aislinn

From: Aislinn Creel
Sent: Thursday, March 31, 2022 1:43 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; jhines@petersburg-va.org
Subject: RE: CID 510112 - Resilience Plan

Darryl,

Please follow this link to download CFPF Round 3 draft application components for the Old Ramada Inn site (380 E. Washington Street et al.): CFPF-1 Old Ramada Inn

The package includes as complete an application as I am able to assemble, given the information I have been provided to-date. Please note, the word document of the application which includes the cover and the scope and budget narratives has a few comments and one complete highlighted portion where input from the City would be beneficial.

Other items to note:

1. The application and the cover letter need to be signed by Mr. Turille
2. Please provide comments for the word document
3. Please review the Maintenance and Management Plan. We could consider using N/A in place of this document, but I will leave that up to the City's discretion and can revise accordingly.

Please provide comment/additional information as soon as possible.

Thanks,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

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1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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To send me files greater than 20MB click here.

From: Aislinn Creel
Sent: Monday, March 28, 2022 5:35 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>
Subject: FW: CID 510112 - Resilience Plan

Darryl,

I sent the initial Resilience Plan to Ms. Howard-Cooper since it will take her about a week to review, but if you have any comments or revisions please let me know, and I will make them at once! She wrote this, via email, in response to my question about whether it needed to go before Council: *"The plan can be a compilation of already adopted plans provided per instructions in Attachment G of the grant manual. If you are creating a new plan, it will need to be adopted by the community."* I will leave that decision up to the City.

Tomorrow, I will begin in earnest on the applications. Please provide any and all information in addition to what Joanne sent last week, specifically in regards to cost, about the old Ramada Inn building and the Roper Building. I also plan to reiterate the information from the BRIC grant for Lakemont, so if you can forward me any information you have from December that I might not have already, please do. Any information will help me to strengthen the City's applications.

Thanks,

Aislinn

From: Aislinn Creel
Sent: Monday, March 28, 2022 5:27 PM
To: cfpf@dcr.virginia.gov
Cc: Darryl Walker <dwalker@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>
Subject: CID 510112 - Resilience Plan

Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg's initial Resilience Plan and associated appendices for your review: City of Petersburg's Initial Resilience Plan.

On behalf of the City, we are looking forward to your comment.

Best regards,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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5 attachments

Cover Letter - Roper Building_Signed by ICM.pdf
104K

FEMA FIRMETTE_130 POCAHONTAS STREET_03-03-21.pdf
840K

Roper Brother Demo Quote.doc
50K

Roper Brother Demo Quote.doc
46K

Re: CID 510112 - Resilience Plan.eml
894K

Town of Occoquan, Virginia

Resilient Stormwater and Flood Management and Implementation Plan

Virginia Community Flood Preparedness Fund
FY2022 ROUND 3 GRANT APPLICATION
April 8, 2022

TOWN OF OCCOQUAN

Circa 1734 ● Chartered 1804 ● Incorporated 1874
314 Mill Street ● PO Box 195 ● Occoquan, Virginia 22125
www.occoquanva.gov

Contents

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

TOWN OF OCCOQUAN, VA

Category of Grant Being Applied for (check one):

____Capacity Building/Planning

_____Project

_X__Study

NFIP/DCR Community Identification Number (CID)__510124

If a state or federally recognized Indian tribe, Name of tribe____________

Name of Authorized Official: _KIRSTYN JOVANOVICH, TOWN MANAGER

Signature of Authorized Official: Kirstyn Jovanovich

Mailing Address (1): __PO BOX 195

Mailing Address (2): _314 MILL STREET

City: _OCCOQUAN____ State: __VA_____ Zip: ____22125_____

Telephone Number: (703) 491-1918__ Cell Phone Number: (571) 572-8411

Email Address: _KJOVANOVICH@OCCOQUANVA.GOV

Contact Person (If different from authorized official): ____________

Mailing Address (1): ____________

Mailing Address (2): ____

City: ____________________________ State: _________________ Zip: ___________________

Telephone Number: (____) _______________ Cell Phone Number: (____) ________________

Email Address: ____

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No _X_

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

- ☒ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☒ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☒ Studies and Data Collection of Statewide and Regional Significance.

☒ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☒ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): WITHIN MUNICIPAL BOUNDARY OF TOWN OF OCCOQUAN, VA

NFIP Community Identification Number (CID#):(See appendix F)___510124_________________

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): ____

Flood Insurance Rate Map Number(s) (If Applicable): ______51153C0217D________________________

Total Cost of Project: ______$175,000_____________________________________

Total Amount Requested ____$131,250________________

Town of Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan

The Town of Occoquan (Town) is applying for this grant assistance under the Virginia Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF) Round 3 'Study' category for a new study that evaluates the town's stormwater and flood resilience and ultimately results in an actionable plan that when implemented, increases the town's overall resilience and responds to the impacts of climate change within the community and region.

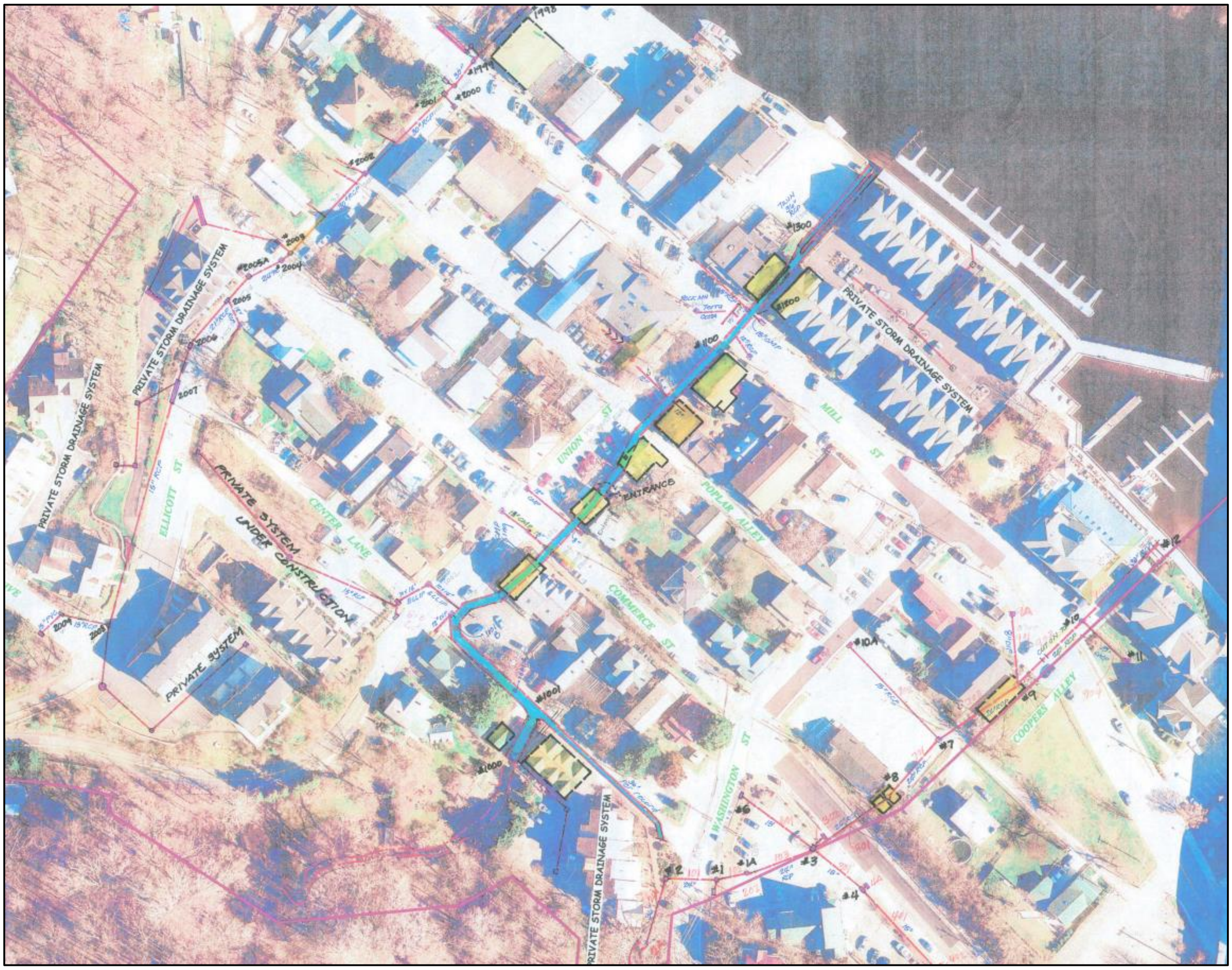
The project, *Town of Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan*, is focused on evaluating the town's existing conditions, future conditions, and provides an actionable plan that incorporates flood resilience goals, considers capacity, and identifies opportunities for green infrastructure throughout the community. This Plan will aid the Town in implementing a comprehensive stormwater and flood management program and guide investment into projects aimed at enhancing and supporting the town's resilience goals today and into the future.

While a community Resilience Plan is not required for submission under the 'study' category according to the 2022 Grant Manual for the Virginia CFPF, the Town will be submitting a Resilience Plan for consideration by DCR in April 2022. The Town has integrated flood mitigation and resilience goals across areas of the local government, with flood resistance and stormwater management a priority addressed through our comprehensive planning and town ordinances and policies. This project will advance the town's priorities identified in these plans and policies, especially as it relates to building a resilient stormwater and flood management program for the community.

I. Background Information

The Town of Occoquan experiences periodic flooding, particularly in the spring and fall, from two primary sources. First among these is the Occoquan River. Flooding associated with spring thaws and rains to the west, and fall hurricanes or tropical storms that create a tidal bore, are fairly common, occurring roughly every other year.

The second primary source of flooding in Occoquan is flash-flooding from two major streams that flow through town to the Occoquan River – Ballywhack Creek and Boundary Branch. This flooding is much less predictable, affects inland properties in town, endangers traffic on major streets in town, and threatens damage to the town's stormwater system. Each of these tributaries originates outside of town, thus drawing from watersheds well beyond town boundaries, and is significantly affected by development and stormwater practices beyond the town's control. Sitting at the bottom of hillsides along the banks of the Occoquan River, the Town of Occoquan and its stormwater management system is a recipient of runoff, some uncontrolled, from developments and roadways outside of Occoquan.



[Map 1] Town of Occoquan Downtown along the Occoquan River, 2018. Existing locations of the three main stormwater systems that run through Occoquan and exit into the Occoquan River: Ellicott Street system, Union Street System and Coopers Alley System. The Town of Occoquan has responsibility for management of its Stormwater Program.

The Town is responsible for managing and administering its stormwater program, including maintenance of existing stormwater structures, and planning for capital improvements to the system in response to existing needs and anticipated future needs caused by increased development in the region and impacts from climate change.

In 2018, the Town partnered with Prince William County to conduct a preliminary investigation and evaluation of the town's three main stormwater systems that run through the historic district and discharge directly into the Occoquan River. Since then, the Town has been working closely with Prince William County to assist the Town in performing a comprehensive review of the town's stormwater program, including mapping and evaluating existing public underground and surface infrastructure, locating and evaluating private facilities that feed into the town's system, as well as identifying opportunities for stream restoration and projects to combat impacts from climate change. The Town's intent is to incorporate natural elements to aid in stormwater management and to combat climate change. Part of this assessment includes evaluating the stormwater management program within the town and establishing a Stormwater Utility Fee to aid in maintaining and upgrading the town's infrastructure now and into the future.

II. Project Information

The Town of Occoquan is seeking this grant request to fund development of *Town of Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan*. The Town has been subject to various flooding events over the years and has limited historical or existing conditions information and data to evaluate and plan for the future of the town's stormwater program, including the community's flood resilience. This study, once completed, will provide the Town with invaluable data on existing conditions, future conditions, and provide an actionable plan that incorporates flood resilience goals, considers capacity, and identifies opportunities for green infrastructure throughout the community. This Plan will be the launching pad for the Town to invest in and modernize our stormwater program to reduce flood risk, incorporate green infrastructure that addresses stormwater quality and quantity, respond to climate change, as well as increase quality of life and natural beauty within our community.

a. Scope of Work

The following Scope of Work outlines the intended process and deliverables associated with the development of the *Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan*. The funding requested through this grant program will fund the development of this Plan.

Task 1. Project Kickoff

1.1 <u>Project Kickoff Meeting</u>
At the onset of the project, the Project Team will review and commit to a detailed proposed schedule, which outlines key milestones, including projected meeting dates. An agreed-upon schedule will ensure that the project keeps moving forward and is completed within the grant timeframe required by the funder, the Virginia Department of Conservation and Recreation. All of the FY23 activities will be completed by June 30, 2023, so that Occoquan can receive all Community Flood Preparedness funds allocated to them for FY23.

1.2 <u>Collect Background Information</u>
As much historical information as possible will be gathered and reviewed regarding the condition of the town's drainage system, where available.

Task 2. Flood Resilience Assessment

An assessment of flood vulnerability will be performed using a Hydraulic and Hydrologic model and a field survey of the current condition of the town's stormwater system.

2.1 <u>Field Data Collection Survey</u>
The purpose of the data collection efforts, identified in the following sub-tasks, is to minimize data gaps by collecting an appropriate level of data to cost-effectively estimate future project costs. Where insufficient data is available to develop a reasonable cost estimate for a particular project, the tasks and associated cost to obtain will be estimated. A data gap analysis will be used to identify projects that may not be ready to proceed during the early stages of the plan. It will also be utilized to identify data gathering tasks that could be added to early phases of the plan to facilitate future projects.

Two to three weeks of field effort will be conducted by two stormwater trained professionals to verify connectivity, as well as to establish an accurate and complete the town stormwater GIS layer. Collected data may include topography, drain manholes, catch basins, outfalls, and numerous other physical features such as roadways, parcels, and water ways. The Town will update their stormwater GIS data based on information obtained through this project's data gathering efforts.

The consultant will conduct surveys, geotechnical, and groundwater investigations to inform the design process and project feasibility. The following items are associated with this investigation task:

a. GPS all encountered drainage structures, and locations where historical structures reportedly existed;
b. Main channel and stream embankment debris, channel cross-section, slope, sinuosity, and existing erosion/deposition features, identify reference reaches along the channel for periodic flow and velocity measurements;
c. Locations of embankment erosion;
d. Type and condition of culverts and headwalls;
e. Types and location of aquatic and surrounding upland vegetation;
f. Photos documenting the condition of outlets to the Occoquan River and contributing drainage system;
g. Ground elevations and physical structures at numerous points of interest in the watershed in the project areas of interest (e.g., known areas of flooding, existing culverts, etc.); and
h. Geotechnical and groundwater surveys to further the understanding of given pilot project site constraints, concerns, and requirements.

Flood prone areas, as identified by municipal staff and residents, will also be evaluated to gain a better understanding of potential improvements required to mitigate flooding issues. It is estimated that the town has areas of localized flooding that will be evaluated as part of the project. A site visit will be conducted at each location to document existing conditions and identify potential solutions. This may also include meeting with impacted residents to gain a better understanding of flooding issues that directly impact them. At some locations, the solution may require a phased approach that includes evaluation, design, and construction phases. The goal at each location will be to eliminate localized flooding while incorporating green infrastructure/low impact development (GI/LID) practices, where feasible.

The purpose of the investigation of flood prone areas is to minimize data gaps by collecting an appropriate level of data to cost-effectively estimate future project costs. Where insufficient data is available to develop a reasonable cost estimate for a particular project, the tasks and associated cost to obtain will be estimated. A data gap analysis will be used to identify projects that may not be ready to proceed during the early stages of the plan. It will also be utilized to identify data gathering tasks that could be added to early phases of the plan to facilitate future projects.

All field collected data will provide condition assessment information that will be utilized to better predict future project costs. Condition information collected regarding the condition of the town's stormwater drainage system will be compiled in a format compatible with the town's existing GIS database and displayed on a series of maps. A visual representation of the wide-ranging data will be used to understand the "big picture"; create a list of potential projects; develop rating criteria to prioritize the projects; identify gaps in the available data; and ultimately, present the *Town's Resilient Stormwater and Flood Management and Implementation Plan*. The maps and data will also provide a visual tool to help the public to better understand the nature and scope of the town's stormwater issues. Each site identified will have a project summary that will include the potential GI approach, brief narrative, benefits anticipated, and estimated cost for design and construction.

Deliverables:

- *Existing Conditions Memo*
- *GIS Layers*
- *List of actions to address data gaps*

2.2 Hydraulic & Hydrologic Study

The project consultant will develop a detailed Hydraulic and Hydrologic (H&H) model to assess the capacity of the town's stormwater system. The H&H model will assess the stormwater and riverine conditions.

The H&H model will evaluate flooding extents, depths, and durations throughout the study area. The model will include upstream drainage areas that are expected to contribute runoff in the study neighborhood. The anticipated drainage area is approximately 390 acres. That area will be broken up into several subcatchments based on watershed hydrology, topography, land use patterns, and the locations of outfalls, catch basins, and other stormwater infrastructure. Input parameters representative of those subcatchments will be derived from Occoquan's existing records.

The runoff hydrographs generated by these subcatchments will be routed into a 1D framework consisting of a series of nodes and conduits. Nodes define the rim and invert elevations of various manholes and catch basins or the channel bottom and bank elevations of open channels. These elevation data will be obtained from available town records, the latest available LiDAR, or during consultant field investigations. Nodes are connected by conduits, which may represent closed storm drain systems or open channel flow. The dimensions of these conveyances will be derived from existing town records, potentially from existing FEMA models, or from consultant field investigations.

The hydrologic and hydraulic (H&H) is expected to be conducted using the PCSWMM modeling platform. Based on the EPA's Storm Water Management Model (SWMM) model, PCSWMM can evaluate the land's runoff response to various rainfall events and the movement of runoff through open channel, closed pipe systems, and surface flooding in streets. Also, it is anticipated that the traditional 1D model framework of nodes and conduits will be overlayed with a 2D mesh to better understand the extents, depths, and durations of flooding and to better understand present and future flood impacts in the community. To ensure the model's accuracy and usefulness, it will be calibrated against historical observations of flooding within the project area.

If needed, the Project Team will collect additional information for input into the model through field investigations.

The model will be used to evaluate the magnitude and associated impacts of inland flooding during a range of design events (e.g. 2-, 10-, 25-, 100-year), under both baseline and future climate scenarios. Baseline design rainfall depths and temporal distributions for the neighborhood will be derived from NOAA Atlas 14 data. The specific rainfall events and scenarios, including planning horizons and storm recurrence intervals used to drive the inland flooding analyses will be selected in collaboration with the Town.

2.3 Green Infrastructure Assessment

The *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* will include an assessment of the opportunities to implement green infrastructure. Green infrastructure (GI) and low impact development (LID) are considered climate resilience best management practices and will be considered as part of the action development. Green infrastructure experts will look for opportunities to capture runoff from large impervious areas and convert as much of that volume into infiltration loss or detention storage for slow release. By increasing infiltration through green infrastructure designs, up to the 95th percentile (2 inches of runoff) of all rainfall events that occur in a year can be captured and stored. On an annual basis, this can be a significant volume capture and removal of pollutant loads.

The addition of GI and more vegetative planting will also be assessed for reduction of the Heat Island Effect. The I-Tree tool may be used to quantify the Greenhouse Gas (GHG) emission reductions and stormwater runoff reduction due to adding plantings. The application of this tool will help Occoquan respond to higher temperatures by increasing the urban forest and tree plantings. This will also provide direction for future planning for tree plantings and expected benefits.

Deliverables:

- *Green Infrastructure Opportunities Analysis*
- *List of opportunities to implement green infrastructure*
- *I-Tree Tool Assessment*

Task 3. Public and Stakeholder Engagement

3.1 Public Engagement

The consultant, working closely with the Project Team, will develop an internal and external outreach program for presenting the *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* to the elected body and relevant town department, Prince William County and other surrounding localities, and external stakeholders. Target stakeholders are identified as property owners, businesses, residents, non-profit organizations, and other entities that have a direct interest in the outcome of the plan.

The Project Team will leverage existing platforms to disseminate new materials relating to the relationship between stormwater management and climate resilience, such as volunteer outings, the Town's website, mailings, and tabletop displays. The project team will also share public engagement material linking stormwater and climate resilience with the Northern Virginia Regional Hazard Mitigation Plan Committee and the Chesapeake Watershed campaign to reach the regional stakeholders. The Project Team will attend or host two to three public events or create tabling materials for existing events. The workshops will ground truth flooding and urban heat challenges, gather input for the plan, and inform participants about the link between stormwater flooding and climate change. Proposed updates to the town's stormwater guidance and rules and regulations will be shared through public meetings and or an online portal with feedback which will be available for residents, developers, businesses and surrounding communities. The consultant will also work with the Town to present the final report to the public.

Deliverables

- *Event materials for two to three dual purpose tabling events or workshops to educate the public and collect input*
- *Informational and web content will showcase the climate resiliency components of the project and areas where the public can participate and will include:*
- ▪ *Up to two fact sheets or promotional flyers*
- ▪ *Website content*
- *Up to five promotional and educational social media posts on the:*
- ▪ *Town of Occoquan, Facebook*
- ▪ *Town of Occoquan, Instagram*
- *List of actions identified by the community*

Task 4. Action Identification

The consultant will generate a list of actions to review and discuss with the Town. The Town will further develop plan scope and add any additional projects that should be considered.

General project types will include:

- Inspection and/or rehabilitation of critical stormwater infrastructure (culverts, pipes, stream channels);
- Design of improvements to eliminate localized flooding issues, including retrofit of the existing drainage system, to incorporate BMPs that encourage green infrastructure practices and help improve water quality, reduce flooding, and reduce urban heat island effect; and
- Drainage system operation & maintenance needs so that the Town may ultimately move from a reactive to a proactive approach

Culverts identified for future repair will be included as separate projects within the Plan and will be assigned planning level repair costs. It is anticipated that many culverts will require a complete structural evaluation to fully understand the extent of repairs that will be required, and costs for additional evaluation will be incorporated into the Plan. An allowance will also be factored into repair deficiencies that may be identified during the evaluation.

Deliverables:

- *Plan scope*
- *List of culverts and planning level repair costs*
- *List of compiled project ideas*

Task 5. Action Prioritization

An equitable climate resilience-based approach will be utilized to analyze and prioritize the town’s stormwater capital needs. The prioritization will be based on the probability of failure, climate change resilience potential, social impact, and the magnitude of the consequence of failure. The probability of failure will be based upon the age and the overall condition of the asset. Rating criteria will vary based on the asset type, but could include costs and operational feasibility. Consequence of failure categories to be considered may include, but are not limited to, impacts to health and safety, potential for property damage, cost of deferred maintenance, the number of people impacted, impacts to traffic, and the impact on town development priorities. The consultant and the Town will discuss and finalize the selection of evaluation criteria under which each identified action will be ranked with the Project Team input.

Some of the factors may be weighted more heavily to arrive at a final project score and ranking. Action prioritization may not always be consistent with the rating system. In some respects, projects may be grouped together. If a project is critical to the success of another highly rated project, the two projects will be grouped and completed together. Other adjustments will be made, as needed, to decrease total project cost through economy of scale. The action priority ranking will be reviewed with the Project Team to arrive at a final consensus regarding the weighting and ranking of projects. A final combined ranked table will be presented. In addition, for priority actions with opportunities for natural drainage enhancement that are readily apparent, a separate field in the prioritization matrix will be added to highlight these projects. If two projects are closely ranked, the project that has known potential for natural drainage enhancement will be given priority in the implementation of the overall plan.

The recommended actions will be displayed on a series of maps and the following implementation chapter will focus on the recommended actions.

Deliverables:

- *List of recommended or prioritized actions*
- *Map showing locations of recommended actions identified under the Plan*

Task 6. Implementation Chapter

In developing a multi-year implementation chapter of the Plan, several factors will be evaluated to determine the appropriate length, for example, a fixed annual expenditure, a fixed plan length, or limitations on the amount of work that can reasonably be completed per year. The implementation chapter will guide the town's efforts to modernize its stormwater collection system, while ensuring that adequate funding is available. Development of an implementation chapter for prioritized actions will help ensure the protection of flood prone areas and improve overall water quality. By completing actual field reconnaissance during the plan's development to collect condition assessment data, as proposed, a more accurate assessment of future program costs can be generated. The implementation chapter will also include information about operation and maintenance.

The *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* will include an operational assessment of the staffing, resources, equipment, and department organizational approach to implement stormwater services. The operational assessment will be based on a review of existing budgets, services conducted, and the organizational structure of the town departments that are involved in stormwater management. Recommendations for possible reorganization to improve stormwater management and services and a comparison of this reorganization against current conditions will be a part of the final deliverable. Recommendations will be presented based on improved integration, collaboration, performance, costs, and training needs. A cash flow diagram will be developed to assess the plan's compatibility with available funding sources. Recommended adjustments will be proposed as needed to help the Town balance the level of funding need with the capital and operation & maintenance recommendations outlined in the plan.

Deliverables:

- *Implementation chapter*
- *Operational assessment*
- *Cash flow diagram*

Task 7. Reporting and Grant Management

The Project Team will prepare regular reports to monitor the budget and schedule for submittal to DCR. The project team will draft the *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* report based on the work and findings of the previous Tasks. The *Resilient Stormwater and Flood Management and Implementation Plan* components will include the following:

- Summary of Existing Stormwater System Conditions and Projected Climate Impacts
- Green Infrastructure Opportunities Map and Recommendations
- Culvert Evaluation and Rehabilitation Project List
- Project Prioritization Methodology and Prioritization Matrix
- List of Prioritized Projects and Implementation
- Operational Assessment

Project Timeline

PROJECT SCHEDULE													
	2022							2023					
TASK DESCRIPTION		JU	AU	SE	OC	NO	DE	JA	FE	MA	AP	MA	JU
Task 1: Project Kickoff	*Start date is dependent on grant award date and contracting*	🟩	🟩										
Task 2: Flood Resilience Assessment			🟩	🟩	🟩								
Task 3: Public and Stakeholder Engagement			🟩	🟩				🟩	🟩	🟩	🟩		
Task 4: Action Identification							🟩	🟩	🟩				
Task 5: Action Prioritization									🟩	🟩	🟩		
Task 6: Implementation Chapter											🟩	🟩	
Task 7: Reporting and Grant Management		🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩

b. Budget Narrative

The *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* will be conducted as one study within FY2023. The total project is estimated to cost $175,000. The Town respectfully requests 75% of the estimated total project cost to be funded by this grant: $131,250. The Town has included the funding request, including a 25% Town match, in its FY2023 Capital Improvement Program Proposed Budget. The Town Council also passed a Resolution of Support committing to submit this grant request and identify and allocate the necessary funding depending on the success of this grant request.

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	TOWN OF OCCOQUAN, VA	
Eligibility Information		
Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application? N/A		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration		☐ Yes ☐ No
Applicant Name:	TOWN OF OCCOQUAN, VA	
Scoring Information		
Criterion	Point Value	Points Awarded
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	30
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	15
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	45
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	
☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include	**45**	45

projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.		
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	50	50
☐ Regional hydrologic and hydraulic studies of floodplains.	45	45
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	40	40
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	35	35
7. Is the study area socially vulnerable? (**Based on** [ADAPT VA's Social Vulnerability Index Score.)])		
Very High Social Vulnerability (More than 1.5)	15	
High Social Vulnerability (1.0 to 1.5)	12	
Moderate Social Vulnerability (0.0 to 1.0)	8	8
Low Social Vulnerability (-1.0 to 0.0)	0	0
Very Low Social Vulnerability (Less than -1.0)	0	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	10	
No	0	X
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	10	
No	0	X
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	5	5
No	0	
Total Points		318

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	X Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	X Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	X Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	X Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No X N/A
A link to or a copy of the current hazard mitigation plan	X Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	X Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	X Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No X N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	X Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	X Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	X Yes ☐ No ☐ N/A

Supporting Documentation (Reference: Appendix D Checklist)

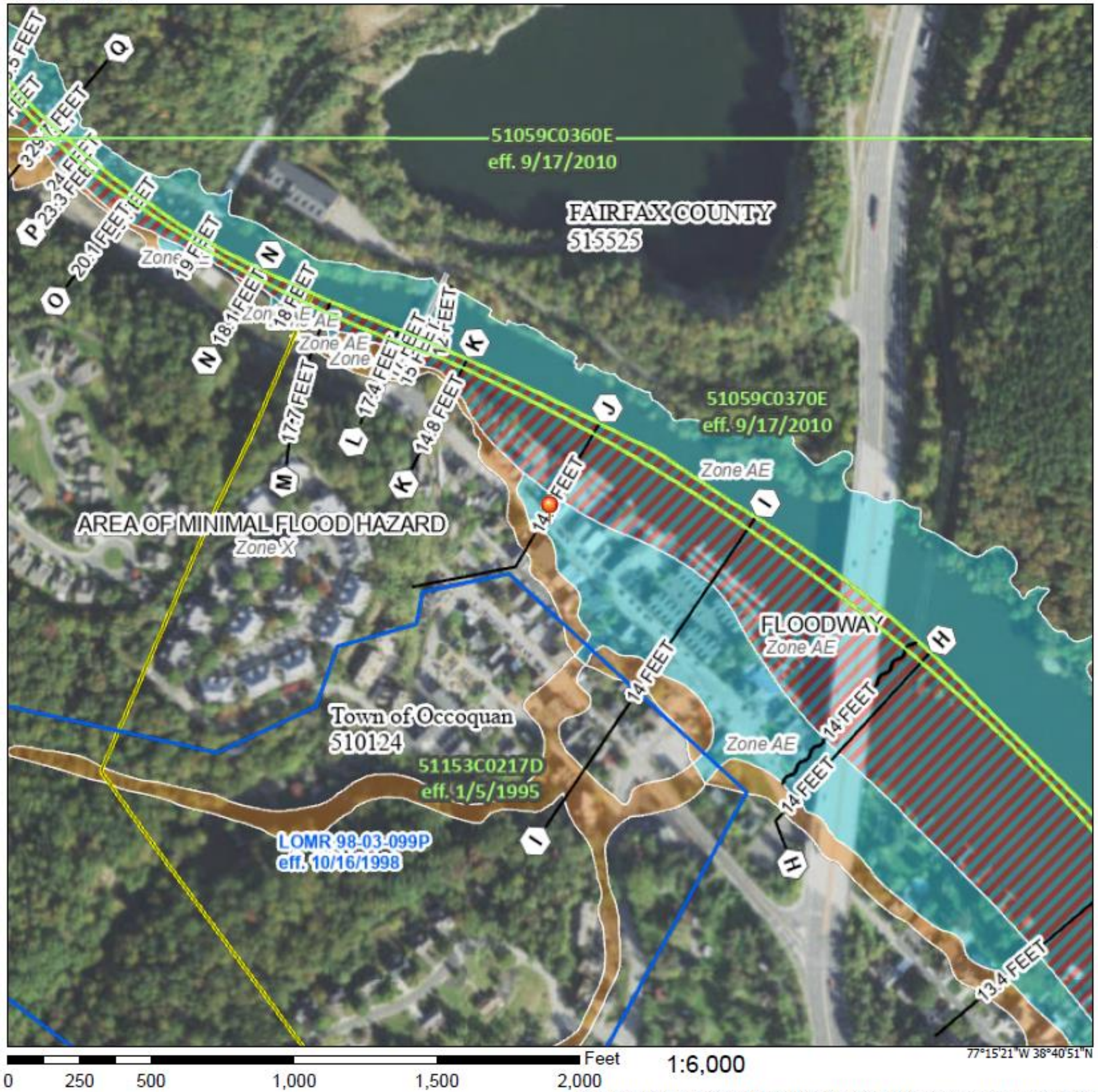
- **Project Map – Incorporated Boundaries of Occoquan, VA**

- [National Flood Hazard Layer FIRMette]

National Flood Hazard Layer FIRMette

FEMA

77°15'59"W 38°41'19"N



77°15'21"W 38°40'51"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	▭	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— - — -	Channel, Culvert, or Storm Sewer
	⁞⁞⁞⁞⁞⁞	Levee, Dike, or Floodwall
OTHER FEATURES	20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	— — —	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	▭	Digital Data Available
	▭	No Digital Data Available
	☒	Unmapped

N

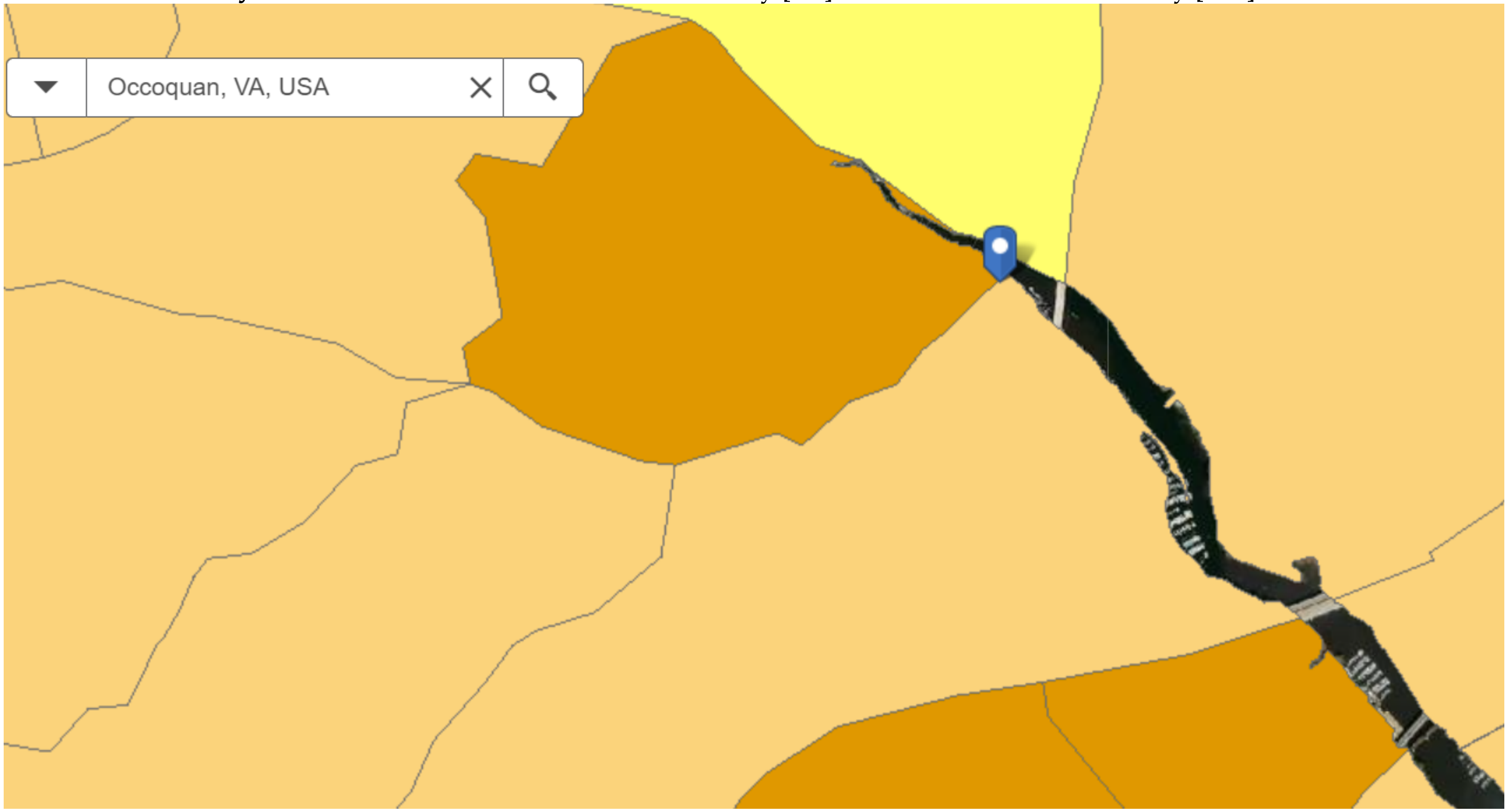
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/8/2022 at 12:22 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

- Floodplain Ordinance O-2016-01
- Northern Virginia Regional Hazard Mitigation Plan (2017)
- Vision 2026: Occoquan Comprehensive Plan 2016-2026
- **Social Vulnerability Index Score:** Moderate Social Vulnerability [0.2] and Low Social Vulnerability [-0.0]



Adapt VA's Virginia Vulnerability Viewer – Occoquan, VA

R-2022-05

TOWN OF OCCOQUAN, VIRGINIA
RESOLUTION

RESOLUTION ENDORSING SUBMISSION OF AN APPLICATION TO THE VIRGINIA COMMMUNITY FLOOD PREPAREDNESS FUND GRANT

WHEREAS, one of the highest natural risks to affect the Town of Occoquan according to the 2018 Northern Virginia Hazard Mitigation Plan is flooding and flash flooding; and

WHEREAS, since its inception, the Town of Occoquan has managed its stormwater program and participates regionally on planning efforts to increase community resiliency; and

WHEREAS, the Virginia Department of Conservation and Recreation (DCR) manages the Virginia Community Flood Preparedness Fund (CFPF) to provide support for regions and localities across Virginia to reduce the impacts of flooding by empowering communities to develop and implement action-oriented approaches to bolster flood preparedness and resilience; and

WHEREAS, DCR has solicited applications for competitive awards through three (3) eligible categories: planning and capacity building, flood prevention and protection studies, and projects; and

WHEREAS, the fund prioritizes the availability of funding for localities to develop and implement a comprehensive, whole community approach to flood preparedness and resilience to ensure coordinated mitigation efforts are maintained and enhanced by all stakeholders; and

WHEREAS, town staff has recommended that this funding be used to retain a firm to develop a Town of Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan that focuses comprehensively on the town's stormwater program and integrates historical data, analyzes existing and future conditions, capacity, and mitigation concepts to enhance the Town's resilience to floods; and

WHEREAS, if awarded, the grant budget will be established on a reimbursement basis; and

WHEREAS, the CFPF grant requires a 25% funding match, totaling $37,500 for this application and has been incorporated into the Town of Occoquan FY2023 Capital Improvement Program.

NOW, THEREFORE, BE IT RESOLVED, the Occoquan Town Council, meeting in regular session this 5th day of April, 2022 endorses submission of an application for such purpose to the Virginia Department of Conservation and Recreation's Virginia Community Flood Preparedness Fund Grant.

Adopted by the Town Council of the Town of Occoquan, Virginia this 5th Day of April 2022.

MOTION: Vice Mayor Loges

DATE: April 5, 2022
Town Council Meeting

SECOND: Councilmember Fithian

<u>Votes</u>
Ayes: Vice Mayor Loges
Nays: None
Absent from Vote: Councilmember Perkins
Absent from Meeting: Councilmember Perkins

BY ORDER OF THE TOWN COUNCIL

Attested:

Earnest W. Porta, Jr.
Earnest W. Porta, Jr., Mayor

Kirstyn Jovanovich
Kirstyn Jovanovich, Town Manager

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CFPF Submission - Round 3 - Town of Occoquan

2 messages

Kirstyn Jovanovich <kjovanovich@occoquanva.gov> Fri, Apr 8, 2022 at 1:51 PM
To: "CFPF@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Earnie Porta <eporta@occoquanva.gov>, "Bruce A. Reese" <bruce@legacy-eng.com>

Good afternoon,

Please see the Town of Occoquan's submission to the Virginia Community Flood Preparedness Fund – Round 3 Grant Program. Please confirm receipt.

Attachment: CID510124_OCCOQUANVA_CFPF.pdf

Thank you,

Kirstyn

Kirstyn Jovanovich, ICMA-CM

Town Manager

Town of Occoquan

314 Mill Street, PO Box 195

Occoquan, VA 22125

(703) 491-1918

www.occoquanva.gov

kjovanovich@occoquanva.gov

AUTHENTIC OCCOQUAN

CID510124_OCCOQUANVA_CFPF.pdf
2561K

Kirstyn Jovanovich <kjovanovich@occoquanva.gov> Fri, Apr 8, 2022 at 3:40 PM
To: "CFPF@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Good afternoon,

In case the PDF did not get delivered via the email I sent at 1:51 p.m. on 4/8/2022, I have provided a link below to access the PDF grant application.

CID510124_OCCOQUANVA_CFPF.pdf

Thank you,

Kirstyn

Kirstyn Jovanovich, ICMA-CM

Town Manager

Town of Occoquan

(703) 491-1918

kjovanovich@occoquanva.gov

[Quoted text hidden]

Mayo Island

City of Richmond Application to
The Community Flood Preparedness Fund
April 8, 2022

CITY OF RICHMOND
DEPARTMENT OF PUBLIC UTILITIES

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

City of Richmond

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

X **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510129

If a state or federally recognized Indian tribe, Name of tribe____________________________

Name of Authorized Official: Lincoln Saunders, Chief Administrative Officer

Signature of Authorized Official: Lincoln Saunders

Mailing Address (1): 900 East Broad Street

Mailing Address (2): ____

City: Richmond **State:** VA **Zip:** 23219

Telephone Number: (804) 646-7978 **Cell Phone Number:** (____) ________________

Email Address: Lincoln.Saunders@rva.org

Contact Person (If different from authorized official): April Bingham, Director of Public Utilities

Mailing Address (1): 900 East Broad Street

Mailing Address (2): ____________________

City: Richmond **State:** VA **Zip:** 23219

Telephone Number: (804) 646-5205 **Cell Phone Number:** (____) ____________

Email Address: April.Bingham@rva.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project): Acquisition of land; restoration of natural features

Project Grants (Check All that Apply)

☒ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☒ Floodplain restoration.
☐ Construction of swales and settling ponds.
☒ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☒ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☒ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply) N/A

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants N/A

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): Mayo Island (37.529252, -77.433230)

NFIP Community Identification Number (CID#):(See appendix F 510129

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Regulatory Floodway within Special Flood Hazard Area (Zone AE)

Flood Insurance Rate Map Number(s) (If Applicable): Panel 0043E

Total Cost of Project: $11,500,000.00

Total Amount Requested $9,200,000.00

Scope of Work

1. Project Information:

The City of Richmond seeks $9.2 million in funding from the Community Flood Preparedness Fund to support its acquisition of the 14.5-acre privately owned Mayo Island located in the James River. The property is located entirely within the Federal Emergency Management Agency's Regulatory Floodway Zone AE of the Special Flood Hazard Areas. It is also located in an Intensely Developed Area that overlays the Resource Protection Area of the Chesapeake Bay Preservation Area while the remainder of the island is Resource Management Area.

Mayo Island has a long history dating to the 18th century when the first bridge was erected to connect the north and south side of the James River in Richmond, Virginia. Various bridges to the island would be washed out by flooding over the centuries and the island itself would become inundated on numerous occasions. The most memorable occasions occurred in 1969, 1972, and 1985 and subsequently lead to the construction of the Richmond Floodwall that was completed in 1995. Mayo Island is one of just two privately owned islands that make up the archipelago of islands between the floodwalls. It is the largest island and also the only developed one due to the bridge that connects into Richmond to Manchester at grade.

Population:
As of April 1, 2020, the U.S. Census Bureau reports the population of the City of Richmond to be 226,610. Racially, the demographics of the City are 46.1% Black or African America and 45.2% White. 20.9% of the population live in poverty. Mayo Island is located in Census Tract 610.02, which is also identified as Opportunity Zone Census Tract ID 517600610000 by the Internal Revenue Services. Demographics specific to this geographic area are 47.1% White and 35.8% Black or African American. This particular project is located in a low-income geographic area as defined in the DCR 2022 Grant Manual.

According to the Trust for Public Land ParkServe model, 1,447 people live within the 10-minute walk model. However, within 1-mile of the property that population is growing at the fastest pace in the Richmond region. Mayo Island is also served by Mayo's Bridge for U.S. Route 360 that carries over 20,000 cars daily and is served by public transportation.

Historic Flooding Data:
Please reference the more exhaustive narrative below outlining 18th, 19th, and 20th Century flooding history.

Local Government Ability to Provide Cost Share:
See Budget Narrative.

Local Floodplain Management Regulations:
The City of Richmond's local floodplain management regulations is accessible online at https://library.municode.com/va/richmond/codes/code_of_ordinances?nodeId=PTIICICO_CH14FLMAERSECODR

2. Need for Assistance:

The Richmond Department of Public Utilities / Storm Water leadership and project managers, in coordination with the Richmond Department of Parks & Recreation and other departments and agencies, are experienced in executing capital projects from the time of inception and scoping to construction and final close-out. DPU/SW has sufficient capacity including staff, external consultants and contractors, and financial resources to adequately manage and facilitate all that is required to bring this project to completion. DPU/SW has three Capital Projects Managers and 4 Engineers. Any and all reporting requirements, either those of the City of those specific to DCR Community Flood Preparedness Grant Fund will be adequately addresses as may be required.

Mayo Island is located in Census Tract 610.02, which is also identified as Opportunity Zone Census Tract ID 517600610000 by the Internal Revenue Services. The project thus meets the definition for "low-income geographic area" in the 2022 Grant Manual. According to ADAPT Virginia's Virginia Vulnerability Viewer, Mayo Island is classified as High Social Vulnerability and scores 1.2 on the Social Vulnerability Index.

3. Goals and Objectives:

The goal of the project is simple – acquire Mayo Island from private landowners to turn it into public open-space and implement Natural and Nature Based Features (NNBF) such as converting riparian buffer turf & impervious areas to forest and protecting natural wetlands with surrounding upland buffer. This has been part of the City of Richmond's comprehensive plan for 30 years.

4. Approach, Milestones, and Deliverables:

The island was listed for sale in February 2022 for an asking price of $19 million. The City of Richmond in coordination with Capital Region Land Conservancy (CRLC) have completed a fair market value appraisal of the property, which is $11.4 million, that meets Yellow Book and Uniform Standards of Professional Appraisal Practice (USPAP). Per the local comprehensive plan, the City shall acquire the property for fair market value. The owners are in negotiation with CRLC to enter a purchase agreement. CRLC will then work to transfer the property to the City of Richmond as it has done with similar projects at Dock Street and the James River Park System.

A purchase agreement is anticipated to be finalized in Summer 2022 after which due diligence of the property will be conducted. This is to include title research and a Phase I Environmental Survey Assessment. An existing ALTA survey of the property was prepared in April 2008 by Timmons Group.

Closing on the acquisition of Mayo Island could occur in 2022 but is dependent on factors discovered during the due diligence period. Work to remove impervious surface and to restore riparian area, plant trees, and implement other BMPs as well as provide public access will occur after the Community Flood Preparedness Grant performance period.

5. Relationship to Other Projects:

After the 1985 flooding of Downtown Richmond, the Richmond Floodwall was built at a cost of $143 million to the city and federal agencies. Mayo Island and Mayo's Bridge remained in the floodway. Since 1994, the acquisition of Mayo Island has been in the City's master plan though the purchase price has remained out of reach for the City's Capital Improvement Plan budget. In partnership with other non-profits such as Capital Region Land Conservancy, the City is beginning to acquire parcels that have been identified as strategic acquisitions along the riverfront. This includes 5.2 acres at Dock Street next to Great Shiplock Park that is in the floodplain as well as 6 acres along the James River at Brander Street and adjacent to Ancarrow's Landing. This work to acquire private lands is helping to build out the eastern portions of the James River Park System that welcomes more than 2 million visitors annually. Mayo Island will become a key feature of the park.

Additionally, renovation and/or replacement of the 110-year-old Mayo's Bridge has been deemed a critical priority for the City of Richmond. The Virginia Department of Transportation has determined that the bridge is structurally deficient. The cost to replace the bridge is estimated at $80 million of which $14 million has been secured. This includes $5 million that was recently provided through the federal Infrastructure Investment and Jobs Act. Additional funding for Mayo's Bridge is being sought from the Commonwealth Transportation Board.

6. Maintenance Plan:
A benefit to nature-based projects is that there can be low ongoing maintenance costs. Once Mayo Island is acquired, restoration work can commence to remove concrete and asphalt surfaces and restore vegetation. Mayo Island will then be placed under the supervision of the James River Park System with a conservation easement. Stewardship of the conservation values will become a community responsibility with support from non-profit organizations including Capital Region Land Conservancy and Friends of James River Park.

7. Criteria:
Appendix B is attached to this application. All criteria for eligibility have been met for Flood Prevention and Protection Projects. Reponses to scoring information also make the Mayo Island acquisition project very competitive with a total score of 97 out of 110 available points. This includes acquisition of property in the local comprehensive plan that includes restoration of floodplain to natural and beneficial function, living shorelines and vegetated buffers, permanent conservation of land in the Floodplain and Flooding Resilience layer of ConserveVirginia v3.0. As noted previously, the project area has a Social Vulnerability Index Score of 1.2. and is within a low-income geographic area as defined in the 2022 Grant Manual. The project will also help the City of Richmond meet Chesapeake Bay TMDLs through best management practices to reduce nitrogen, phosphorus, and sediment as established in the Commonwealth of Virginia Chesapeake Bay TMDL Phase III Watershed Implementation Plan. Land Use Change BMPs that are anticipated for post-acquisition implementation include Impervious Urban Surface Reduction, Forest Buffers, Urban Forest Planting, and Urban Tree Canopy Expansion. Additional BMPs specific to the James River Basin that may be implemented include Conservation Landscaping Practices, Erosion and Sediment Control, Shoreline Management (Urban), Urban Nutrient Management, Wet Ponds and Wetlands. Removing approximately 8 acres of surface parking and restoring it to a more natural area will have many co-benefits.

Additionally, the City of Richmond is a local government and thus an eligible applicant. The City of Richmond fulfills the Resilience Plan submission requirement as confirmed by correspondence letter between Wendy Howard Cooper, Director Dam Safety and Floodplain Management, and Allen Shue, Greeley and Hansen, dated August 19, 2021.

Budget Narrative

The total estimated cost for the acquisition of Mayo Island is expected to be $11.5 million. $11.4 million is the fair market appraised purchase price. Other due diligence costs are expected to be approximately $100,000 to include appraisal, survey, legal, title, and Phase I ESA. A budget pro forma is provided below showing estimated income and expenses per quarter.

The City of Richmond is requesting $9.2 million (80% of the nature-based project cost) from the Community Flood Preparedness Fund.

The City of Richmond currently has the remaining $2.3 million needed to complete this project. $1.5 million is currently budgeted for future park acquisition from American Rescue Plan Act funding and the balance of $800,000 will be provided from general operating funds. However, through efforts of the Capital Region Land Conservancy and other partners, the City anticipates that its matching share could be privately raised. These funds are not pledged by the organizations referenced but are instead sources that will be asked for financial assistance with the project.

Funding to complete the transformation of Mayo Island post acquisition will be provided in future years. This will include replanting riparian tree buffers and removing impervious surfaces and providing nature-based, flood resilience projects.

	2022 Q1	**2022 Q2**	**2022 Q3**	**2022 Q4**	**2023 Q1**	**TOTAL**
EXPENSES						
Purchase	$ -	$ 150,000	$ 11,250,000	$ -	$ -	$ 11,400,000
Appraisal	$ 10,000	$ 10,000	$ -	$ -	$ -	$ 20,000
Survey	$ -	$ 10,000	$ -	$ -	$ -	$ 10,000
Legal	$ -	$ 10,000	$ -	$ -	$ -	$ 10,000
Title	$ -	$ 20,000	$ -	$ -	$ -	$ 20,000
Phase I ESA	$ -	$ 25,000	$ -	$ -	$ -	$ 25,000
Phase I Archeology	$ -	$ -	$ -	$ -	$ -	$ -
Interest	$ -	$ -	$ -	$ -	$ -	$ -
Other - Contingency	$ -	$ 15,000	$ -	$ -	$ -	$ 15,000
SUBTOTAL	$ 10,000	$ 240,000	$ 11,250,000	$ -	$ -	$ 11,500,000
	2022 Q1	**2022 Q2**	**2022 Q3**	**2022 Q4**	**2023 Q1**	**TOTAL**
ANTICIPATED REVENUE						
Comm Flood Prep Fund	$ -	$ -	$ 9,200,000	$ -	$ -	$ 9,200,000
Cabell Foundation	$ -	$ -	$ -	$ 500,000	$ -	$ 500,000
Mary Morton Parsons Foun	$ -	$ -	$ -	$ -	$ 250,000	$ 250,000
VLCF	$ -	$ -	$ -	$ -	$ 500,000	$ 500,000
Private Donors	$ 6,000	$ 150,000	$ 650,000	$ 250,000	$ -	$ 1,056,000
SUBTOTOAL	$ 6,000	$ 150,000	$ 9,850,000	$ 750,000	$ 750,000	$ 11,506,000

Historical Background

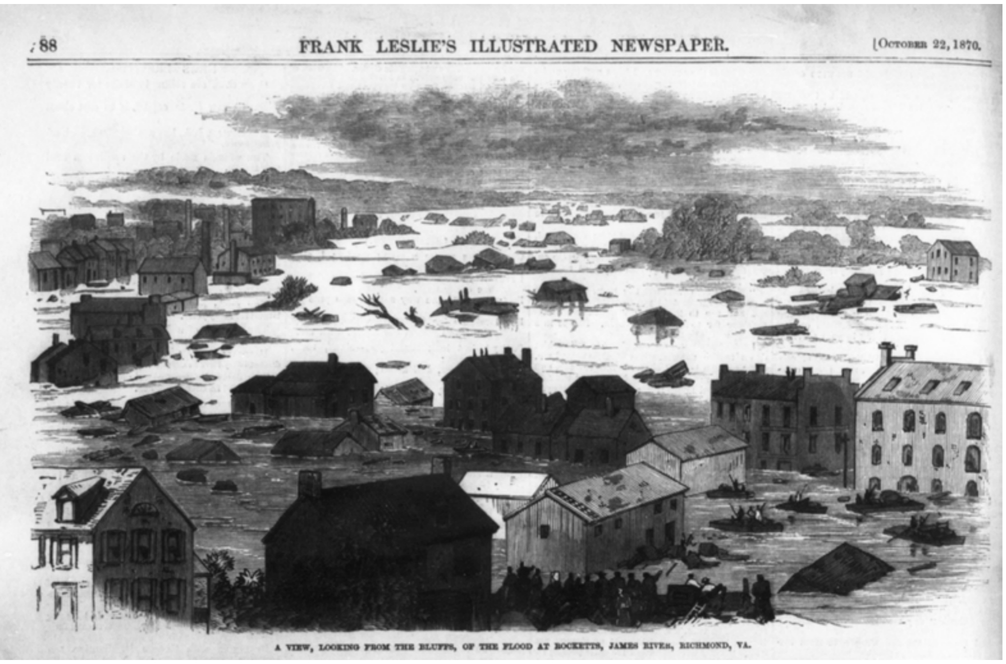
Mayo Island is named for William Mayo (1685-1744) who laid out Richmond's street grid in 1737. He conceived a bridge that would be the first to cross the James River when only ferry operations connected the north and south shores during the colonial period. It was to be constructed at the end of the fall line where rapids cease and the tidal flatwater begins. His son John Mayo (1737-1786) was granted a charter in 1785 by the General Assembly to build a toll bridge. He died before it was built. His son John Mayo Jr. (1760-1818) completed the first bridge crossing, floating pontoon bridge – "large logs, raft-like, spiked to the rocks, with rough floor laid on the logs" across the river in 1788.

Mayo's Island began as two islands: Tollhouse Island to the west and Confluence Island to the east. The two islands were merged and expanded by fill and alluvial deposits to create Mayo's Island's present form. The Tollhouse Island section contained the tollhouse and a wooded grove used for picnics, barbeques, fishing, and quoits

After the Great Fresh of 1771 with its "wall of water" killing about 150 people and reaching flood stage of forty-five feet above normal, it's hard to imagine the desire to have invested in a bridge that seemed likely to washout. The Virginia Gazette reported the 1771 flood being twenty feet higher than that in May 1766. It is estimated to have crested at 40 feet. Mayo's Bridge was frequently destroyed by floods and rebuilt. It was a profitable venture afterall with six-and-a-quarter cents per person, per horse, and per wheel being charged at the toll house located on Mayo Island. Historical documents reveal that the bridge was destroyed by floods in 1790, 1802, 1814, 1816, 1823, 1835, 1847, 1870, 1877, 1882, and 1899. It was also burned during the War of 1812 and in 1865 during the evacuation of Richmond by the Confederacy during the American Civil War. The current filled concrete bridge was built in 1913 and has withstood numerous flood events.

View of Richmond by John William Hill, artist & F. Palmer, lithographer (1852)

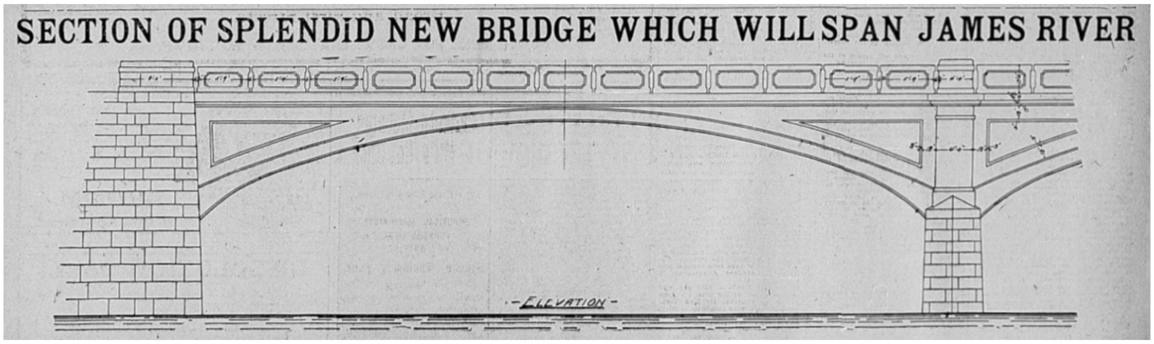
In addition to the Great Fresh of 1771, the Great Flood of 1870 was a devastating event in Richmond. Frank Leslie's Illustrated Newspaper October 22, 1870 reported "At a later hour in the day the entire portion of Mayo's Bridge, extending from Manchester to Mayo's Island, was swept away by the foaming torrent, and the huge mass floated slowly down the river. Further down, toward Rocketts, all the docks were completely submerged, and seriously damaged." An accompanying illustration shows a view from Libby Hill of houses and debris floating down the James River past Rockett's Landing.



A View, Looking from the Bluffs, of the Flood at Rocketts, James River, Richmond, Va. by Frank Leslie Illustrated Newspaper (1870)

The repaired Mayo Bridge (1889)

Plans to build a new bridge in 1904 and were designed with previous flood threats in mind. According to a *Times-Dispatch* article, the new bridge was to be “five feet higher than the flood of 1877, which was the highest flood known here.” Engineers at the time claimed the class of construction minimized danger from extreme floods. “These bridges have been known to be completely submerged by water, and remain perfectly intact.” As a free bridge, the project was funded jointly by Manchester and Richmond at a proposed cost of $250,000 and was laid out by the Concrete Steel Engineering Company of New York.


SECTION OF SPLENDID NEW BRIDGE WHICH WILL SPAN JAMES RIVER

Times-Dispatch July 3, 1904

In March 2022, U.S. Senator Mark Warner announced $5 million in federal funding to help pay for replacement of the 110-year-old bridge. The total cost is expected to be around $80 million with $14 million secured and requests pending with the Commonwealth Transportation Board.

In the 1950s a motor freight company, the Overnight Transportation Co., operated from this Mayo Island. Its offices and terminal were located in the two-story brick building that faces Mayo's Bridge at 501 South 14th Street. The existing T-shaped brick building on the east side was used as a truck maintenance and storage facility by the company. Later, other transportation companies used the east side of the island for activities ranging from refurbishing container trailers to truck maintenance to truck and trailer parking and storage.

During the 1950s, two gas stations, which were almost across the street from each other, were operated on the island. An ESSO station, which no longer exists, was located on the east side of Mayo's Bridge and a Gulf station, which operated until the early 1970s, was located on the island's west side. The building that housed the Gulf station is now used as part of the Reynolds Recycling operation.'

Another major user of the island was the paper and wood related industry. In the 1870s a lumber mill operated on the east side of the island.' The western side of the island was used by several paper companies. In the 1950s, the Manchester Paper Company operated a paper storage warehouse on the western portion of the island, followed by the Standard Paper Manufacturing Company and finally a paper recycling company until its warehouse was destroyed in 1987 by fire.

Early Public Recreation

In 1875, the Virginia Boat Club was founded and boathouses were built on the south side of Mayo Island. Boathouses with rowboats, canoes, rowing sculls were a regular feature until 1969 when the facilities of the Club were destroyed by flooding. Mayo Island also served as the home of Richmond's minor league baseball team, the Richmond Colts. The stadium known as Mayo Island Park, later named Tate Field, operated on the island from 1894 until 1941 when it was destroyed by a fire. During a game in 1922, legendary slugger Babe Ruth hit a home run over the right-field fence. College football games were also played at the Park between 1921 and 1928 when City Stadium opened. During this era of great public access to the island for recreation, the island continued to regularly flood. Events in 1936 and 1937 brough some of the highest floodwaters to Richmond.

Virginia Boat Club, Tate Field, and Mayo Island by Dementi Studio (1931)

Tate Field by Dementi Studio (1937)

Modern Flooding

The history of flooding in Richmond is well documented. However, events in the past 50 years are among the top with regard to height of flood waters and financial impacts. Many people recall the devastation that Hurricanes Camille (1969), Agnes (1972), and Juan (1985) wrought on Downtown Richmond. According to the National Oceanic and Atmospheric Administration, these hurricanes represent the highest recorded crests of the James River with data from the 1771 and 1870 events being reported anecdotally.

Hurricane Agnes made landfall in Florida on June 19, 1972. The tropical system drenched the eastern United States and flooded Shockoe Bottom and Manchester in Richmond, Virginia. Richmond's Mayo Island and Mayo Bridge were inundated. On June 23 the James River crested at 28.62 feet at the Richmond Westham gauge and 36.5 feet at the Richmond City Locks gauge. Thirteen fatalities and over $125 million in losses were reported in Virginia.

Richmond Times Dispatch (1972)

Hurricane Camille, a Category 5 hurricane, made landfall near the mouth of the Mississippi River on August 17, 1969. The remnants of the storm crossed the Appalachian Mountains and devastated Nelson County, Virginia. Rainfall in excess of 27 inches, mostly falling in a five-hour period, overwhelmed the James River and its tributaries. On August 21, the James River crested at 41.3 feet at Columbia gauge, 24.95 feet at Richmond Westham gauge, and 28.6 feet at Richmond City Locks gauge. 153 people died and numerous roads, bridges, and structures were damaged or destroyed. Damage totaled more than $140 million and Virginia was declared a disaster area.

Richmond Times Dispatch (1969)

Rounding out the Top 3 floods is Hurricane Juan that combined with another low-pressure system and dropped significant rainfall across the Appalachian Mountains and Mid-Atlantic in late October 1985. The James River crested at 24.77 feet at the Richmond Westham gauge and 30.76 feet at Richmond City Locks gauge. Several blocks of Downtown Richmond were flooded on November 7. President Ronald Reagan signed legislation authorizing the construction of Richmond’s floodwall the following year.

Richmond Times Dispatch (1985)

A joint city and federal project, the Richmond Floodwall was completed in 1995 at a cost of $143 million. It earned its accreditation from the Army Corps of Engineers on March 19, 2010. The floodwall is located on both the north and south side of the James River. The north side measures 4,277 feet and protects 150 acres. The south side measurers 13,046 feet long and protects 600 acres. There are 30 sluice gates and 19 road closures that are inspected every 90 days. The road closures are operated once a year. The area between the floodwall is uninhabited and largely undeveloped with the exhibition of Mayo Island. On November 12, 2020 the flood gates at Dock Street and Brander Street were closed due to precautionary measure. It was the first time since 1999 that the gates were closed due to flood risk.

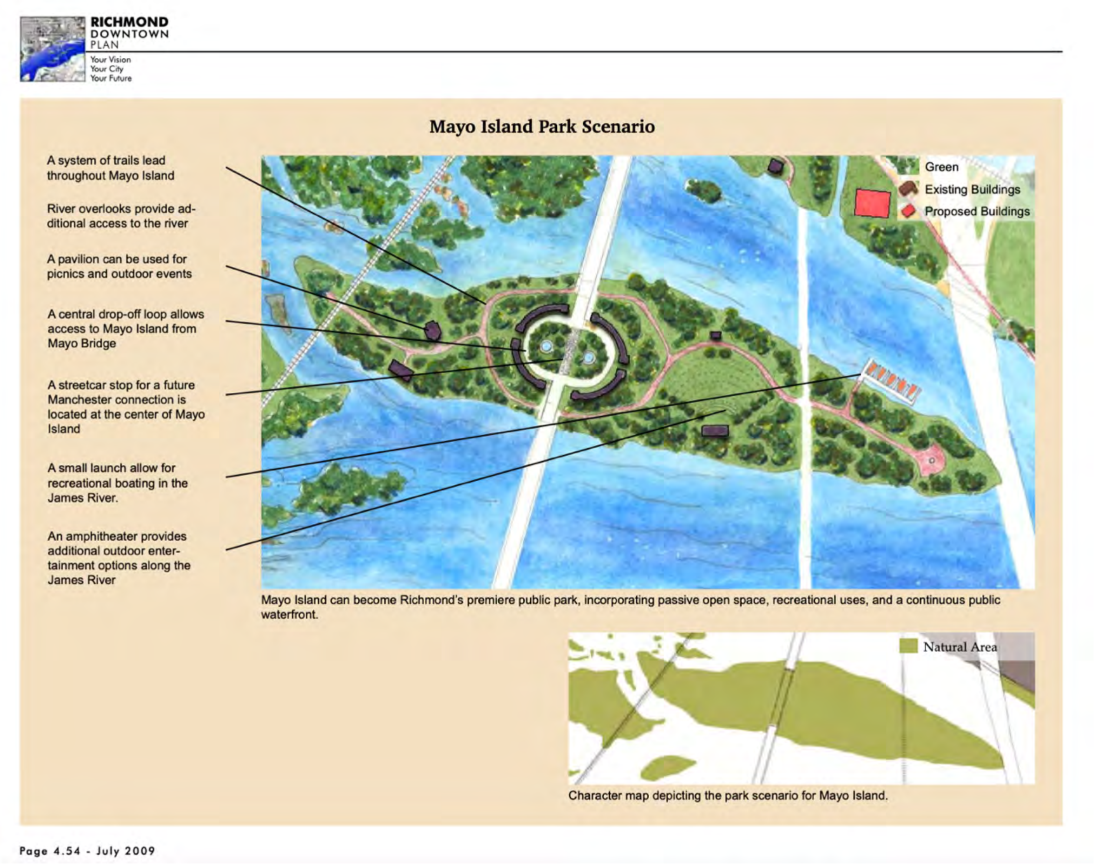
Local Comprehensive Plan

Acquisition of Mayo Island has been in the City's comprehensive plan almost four decades. The 1983 Master Plan noted "the conversion of Mayo Island into public open space is recommended due to its accessibility by City residents, including the handicapped, the availability of excellent fishing opportunities, and the potential for boating access." In 1994, the City of Richmond received a grant of $15,000 from the Virginia Coastal Resources Management Program through the Department of Environmental Quality to conduct a study of Mayo's Island. The explicit interest was to provide fishing access, boating access, and reestablish wildlife habitat by removing some of the impervious surface and revegetating part of the island. Amendments to the 1984 Downtown Plan were then adopted by Ordinance 1994-052-58.

The acquisition of Mayo Island has been more particularly detailed in the Richmond Downtown Plan (adopted in 2009), Richmond Riverfront Plan (adopted in 2012), and James River Park Master Plan (adopted in 2019).

On page 4.47 of the Richmond Downtown Plan, one of the goals identified is "Establish Mayo Island as a premiere public park." Acquisition is specifically noted: "Mayo Island in the center of the river should be purchased. The City should purchase the properties at fair market value and negotiations with these various property owners should begin as soon as possible." The plan further notes "Mayo Island, half of Brown's Island, Vauxhall Island, and most of the Canal and James River waterfront is privately held by individuals, corporations and industrial owners. While it is impractical to consider buying back all of these properties for public use in the present generation, the City should plan strategic purchases of some of these properties, and should secure waterfront access and trail right-of-way rights from the others, regardless of whether there is future development by the private and/or public sectors."

"The transformation of Mayo Island into a central public park cannot occur without the restoration of Mayo Bridge. The establishment of a comfortable pedestrian linkage between Downtown and Manchester also depends upon the restoration of the Mayo Bridge." "A historic bridge restoration project of this scale will require a staging area. As a part of the restoration project, Mayo Island could be purchased for staging, to later become a celebrated riverfront park."



RICHMOND DOWNTOWN PLAN
Your Vision
Your City
Your Future

Mayo Island Park Scenario

A system of trails lead throughout Mayo Island

River overlooks provide additional access to the river

A pavilion can be used for picnics and outdoor events

A central drop-off loop allows access to Mayo Island from Mayo Bridge

A streetcar stop for a future Manchester connection is located at the center of Mayo Island

A small launch allow for recreational boating in the James River.

An amphitheater provides additional outdoor entertainment options along the James River

Mayo Island can become Richmond's premiere public park, incorporating passive open space, recreational uses, and a continuous public waterfront.

Character map depicting the park scenario for Mayo Island.

Page 4.54 - July 2009

Mayo Island also received a dedicated chapter in the 2012 Richmond Riverfront Plan.

26 NOVEMBER 2012

RICHMOND *RIVERFRONT* PLAN

MAYO'S ISLAND: LONG-TERM PLAN

Mayo's Island would be transformed from a predominantly paved parking lot with decaying buildings to an island landscape inviting exploration. Pedestrian and bike trails would traverse the island, maximizing access along the river and across the island, intersecting with a diversity of programmatic activities. From open lawns for informal play to integrated play environments, the transformed Mayo's Island would offer opportunities for play, bike and skate rental, as well as passive gardens, within an iconic 21st-century landscape capitalizing on its position in the middle of the river. The intersection of Mayo Bridge with Mayo's Island can be detailed as a speed table, or benched travel way, effectively calming speeding bridge traffic most days, while on rare occasions allowing the bridge to be closed for civic events. At 16-acres, Mayo's Island is more than twice as large as Brown's Island, and positioned squarely in the middle of the James River. A publicly-owned Mayo's Island would allow ample space for a new Richmond landscape type: an exploratory, green landscape capable of hosting events and festivals, a dynamic hybrid landscape that does not exist along the Richmond Riverfront.

SECTION 2: RIVERFRONT PLAN

PAGE 69

“Mayo’s Island is strategically located to serve communities on both the north and south sides of the River as a premier regional public open space. Mayo’s Island is both the largest and most vehicular-accessible of all the islands; additionally, it is adjacent to the habitat-rich archipelago of smaller islands immediately upriver. The island should be acquired for public use as open space, consistent with recommendations in the 2009 Downtown Master Plan, that envisioned Mayo’s Island as the centerpiece of the Riverfront. The island could provide a distinct open space that provides walking and biking trails, multiple watercraft launches, an exploratory green landscape, play areas, an event lawn, and restored riparian overlooks upriver and downriver. Existing parking lots could be reused adjacent to the road, and a plaza with concessions and recreational equipment rentals could offer support for a variety of programs. The rehabilitation of Mayo Bridge should integrate with this anticipated revitalization of Mayo’s Island, in support of this anticipated active, pedestrian landscape. The Plan recommends that 14th Street as it crosses the island be reconfigured to calm traffic speed and accommodate the anticipated foot and bike traffic crossing the street from one side of the island to the other. The acquisition and transformation of Mayo’s Island into public open space is a priority for protecting the integrity of the James River as an accessible landscape, reflective of Richmond’s rich natural and cultural legacy: Mayo’s Island becomes the ‘green jewel’ of the Richmond Riverfront.”

“Mayo’s Island would be transformed from a predominantly paved parking lot with decaying buildings to an island landscape inviting exploration. Pedestrian and bike trails would traverse the island, maximizing access along the river and across the island, intersecting with a diversity of programmatic activities. From open lawns for informal play to integrated play environments, the transformed Mayo’s Island would offer opportunities for play, bike and skate rental, as well as passive gardens, within an iconic 21st-century landscape capitalizing on its position in the middle of the river. The intersection of Mayo Bridge with Mayo’s Island can be detailed as a speed table, or benched travel way, effectively calming speeding bridge traffic most days, while on rare occasions allowing the bridge to be closed for civic events. At 16-acres, Mayo’s Island is more than twice as large as Brown’s Island, and positioned squarely in the middle of the James River. A publicly owned Mayo’s Island would allow ample space for a new Richmond landscape type: an exploratory, green landscape capable of hosting events and festivals, a dynamic hybrid landscape that does not exist along the Richmond Riverfront.”

The James River Park Master Plan that City Council adopted in 2020 reiterates the need to acquire Mayo Island. A citation from page 61 reads: “Mayo Island was the single largest island identified in the 2012 Riverfront Plan, and remains the primary, privately held island for future Park acquisition. Since then, the property has been repaved with approximately 625 striped parking spaces.”

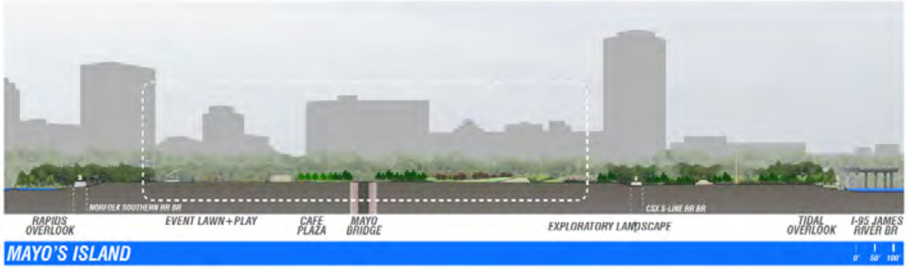
The acquisition of Mayo Island would support the City’s RVA Clean Water Plan by allowing it to implement the following strategies.

1) Replace or restore 10 acres of riparian buffers in MS4 and/or Combined Sewer System area. Evaluate opportunities for inclusion of access points to waterbody for recreational activities.
2) Place an additional 10 acres under conservation easement, prioritizing conservation of land that creates connected green corridors. Evaluate opportunities for inclusion of access points to waterbody for recreational activities.

Finally, the current Richmond 300 Master Plan lists as one of its goals: “develop and implement the plan for rehabilitating/replacing the Mayo Bridge that incorporates pedestrian and bicycle infrastructure.”

Physical conditions

Mayo Island is the largest and most accessible of the archipelago fall line islands in the James River. It is approximately 2,140 feet long and about 500 feet wide at its widest point. Mayo Island is 29 feet in elevation above sea level at its highest point and is located in the James River's 100-year floodplain. Because the James River drains 25% of the state, moderate floods are estimated to occur every 3 1⁄2 years. In the middle of the island, the 100-year floodplain is 36 feet in elevation while at the upper end of the island it is 36.9 feet. Essentially flat, the island has relatively steep banks approximately 25 feet to 28 feet high around most of its perimeter, making access to the water somewhat difficult. Exceptions to the steep bank conditions occur at the island's upstream and downstream tips, where more gentle and sloping terrain is found. Access to the water is easiest at these locations.



About one-third, or 4.75 acres, of the island's total of approximately 13.62 acres are located west of Mayo's Bridge (14th Street) while 8.87 acres, are located east of the bridge. When reference is made to the western portion of Mayo Island, it refers to that portion of the island west of Mayo's Bridge (14th Street) while reference to the eastern section of the island refers to the section of the island east of Mayo's Bridge (14th Street). The majority, approximately 7 acres of the island is paved with impervious concrete and asphalt. This includes 2.5 acres of paved parking on the western section and 4.5 acres of paved parking and impervious surfaces including structures on the eastern section of Mayo Island.

Current uses on Mayo Island include surface parking lots, recycling transfer, and artist loft rental. Future development of this privately-owned island is constrained by three significant factors: flooding, infrastructure, and utilities. Mayo's Island lies in the Regulatory Floodway and 100-year floodplain and has been flooded a number of times in the past twenty-five years. The island also lies in a Chesapeake Bay Preservation Area with part of the island classified as an Intensely Developed Area (IDA) designated as an overlay to the Resource Protection Area, this category includes “areas of existing development and infill sites where little of the natural environment remains.”

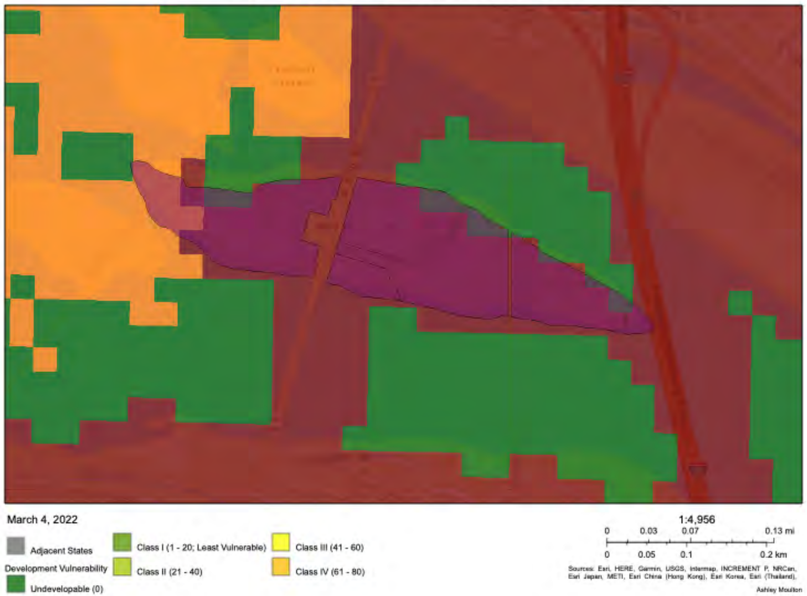
Other portions of the island are classified as a Resource Management Area. The Virginia Department of Conservation & Recreation’s Development Vulnerability Model shows Mayo Island as fully developed.

Chesapeake Bay Protection Areas Map

Intensely Developed Areas, Resource Management Areas, Resource Protection Areas

City of Richmond Departments of Information Technology and Assessor of Real Estate | City of Richmond Departments of Information Technology and Planning and Development Review | DIT

Mayo - Development Vulnerability Model



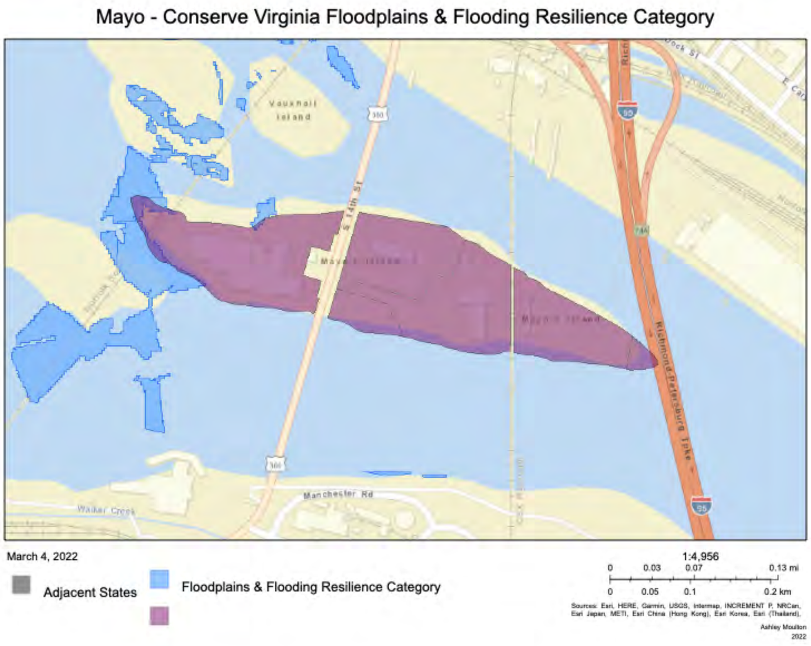
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand),

Ashley Moulton
2022

The general topographic elevation of the island is lower than the base flood elevation, making redevelopment extremely difficult from a construction design standpoint. Historically, the island has endured multiple catastrophic floods resulting in immersion and the total loss of various structures. Additionally, the 1995 floodwall on either bank of the James is likely to amplify the flooding impact at Mayo’s Island; the former wide breadth of the river at this location is now constrained between two floodwalls, concentrating floodwaters. The entire island is located in the Regulatory Floodway. The regulations governing development in floodways (44 CFR § 60.3.(d)3) stipulate that no new development, substantial improvements on existing development, or fill is permitted without an engineered certificate proving the development will not contribute to an increase in flood levels. If such development is approved, the City of Richmond's floodplain ordinance requires that residential and commercial structures must be elevated one foot above the base flood elevation, which ranges from 35-37 feet. In addition to the Regulatory Floodway building limitations, any redevelopment of commercially-viable structures requires a secondary emergency vehicle egress route to either bank of the river. While any new egress bridge would be a significant cost, it would also have to surmount the height of the floodwalls that protect the City from a 280-year flood event. The absence of any detectable link to the City sanitary sewer system is the third constraint. Written records and site investigations have shown no evidence of a functioning sanitary sewer system; therefore island structures do not currently conform to regulatory health and building codes. The cost of addressing all three constraints, particularly the implied public funding of significant infrastructure improvements to solve the constraints, leads the City to focus on acquisition rather than private development.

Conservation Values

Mayo Island ranks in the Top 10 Percent of land within Virginia to be protected as scored by ConserveVirginia 3.0, the scientific model developed by the Department of Conservation & Recreation. The property is included in several categories – Floodplains & Flooding Resilience, Cultural and Historic Preservation, and Scenic.



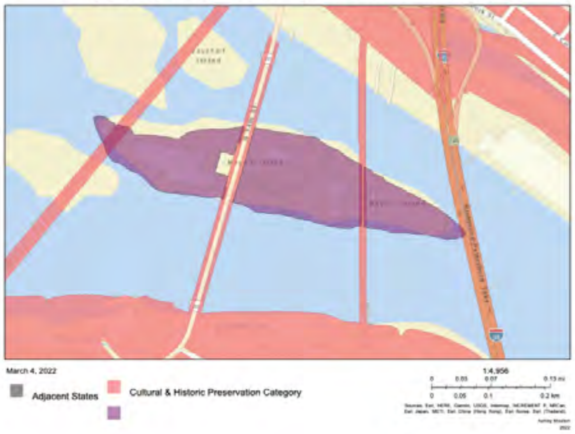
Mayo - Conserve Virginia Floodplains & Flooding Resilience Category

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand),

Ashley Moulton
2022

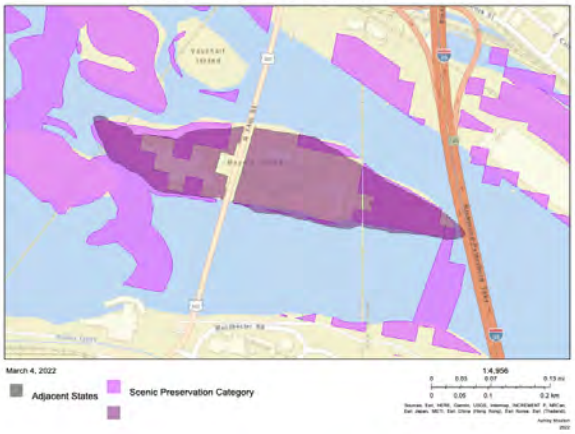
Mayo's Island is located in a stretch of the James River designated as a State Scenic River. Known as the Falls of the James Scenic River, this section is administered by the Falls of the James Scenic River Advisory Board.

Mayo - Conserve Virginia Cultural & Historic Preservation Category



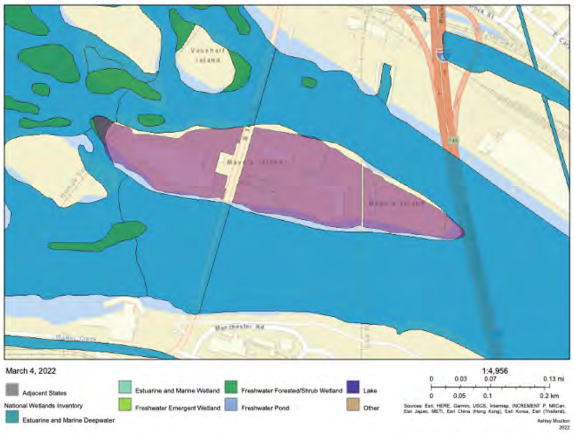
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand). Ashley Moulton 2022

Mayo - Conserve Virginia Scenic Preservation Category



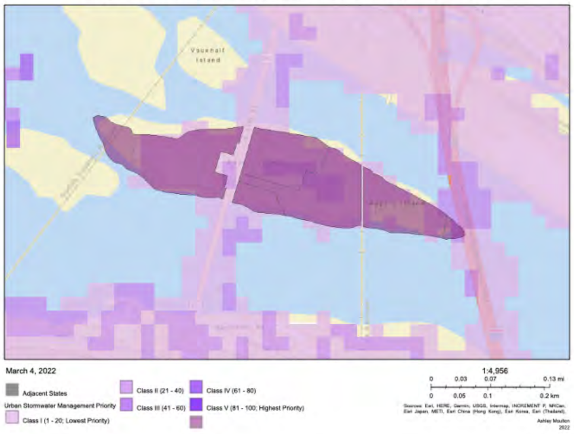
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand). Ashley Moulton 2022

Mayo - National Wetland Inventory



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand). Ashley Moulton 2022

Mayo - Watershed Model Urban Stormwater Management Priority



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand). Ashley Moulton 2022

Nature-Based Infrastructure and Restoration Opportunity

As concluded in the 1994 report *An Evaluation of Mayo's Island for Potential Public Access for Recreation and Open Space Use*, "restoring most of the surface of Mayo's Island to a natural condition will be beneficial to wildlife, reduce runoff, and present a more pleasing environment for public use." This sentiment has been reiterated in subsequent comprehensive plans and more particularly detailed in the Richmond Downtown Plan (2009) and Richmond Riverfront Plan (2012).

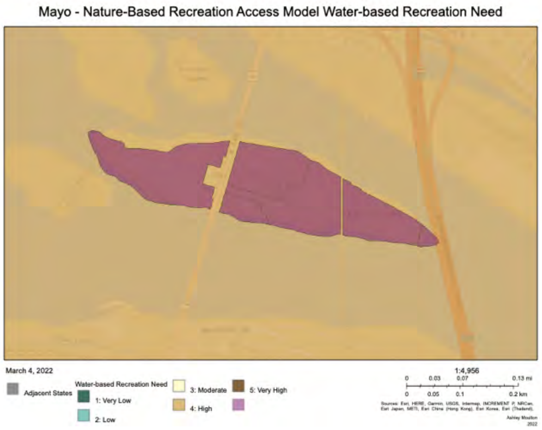
Current restoration planning models, such as the James River Water Quality Improvement Program Restoration Planner (JRWQIP) that was developed by the Chesapeake Conservancy with funding from the Virginia Environmental Endowment and the ADAPTVA Interactive Map created by the Center for Coastal Resources Management and Virginia Institute of Marine Science, show the restoration priority of for Mayo Island as well as particular initiatives that can be incorporated into future plans for the property after acquisition.

The JRWQIP Restoration Planner notes that the Mayo Island is of the highest priority for restoration opportunities in the Middle James River. Likewise, the Adapt VA Interactive Map shows the western side of Mayo Island as having many benefits as Lands for Protection in using Natural and Nature-Based Features for coastal resilience. Such benefits include 1) interception and reduction of flooding as floodwaters are stored and slowly released by trees and wetlands; 2) protecting and restoring natural features can earn credits for reduced insurance premiums through the National Flood Insurance Program's Community Rating System (in which the City already participates and could directly benefit); 3) forests, trees, and wetlands effectively filter air pollution and remove excess nitrogen and phosphorus and also capture sediment in stormwater runoff; 4) floodplain restoration reestablishes a more natural hydrologic regime that connects wetlands, waterways, and adjacent land.

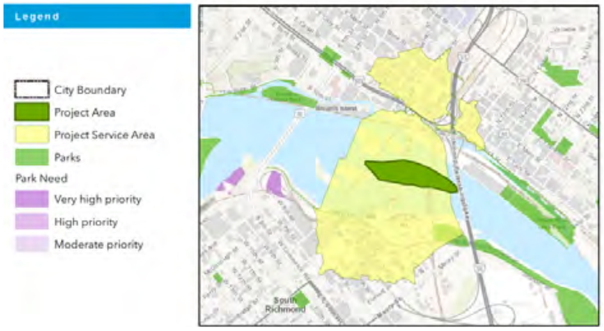
Future Public Access and Recreation:

"Mayo Island could provide recreational benefits by increasing the opportunities for the public to experience and enjoy the James River at a unique area, the fall line. Trails; landscaping; fishing access sites, including for handicapped fishing; a boat launching site; food service; tackle shop; and other amenities and services would enable Mayo's Island to provide a range of outdoor recreational benefits. Private development could provide some of these recreational opportunities on and from the island." That was the conclusion of the 1994 report prepared for the City of Richmond. As has been articulated through the Richmond Downtown Plan (2009) and Richmond Riverfront Plan (2012) the acquisition of Mayo Island for outdoor recreation remains a high priority. It could also serve as a visitor hub in support of the adventure tourist looking to book excursions such as whitewater rafting, cycling the Virginia Capital Trail, mountain biking at the Richmond Ride Center, rappelling the Manchester Climbing Wall, etc.

According to the Nature-Based Recreation Access Model for Water-Based Recreation Need, Mayo Island ranks as a high need. Mayo Island ranks as a moderate need for the Land-Based Recreation Need.

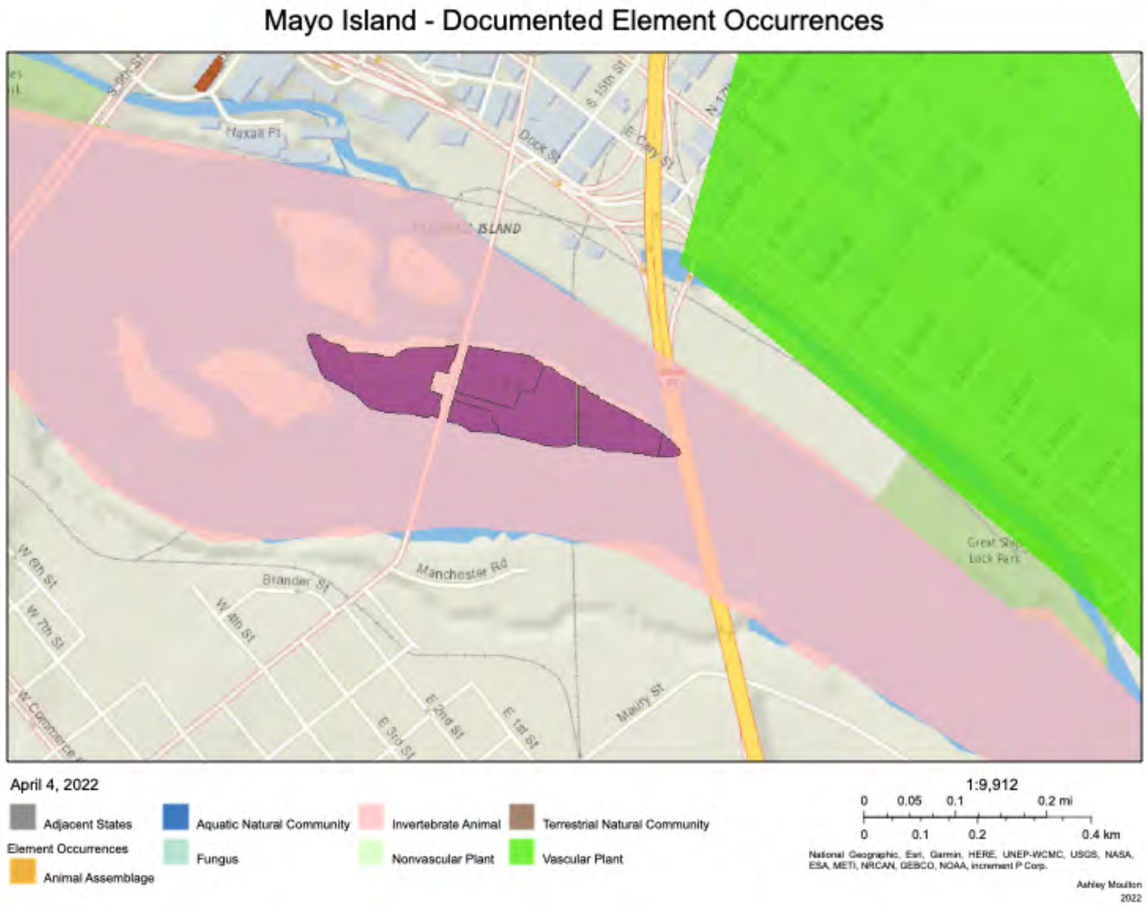


Trust for Public Land – ParkServe 10-minute Walk Model

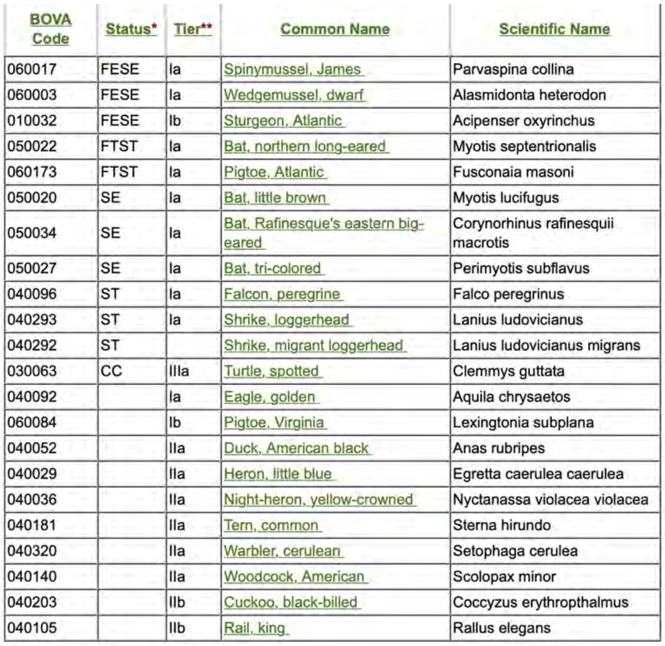


Improved Wildlife Habitat

Mayo Island is situated at an important confluence of the James River where the freshwater rapids meet brackish tidal waters. This is why residents have come to the banks of the James River and Mayo Island and atop Mayo's Bridge to fish. The Department of Conservation and Recreation Natural Heritage Division reports Documented Element Occurrences for invertebrate animal in the river surrounding Mayo Island. This is due to the Atlantic Sturgeon that is Federally Endangered and State Endangered with a status of 1b. The James River is a major fishway for anadromous fish, including American and hickory shad, alewife and blueback herring, and striped bass, and yellow perch. While none of these anadromous fish species are threatened or endangered the herring and shad have a Moderate Conservation Need according to the Virginia Department of Game and Inland Fisheries. Probably the heaviest fishing traffic is during the spring spawning run of perch.

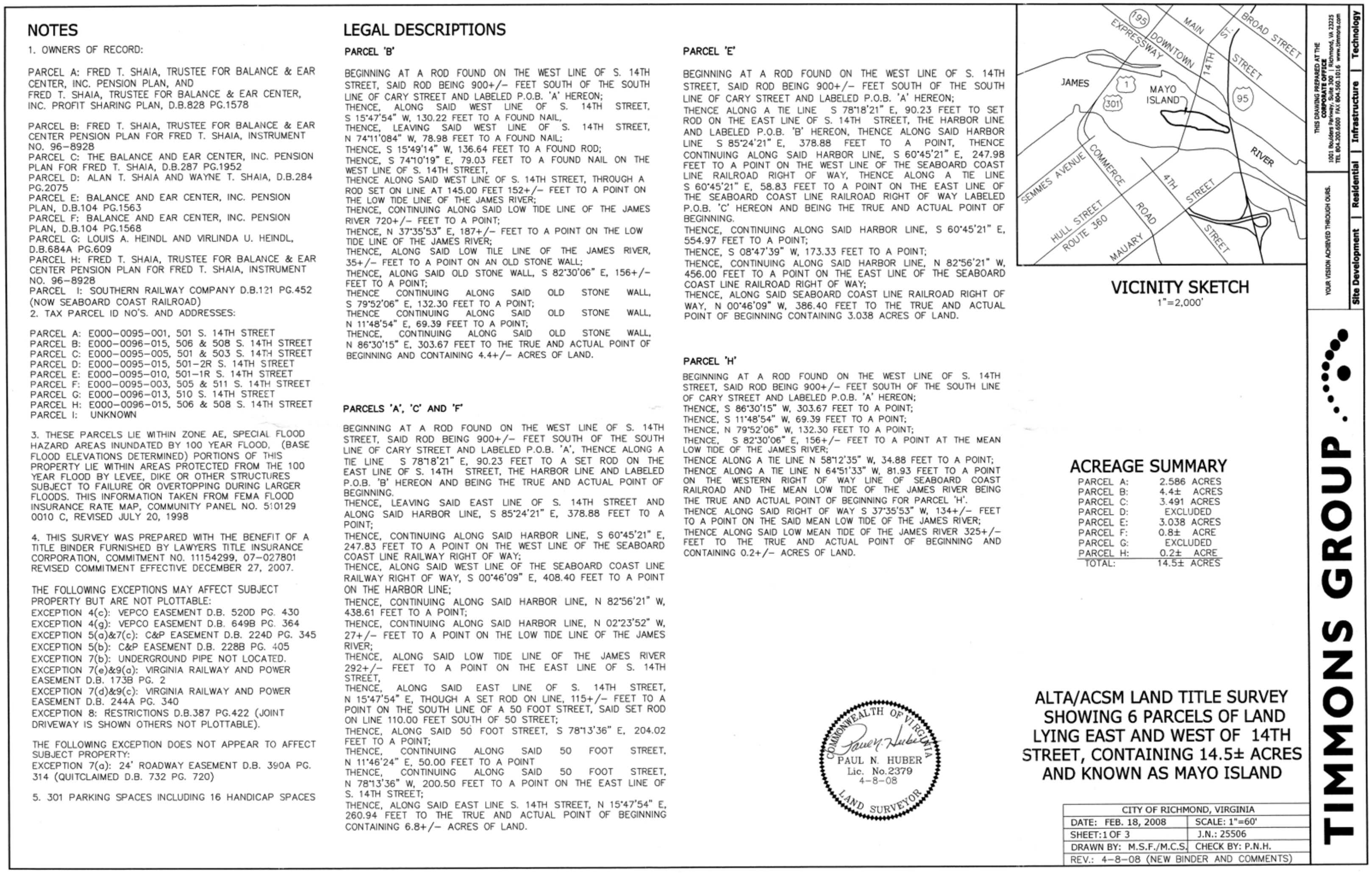


In addition to the above referenced fish, Mayo Island is also suitable habitat for the following known or likely species:



BOVA Code	Status*	Tier**	Common Name	Scientific Name
060017	FESE	Ia	Spinymussel, James	Parvaspina collina
060003	FESE	Ia	Wedgemussel, dwarf	Alasmidonta heterodon
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis
060173	FTST	Ia	Pigtoe, Atlantic	Fusconaia masoni
050020	SE	Ia	Bat, little brown	Myotis lucifugus
050034	SE	Ia	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus
040096	ST	Ia	Falcon, peregrine	Falco peregrinus
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans
030063	CC	IIIa	Turtle, spotted	Clemmys guttata
040092		Ia	Eagle, golden	Aquila chrysaetos
060084		Ib	Pigtoe, Virginia	Lexingtonia subplana
040052		IIa	Duck, American black	Anas rubripes
040029		IIa	Heron, little blue	Egretta caerulea caerulea
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea
040181		IIa	Tern, common	Sterna hirundo
040320		IIa	Warbler, cerulean	Setophaga cerulea
040140		IIa	Woodcock, American	Scolopax minor
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus
040105		IIb	Rail, king	Rallus elegans

Detailed Map of the Project Area - Survey



NOTES

1. OWNERS OF RECORD:

PARCEL A: FRED T. SHAIA, TRUSTEE FOR BALANCE & EAR CENTER, INC. PENSION PLAN, AND
FRED T. SHAIA, TRUSTEE FOR BALANCE & EAR CENTER, INC. PROFIT SHARING PLAN, D.B.828 PG.1578

PARCEL B: FRED T. SHAIA, TRUSTEE FOR BALANCE & EAR CENTER PENSION PLAN FOR FRED T. SHAIA, INSTRUMENT NO. 96-8928
PARCEL C: THE BALANCE AND EAR CENTER, INC. PENSION PLAN FOR FRED T. SHAIA, D.B.287 PG.1952
PARCEL D: ALAN T. SHAIA AND WAYNE T. SHAIA, D.B.284 PG.2075
PARCEL E: BALANCE AND EAR CENTER, INC. PENSION PLAN, D.B.104 PG.1563
PARCEL F: BALANCE AND EAR CENTER, INC. PENSION PLAN, D.B.104 PG.1568
PARCEL G: LOUIS A. HEINDL AND VIRLINDA U. HEINDL, D.B.684A PG.609
PARCEL H: FRED T. SHAIA, TRUSTEE FOR BALANCE & EAR CENTER PENSION PLAN FOR FRED T. SHAIA, INSTRUMENT NO. 96-8928
PARCEL I: SOUTHERN RAILWAY COMPANY D.B.121 PG.452 (NOW SEABOARD COAST RAILROAD)

2. TAX PARCEL ID NO'S. AND ADDRESSES:

PARCEL A: E000-0095-001, 501 S. 14TH STREET
PARCEL B: E000-0096-015, 506 & 508 S. 14TH STREET
PARCEL C: E000-0095-005, 501 & 503 S. 14TH STREET
PARCEL D: E000-0095-015, 501-2R S. 14TH STREET
PARCEL E: E000-0095-010, 501-1R S. 14TH STREET
PARCEL F: E000-0095-003, 505 & 511 S. 14TH STREET
PARCEL G: E000-0096-013, 510 S. 14TH STREET
PARCEL H: E000-0096-015, 506 & 508 S. 14TH STREET
PARCEL I: UNKNOWN

3. THESE PARCELS LIE WITHIN ZONE AE, SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100 YEAR FLOOD, (BASE FLOOD ELEVATIONS DETERMINED) PORTIONS OF THIS PROPERTY LIE WITHIN AREAS PROTECTED FROM THE 100 YEAR FLOOD BY LEVEE, DIKE OR OTHER STRUCTURES SUBJECT TO FAILURE OR OVERTOPPING DURING LARGER FLOODS. THIS INFORMATION TAKEN FROM FEMA FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 510129 0010 C, REVISED JULY 20, 1998

4. THIS SURVEY WAS PREPARED WITH THE BENEFIT OF A TITLE BINDER FURNISHED BY LAWYERS TITLE INSURANCE CORPORATION, COMMITMENT NO. 11154299, 07-027801 REVISED COMMITMENT EFFECTIVE DECEMBER 27, 2007.

THE FOLLOWING EXCEPTIONS MAY AFFECT SUBJECT PROPERTY BUT ARE NOT PLOTTABLE:
EXCEPTION 4(c): VEPCO EASEMENT D.B. 520D PG. 430
EXCEPTION 4(g): VEPCO EASEMENT D.B. 649B PG. 364
EXCEPTION 5(a)&7(c): C&P EASEMENT D.B. 224D PG. 345
EXCEPTION 5(b): C&P EASEMENT D.B. 228B PG. 405
EXCEPTION 7(b): UNDERGROUND PIPE NOT LOCATED.
EXCEPTION 7(e)&9(a): VIRGINIA RAILWAY AND POWER EASEMENT D.B. 173B PG. 2
EXCEPTION 7(d)&9(c): VIRGINIA RAILWAY AND POWER EASEMENT D.B. 244A PG. 340
EXCEPTION 8: RESTRICTIONS D.B.387 PG.422 (JOINT DRIVEWAY IS SHOWN OTHERS NOT PLOTTABLE).

THE FOLLOWING EXCEPTION DOES NOT APPEAR TO AFFECT SUBJECT PROPERTY:
EXCEPTION 7(a): 24' ROADWAY EASEMENT D.B. 390A PG. 314 (QUITCLAIMED D.B. 732 PG. 720)

5. 301 PARKING SPACES INCLUDING 16 HANDICAP SPACES

LEGAL DESCRIPTIONS

PARCEL 'B'

BEGINNING AT A ROD FOUND ON THE WEST LINE OF S. 14TH STREET, SAID ROD BEING 900+/- FEET SOUTH OF THE SOUTH LINE OF CARY STREET AND LABELED P.O.B. 'A' HEREON;
THENCE, ALONG SAID WEST LINE OF S. 14TH STREET, S 15°47'54" W, 130.22 FEET TO A FOUND NAIL,
THENCE, LEAVING SAID WEST LINE OF S. 14TH STREET, N 74°11'084" W, 78.98 FEET TO A FOUND NAIL;
THENCE, S 15°49'14" W, 136.64 FEET TO A FOUND ROD;
THENCE, S 74°10'19" E, 79.03 FEET TO A FOUND NAIL ON THE WEST LINE OF S. 14TH STREET,
THENCE ALONG SAID WEST LINE OF S. 14TH STREET, THROUGH A ROD SET ON LINE AT 145.00 FEET 152+/- FEET TO A POINT ON THE LOW TIDE LINE OF THE JAMES RIVER;
THENCE, CONTINUING ALONG SAID LOW TIDE LINE OF THE JAMES RIVER 720+/- FEET TO A POINT;
THENCE, N 37°35'53" E, 187+/- FEET TO A POINT ON THE LOW TIDE LINE OF THE JAMES RIVER;
THENCE, ALONG SAID LOW TILE LINE OF THE JAMES RIVER, 35+/- FEET TO A POINT ON AN OLD STONE WALL;
THENCE, ALONG SAID OLD STONE WALL, S 82°30'06" E, 156+/- FEET TO A POINT;
THENCE CONTINUING ALONG SAID OLD STONE WALL, S 79°52'06" E, 132.30 FEET TO A POINT;
THENCE CONTINUING ALONG SAID OLD STONE WALL, N 11°48'54" E, 69.39 FEET TO A POINT;
THENCE, CONTINUING ALONG SAID OLD STONE WALL, N 86°30'15" E, 303.67 FEET TO THE TRUE AND ACTUAL POINT OF BEGINNING AND CONTAINING 4.4+/- ACRES OF LAND.

PARCELS 'A', 'C' AND 'F'

BEGINNING AT A ROD FOUND ON THE WEST LINE OF S. 14TH STREET, SAID ROD BEING 900+/- FEET SOUTH OF THE SOUTH LINE OF CARY STREET AND LABELED P.O.B. 'A', THENCE ALONG A TIE LINE S 78°18'21" E, 90.23 FEET TO A SET ROD ON THE EAST LINE OF S. 14TH STREET, THE HARBOR LINE AND LABELED P.O.B. 'B' HEREON AND BEING THE TRUE AND ACTUAL POINT OF BEGINNING.
THENCE, LEAVING SAID EAST LINE OF S. 14TH STREET AND ALONG SAID HARBOR LINE, S 85°24'21" E, 378.88 FEET TO A POINT;
THENCE, CONTINUING ALONG SAID HARBOR LINE, S 60°45'21" E, 247.83 FEET TO A POINT ON THE WEST LINE OF THE SEABOARD COAST LINE RAILWAY RIGHT OF WAY;
THENCE, ALONG SAID WEST LINE OF THE SEABOARD COAST LINE RAILWAY RIGHT OF WAY, S 00°46'09" E, 408.40 FEET TO A POINT ON THE HARBOR LINE;
THENCE, CONTINUING ALONG SAID HARBOR LINE, N 82°56'21" W, 438.61 FEET TO A POINT;
THENCE, CONTINUING ALONG SAID HARBOR LINE, N 02°23'52" W, 27+/- FEET TO A POINT ON THE LOW TIDE LINE OF THE JAMES RIVER;
THENCE, ALONG SAID LOW TIDE LINE OF THE JAMES RIVER 292+/- FEET TO A POINT ON THE EAST LINE OF S. 14TH STREET,
THENCE, ALONG SAID EAST LINE OF S. 14TH STREET, N 15°47'54" E, THOUGH A SET ROD ON LINE, 115+/- FEET TO A POINT ON THE SOUTH LINE OF A 50 FOOT STREET, SAID SET ROD ON LINE 110.00 FEET SOUTH OF 50 STREET;
THENCE, ALONG SAID 50 FOOT STREET, S 78°13'36" E, 204.02 FEET TO A POINT;
THENCE, CONTINUING ALONG SAID 50 FOOT STREET, N 11°46'24" E, 50.00 FEET TO A POINT
THENCE, CONTINUING ALONG SAID 50 FOOT STREET, N 78°13'36" W, 200.50 FEET TO A POINT ON THE EAST LINE OF S. 14TH STREET;
THENCE, ALONG SAID EAST LINE S. 14TH STREET, N 15°47'54" E, 260.94 FEET TO THE TRUE AND ACTUAL POINT OF BEGINNING CONTAINING 6.8+/- ACRES OF LAND.

PARCEL 'E'

BEGINNING AT A ROD FOUND ON THE WEST LINE OF S. 14TH STREET, SAID ROD BEING 900+/- FEET SOUTH OF THE SOUTH LINE OF CARY STREET AND LABELED P.O.B. 'A' HEREON;
THENCE ALONG A TIE LINE S 78°18'21" E, 90.23 FEET TO SET ROD ON THE EAST LINE OF S. 14TH STREET, THE HARBOR LINE AND LABELED P.O.B. 'B' HEREON, THENCE ALONG SAID HARBOR LINE S 85°24'21" E, 378.88 FEET TO A POINT, THENCE CONTINUING ALONG SAID HARBOR LINE, S 60°45'21" E, 247.98 FEET TO A POINT ON THE WEST LINE OF THE SEABOARD COAST LINE RAILROAD RIGHT OF WAY, THENCE ALONG A TIE LINE S 60°45'21" E, 58.83 FEET TO A POINT ON THE EAST LINE OF THE SEABOARD COAST LINE RAILROAD RIGHT OF WAY LABELED P.O.B. 'C' HEREON AND BEING THE TRUE AND ACTUAL POINT OF BEGINNING.
THENCE, CONTINUING ALONG SAID HARBOR LINE, S 60°45'21" E, 554.97 FEET TO A POINT;
THENCE, S 08°47'39" W, 173.33 FEET TO A POINT;
THENCE, CONTINUING ALONG SAID HARBOR LINE, N 82°56'21" W, 456.00 FEET TO A POINT ON THE EAST LINE OF THE SEABOARD COAST LINE RAILROAD RIGHT OF WAY;
THENCE, ALONG SAID SEABOARD COAST LINE RAILROAD RIGHT OF WAY, N 00°46'09" W, 386.40 FEET TO THE TRUE AND ACTUAL POINT OF BEGINNING CONTAINING 3.038 ACRES OF LAND.

PARCEL 'H'

BEGINNING AT A ROD FOUND ON THE WEST LINE OF S. 14TH STREET, SAID ROD BEING 900+/- FEET SOUTH OF THE SOUTH LINE OF CARY STREET AND LABELED P.O.B. 'A' HEREON;
THENCE, S 86°30'15" W, 303.67 FEET TO A POINT;
THENCE, S 11°48'54" W, 69.39 FEET TO A POINT;
THENCE, N 79°52'06" W, 132.30 FEET TO A POINT;
THENCE, S 82°30'06" E, 156+/- FEET TO A POINT AT THE MEAN LOW TIDE OF THE JAMES RIVER;
THENCE ALONG A TIE LINE N 58°12'35" W, 34.88 FEET TO A POINT;
THENCE ALONG A TIE LINE N 64°51'33" W, 81.93 FEET TO A POINT ON THE WESTERN RIGHT OF WAY LINE OF SEABOARD COAST RAILROAD AND THE MEAN LOW TIDE OF THE JAMES RIVER BEING THE TRUE AND ACTUAL POINT OF BEGINNING FOR PARCEL 'H'.
THENCE ALONG SAID RIGHT OF WAY S 37°35'53" W, 134+/- FEET TO A POINT ON THE SAID MEAN LOW TIDE OF THE JAMES RIVER;
THENCE ALONG SAID LOW MEAN TIDE OF THE JAMES RIVER 325+/- FEET TO THE TRUE AND ACTUAL POINT OF BEGINNING AND CONTAINING 0.2+/- ACRES OF LAND.

VICINITY SKETCH

1"=2,000'

ACREAGE SUMMARY

PARCEL A:	2.586 ACRES
PARCEL B:	4.4± ACRES
PARCEL C:	3.491 ACRES
PARCEL D:	EXCLUDED
PARCEL E:	3.038 ACRES
PARCEL F:	0.8± ACRE
PARCEL G:	EXCLUDED
PARCEL H:	0.2± ACRE
TOTAL:	14.5± ACRES

COMMONWEALTH OF VIRGINIA
PAUL N. HUBER
Lic. No.2379
4-8-08
LAND SURVEYOR

ALTA/ACSM LAND TITLE SURVEY SHOWING 6 PARCELS OF LAND LYING EAST AND WEST OF 14TH STREET, CONTAINING 14.5± ACRES AND KNOWN AS MAYO ISLAND

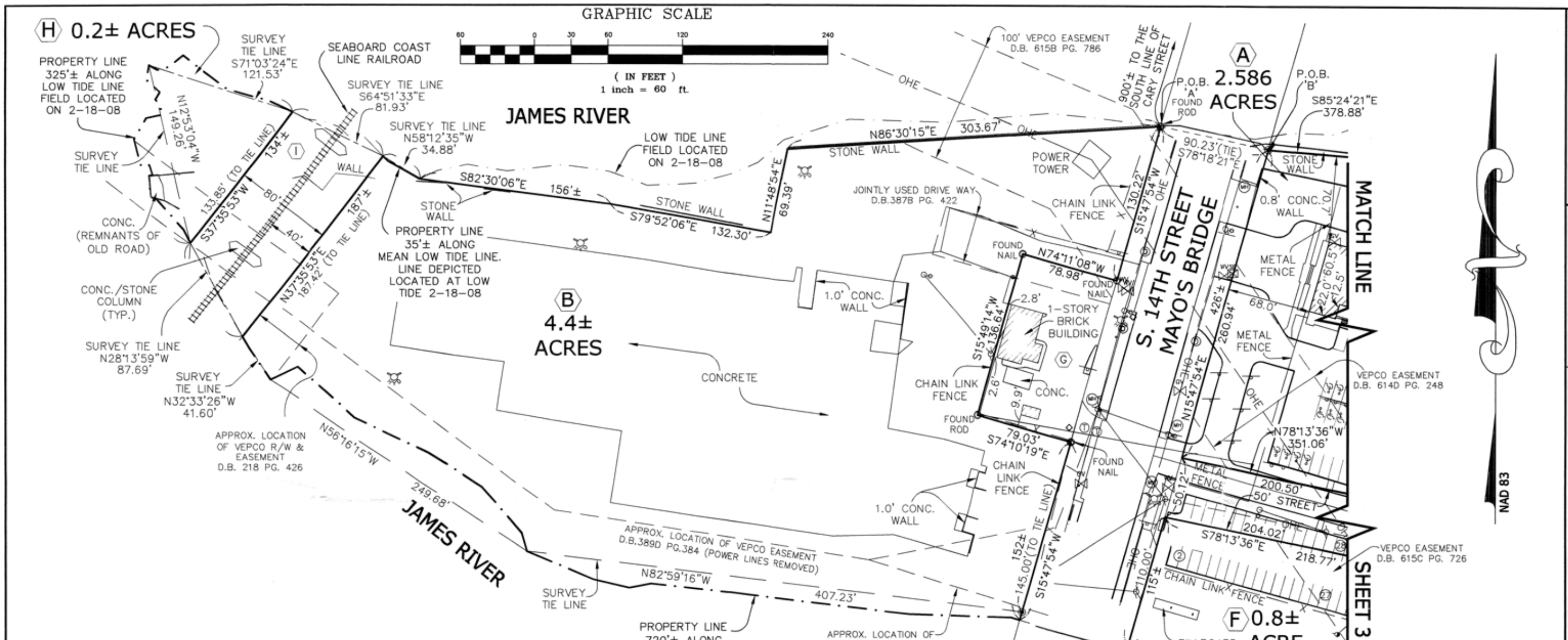
CITY OF RICHMOND, VIRGINIA	
DATE: FEB. 18, 2008	SCALE: 1"=60'
SHEET:1 OF 3	J.N.: 25506
DRAWN BY: M.S.F./M.C.S.	CHECK BY: P.N.H.
REV.: 4-8-08 (NEW BINDER AND COMMENTS)	

TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

THIS DRAWING PREPARED AT THE
CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

Site Development | Residential | Infrastructure | Technology



LEGEND

⋈	SPRINKLER VALVE	□	DRAINAGE GRATE
⊠	SPRINKLER BOX	Ⓜ	UNKNOWN MANHOLE
⚲	FIRE HYDRANT	Ⓣ	TELEPHONE MANHOLE
⋈	WATER VALVE	⊸	SIGN
◇	WATER METER	◑	GUY POLE
⋈	GAS VALVE	○	LIGHT POLE
◉	GAS METER	⊙	ELECTRIC METER
♿	HANDICAP PARKING	<	GUY WIRE
•	BOLLARD	⌽	POWER POLE
②	# PARKING SPACES	◉	ROD SET
Ⓓ	DRAINAGE MANHOLE		

SURVEYORS CERTIFICATE:

TO: REPUBLIC MAYO ISLAND, LLC AND LAWYERS TITLE INSURANCE CORPORATION

THIS IS TO CERTIFY THAT THIS PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA, ACSM AND NSPS IN 2005, AND INCLUDES ITEMS 1,2,3,4,7(a),8,9,10,11(a),13, AND 14 OF TABLE A THEREOF. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR REGISTERED IN THE COMMONWEALTH OF VIRGINIA, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

4-8-08
DATE

Paul N. Huber
PAUL N. HUBER, LS
REGISTRATION NO. 2379

PAUL N. HUBER
Lic. No.2379
4-8-08

ALTA/ACSM LAND TITLE SURVEY SHOWING 6 PARCELS OF LAND LYING EAST AND WEST OF 14TH STREET, CONTAINING 14.5± ACRES AND KNOWN AS MAYO ISLAND

CITY OF RICHMOND, VIRGINIA	
DATE: FEB. 18, 2008	SCALE: 1"=60'
SHEET: 2 OF 3	J.N.: 25506
DRAWN BY: M.S.F./M.C.S.	CHECK BY: P.N.H.
REV.: 4-8-08 (NEW BINDER AND COMMENTS)	

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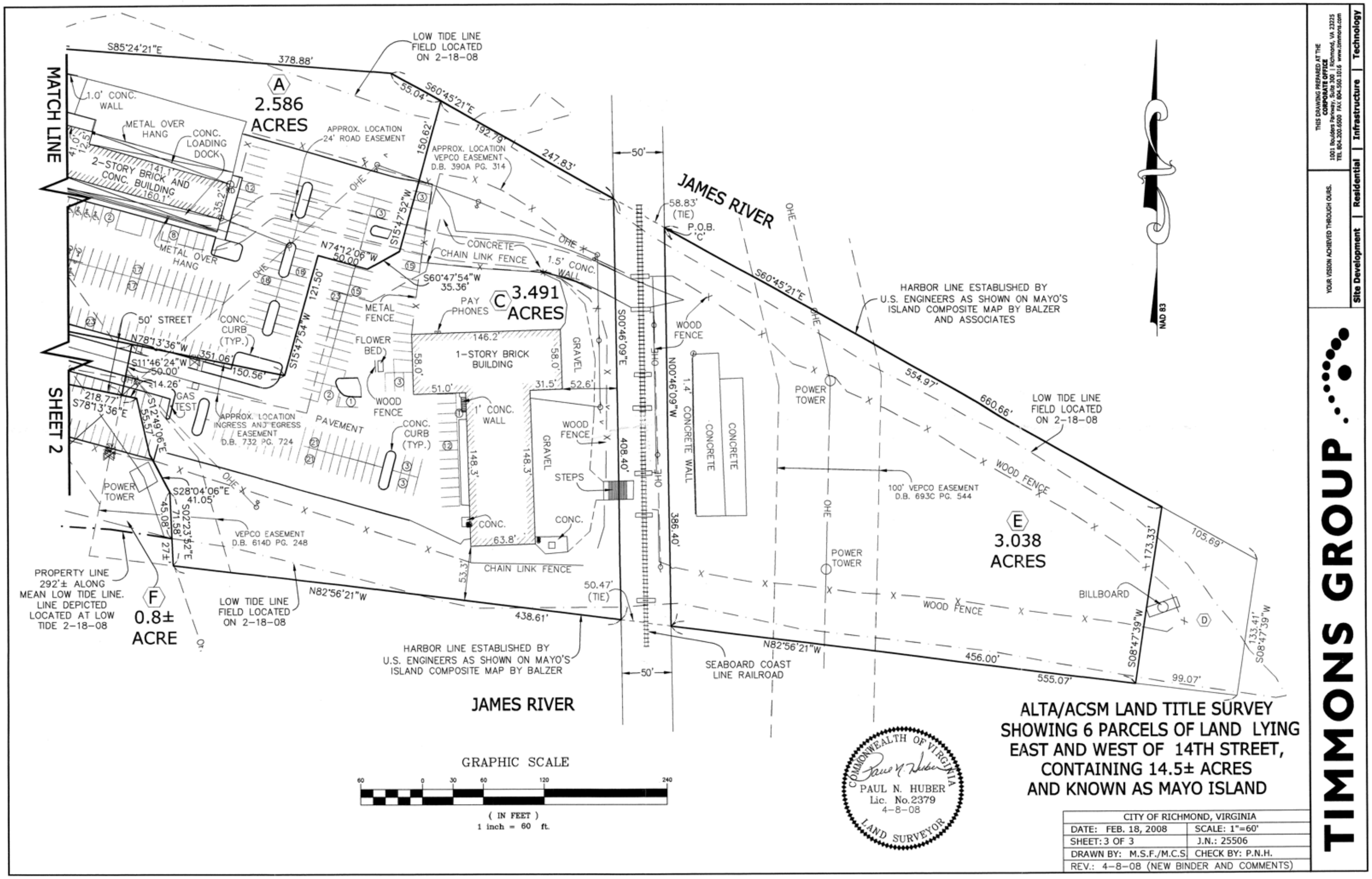

COMMONWEALTH OF VIRGINIA
PAUL N. HUBER
Lic. No.2379
4-8-08
LAND SURVEYOR

ALTA/ACSM LAND TITLE SURVEY SHOWING 6 PARCELS OF LAND LYING EAST AND WEST OF 14TH STREET, CONTAINING 14.5± ACRES AND KNOWN AS MAYO ISLAND

CITY OF RICHMOND, VIRGINIA	
DATE: FEB. 18, 2008	SCALE: 1"=60'
SHEET: 3 OF 3	J.N.: 25506
DRAWN BY: M.S.F./M.C.S.	CHECK BY: P.N.H.
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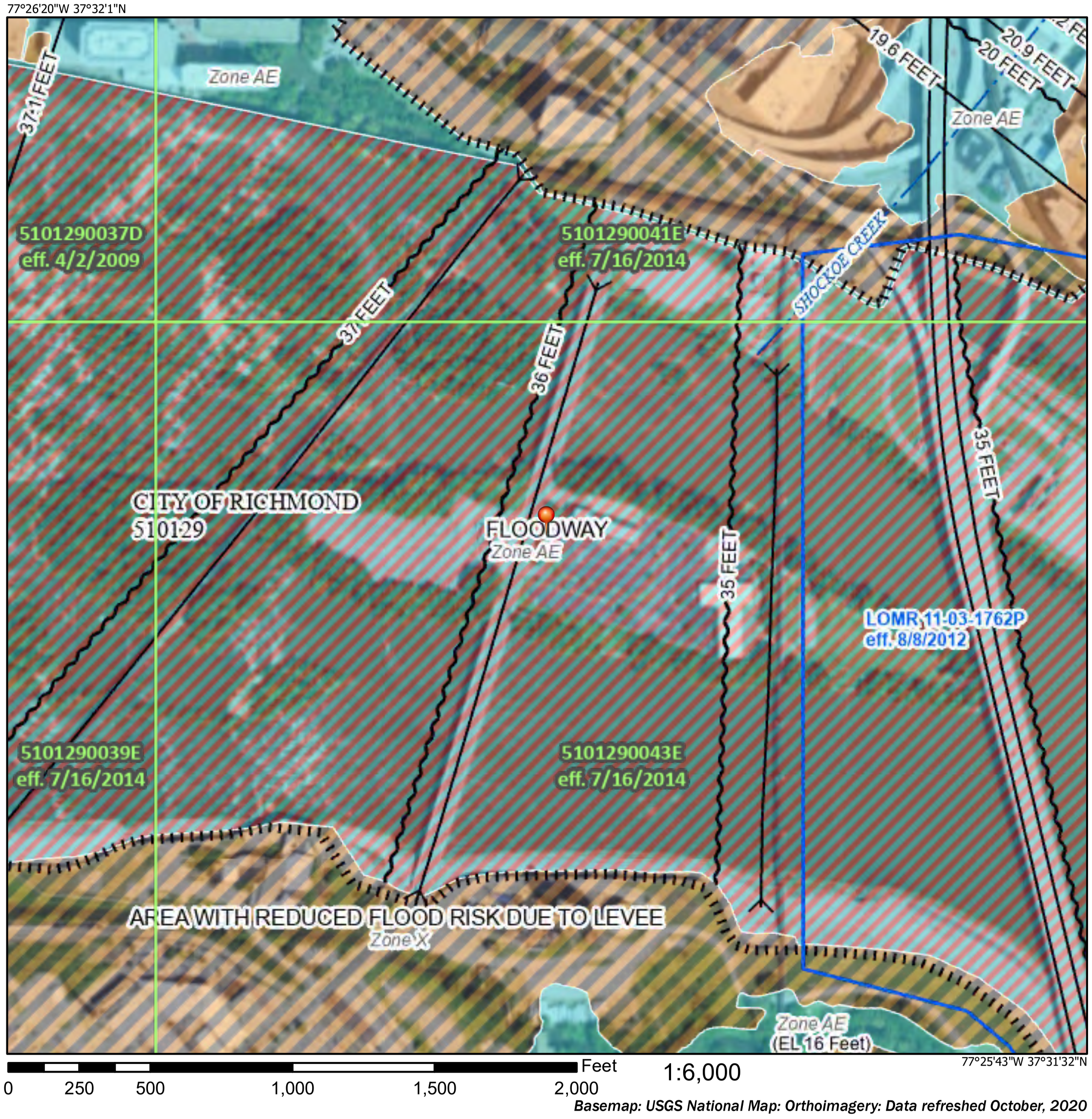
National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	☐	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	– – –	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~513~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	– —	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/31/2022 at 8:58 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

FIRMette of the project Area

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map data was obtained from the City of Richmond including transportation, hydrography, and political lines. Basemapping was originally interpreted from orthophotography flown in March of 1999. Additional information has been drived from other sources.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

LEGEND

▨ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	1% Annual Chance Floodplain Boundary
———	0.2% Annual Chance Floodplain Boundary
— —	Floodway boundary
— — —	Zone D boundary
•••••••	CBRS and OPA boundary
▨	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

Ⓐ——Ⓐ	Cross section line
㉓- - - -㉓	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
3100000 FT	5000-foot ticks: Virginia State Plane South Zone (FIPS Zone 4502), Lambert Conformal Conic projection
⁴⁹89⁰⁰⁰ᵐN	1000-meter Universal Transverse Mercator grid values, zone 18
DX5510 ✕	Bench mark (see explanation in Notes to Users section of this FIRM panel)
•M1.5	River Mile

MAP REPOSITORIES
CITY OF RICHMOND: Dept of Public Works 900 East Broad Street Suite 704, Richmond, Virginia 23219
(Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
December 6, 1974
FLOOD HAZARD BOUNDARY MAP REVISIONS
September 19, 1975
FLOOD INSURANCE RATE MAP EFFECTIVE
June 15, 1979
FLOOD INSURANCE RATE MAP REVISIONS

July 20, 1998 - to reflect updated information established in a Letter of Map Revision.

April 2, 2009 - to change Special Flood Hazard Areas, to add Base Flood Elevations, to add roads and road names, to incorporate previously issued Letters of Map Revision, to add Special Flood Hazard Areas, to reflect updated topographic information and to update corporate limits.

July 16, 2014 - to reflect Levee accreditation and incorporate a Letter of Map Revision. For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0043E

FIRM
FLOOD INSURANCE RATE MAP
CITY OF RICHMOND, VIRGINIA
INDEPENDENT CITY

PANEL 43 OF 100
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RICHMOND, CITY OF	510129	0043	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
5101290043E

MAP REVISED
JULY 16, 2014

Federal Emergency Management Agency

Mayo Island – 1937

Mayo Island – floodwaters of Hurricane Agnes (1972)

Mayo Island – floodwaters of Hurricane Camille (1969)

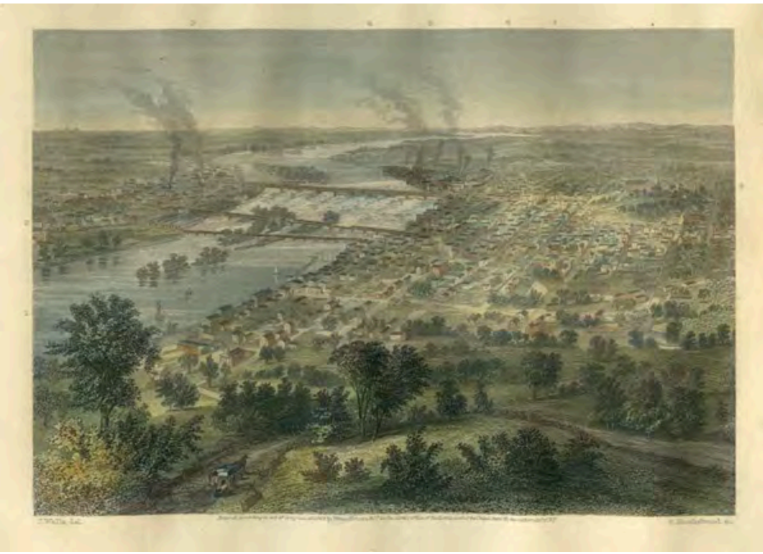
Mayo Island – floodwaters of Juan (1985)

View of Richmond in 1822 by J. L. Bouqueta de Woiseri

View of Richmond by John William Hill, artist & F. Palmer, lithographer (1852)

View of Richmond by Edward Sachse (1851)

View from Gambles Hill by Edward Beyer, artist; Loeillot & Co., lithographer (1857)

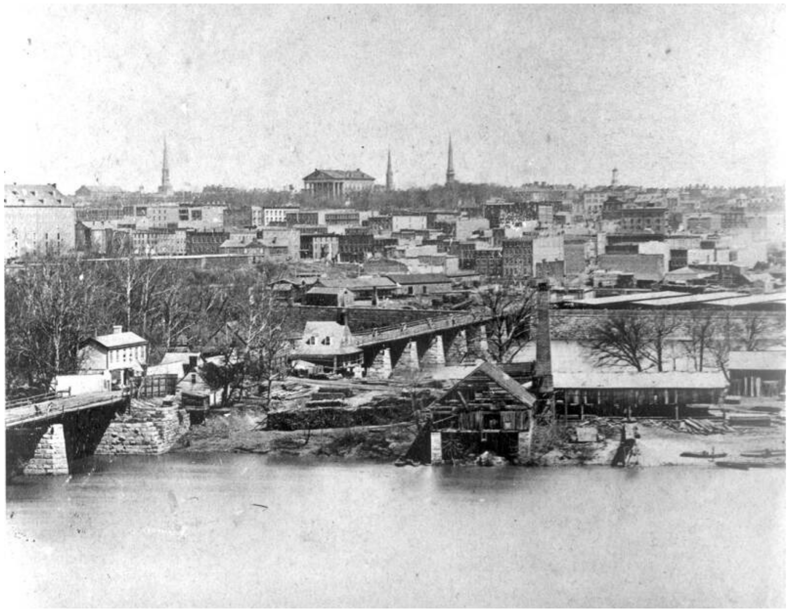


Richmond, VA. And Its Vicinity by J. Wells, artist & R. Hinshelwood, engraver (1863)

The Fall of Richmond by Currier & Ives (1865)

Panorama of Richmond, Virginia, in 1865, following its fall in the American Civil War. Compiled from seven different stereoscopic images taken from the south end of the Mayo Bridge, in Manchester, looking north, by a photographer from Mathew Brady's outfit. It was digitally assembled in October 2011, and was rendered using a cylindrical projection.

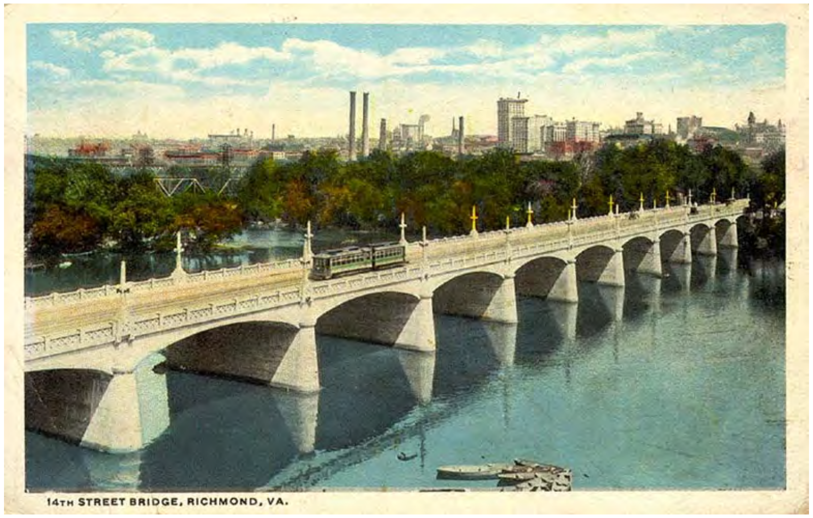
Ruins of Mayo’s Bridge (1865)



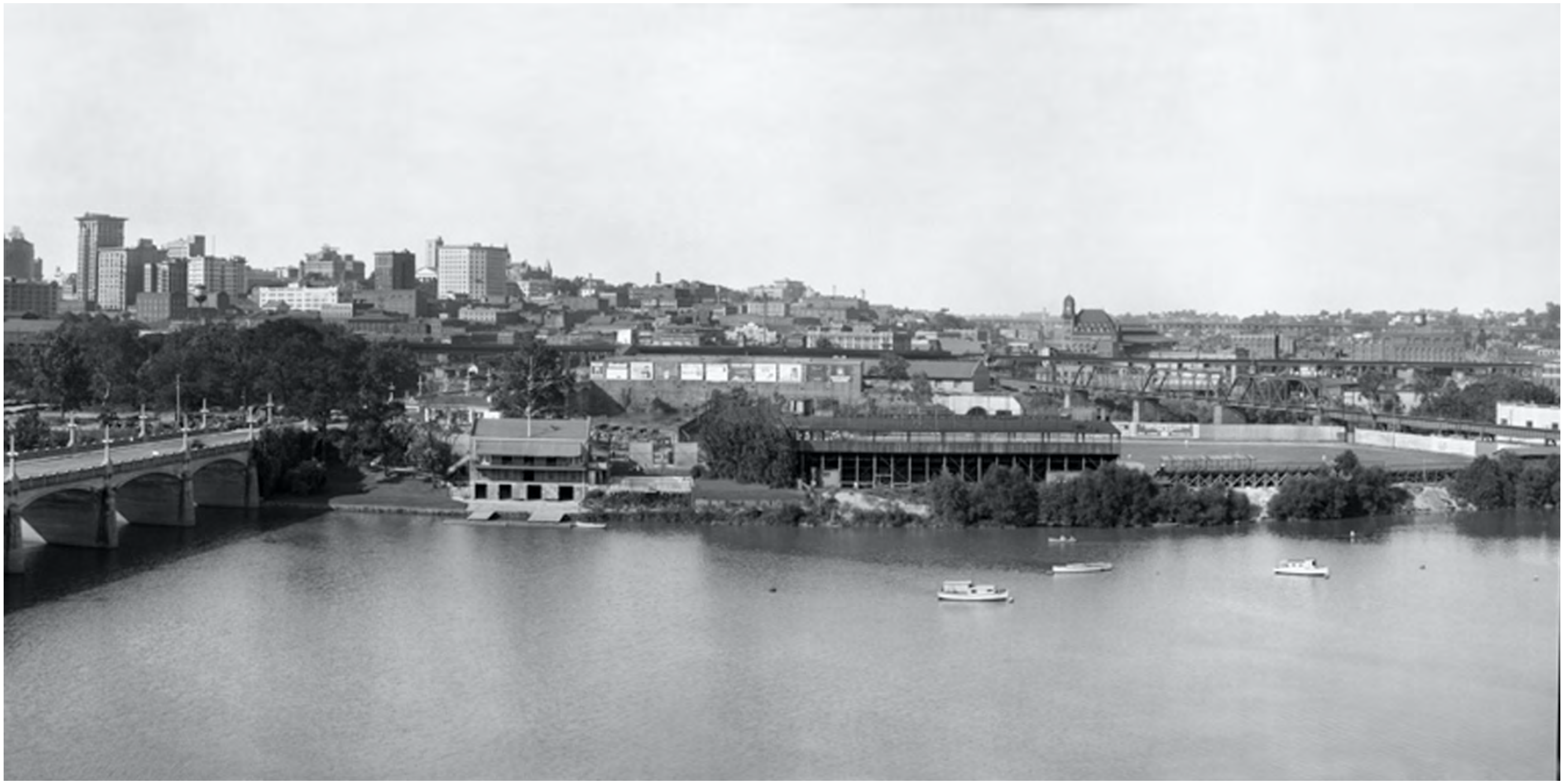
1870s

1907


CITY OF RICHMOND, VA.
FROM MANCHESTER.
1876


14TH STREET BRIDGE, RICHMOND, VA.

1915



Virginia Boat Club, Tate Field, and Mayo Bridge, 1931 by Dementi Studio

BASEBALL

VIRGINIA LEAGUE

MAYO'S ISLAND PARK

RICHMOND vs. NEWPORT NEWS

All Games Begin at [illegible] P. M.

Bleachers .... [illegible]
Grandstand .... [illegible]

War Tax Included.

—TODAY—

Adequate Parking Space for Automobiles

Richmond's Permanent Ball Field

Seating Capacity, [illegible]

1931

Virginia Boat Club (1955)

Low-income Geographic Area
Designated Qualified Opportunity Zone - Census Tract 51760061000

Census Tract ID: 51760061000 (City of Richmond)

Contact:
Leonard Sledge
804-646-7576
leonard.sledge@richmondgov.com
https://www.rva.gov/economic-development

Links to Plans

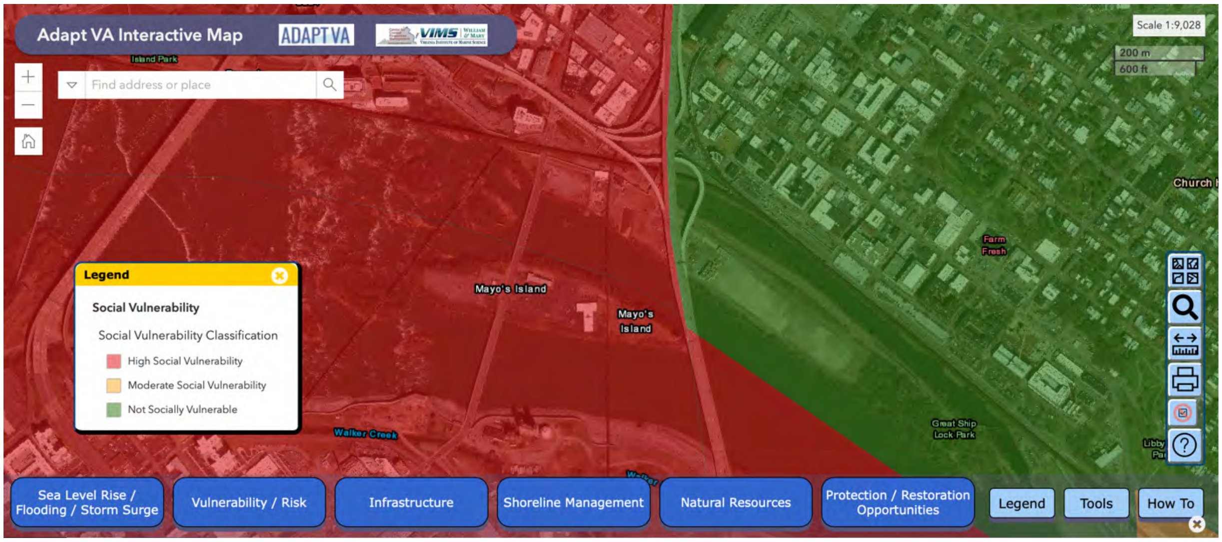
Current Floodplain Ordinance
https://library.municode.com/va/richmond/codes/code_of_ordinances?nodeId=PTIICICO_CH14FLMAERSECODR

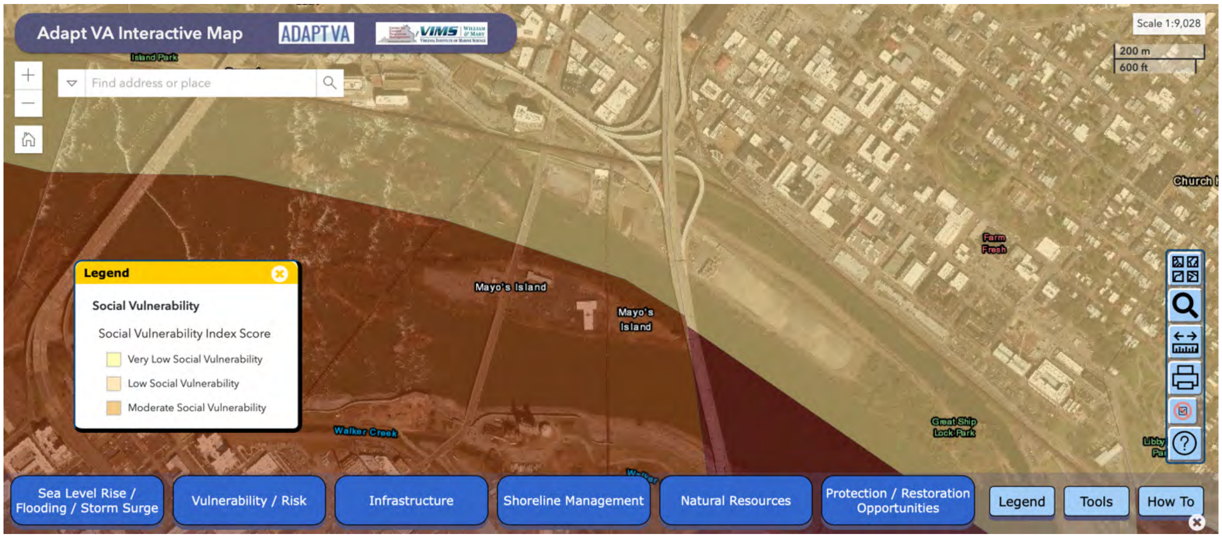
Current Hazard Mitigation Plan
https://planrva.org/emergency-management-home/the-alliance/hazard-mitigation/

Current Comprehensive Plan
https://www.rva.gov/planning-development-review/master-plan

Approved Resilience Plan – RVA Clean Water Plan
https://rvah2o.org/rva-clean-water-plan/
RVAgreen
https://www.rva.gov/sites/default/files/2019-02/RVAGreen_ARoadmapToSustainability.pdf
RVAgreen 2050
https://www.rva.gov/sustainability/what-rvagreen-2050-0

Social Vulnerability Index Scores – Adapt VA Virginia Vulnerability Viewer





Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**City of Richmond**	
	Eligibility Information	
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	X
No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Scoring Criteria Projects 1-B

Project Eligible for Consideration		☒ **Yes** ☐ **No**
Applicant Name:		
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	**50**
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (**Based on ADAPT VA's Social Vulnerability Index Score.)**)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Scoring Criteria Projects 2-B

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		97

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from [ADAPT VA's Virginia Vulnerability Viewer]()	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

CITY OF RICHMOND
Chief Administrative Office

April 8, 2022

This project is funded through the City’s American Rescue Plan Act (ARPA) funding. No other state, federal, or private funds are anticipated to be allocated for use in this project. The City’s ARPA spend plan was approved by Ordinance No. 2021-291 (attached) and provides $1,500,000 for the acquisition of new south side parks. Any remaining funding needs will be found in the FY 2023 Park, Recreation, and Community Facilities operating budget. The City of Richmond has in place the capacity to execute the funding of the City of Richmond’s required match.

Sincerely,

Lincoln Saunders

J.E. Lincoln Saunders
Chief Administrative Officer

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

RE: City of Richmond Mayo Island application

1 message

Steidel, Robert C. - DCAO of Operations <Robert.Steidel@rva.gov> Fri, Apr 8, 2022 at 1:54 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Frelke, Christopher E. - DPR" <Christopher.Frelke@rva.gov>, "May, Jason P. - Budget" <Jason.May@rva.gov>, "Sedano, Caitlin R. - CAO" <Caitlin.Sedano@rva.gov>, "Bradley, Patrick J. - DPU" <Patrick.Bradley@rva.gov>, "Bingham, April N. - DPU" <April.Bingham@rva.gov>, Parker Agelasto <parker@capitalregionland.org>

Amended file name for the letter.

Robert C. Steidel

City of Richmond Virginia Deputy Chief Administrative Officer for Operations

730 and 900 E Broad Street Richmond Virginia 23219

804-646-1378

804-646-7000 or 311 Non-Utility Customer Service

804-646-4646 Utility Customer Service

Robert.Steidel@richmondgov.com

From: Steidel, Robert C. - DCAO of Operations
Sent: Friday, April 8, 2022 1:47 PM
To: 'cfpf@dcr.virginia.gov' <cfpf@dcr.virginia.gov>
Cc: Frelke, Christopher E. - DPR <Christopher.Frelke@rva.gov>; May, Jason P. - Budget <Jason.May@rva.gov>; Sedano, Caitlin R. - CAO <Caitlin.Sedano@rva.gov>; Bradley, Patrick J. - DPU <Patrick.Bradley@rva.gov>; April Bingham (April.Bingham@richmondgov.com) <April.Bingham@richmondgov.com>; Parker Agelasto <parker@capitalregionland.org>
Subject: City of Richmond Mayo Island application
Importance: High

Good afternoon. On behalf of the City of Richmond please accept the attached application and letter. The favor of a reply that the application has been received is requested.

Sincerely;

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www.richmondgov.com/PublicUtilities

www.richmondgov.com/AnimalControl

www.richmondgov.com/PublicWorks

CID510129_CityofRIchmond_CFPF1 Mayo Island City Match Letter.pdf
224K

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

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CID510129_CityofRIchmond_CFPF1 Mayo Island City Match Letter.pdf
224K

CID#510129

City of Richmond

Department of Public Utilities

Virginia Community Flood Preparedness Fund Application #1

(Project Design Phase)

City of Richmond, Virginia - Department of Public Utilities
April 2022

GREELEY AND HANSEN

Contents:

Please note: CFPF Application #1 pertains to funding for the design phase of the project. CFPF Application #2 pertains to funding for the construction phase of the project.

The Application Form

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Richmond Department of Public Utilities (DPU)

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

__X__**Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510129

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Stephen Morgan, Engineering Manager/ Interim Deputy Director, Richmond DPU

Signature of Authorized Official: Stephen T. Morgan

Mailing Address (1): 400 Richmond Highway

Mailing Address (2): ____________________

City: Richmond **State:** VA **Zip:** 23224

Telephone Number: (804) 646-8522 **Cell Phone Number:** (804) 543-2513

Email Address: stephen.morgan@rva.gov

Application Form CFPF| 1-A

Contact Person (If different from authorized official): Brent Sevcik, Architect, Greeley and Hansen

Mailing Address (1): 100 South Wacker Drive

Mailing Address (2): Suite 1400

City: Chicago **State:** IL **Zip:** 60606

Telephone Number: (312) 578-2348 **Cell Phone Number:** (312) 244-9158

Email Address: bsevcik@greeley-hansen.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☒ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Application Form CFPF| 2-A

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): Richmond Wastewater Treatment Plant
1400 Brander Street, Richmond, VA 23224

NFIP Community Identification Number (CID#):(See appendix F 510129

Application Form CFPF| 3-A

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Zone AE

Flood Insurance Rate Map Number(s) (If Applicable): Effective: 5101290043E, effective 7/16/2014
Preliminary: 5101290043F, issued 2/22/2022

Total Cost of Project: $585,000

Total Amount Requested $292,500

Scope of Work Narrative

1. Project Information

Background

The City of Richmond's Wastewater Treatment Plant (WWTP) is located on a flood prone site adjacent to the James River. The Federal Emergency Management Agency's (FEMA) recent flood risk review for the City revealed a preliminary 3-foot increase in the base flood elevation for the facility and surrounding area (see attached FIRMette and Preliminary FIRM Map). In preparation for this increase, Flood Vulnerability and Mitigation Planning Studies were performed to evaluate the impact and determine the facility's current flood hazard susceptibilities. The resulting reports documented several of the building's flood pathways, low lying open tanks, and exposed equipment that assume risk detrimental to the continued function of the facility. Further analysis prioritized the mitigation efforts by determining what operations would be critical to the rapid recovery of baseline processes after a flood event. The critical process operations were identified as seven of the structures or buildings associated with preliminary and primary treatment of wastewater as well as UV disinfection. A severe flood event rendering one or more of the functions of these structures incapable would jeopardize the environmental, infrastructure, and public health protections the facility provides.

The proposed design and construction project will consist of flood mitigation improvements for the seven critical structures identified as vital to the rapid recovery of facility operations after a flood event. The seven critical structures are:

1. Main Plant Switchgear Building
2. Main Pumping Station
3. Primary Sludge Pumping Station
4. Preliminary Sedimentation Tanks (4)
5. Gravity Sludge Thickener Tanks
6. Digester Tanks (2) and Sludge Control Building No. 1
7. UV Building

A target design flood protection level was set at +39.0 ft (City Datum) to include freeboard and surcharge above the new 100-year base flood elevation. The project design will raise the flood protection to the new level and primarily focus on a combination of three flood mitigation strategies identified during the planning phase: raising equipment, replacing susceptible exterior elements with flood proof alternatives, and/or sealing the buildings or structures. Existing exterior walls and foundations will be structurally reinforced to accommodate the increased flood loading, and sump pumps will be added as a redundancy measure. The proposed flood resistant construction and structural components will be designed in accordance with the 2018 Virginia Construction Code, ASCE 7, and ASCE 24. Implementation of these mitigation strategies will allow for a base level of treatment to occur while the remainder of the facility recovers from the flood event and adds resilience to a vital service that the community depends on.

WWTP Structures Included in the Project: (North to South) Main Pumping Station, Main Plant Switchgear Building, Digester Tanks (2) and Sludge Control Building No. 1, Primary Sludge Pumping Station, Preliminary Sedimentation Tanks (4), Gravity Sludge Thickener Tanks, and UV Building

The following mitigation strategies were identified for each of the seven critical structures. The recommended strategy accounts for the criticality and value of vulnerable assets, site-specific constraints, type of flood pathways, feasibility, and cost of implementation. All Elevations are in reference to the City Datum which is 0.8 ft above NAVD 88 Datum.

Main Plant Switchgear Building: The building's first floor elevation of +35.2 feet is 3.8 feet below the DFE level. The first floor contains critical equipment used to control, protect, and isolate the facility's electrical equipment. The recommended mitigation strategy is Sealing the Building. The flood pathways on the exterior of the building will be sealed, protected with temporary barriers, raised, or replaced with watertight assemblies to prevent water inundation up to the higher elevation.

Main Pumping Station: The first floor is 3.0' feet below the DFE at an elevation of +36.0 feet and contains a majority of the critical electrical equipment necessary to operate the station. The lower levels of the station contain pumps and equipment necessary to transport wastewater to the facility. The recommended mitigation strategies are to Raise Equipment and Seal the Building. The perimeter of the building and flood pathways can be protected or sealed using flood barriers and new floodproof fenestrations. The extensive below grade space creates a potential risk to flood water inundation through cracks and penetrations, therefore critical equipment will be raised as a secondary measure. The below grade cracks and penetrations would also be sealed. Structural reinforcement of the exterior walls is also necessary to resist the flood loading. A carbon fiber reinforced polymer product that can be applied to the interior walls is recommended to provide the additional strength needed.

Primary Sludge Pumping Station: The building's first floor elevation is 9.0 feet below the anticipated +39.0 foot DFE level. The first floor contains the critical electrical equipment necessary to operate the station and the majority of the pumps and associated equipment are located on the lowest level. The recommended mitigation strategy is to Seal the Building. The flood pathways on the exterior of the building need to be sealed, protected with temporary barriers, or replaced with watertight assemblies to prevent inundation to the higher elevation. Structural reinforcement of the exterior walls is necessary to resist the flood loading. A carbon fiber reinforced polymer product that can be applied to the interior walls is recommended to provide the additional strength needed.

Preliminary Sedimentation Tanks (4): The preliminary sedimentation tanks consists of four trains of clarifiers with a top slab elevation of +22.0 feet which is 17 feet below the DFE. At grade motor operated gear units and control panels power the sludge collection flights. The recommended mitigation strategies are to Flood Proof Equipment and Seal the Structure. The strategy includes installing a 9 foot high removeable flood barrier wall around the entire structure to protect it to a height of a 50 year flood event. Utilizing a perimeter barrier to protect to the 100 year storm elevation was determined to be exponentially more expensive to the point of not being cost effective. Therefore, to include the mitigation of a 100 year storm event, the recommended strategy includes the replacement of critical equipment with equivalent flood proof versions or purchasing replacement equipment to have available during the rarest events. Watertight electrical enclosures are also planned.

Gravity Sludge Thickener Tanks: The top slab of the four gravity sludge thickeners is 10 feet below the DFE at Elevation +29.0 feet. Thickener rake drive motors are located at that level and are at risk. Sludge pumps are located in the lower level of the building and are also vulnerable. The recommended mitigation strategy is to Flood Proof Equipment. The strategy is to replace the critical equipment with equivalent flood proof versions or place them in submersible enclosures in order to maintain their function after a flood.

Digester Tanks (2) and Sludge Control Building No. 1: The base of the tanks and first floor of the control building are 7.4 and 5.0 feet below the anticipated DFE level, respectively. The recommended mitigation strategy is to Seal the Building and Tanks. The flood pathways identified on the exterior of both structures need to be sealed, protected with temporary barriers, or replaced with watertight assemblies to prevent inundation to the higher elevation. Structural reinforcement of the exterior walls of the Sludge Control Building is also necessary to resist the flood loading. A carbon fiber reinforced polymer product that can be applied to the interior walls is recommended to provide the additional strength needed.

UV Building: The Facility was built ten years ago to be dry-flood proof to an Elevation of +36.0 feet which is now 3 feet below the DFE. The recommended mitigation strategy is to Seal the Building. The flood pathways identified on the exterior of the building, particularly those between Elevations 36.0 and 39.0 feet, need to be raised, protected with temporary barriers, or replaced with watertight assemblies to prevent inundation to the higher elevation.

DFE= 39.0 ft (City Datum)

Structure Name	Type	ELEV (City Datum)	Flood Depth (ft)	Recommended Flood Mitigation Strategy
Main Plant Switchgear Building	Structure	35.2	3.8	Seal Building
Main Pumping Station	Structure	18.0/36.0	21.0/3.0	Raise Equipment, Seal Building
Primary Sludge Pumping Station	Structure	30.0	9.0	Seal Building
Preliminary Sedimentation Tanks (4)	Tanks	22.0	17.0	Seal Structure, Flood Proof Equipment
Gravity Sludge Thickener Tanks	Tanks	29.0	10.0	Flood Proof Equipment
Sludge Control Building No. 1	Structure	34.0	5.0	Seal Building
Digester Tanks (2)	Tanks	31.6	7.4	Seal Building
UV Building	Structure	20.5	18.5	Seal Building

Flood Mitigation Strategy Recommendations

Design Phase Scope of Services

The scope of services for the Design Phase of the Project is divided into the following eight Tasks. This information is also part of the attached Task Order draft for the WWTP Flood Mitigation Design Project.

TASK 1 – PROJECT MANAGEMENT
This task includes management of activities, meetings, and workshops for the design phase of the project as follows:

Kickoff Meeting
A kickoff meeting will be held with the City project team to review the scope of work and discuss the overall project goals. Greeley and Hansen PM will prepare the agenda and minutes of these meetings for review and approval by the City PM.

Design Review Meetings
As part of Task 1, review meetings will be held with the City at 30, 60, 90, and 100%.milestones. These meetings will review work progress and identify efforts and expectations for the remainder of the work. Greeley and Hansen PM will prepare the agenda and minutes of these meetings for review and approval by the City PM.

Coordination, Quality Control, and Progress Reports

This will include project coordination with key City of Richmond staff, project team and subconsultants. It is anticipated that this will be an ongoing Quality Control process. A Greeley and Hansen Principal will review all project design deliverables for quality assurance. Project progress will be reported and included in the invoices on a monthly basis.

TASK 2 – SURVEY AND GEOTECHNICAL

Survey

Mobilize surveyor to document site conditions at the four corners of each of the seven structures of focus. Survey to provide topographic information including natural features and elevations, ground conditions, vegetation, man-made surface features and structures, and utilities. Underground utilities will be marked by Miss Utilities and documented on survey. No ground penetrating radar is planned. The North American Vertical Datum of 1988 (NAVD 88) will be used as the vertical control datum.

Geotechnical Investigation

Mobilize geotechnical engineer to perform up to five soil borings at the site and provide recommendations for necessary below grade design. Based on the anticipated locations, five borings 50 feet deep will be provided. Investigation will include field soil borings, rock cores, laboratory testing, and engineering analysis and report.

TASK 3 – 30% DESIGN

A basis of design memorandum will be developed to solidify the strategies recommended in the Flood Vulnerability and Mitigation Planning Studies, and allow for updates relative to new survey information. The memorandum with summarize the architectural and engineering design criteria and will include 30% drawings and a specification list. Drawings will be created using 3D REVIT and AutoCAD Civil 3d. Greeley and Hansen's BIM and CAD standards will be used. Draft memo will be sent to City for review. It is anticipated that the City will review and provide comments within two weeks. Client comments will be collected in a written tabular comment register. Comments will be adjudicated with City's project manager and replied in a tabular comment register.

The following information will be included in the basis of design memorandum:

- INTRODUCTION AND PROJECT OVERVIEW
- CODE SUMMARY
- PERFORMANCE CRITERIA:
- 30% DRAWINGS
- LIST OF SPECIFICATIONS
- OPINION OF PROBABLE CONSTRUCTION COST

A site visit will take place at the onset of the 30% Design phase to investigate site conditions. One engineer will lead site visit.

TASK 4 – 60% DESIGN

The City review comments from the basis of design memorandum will be incorporated in the drawings, and the design will be further detailed. An AACE Class 3 Opinion of Probable Construction Cost (OPCC) will be prepared. 60% design documents will be provided for client review. Two weeks will be provided in the schedule for this review. Client comments will be collected in a written tabular comment register. Comments will be adjudicated with City's project manager and replied to in a tabular comment register.

TASK 5 – 90% DESIGN

The 60% City review comments will be incorporated, and the design will be further detailed and include a document set covering all disciplines. This 90% phase will include final draft specifications and an updated Class 2 OPCC. The front end of the project book will be coordinated with City's procurement department. 90% design documents will be provided for client review, including third-party constructability review. Two weeks will be provided in the schedule for this review. Client comments will be collected in a written tabular comment register. Comments will be adjudicated with City's project manager and replied in a tabular comment register.

TASK 6 – PERMITTING

This task will provide 100% complete signed and sealed contract documents for electronic submission to receive a certificate from the City's Permit and Planning department for permit review. Permit review comments and corrections will be incorporated into documents.

TASK 7 – 100% DESIGN

This task will deliver the 100% complete signed and sealed contract documents for bid purposes incorporating all previous City comments, third-party constructability review comments, and front-end documents coordinated with the City. Fully documented review comment adjudication will be completed before the documents are sealed. These represent the finished construction documents (100% bid documents) less any potentially needed Addenda that might follow.

TASK 8 – BID ASSISTANCE

This task will include bidding services such as attending a pre-bid meeting, providing addenda, and evaluation of bids. It is anticipated that a mandatory pre-bid meeting will be required. Greeley and Hansen will prepare materials for this meeting and attend the meeting to present materials as needed on City's behalf. It is anticipated that this task will include a site walk through for contractors.

Total Project Cost and Statement of Funding

This application pertains to funding for the design phase of the project. The total cost of design services for the project is estimated at $585,000. At a CFPF Fund/City match split of 50% / 50%, the City is applying for $292,500 towards the design fee. The attached statement of funding describes the City's ability to pay the remaining $292,500 for their match portion.

Population Served

The Richmond WWTP is the primary treatment facility for 225,000 people including all of the residents of the City and a number of residents of surrounding communities.

In addition, the immediate area around the facility is identified as a low-income geographic area and a location of very high social vulnerability (see attached Social Vulnerability and Qualified Opportunity Zone Maps). The protection of wastewater services reduces the community's risks in a number of ways including: reducing the contamination of water resources, safeguarding public health, and preventing environmental pollutants.

Historic Flood Information

The WWTP is located in Special Flood Hazard Zone AE. The effective FIRM map was last created in July of 2014 and identified a BFE through the middle of the site of approximately 33.5 feet in NAVD 88 (34.3 feet City Datum). FEMA's flood risk review over the course of the last two years culminated in the production of preliminary FIRM maps in February of 2022 which depicted a 3-foot rise in the BFE to 36.5 feet in NAVD 88 (37.3 feet City Datum) for the facility.

On November 14, 2020, the James River crested at 16.95 feet in NAVD 88 at the City Locks gauge, flooding portions of Richmond's Wastewater Treatment Plant (see attached Historic Flood Images). The flooding of the James River in Richmond is driven by rainfall in the upper portions of the watershed beginning in the Appalachian Mountains. The City is required to treat wastewater flows to best of their ability, and in large scale events this mandate is continually balanced against ensuring the safety of staff and facility. During this event the plant was shut down for three days due to the inundation and the facility incurred $3000 in damages. In terms of scale, the flood event did not reach the level of a ten year flood elevation (at 19.9 feet in NAVD 88), but nevertheless caused a substantial void in service to the community. The indirect cost due to loss of service was calculated for the 225,000 users at the FEMA provided rate of $41 per person per day of lost wastewater service, the total service loss came to $27,675,000.

At least four additional storm events of greater magnitude than the most recent event have occurred over the last 25 years but records regarding the amount of loss or loss of service were unavailable.

Jan 27, 2010	Flooding of the Facility. The river crested at 18.1 ft (NAVD 88) at the nearest gauge to the WWTP.
Feb 25, 2003	Flooding of the Facility. The river crested at 18.73 ft (NAVD 88) at the nearest gauge to the WWTP.
Sep 8, 1996	Flooding of the Facility. The river crested at 21.23 ft (NAVD 88) at the nearest gauge to the WWTP.
Jan 21, 1996	Flooding of the Facility. The river crested at 20.61 ft (NAVD 88) at the nearest gauge to the WWTP.

Past WWTP Flood Events

Floodplain Management Regulations

The current floodplain regulations for the City of Richmond can be found at the following site:

Chapter 14 - FLOODPLAIN MANAGEMENT, EROSION AND SEDIMENT CONTROL, AND DRAINAGE | Code of Ordinances | Richmond, VA | Municode Library

2. Need for Assistance

Currently many of the critical operations at the facility are at risk to equipment damage and induced loss of service from flood events below a 10 year level event. A recent event below a 10-year level storm halted operations at the facility for 3 days. It is reasonable to assume that a much larger event will have drastic and potentially long term effects on the wastewater service to the community.

The expected annual damages (equipment and service loss) for carrying this risk are estimated at almost $3.4 million (see Budget Narrative analysis). The project decreases this risk by dramatically increasing the protection level of critical operations to allow for a rapid recovery after events up to the 100 year level.

As previously mentioned, the immediate area surrounding the facility is identified as a low-income geographic area and a location of very high social vulnerability (see attached Social Vulnerability and Qualified Opportunity Zone Maps). The protection of wastewater services reduces the risk of untreated sewage being introduced into the waterways and environment of the surrounding community

Alternatives

The recommended project was compared to two alternatives: no action and a perimeter flood wall constructed around the facility.

No Action
A 100-year flood event could decimate many of the critical structures, tanks, and housed equipment at the facility knocking out water treatment services to the City and surrounding communities for many months.

A Perimeter Flood Wall Option around the Facility
The Richmond WWTP is located in the 100-year floodway adjacent to the James River. A costly alternative includes designing and constructing a flood wall around the entire facility to prevent the site wide inundation of flood water. The flood wall would be approximately 7800 ft in length and vary in height from 5'-20' depending on the grade elevation on the site. At an estimated cost of $225/sf the wall would have an estimated construction cost of 22 million dollars. A permanent wall at the site would have a large impact on the hydrology and flooding potential of the surrounding area that would require extensive study to limit determinantal effects.

In previous years the City and US Army Corps of Engineers have evaluated the installation of a floodwall around the facility and thus far it has been determined by the Corps to not be cost effective (low benefit to cost ratio).

3. Goals and Objectives

The flood mitigation effort at the WWTP will benefit the 225,000-person service area in the City of Richmond (and surrounding communities) by protecting the reliability of an essential resource. The long-term stabilization of wastewater service reduces community risks for a multitude of lifelines including: the protection of water resources, safeguarding public health, reducing contamination of food sources, functioning community infrastructure, and preventing environmental pollutants.

The WWTP’s flood mitigation project will be cost effective. The total project benefit (risk avoided) is calculated at $42,773,800 and opinion of probable cost of mitigation is $ 5,586,110, producing a benefit to cost ratio of 7.6. Further explanation and documentation for this analysis is provided in the Budget Narrative section.

4. Approach, Milestones, and Deliverables

The flood mitigation efforts will be implemented in a traditional design-bid-build project. The start of design for the project is planned for the middle of 2022. The anticipated schedule includes 9 months of design, 3 months of procurement, and 2 years of construction (see table below). Milestones for design will include 30%, 60%, and 100% deliverables at the three, six, and nine-month points, respectively. Milestones for construction will be at 25% Construction Complete, 50% Construction Complete, 75% Construction Complete, and 100% Construction Complete. The City of Richmond's Department of Public Utilities will manage and complete the project with outside consultant Architects and Engineers.

ACTIVITY	DURATION IN MONTHS											
	3	6	9	12	15	18	21	24	27	30	33	36
Flood Mitigation Project Design	🟩	🟩	🟩									
Flood Mitigation Project Procurement				🟩								
Flood Mitigation Project Construction					🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
Milestones	30%	60%	100%			25%		50%		75%		100%

Project Schedule

5. Relationship to Other Projects

The project focuses on the protection of seven structures at the facility that have been deemed critical for the rapid recovery of baseline treatment operations. Additional secondary structures and operations at the facility will continue to be susceptible to flood hazards. The protection of these additional less critical areas is planned to be integrated into general capital improvement work for each structure.

6. Maintenance and Management Plan

All equipment and flood mitigation elements installed through this project will be maintained in perpetuity by the DPU's in-house maintenance staff at the WWTP through maintenance work orders. Maintenance work orders are used by the facility in concert with the Operation and Maintenance Manual to track, operate, and maintain all assets. All Maintenance Work Orders are funded through the Facility's Operation and Maintenance Fund. All manufacturer instruction, documentation, and recommendations for maintenance and repair of installed elements will become part of the Facility's Operation and Maintenance Manual.

7. Additional Criteria

- The City has an approved resilience plan through DCR. See attached Resilience Plan Approval letter.
- No portion of the project has been included in any application or program previously funded by the DCR.
- Evidence of an ability to provide the required match funds: see attached Statement of Funding letter.
- A link the current hazard mitigation plan: RCMR-HMP-07182017-1.pdf (planrva.org)
- A link to the current comprehensive plan: Master Plan | Richmond (rva.gov)

Budget Narrative

1. Estimated Total Project Cost

The total cost of services for the Design phase of the project is **$585,000**. A tabular breakdown of this cost organized by the anticipated amount of hours per employee rate is located below (and also contained in the attached draft Task Order for WWTP Flood Mitigation Design Project).

WWTP Flood Mitigation Design Project

Estimated Cost of Services

Estimated Labor Costs:

Tasks	**Program Coor.**	**Project Manager**	**Architect / Engineer IV**	**Architect / Engineer III**	**Architect / Engineer II**	**Architect / Engineer I**	**Sen. CADD Tech.**	**Jr. CADD Tech.**	**Typist/ Clerical**	**Total Hours**	**Estimated Labor Costs**
Task 1 - PROJECT MANAGEMENT	8	80	8							96	$20,920
Task 2 - SURVEY AND GEOTECHNICAL	1	8	12	16						37	$7,207
Task 3 - 30% DESIGN	1	24	30	220	220	240	20	120	6	881	$118,331
Task 4 - 60% DESIGN	1	24	30	200	200	240	20	120	6	841	$112,311
Task 5 - 90% DESIGN	1	24	30	200	200	240	16	100	6	817	$109,967
Task 6 - PERMITTING	1	8	16	24	40		4	20	6	119	$17,455
Task 7 - 100% DESIGN		4	10	30	30	30	6	16	6	132	$17,892
Task 8 - BID ASSISTANCE	1	8	16	30	25	20	4	8		112	$17,117
										0	
Subtotal Labor Hours	14	180	152	720	715	770	70	384	30	0	**$421,200**
Hourly Rate	$ 295	$ 211	$ 210	$ 169	$ 132	$ 110	$ 111	$ 95	$ 72		
Estimated Total Labor Cost	$ 4,130	$ 37,980	$ 31,920	$ 121,680	$ 94,380	$ 84,700	$ 7,770	$ 36,480	$ 2,160	$421,200	

Estimated Other Direct Costs:

Item	**Cost**	**Multiplier**	**Total Estimate**
1. Survey AND Geotechnical (MBE)	$20,000	1.05	$21,000
2. Structural Subcontractor (MBE)	$130,000	1.05	$136,500
3. Reproduction	$1,000	1.05	$1,050
4. Travel	$5,000	1.05	$5,250
Subtotal Estimated Other Direct Costs			**$ 163,800**

Total Estimated Costs:

Total Estimated Cost of Labor and Other Direct Costs			**$585,000**

Estimated Cost of Design Services

2. Amount of Funds Requested from the Fund

The total amount of grant assistance requested by the fund for the Design phase of the project is **$292,500.** This amount constitutes a 50% / 50% split between the Fund and the City of Richmond's match amount. The grant funds will be allocated to cover half of the estimated Cost of Design Services in the table above.

3. Amount of cash funds available

The City of Richmond Department of Public utilities has a match amount of **$292,500**, which when combined with the amount of funds requested reflects the total estimated cost of the Design phase of the project. The City's funds will be sourced from DPU's CIP Fund. A Statement of Funding letter from the City has been included with the supporting documentation with the application**.**

A letter authorizing the request for funding from the City has also been included with the supporting documentation with the application**.**

4. Opinion of Probable Flood Mitigation Costs

This section provides a conceptual opinion of the probable construction cost for the identified mitigation strategy for each structure. The conceptual opinion of probable construction has been updated to reflect the initial structural analysis completed and the additional assessment of optimal resiliency design strategies. The conceptual opinions of construction cost provided in this report are considered AACE Class 5. The conceptual cost of sealing a building comprised of a conservative estimate for the protection of each flood pathway. The conceptual cost of raising equipment included an estimate of the platform of structure needed to raise and access the equipment and the effort to reinstall. The conceptual cost of installing flood proof equipment was considered equivalent to the replacement cost of the original piece of equipment. These construction cost opinions include materials and equipment, labor and installation, contingency, and general contractor overhead; and are based on the engineer's experience with prior projects and cost sources such as RS Means. All benefits and costs are provided in 2022-dollar values.

Opinion of Probable Cost of Mitigation per Structure

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
Main Plant Switchgear Building					
Northside					
1	New Flood windows (5)	170	SF	$ 500	$ 85,000
2	Single Door w/ sidelite - Flexible Flood Cover	32	SF	$ 210	$ 6,720
Southside					
3	New Flood windows (4)	148	SF	$ 500	$ 74,000
Eastside					
4	Overhead Door - Flexible Flood Cover	50	SF	$ 280	$ 14,000
5	Single Door - Flexible Flood Cover	18	SF	$ 300	$ 5,400
Westside					
General					
6	Seal exterior pipe penetrations (1)	1	EA	$ 500	$ 500
7	Additional sump pump	1	EA	$ 2,500	$ 2,500
				Subtotal	**$ 188,120**
Main Pump Station					
Northside					
1	Overhead Door - Flood Barrier	120	SF	$ 450	$ 54,000
2	New Flood Door	24	SF	$ 625	$ 15,000
3	Raise Louver	36	SF	$ 500	$ 18,000
Southside					
4	Overhead Door - Flexible Flood Cover	60	SF	$ 280	$ 16,800
5	Single Door - Flexible Flood Cover	18	SF	$ 300	$ 5,400
6	Single Door - Flexible Flood Cover	18	SF	$ 300	$ 5,400
7	Louver - Flood Barrier	32	SF	$ 225	$ 7,200
Eastside					
8	Single Door - Flood Barrier	32	SF	$ 225	$ 7,200
9	Louvers (4) - Flood Barrier	100	SF	$ 225	$ 22,500

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
Westside					
10	New Flood Door	24	SF	$ 625	$ 15,000
11	Louvers (4) - Flood Barrier	156	SF	$ 225	$ 35,100
General					
12	Seal exterior pipe penetrations (4)	4	EA	$ 500	$ 2,000
13	Seal exterior conduit penetrations (4)	4	EA	$ 500	$ 2,000
14	Additional sump pump	1	EA	$ 2,500	$ 2,500
15	Seal below grade penetrations	1	LS	$ 30,000	$ 30,000
16	Structural wall reinforcement - Carbon Fiber Reinforced Polymer	5036	SF	$ 100	$ 503,600
17	Raising Interior Electrical Equipment: Control Center CC-3, Control Center Transformer, 2.4 KV Switchgear 1, Pump Auto Control Panel, Control and Indication Panel, DCU-1, Transformer, 2.4 KV Switchgear	1	LS	$ 250,000	$ 250,000
				Subtotal	**$ 991,700**
Primary Sludge Pump Station					
Northside					
1	New Flood Window (3)	144	SF	$ 500	$ 72,000
2	New Flood Window (3)	144	SF	$ 500	$ 72,000
3	Double Door - Flood Barrier	66	SF	$ 225	$ 14,850
Southside					
4	New Flood Window	28	SF	$ 500	$ 14,000
5	New Flood Door	24	SF	$ 625	$ 15,000
Eastside					
6	New Flood Window (2)	56	SF	$ 500	$ 28,000
7	Raise Louver	9	SF	$ 500	$ 4,500
Westside					
8	New Flood Window	28	SF	$ 500	$ 14,000
General					
9	Seal exterior pipe penetrations (4)	4	EA	$ 500	$ 2,000
10	Seal exterior conduit penetrations (3)	3	EA	$ 500	$ 1,500
11	Additional sump pump	1	EA	$ 2,500	$ 2,500
12	Seal below grade penetrations	1	LS	$ 3000	$ 3000
13	Structural wall reinforcement - Carbon Fiber Reinforced Polymer	1710	SF	$ 100	$ 171,000
				Subtotal	**$ 414,350**
Preliminary Sedimentation Tanks					
General					
1	Replaced/Floodproof Flight Drives/Collector Motors	1	LS	$ 100,000	$ 100,000
2	Replaced/Floodproof Cross and Longitudinal Drives	1	LS	$ 80,000	$ 80,000
3	Replaced/Floodproof Control Panels and Disconnets	1	LS	$ 120,000	$ 120,000
4	Removeable Flood Barrier Wall (protecting to 50 year flood) ~1300ft	11700	SF	$ 225	$ 2,632,500
				Subtotal	**$ 2,932,500**
Gravity Sludge Thickener Tanks					
General					
1	Replaced/Floodproof Thickener Drives	4	EA	$ 40,000	$ 160,000
2	Replaced/Floodproof Sludge Pumps	4	EA	$ 100,000	$ 400,000
				Subtotal	**$ 560,000**

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
Digester Tanks and Sludge Control Building No.1					
Digester Tank 1					
General					
1	New Flood Window	32	SF	$ 500	$ 16,000
2	New Flood Door	24	SF	$ 625	$ 15,000
3	Raise Louver	9	SF	$ 500	$ 4,500
4	Seal exterior conduit penetrations (1)	1	EA	$ 500	$ 500
Digester Tank 2					
General					
1	New Flood Window	32	SF	$ 500	$ 16,000
2	New Flood Door	24	SF	$ 625	$ 15,000
3	New Flood Hatches (2)	12	SF	$ 500	$ 6,000
4	Seal exterior conduit penetrations (1)	1	EA	$ 500	$ 500
Sludge Control Building No.1					
Northside					
1	Single Door - Flexible Flood Cover	46	SF	$ 280	$ 12,880
2	New Flood Window (2)	70	SF	$ 500	$ 35,000
Southside					
3	Overhead Door - Flood Barrier	56	SF	$ 225	$ 12,600
4	New Flood Window (2)	1	SF	$ 500	$ 500
Eastside					
5	New Flood Window	35	SF	$ 500	$ 17,500
Westside					
6	Single Door w/ sidelites - Flexible Flood Cover	46	SF	$ 210	$ 9,660
General					
7	Seal exterior pipe penetrations (2)	2	EA	$ 500	$ 1,000
8	Seal exterior conduit penetrations (2)	2	EA	$ 500	$ 1,000
9	Additional sump pump	1	EA	$ 2,500	$ 2,500
10	Structural wall reinforcement - Carbon Fiber Reinforced Polymer	1360	SF	$ 100	$ 136,000
				Subtotal	**$ 302,140**
UV Building					
Northside					
1	New Flood Window (3)	108	SF	$ 500	$ 54,000
Southside					
2	New Flood Window (3)	108	SF	$ 500	$ 54,000
Eastside					
3	Raise Louvers	108	SF	$ 600	$ 64,800
Westside					
4	Raise Louvers	45	SF	$ 500	$ 22,500
General					
5	Seal exterior pipe penetrations (1)	1	EA	$ 500	$ 500
6	Seal exterior conduit penetrations (3)	3	EA	$ 500	$ 1,500
				Subtotal	**$ 197,300**
				Total All Items	**$ 5,586,110**

5. Opinion of Probable Mitigated Risk

This section quantifies the present risk to the WWTP and critical assets given the probability of a future flood event. According to FEMA the replacement cost value is defined as the "cost to replace property with the same kind of material and construction without deduction for depreciation."[1] A conceptual opinion of probable asset replacement costs are listed below.

Opinion of Probable Asset Replacement Costs

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
Main Plant Switchgear Building					
1	Main Switchgear	1	EA	$ 500,000	$ 500,000
2	Transformers: T-29, T-30	2	EA	$ 150,000	$ 300,000
3	Distribution Panels, Control-Panel, Automatic Transfer Switch, DCU-EB	1	LS	$ 400,000	$ 400,000
				Subtotal	**$ 1,200,000**
Main Pump Station					
1	Gate operators	1	EA	$ 100,000	$ 100,000
2	AFDs	4	EA	$ 500,000	$ 2,000,000
3	Venturi meter sensor	1	EA	$ 75,000	$ 75,000
4	AFD control panels	1	EA	$ 250,000	$ 250,000
5	4 pump Motors	4	EA	$ 250,000	$ 1,000,000
6	MCC, Transformer, switchgear	1	EA	$ 500,000	$ 500,000
7	DCS, Pump Control, DCU, Lighting trans, lighting panel	1	LS	$ 1,000,000	$ 1,000,000
				Subtotal	**$ 4,925,000**
Primary Sludge Pump Station					
1	5 primary sludge pumps	5	EA	$ 150,000	$ 750,000
2	2 scum pumps	2	EA	$ 75,000	$ 150,000
3	2 ferric chloride pumps	2	EA	$ 75,000	$ 150,000
4	pump control panel	1	EA	$ 100,000	$ 100,000
5	DCU, MCC, MCS, Lighting	1	LS	$ 400,000	$ 400,000
				Subtotal	**$ 1,550,000**
Preliminary Sedimentation Tanks					
1	Flight drives, collector motors	8	EA	$ 12,500	$ 100,000
2	Cross and longitudinal drives	16	EA	$ 5,000	$ 80,000
3	Control panels	8	EA	$ 15,000	$ 120,000
				Subtotal	**$ 300,000**
Gravity Sludge Thickener Tanks					
1	Thickener drives	4	EA	$ 40,000	$ 160,000
2	sludge pumps	4	EA	$ 100,000	$ 400,000
				Subtotal	**$ 560,000**
Digester Tanks and Sludge Control Building No.1					
1	Controllers, MCC	1	EA	$ 300,000	$ 300,000

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[1] https://www.fema.gov/national-flood-insurance-program/definitions#R

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
2	Valves	12	EA	$ 40,000	$ 480,000
3	Circulating pumps	9	EA	$ 150,000	$ 1,350,000
4	Sludge heating water pumps	12	EA	$ 10,000	$ 120,000
5	CC, Steam system, lighting	1	LS	$ 500,000	$ 500,000
				Subtotal	**$ 2,750,000**
UV Building					
1	UV Reactors	1	LS	$ 1,000,000	$ 1,000,000
2	MCC UV1	1	EA	$ 300,000	$ 300,000
3	UV System Control Centers SCC-1, SCC-2	2	EA	$ 200,000	$ 400,000
4	480V Switchgear UV1, UV2	2	EA	$ 500,000	$ 1,000,000
5	VFDs	4	EA	$ 75,000	$ 300,000
				Subtotal	**$ 3,000,000**
				Total All Items	**$ 14,285,000**

Expected annual damages (EAD) for each structure were calculated based the conservative probability of flooding given the current protection level and the replacement cost value of assets at risk. A conceptual opinion of probable expected annual damages to critical assets are summarized below.

Expected Annual Damages per Structure

Structure Name	Estimated Total Asset Replacement Cost	Probability	Expected Annual Damages (EAD)
Main Plant Switchgear Building	$1,200,000	1%	$12,000
Main Pumping Station	$4,925,000	10%	$492,500
Primary Sludge Pumping Station	$1,500,000	2%	$30,000
Preliminary Sedimentation Tanks	$300,000	10%	$30,000
Gravity Sludge Thickener Tanks	$600,000	2%	$12,000
Digester Tanks/ Sludge Control Building #1	$2,750,000	1%	$27,500
UV Building	$3,000,000	1%	$30,000
	Total		**$634,000**

In addition to the asset replacement cost, the facility's mitigated risk includes a conceptual value for the loss of service to the community. FEMA estimates the economic impact of the loss of wastewater service to be $41 per person per day lost of service. The Richmond Wastewater Treatment Plant serves approximately 225,000 people. Using the data from the most recent storm event in 2020, the facility incurred 3 days of lost service for an event that did not reach the level of a 10-year storm, so a 10% probability was conservatively used. The economic impact of service loss is estimated at $27,675,000. The expected annual value is the following:

Expected Annual Value of Service Loss to a Flood Event

Name	Estimated Total Economic Impact of Service Loss	Probability	Expected Annual Value of Service Loss
WWTP	$27,675,000	10%	**$2,767,500**

In order to compare future, recurring EAD to the 2022 cost of proposed mitigation strategies, a discount rate was applied over the life of a project to establish flood risk. The useful lifetime of flood mitigation for this study was estimated at 30 years. A discount rate of 7% was used in accordance with FEMA benefit-cost analysis and as required by the Federal Government's Office of Management and Budget for 2022. The present value formula used is as follows:

$$\text{Risk} = EAD\left[\frac{1-(1+r)^{-T}}{r}\right]$$

Where EAD = expected annual damages

r = discount rate = 7%

T = useful life, years = 30

The table below provides a summary of the present value of the risk to critical assets at each structure.

Present Value at Risk for Each Structure

Structure Name	EAD	Mitigated Risk (Present Value)
Main Plant Switchgear Building	$12,000	$148,800
Main Pumping Station	$492,500	$6,107,000
Primary Sludge Pumping Station	$30,000	$372,000
Preliminary Sedimentation Tanks	$30,000	$372,000
Gravity Sludge Thickener Tanks	$12,000	$148,800
Digester Tanks/ Sludge Control Building #1	$27,500	$341,000
UV Building	$30,000	$372,000
Total		**$7,861,600**

The table below provides the present value of the risk to the WWTP for service loss.

Present Value at Risk for Loss of Service

Name	Expected Annual Value of Service Loss	Mitigated Risk (Present Value)
WWTP	$2,767,500	**$34,317,000**

In adding the two mitigated risk categories, the total present value of mitigated risk comes to **$42,178,600**.

The following benefit to cost ratio for the WWTP Flood Mitigation effort was determined.

Benefit to Cost Summary of Mitigated Risk

Total Benefit, Present Value Mitigated Risk	Estimated Cost of Flood Mitigation	Benefit-to-Cost Ratio
$42,178,600	**$5,586,110**	**7.6**

Supporting Documentation

- Scoring Criteria Worksheet
- Project Location Maps
- Qualified Opportunity Zone Map
- Social Vulnerability Map
- FIRMette and Preliminary FIRM Map
- Resilience Plan Approval Letter
- Historic Flood Images
- WWTP Flood Mitigation Design Project Draft Task Order
- Statement of Funding Letter
- Letter Authorizing the Request for Funding
- Supporting Documentation Checklist

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

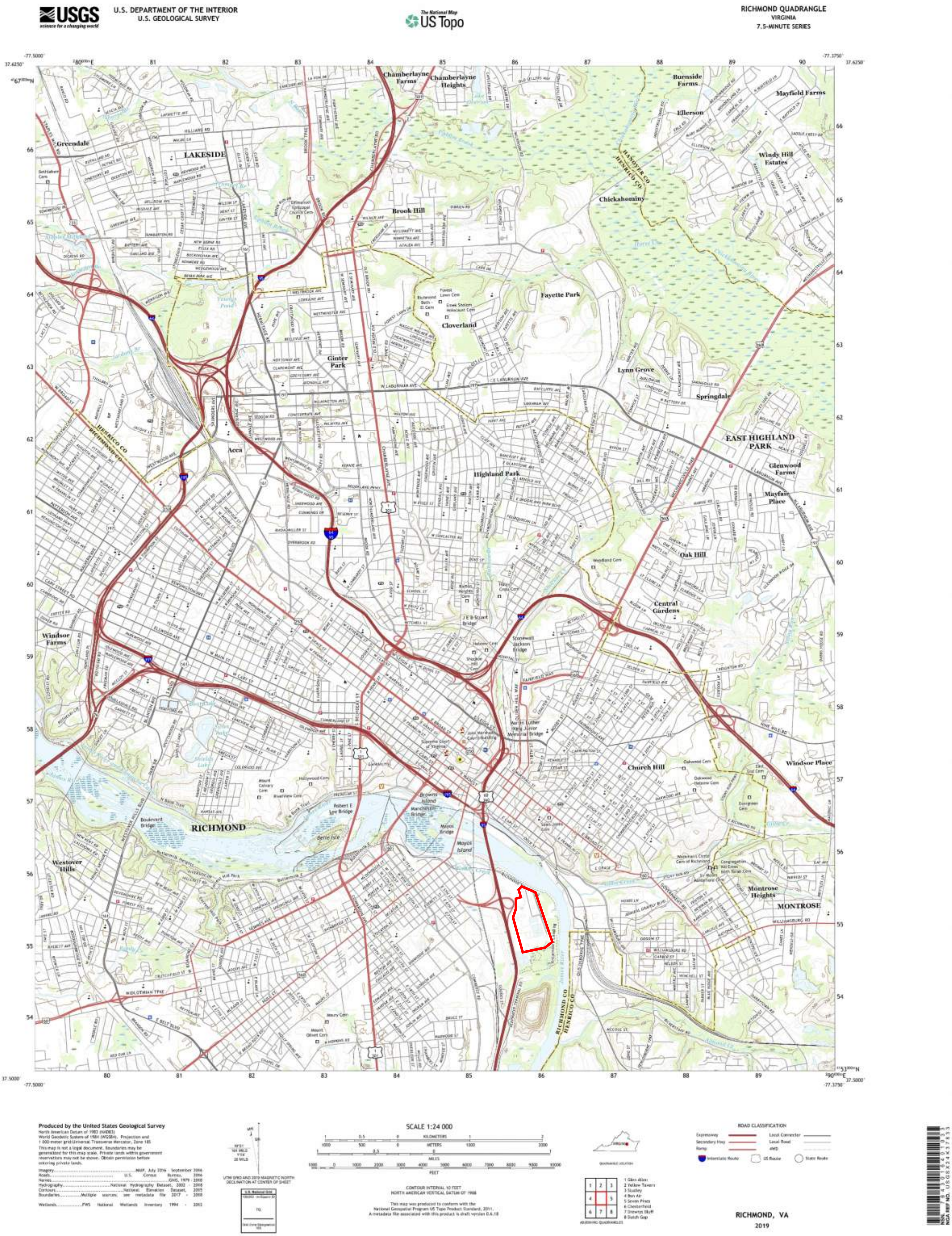
Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Richmond	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		☒ **Yes** ☐ **No**
Applicant Name:	City of Richmond DPU	
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	25
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	15
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		**70**

Project Location Maps



Google Maps

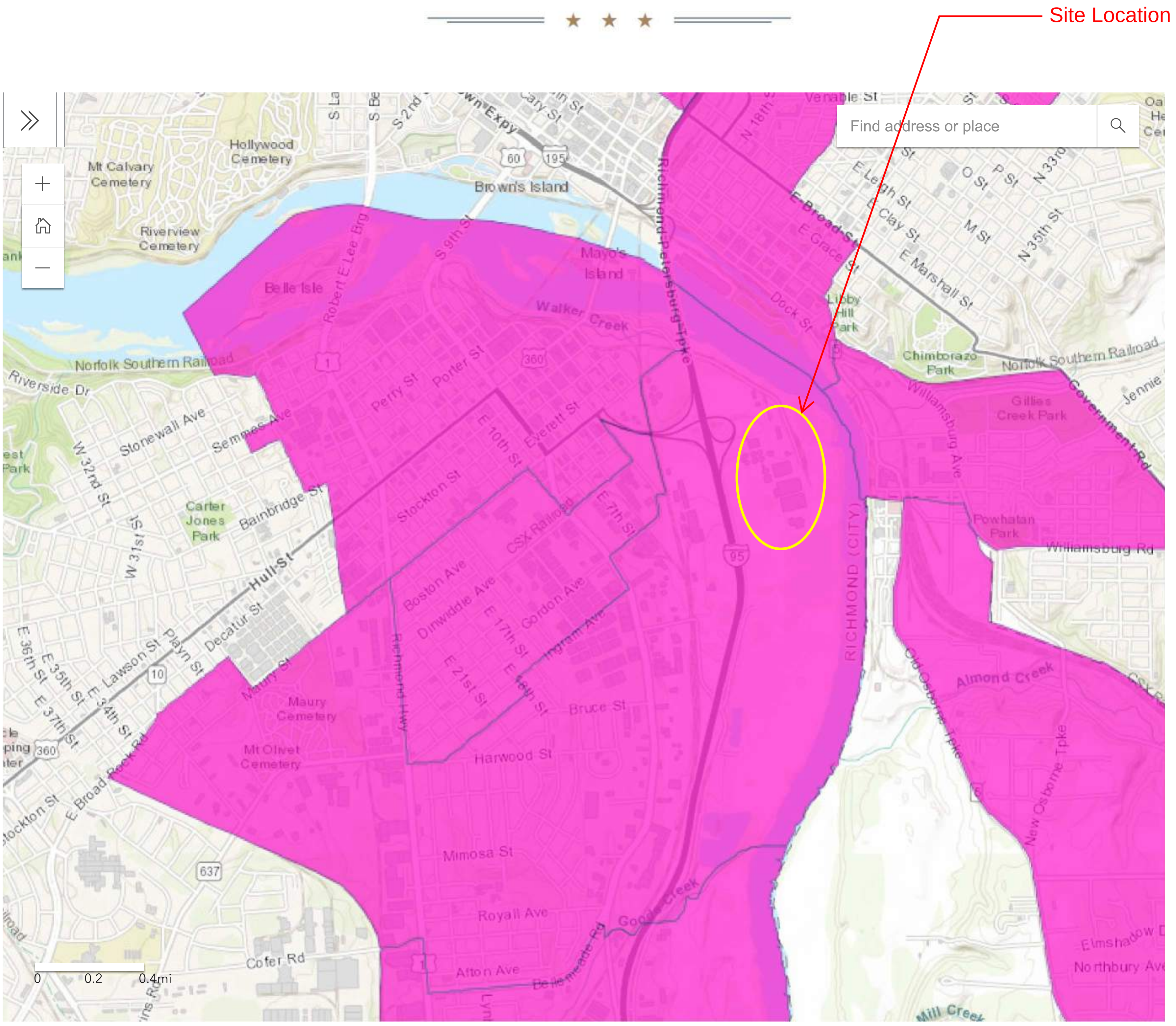
Imagery ©2022 CNES / Airbus, Commonwealth of Virginia, Maxar Technologies, USDA/FPAC/GEO, Map data ©2022 500 ft

Qualified Opportunity Zone Map -
Low-income geographic area

Map of Opportunity Zones

★ ★ ★

Site Location



View larger map

Interested in your State's or Territory's Opportunity Zone strategy? Click here to learn more.

Please select a State or Territory ⌄

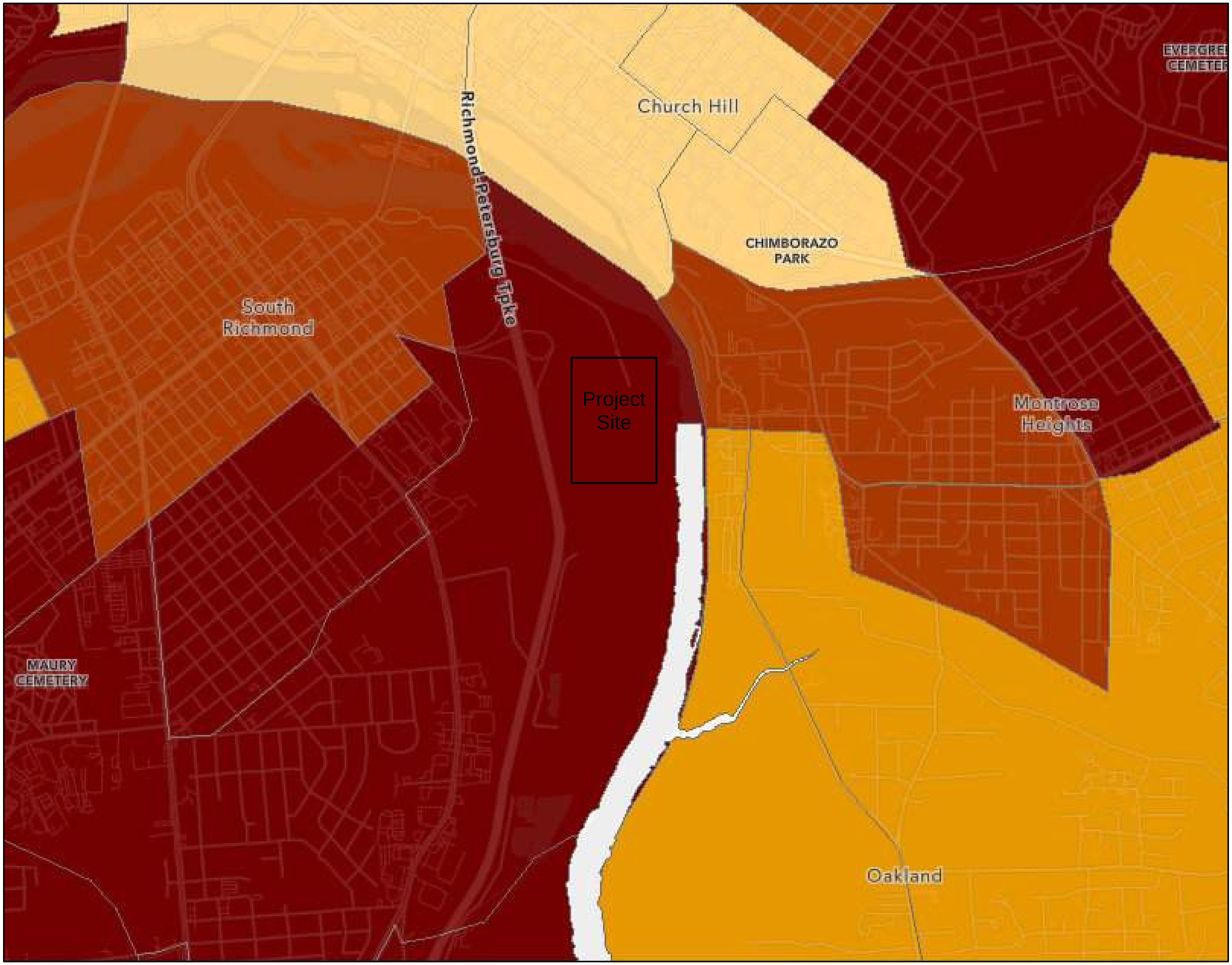
Find a census tract

For a list of the census tracts designated by the Secretary of the Treasury as Opportunity Zones in July 2018, please click here

Social Vulnerability Map -
Vulnerability Index Score of 2.7

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- 🟧 Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟫 High Social Vulnerability
- 🟥 Very High Social Vulnerability
- ⊠ Not inlcuded in the analysis



11/10/2021

1:36,112
0 0.2 0.4 0.8 mi
0 0.35 0.7 1.4 km

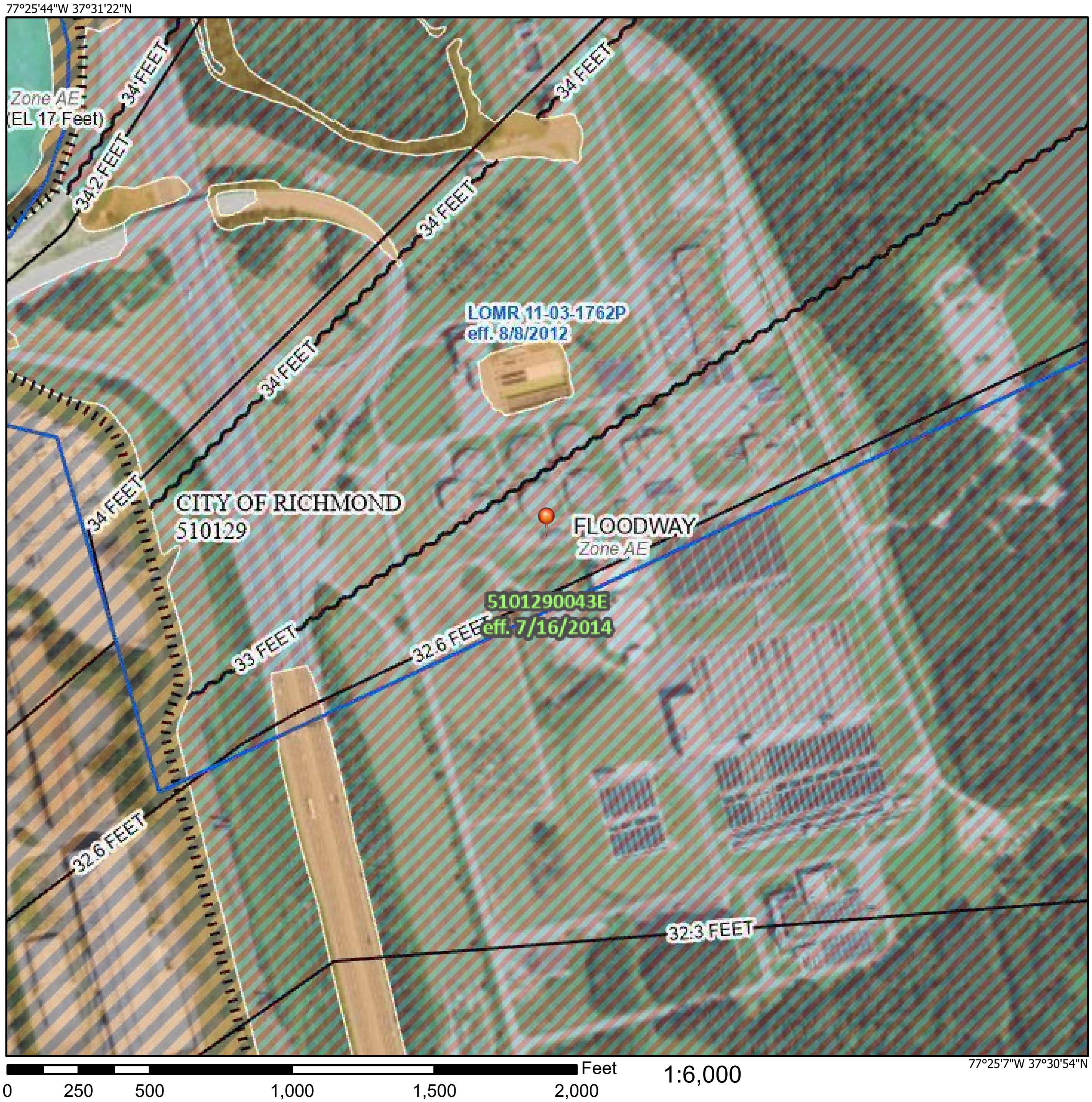
Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPT VA

National Flood Hazard Layer FIRMette

FEMA

FIRMette and Preliminary FIRM Maps



1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	Ⓑ 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	— - —	Coastal Transect Baseline
	— —	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

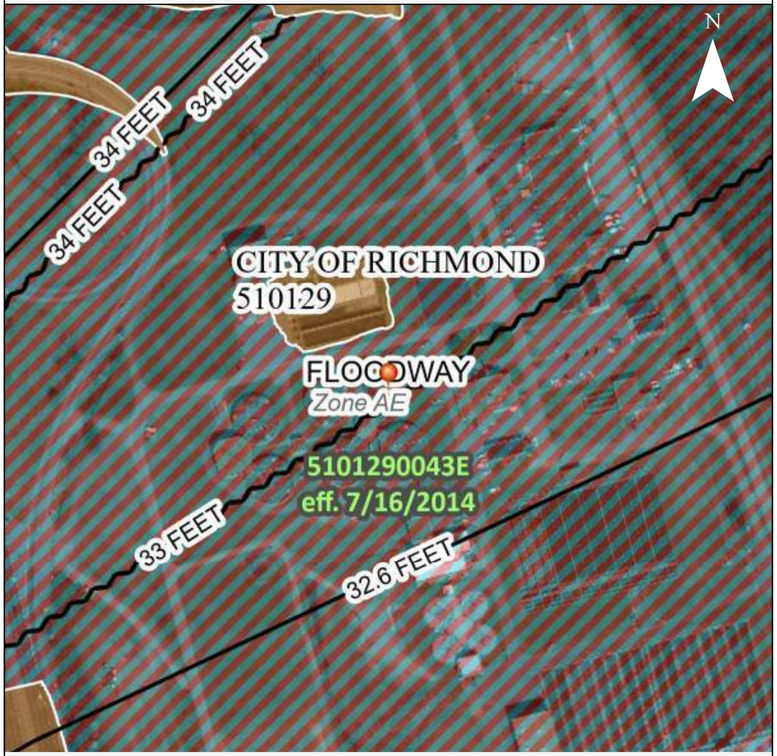
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/2/2022 at 3:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

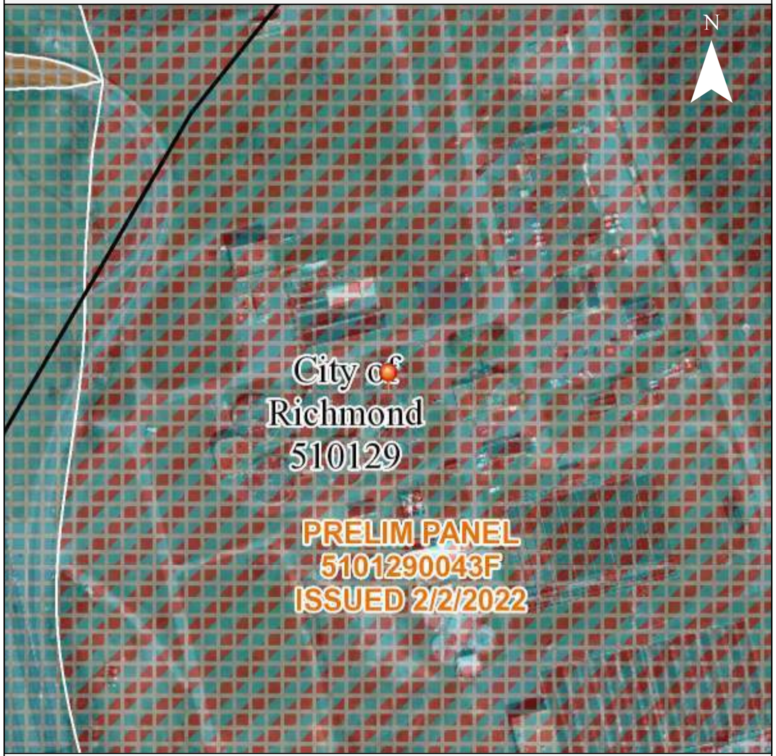
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Comparison of Flood Hazard

Effective & Preliminary Flood Hazards

Effective	Preliminary





Effective

POI Longitude/Latitude	-77.4235, 37.5197
Effective FIRM Panel	5101290043E
Effective Date	7/16/2014
Flood Zone	AE
Static BFE*	Not Available
Flood Depth	Not Available
Vertical Datum	Not Available

Preliminary

POI Longitude/Latitude	-77.4235, 37.5197
Preliminary FIRM Panel	5101290043F
Preliminary Issue Date	2/2/2022
Flood Zone	AE
Estimated Static BFE*	Not Available
Estimated Flood Depth	Not Available
Vertical Datum	Not Available

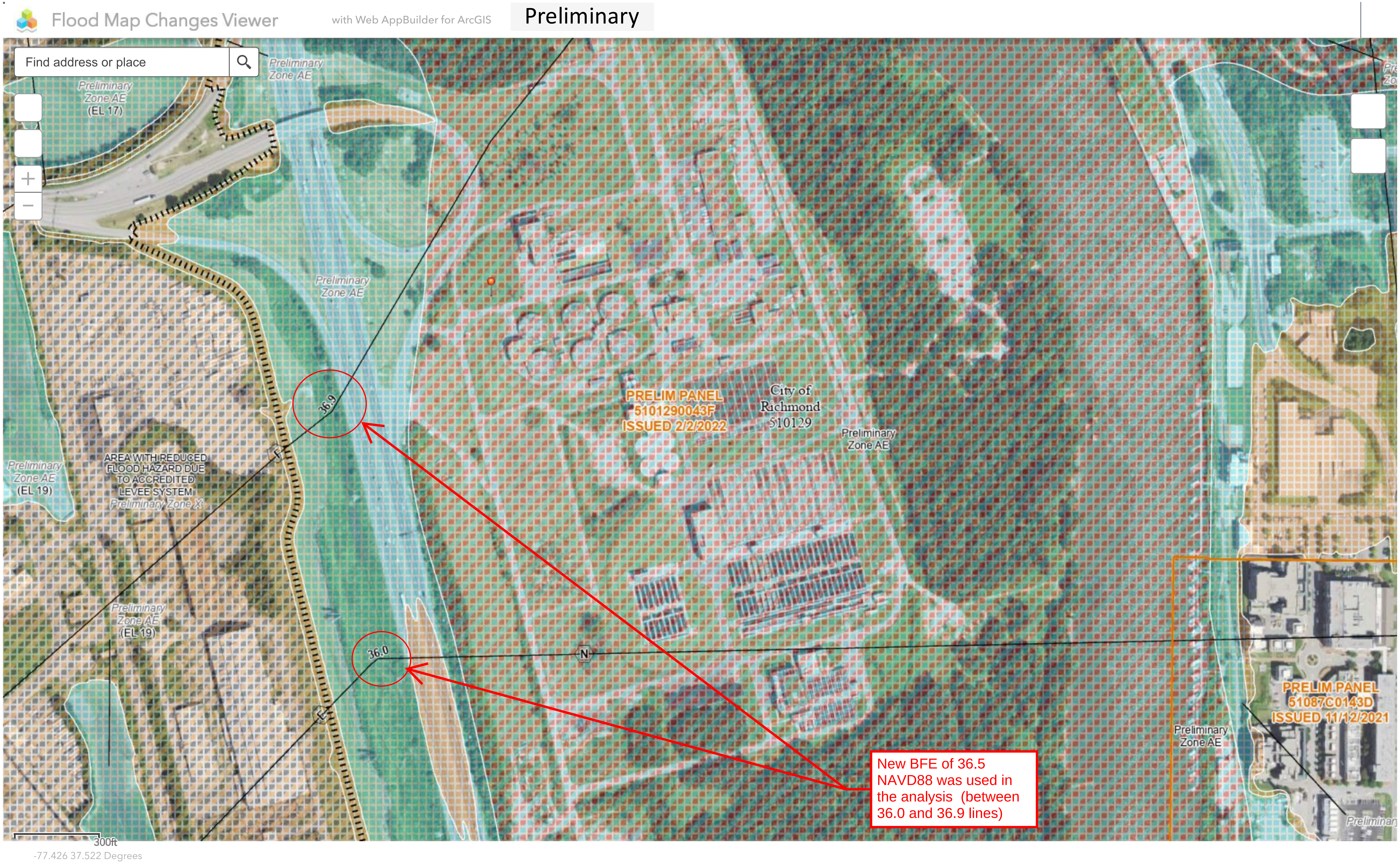
* A **Base Flood Elevation** is the expected elevation of flood water during the 1% annual chance storm event. Structures below the estimated water surface elevation may experience flooding during a base flood event.

Hazard Level	Flood Hazard Zone
High Flood Hazard	**AE, A, AH, AO, VE and V Zones.** Properties in these flood zones have a 1% chance of flooding each year. This represents a 26% chance of flooding over the life of a 30-year mortgage.
Moderate Flood Hazard	**Shaded Zone X.** Properties in the moderate flood risk areas also have a chance of flooding from storm events that have a less than 1% chance of occuring each year. Moderate flood risk indicates an area that may be provided flood risk reduction due to a flood control system or an area that is prone to flooding during a 0.2% annual chance storm event. These areas may have been indicated as areas of shallow flooding by your community. **Unshaded Zone X.** Properties on higher ground and away from local flooding sources have a reduced flood risk when compared to the Moderate and High Flood Risk categories. Structures in these areas may be affected by larger storm events, in excess of the 0.2% annual chance storm event.
Low Flood Hazard	**Insurance Note:** High Risk Areas are called 'Special Flood Hazard Areas' and flood insurance is mandatory for federally backed mortgage holders. Properties in Moderate and Low Flood Risk areas may purchase flood insurance at a lower-cost rate, known as Preferred Risk Policies. See your local insurance agent or visit https://www.fema.gov/national-flood-insurance-program for more information.

Disclaimer: This report is for informational purposes only and is not authorized for official use. The positional accuracy may be compromised in some areas. Please contact your local floodplain administrator for more information or go to msc.fema.gov to view an official copy of the Flood Insurance Rate Maps.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

4/2/2022 4:02:56 PM



New BFE of 36.5 NAVD88 was used in the analysis (between 36.0 and 36.9 lines)

Resilience Plan Approval Letter

Matthew J. Strickler
Secretary of Natural and Historic Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Nathan Burrell
Deputy Director of Government and Community Relations

Darryl M. Glover
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Thomas L. Smith
Deputy Director of Operations

August 19, 2021

Allen Shue, P.E.
Greeley and Hansen
9020 Stony Point Parkway, Suite 475
Richmond, VA 23235-1946

RE: City of Richmond Resilience Plan Submission - CFPF

Dear Mr. Shue:

Thank you for providing an overview of your Resilience Plan, and informing DCR of the various plans that the City of Richmond will be utilizing to fulfill the Resilience Plan submission requirements. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the June 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on August 20, 2024.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

   Meets criteria as written.

   a. Project-based: The city of Richmond lies within the James River Watershed with 24 miles of the James River flowing through the city. This has been subdivided into 4 watershed groupings, each with uniquely defined characteristics. Several projects have been completed or are phased for completion as notated in the *Richmond-Crater Hazard Mitigation Plan*. Additionally, watershed based projects have been outlined in the *RVA Clean Water Plan* and flood control and resilience projects are also identified within the *RVA Emergency Operations Plan*.

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

   Meets criteria as written.

a. Natural and nature-based flood management measures are identified for use in projects throughout the city in the *RVA Clean Water Plan*.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**

   Meets criteria as written.

   a. All parts of a locality: Entirety of the City of Richmond's stormwater system was evaluated as part of the watershed characterization in the *RVA Clean Water Plan;* and city-wide land use patterns described in the *2017 Richmond-Crater Hazard Mitigation Plan*.

   b. Social vulnerability: FEMA TEIF 2.0 analysis used to evaluate flood risk in the *2017 Richmond-Crater Hazard Mitigation Plan*.

   c. Demographic Analysis: Community profiles of the city and region-wide demographics captured in the *2017 Richmond-Crater Hazard Mitigation Plan*.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**

   Meets criteria as written.

   a. Coordination with other local and inter-jurisdictional projects, plans and activities:
   The development of the *Richmond-Regional–Crater PDC Multi-Regional Hazard Mitigation Plan* included coordination with public servants and planning officials from all but three of the 24 localities included in the Crater and Plan RVA PDC's. It also draws from several regional plans and activities as outlined on section 3.3 on page 3-12.

   The Technical Workgroup which contributed to the development of *the RVA Clean Water Plan* drew on experience from 30 different entities including state agencies, community associations, conservation and planning organizations, educational and scientific institutions, and other collectives as outlined in Section 2 on pages 6-7.

   b. Clearly articulated timeline or phasing plan for implementation:
   Section 5 of the *RVA Clean Water Program* identifies strategies for green infrastructure, stream restoration and land & water conservation in the City. Sections 4, 7 and 8 Identify a planning framework for the prioritization projects as well as a means by which success will be measured.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

   Meets criteria as written.

a. The *Richmond-Regional–Crater PDC Multi-Regional Hazard Mitigation Plan* references best-available data regarding flood risk from FEMA and the NCDC in sections 5.6.6 and 5.6.9. The RVA *Clean Water Plan* is established on data from the City’s 2015 *Watershed Characterization Report* as well as the City’s *2017 Clean Water Modeling Report*, found in Appendix A.

VA DCR looks forward to working with you as you work to make the City of Richmond a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

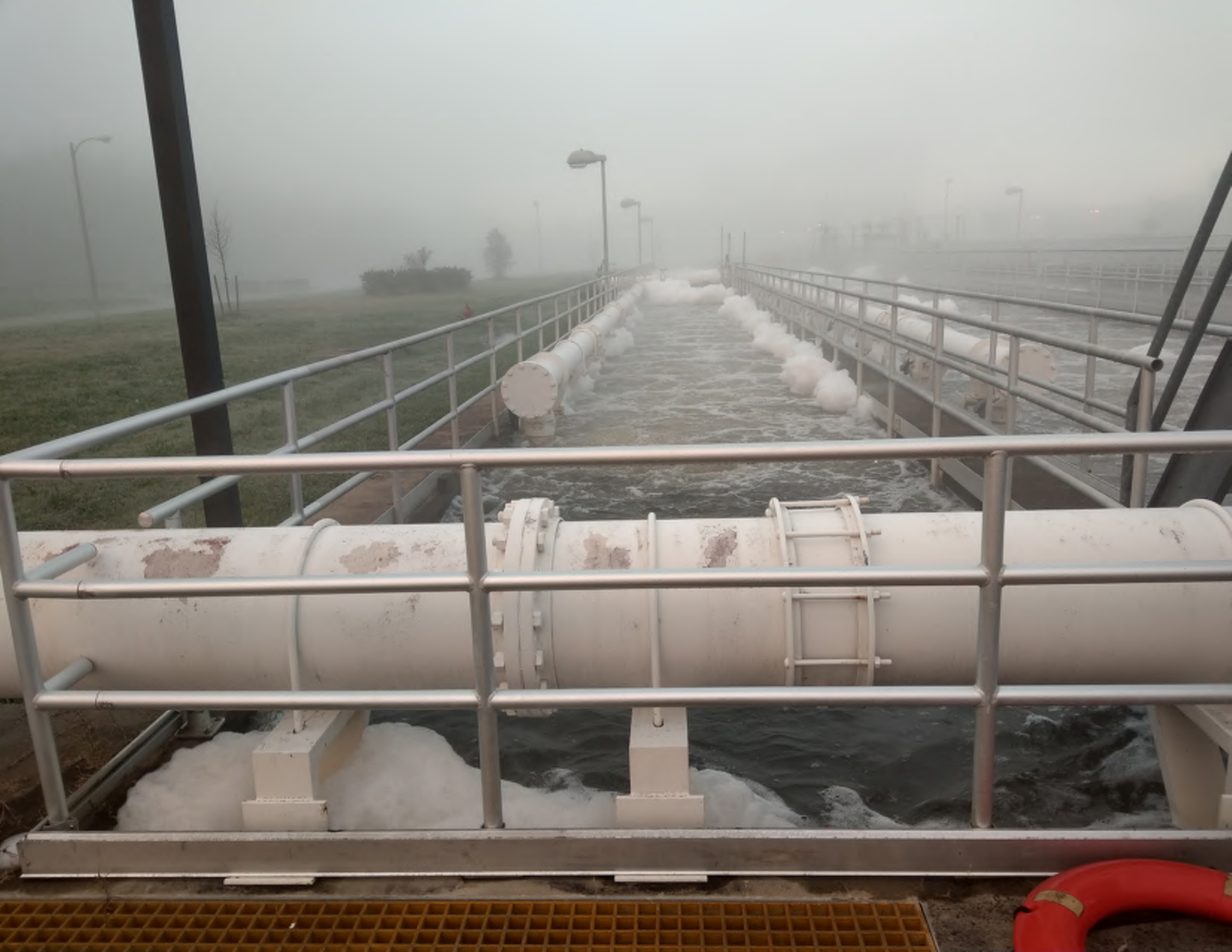
Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl M. Glover, DCR

Historic Flood Images - Nov 2020


SIMPLEX




018

WWTP Flood Mitigation Design Project Draft Task Order

WWTP Flood Mitigation Design Project – DRAFT

CITY OF RICHMOND, VIRGINIA
DEPARTMENT OF PUBLIC UTILITIES
CONTRACT NO. 17000006735
Wastewater Utility Work Order

Task Order - draft

WWTP Flood Hazard Mitigation Design Services

Date: March 20,2022

Issued to: Greeley and Hansen

Description: See Attachment

Budget: $585,000

Schedule: See Attachment

Requested by:	Approved by:
Greeley and Hansen LLC	City Of Richmond Department Of Public Utilities
(Signature)	(Signature)
Michael J. Hope, PE (Printed name)	Stephen Morgan (Printed name)
Member and Executive Vice President (Title)	Engineer/Principal (Title)
(Date)	(Date)

CITY OF RICHMOND, VIRGINIA
DEPARTMENT OF PUBLIC UTILITIES
CONTRACT NO. 17000006735
Wastewater Utility Work Order

WWTP Flood Hazard Mitigation Strategic Planning

BACKGROUND

The Federal Emergency Management Agency's (FEMA) recent flood risk review revealed an anticipated 3-foot increase in the base flood elevation for the Richmond Wastewater Treatment Plant (WWTP) and surrounding area. In preparation for this increase a Flood Vulnerability Study and Mitigation Planning Studies were performed for the City of Richmond (the City) to evaluate the impact and realize the current flood hazard susceptibilities. The resulting reports documented several of the building's flood pathways, low lying open tanks, and exposed equipment that assume risk detrimental to the continued function of the facility. Further analysis prioritized the mitigation efforts by determining what operations would be critical to the rapid recovery of baseline processes after a flood event. The critical process operations were identified as those associated with preliminary and primary treatment of wastewater as well as UV disinfection. The following buildings or structures were identified:

1. Main Plant Switchgear Building
2. Main Pumping Station
3. UV Building
4. Primary Sludge Pumping Station
5. Preliminary Sedimentation Tanks (4)
6. Gravity Sludge Thickener Tanks
7. Digester Tanks (2) and Sludge Control Building No. 1

The following scope of services are for the design of flood mitigation improvements for the seven critical structures identified as vital to the rapid recovery of facility operations after a flood event. A target design flood protection level was set at +39.0 ft to include freeboard and surcharge above the new 100-year base flood elevation. The project design will raise the flood protection to the new level and primarily focus on a combination of three flood mitigation strategies identified during the planning phase: raising equipment, replacing susceptible exterior elements with flood proof alternatives, and/or sealing the buildings or structures. Existing exterior walls will be structurally reinforced to accommodate the increased flood loading, and sump pumps will be added as a redundancy measure. The proposed flood resistant construction and structural components will be designed in accordance with the 2018 Virginia Construction Code, ASCE 7, and ASCE 24. Implementation of these mitigation strategies will allow for a base level of treatment to occur while the remainder of the facility recovers from the flood event and adds resilience to a vital service that the community depends on.

This Richmond WWTP Flood Mitigation design includes architectural and engineering drawings and specifications, opinions of probable construction cost, permitting, and bid assistance. The Design will incorporate a quality assurance and quality control program resulting in high quality deliverables.

SCOPE OF SERVICES

Unless noted otherwise, all deliverables will be transmitted electronically in portable document format (pdf).

TASK 1 – PROJECT MANAGEMENT

This task includes management of activities, meetings, and workshops for the design phase of the project as follows:

Kickoff Meeting

A kickoff meeting will be held with the City project team to review the scope of work and discuss the overall project goals. Greeley and Hansen PM will prepare the agenda and minutes of these meetings for review and approval by the City PM.

Design Review Meetings

As part of Task 1, review meetings will be held with the City at 30, 60, 90, and 100%.milestones. These meetings will review work progress and identify efforts and expectations for the remainder of the work. Greeley and Hansen PM will prepare the agenda and minutes of these meetings for review and approval by the City PM.

Coordination, Quality Control, and Progress Reports

This will include project coordination with key City of Richmond staff, project team and subconsultants. It is anticipated that this will be an ongoing Quality Control process. A Greeley and Hansen Principal will review all project design deliverables for quality assurance. Project progress will be reported and included in the invoices on a monthly basis.

Deliverables:

- Agenda, draft and final minutes from the meetings and workshops for distribution to the attendees. Agenda will be distributed no later than two (2) working days before meetings. Draft minutes will be distributed within five (5) working days of the meeting. Final minutes will be distributed within (2) days after draft minutes distributed (if revisions requested by attendees).
- Monthly Progress Reports.

TASK 2 – SURVEY AND GEOTECHNICAL

Survey

Mobilize surveyor to document site conditions at the four corners of each of the seven structures of focus. Survey to provide topographic information including natural features and elevations, ground conditions, vegetation, man-made surface features and structures, and utilities. Underground utilities will be marked by Miss Utilities and documented on survey. No ground penetrating radar is planned. The North American Vertical Datum of 1988 (NAVD 88) will be used as the vertical control datum.

Geotechnical Investigation

Mobilize geotechnical engineer to perform up to five soil borings at the site and provide recommendations for necessary below grade design. Based on the anticipated locations, five borings 50 feet deep will be provided. Investigation will include field soil borings, rock cores, laboratory testing, and engineering analysis and report.

Deliverables:

- Site Survey sealed and signed in PDF 60% Design Drawings and Specifications.
- Geotechnical Report
- Soil Borings

TASK 3 – 30% DESIGN

A basis of design memorandum will be developed to solidify the strategies recommended in the Flood Vulnerability and Mitigation Planning Studies, and allow for updates relative to new survey information. The memorandum with summarize the architectural and engineering design criteria and will include 30% drawings and a specification list. Drawings will be created using 3D REVIT and AutoCAD Civil 3d. Greeley and Hansen's BIM and CAD standards will be used. Draft memo will be sent to City for review. It is anticipated that the City will review and provide comments within two weeks. Client comments will be collected in a written tabular comment register. Comments will be adjudicated with City's project manager and replied in a tabular comment register.

The following information will be included in the basis of design memorandum:

- INTRODUCTION AND PROJECT OVERVIEW
- CODE SUMMARY
- PERFORMANCE CRITERIA:
- 30% DRAWINGS
- LIST OF SPECIFICATIONS
- OPINION OF PROBABLE CONSTRUCTION COST
    - This OPCC will be AACE Class 3

A site visit will take place at the onset of the 30% Design phase to investigate site conditions. One engineer will lead site visit.

Deliverables:

- Basis of Design Memorandum
- Class 3 OPCC
- Comment register
- Site Visit Notes

TASK 4 – 60% DESIGN

The City review comments from the basis of design memorandum will be incorporated in the drawings, and the design will be further detailed. An AACE Class 3 Opinion of Probable Construction Cost (OPCC) will be prepared. 60% design documents will be provided for client review. Two weeks will be provided in the schedule for this review. Client comments will be collected in a written tabular comment register. Comments will be adjudicated with City's project manager and replied to in a tabular comment register.

Deliverables:

- 60% Design Drawings and Specifications.
- Class 3 OPCC
- Comment register

TASK 5 – 90% DESIGN

The 60% City review comments will be incorporated, and the design will be further detailed and include a document set covering all disciplines. This 90% phase will include final draft specifications and an updated Class 2 OPCC. The front end of the project book will be coordinated with City's procurement department. 90% design documents will be provided for client review, including third-party constructability review. Two weeks will be provided in the schedule for this review. Client comments will be collected in a written tabular comment register. Comments will be adjudicated with City's project manager and replied in a tabular comment register.

Deliverables:

- 90% Design Drawings and Specifications.
- Class 2 OPCC
- Comment register

TASK 6 – PERMITTING

This task will provide 100% complete signed and sealed contract documents for electronic submission to receive a certificate from the City's Permit and Planning department for permit review. Permit review comments and corrections will be incorporated into documents.

Permitting fees will be paid by the City and are not included in this task order.

Deliverables:

- Final signed and sealed drawings and specifications issued for permit
- Permit application forms

TASK 7 – 100% DESIGN

This task will deliver the 100% complete signed and sealed contract documents for bid purposes incorporating all previous City comments, third-party constructability review comments, and front-end documents coordinated with the City. Fully documented review comment adjudication will be completed before the documents are sealed. These represent the finished construction documents (100% bid documents) less any potentially needed Addenda that might follow.

Deliverables:

- 100% Design Drawings and Specifications.
    - The City will be provided with both electronic and hard copy documents for 100% submittal. Electronic documents will be provided in PDF format. Four (4) hard copy full size and four (4) half-size drawing sets with specifications will also be provided.
- Class 2 OPCC

TASK 8 – BID ASSISTANCE

This task will include bidding services such as attending a pre-bid meeting, providing addenda, and evaluation of bids. It is anticipated that a mandatory pre-bid meeting will be required. Greeley and Hansen will prepare materials for this meeting and attend the meeting to present materials as needed on City's behalf. It is anticipated that this task will include a site walk through for contractors.

Deliverables:

- Pre-bid meeting agenda and notes.
- Written responses as needed to Contractor Bid questions as requested through the City's Procurement.
- Bid addenda as requested through the City's Procurement.

CITY OF RICHMOND, VIRGINIA
DEPARTMENT OF PUBLIC UTILITIES
CONTRACT NO. 17000006735
Wastewater Utility Work Order

PROPOSED SCHEDULE – WWTP Flood Mitigation Design Project

TASK	ACTIVITY	DURATION IN MONTHS									
		1	2	3	4	5	6	7	8	9	10
1	**PROJECT MANAGEMENT**	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
	Monthly Progress Meetings	🟩		🟩		🟩		🟩		🟩	
2	**SURVEY AND GEOTECHNICAL**	🟩									
3	**30% DESIGN**	🟩	🟩	🟩 *							
4	**60% DESIGN**				🟩	🟩	🟩 *				
5	**90% DESIGN**							🟩	🟩		
6	**PERMITTING**								🟩	🟩	
7	**100% DESIGN**									🟩 *	
8	**BID ASSISTANCE**										🟩
	* **Milestones**										

WWTP Flood Mitigation Design Project
Estimated Cost of Services

Estimated Labor Costs:

Tasks	**Program Coor.**	**Project Manager**	**Architect / Engineer IV**	**Architect / Engineer III**	**Architect / Engineer II**	**Architect / Engineer I**	**Sen. CADD Tech.**	**Jr. CADD Tech.**	**Typist/ Clerical**	**Total Hours**	**Estimated Labor Costs**
Task 1 - PROJECT MANAGEMENT	8	80	8							96	$20,920
Task 2 - SURVEY AND GEOTECHNICAL	1	8	12	16						37	$7,207
Task 3 - 30% DESIGN	1	24	30	220	220	240	20	120	6	881	$118,331
Task 4 - 60% DESIGN	1	24	30	200	200	240	20	120	6	841	$112,311
Task 5 - 90% DESIGN	1	24	30	200	200	240	16	100	6	817	$109,967
Task 6 - PERMITTING	1	8	16	24	40		4	20	6	119	$17,455
Task 7 - 100% DESIGN		4	10	30	30	30	6	16	6	132	$17,892
Task 8 - BID ASSISTANCE	1	8	16	30	25	20	4	8		112	$17,117
										0	
Subtotal Labor Hours	14	180	152	720	715	770	70	384	30	0	
Hourly Rate	$ 295	$ 211	$ 210	$ 169	$ 132	$ 110	$ 111	$ 95	$ 72		**$421,200**
Estimated Total Labor Cost	$ 4,130	$ 37,980	$ 31,920	$ 121,680	$ 94,380	$ 84,700	$ 7,770	$ 36,480	$ 2,160	$421,200	

Estimated Other Direct Costs:

Item	**Cost**	**Multiplier**	**Total Estimate**
1. Survey AND Geotechnical (MBE)	$20,000	1.05	$21,000
2. Structural Subcontractor (MBE)	$130,000	1.05	$136,500
3. Reproduction	$1,000	1.05	$1,050
4. Travel	$5,000	1.05	$5,250
Subtotal Estimated Other Direct Costs			**$ 163,800**

Total Estimated Costs:

Total Estimated Cost of Labor and Other Direct Costs	**$585,000**

CITY OF RICHMOND
Department of Public Utilities

Statement of Funding Letter

April 6, 2022

Virginia Department of Conservation and Recreation
600 East Main Street
24th Floor
Richmond, VA 23219-2094

Re: WWTP Flood Mitigation Project

To whom it may concern:

The total estimated value of design services for the WWTP Flood Mitigation Project is $585,000. The City of Richmond, Department of Public utilities will utilize their CIP fund to cover their 50% match share of the cost ($292,500). DPU is committed to contributing the match amount from this fund to cover the cost of the project.

Sincerely,

John W Vaughan Jr.

John W. Vaughan, Jr.
City of Richmond, Department of Public Utilities
Deputy Department Director, Senior
(804) 646-5232

CITY OF RICHMOND
Department of Public Utilities

Letter Authorizing the Request for Funding

April 6, 2022

Virginia Department of Conservation and Recreation
600 East Main Street
24th Floor
Richmond, VA 23219-2094

Re: **Authorization for Funding**

To whom it may concern:

The City of Richmond, Department of Public has authorized this request for funding through the Virginia Community Flood Preparedness Fund Grant Program.

Sincerely,

John W Vaughan

John W. Vaughan, Jr.
City of Richmond, Department of Public Utilities
Deputy Department Director, Senior
(804) 646-5232

Supporting Documentation Checklist

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

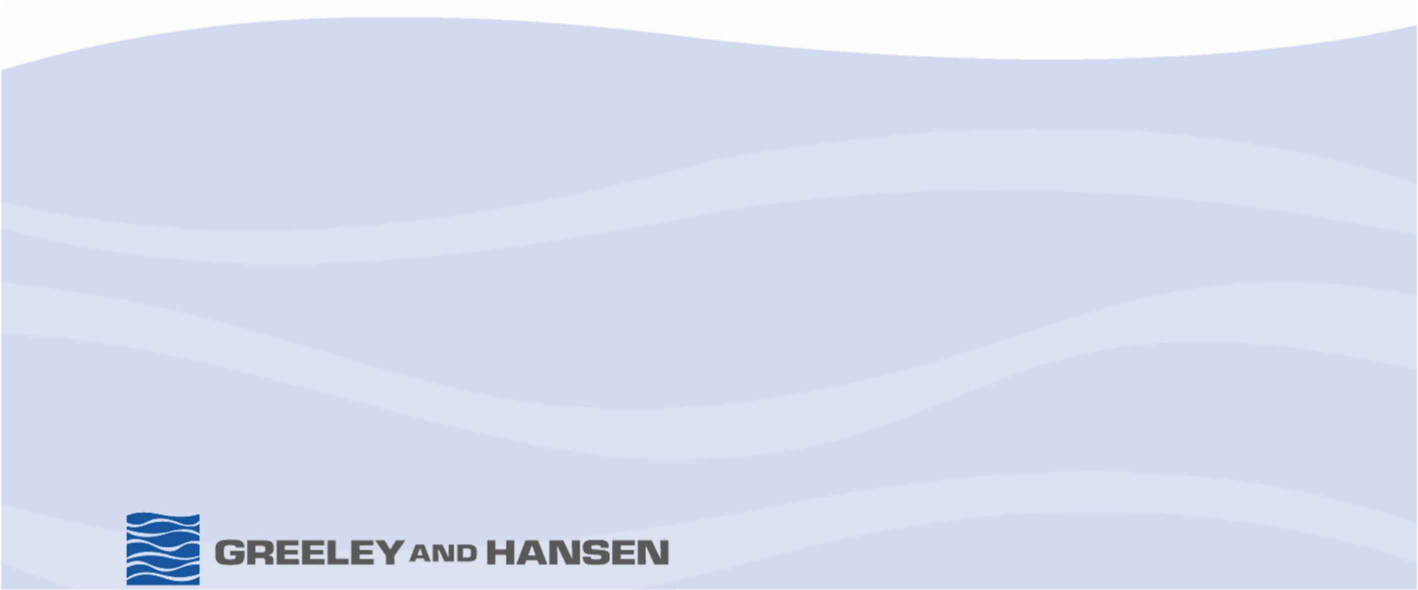
Community Flood Preparedness Fund Grant Program

Scope of Work Narrative

Supporting Documentation	Included
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative

Supporting Documentation	Included
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☒ Yes ☐ No ☐ N/A



GREELEY AND HANSEN

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510129_CityofRichmond_CFPF-1

1 message

Sevcik, Brent <bsevcik@greeley-hansen.com> Fri, Apr 8, 2022 at 1:16 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Morgan, Stephen T. - DPU" <Stephen.Morgan@rva.gov>, "Vaughan, John \"Billy\" - DPU" <John.Vaughan@richmondgov.com>, "Lenti, John" <jlenti@greeley-hansen.com>

Division of Dam Safety and Floodplain Management-

I have attached the City of Richmond's CFPF Grant Application for the **WWTP Flood Mitigation Design Project** (CID510129_CityofRichmond_CFPF-1)

An additional email will contain the submission for the Construction Phase of the Project (CID510129_CityofRichmond_CFPF-2).

Please let me know of any questions,

Thanks,

Brent Sevcik

GREELEY AND HANSEN

Brent Sevcik AIA, EIT, LEED AP, ENV SP

Associate

100 S. Wacker Drive, Ste. 1400

Chicago, Illinois 60606

Office: 312.578.2348

Cell: 312.244.9158

greeley-hansen.com

CID510129_CityofRichmond_CFPF-1.pdf
11353K

CID#510129

City of Richmond

Department of Public Utilities

Virginia Community Flood Preparedness Fund Application #2

(Project Construction Phase)

City of Richmond, Virginia - Department of Public Utilities
April 2022

GREELEY AND HANSEN

Contents:

Please note: CFPF Application #2 pertains to funding for the construction phase of the project. CFPF Application #1 pertains to funding for the design phase of the project.

The Application Form

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: City of Richmond Department of Public Utilities (DPU)

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_X_**Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510129

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Stephen Morgan, Engineering Manager/ Interim Deputy Director, Richmond DPU

Signature of Authorized Official: Stephen T. Morgan

Mailing Address (1): 400 Richmond Highway

Mailing Address (2): ____________________

City: Richmond **State:** VA **Zip:** 23224

Telephone Number: (804) 646-8522 **Cell Phone Number:** (804) 543-2513

Email Address: stephen.morgan@rva.gov

Application Form CFPF| 1-A

Contact Person (If different from authorized official): Brent Sevcik, Architect, Greeley and Hansen

Mailing Address (1): 100 South Wacker Drive

Mailing Address (2): Suite 1400

City: Chicago **State:** IL **Zip:** 60606

Telephone Number: (312) 578-2348 **Cell Phone Number:** (312) 244-9158

Email Address: bsevcik@greeley-hansen.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☒ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Application Form CFPF| 2-A

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Richmond Wastewater Treatment Plant
1400 Brander Street, Richmond, VA 23224

NFIP Community Identification Number (CID#):(See appendix F 510129

Application Form CFPF| 3-A

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Zone AE

Flood Insurance Rate Map Number(s) (If Applicable): Effective: 5101290043E, effective 7/16/2014
Preliminary: 5101290043F, issued 2/22/2022

Total Cost of Project: $5,586,110

Total Amount Requested $2,793,055

Scope of Work Narrative

1. Project Information

Background

The City of Richmond's Wastewater Treatment Plant (WWTP) is located on a flood prone site adjacent to the James River. The Federal Emergency Management Agency's (FEMA) recent flood risk review for the City revealed a preliminary 3-foot increase in the base flood elevation for the facility and surrounding area (see attached FIRMette and Preliminary FIRM Map). In preparation for this increase, Flood Vulnerability and Mitigation Planning Studies were performed to evaluate the impact and determine the facility's current flood hazard susceptibilities. The resulting reports documented several of the building's flood pathways, low lying open tanks, and exposed equipment that assume risk detrimental to the continued function of the facility. Further analysis prioritized the mitigation efforts by determining what operations would be critical to the rapid recovery of baseline processes after a flood event. The critical process operations were identified as seven of the structures or buildings associated with preliminary and primary treatment of wastewater as well as UV disinfection. A severe flood event rendering one or more of the functions of these structures incapable would jeopardize the environmental, infrastructure, and public health protections the facility provides.

The proposed design and construction project will consist of flood mitigation improvements for the seven critical structures identified as vital to the rapid recovery of facility operations after a flood event. The seven critical structures are:

1. Main Plant Switchgear Building
2. Main Pumping Station
3. Primary Sludge Pumping Station
4. Preliminary Sedimentation Tanks (4)
5. Gravity Sludge Thickener Tanks
6. Digester Tanks (2) and Sludge Control Building No. 1
7. UV Building

A target design flood protection level was set at +39.0 ft (City Datum) to include freeboard and surcharge above the new 100-year base flood elevation. The project design will raise the flood protection to the new level and primarily focus on a combination of three flood mitigation strategies identified during the planning phase: raising equipment, replacing susceptible exterior elements with flood proof alternatives, and/or sealing the buildings or structures. Existing exterior walls and foundations will be structurally reinforced to accommodate the increased flood loading, and sump pumps will be added as a redundancy measure. The proposed flood resistant construction and structural components will be designed in accordance with the 2018 Virginia Construction Code, ASCE 7, and ASCE 24. Implementation of these mitigation strategies will allow for a base level of treatment to occur while the remainder of the facility recovers from the flood event and adds resilience to a vital service that the community depends on.

WWTP Structures Included in the Project: (North to South) Main Pumping Station, Main Plant Switchgear Building, Digester Tanks (2) and Sludge Control Building No. 1, Primary Sludge Pumping Station, Preliminary Sedimentation Tanks (4), Gravity Sludge Thickener Tanks, and UV Building

The following mitigation strategies were identified for each of the seven critical structures. The recommended strategy accounts for the criticality and value of vulnerable assets, site-specific constraints, type of flood pathways, feasibility, and cost of implementation. All Elevations are in reference to the City Datum which is 0.8 ft above NAVD 88 Datum.

Main Plant Switchgear Building: The building's first floor elevation of +35.2 feet is 3.8 feet below the DFE level. The first floor contains critical equipment used to control, protect, and isolate the facility's electrical equipment. The recommended mitigation strategy is Sealing the Building. The flood pathways on the exterior of the building will be sealed, protected with temporary barriers, raised, or replaced with watertight assemblies to prevent water inundation up to the higher elevation.

Main Pumping Station: The first floor is 3.0' feet below the DFE at an elevation of +36.0 feet and contains a majority of the critical electrical equipment necessary to operate the station. The lower levels of the station contain pumps and equipment necessary to transport wastewater to the facility. The recommended mitigation strategies are to Raise Equipment and Seal the Building. The perimeter of the building and flood pathways can be protected or sealed using flood barriers and new floodproof fenestrations. The extensive below grade space creates a potential risk to flood water inundation through cracks and penetrations, therefore critical equipment will be raised as a secondary measure. The below grade cracks and penetrations would also be sealed. Structural reinforcement of the exterior walls is also necessary to resist the flood loading. A carbon fiber reinforced polymer product that can be applied to the interior walls is recommended to provide the additional strength needed.

Primary Sludge Pumping Station: The building's first floor elevation is 9.0 feet below the anticipated +39.0 foot DFE level. The first floor contains the critical electrical equipment necessary to operate the station and the majority of the pumps and associated equipment are located on the lowest level. The recommended mitigation strategy is to Seal the Building. The flood pathways on the exterior of the building need to be sealed, protected with temporary barriers, or replaced with watertight assemblies to prevent inundation to the higher elevation. Structural reinforcement of the exterior walls is necessary to resist the flood loading. A carbon fiber reinforced polymer product that can be applied to the interior walls is recommended to provide the additional strength needed.

Preliminary Sedimentation Tanks (4): The preliminary sedimentation tanks consists of four trains of clarifiers with a top slab elevation of +22.0 feet which is 17 feet below the DFE. At grade motor operated gear units and control panels power the sludge collection flights. The recommended mitigation strategies are to Flood Proof Equipment and Seal the Structure. The strategy includes installing a 9 foot high removeable flood barrier wall around the entire structure to protect it to a height of a 50 year flood event. Utilizing a perimeter barrier to protect to the 100 year storm elevation was determined to be exponentially more expensive to the point of not being cost effective. Therefore, to include the mitigation of a 100 year storm event, the recommended strategy includes the replacement of critical equipment with equivalent flood proof versions or purchasing replacement equipment to have available during the rarest events. Watertight electrical enclosures are also planned.

Gravity Sludge Thickener Tanks: The top slab of the four gravity sludge thickeners is 10 feet below the DFE at Elevation +29.0 feet. Thickener rake drive motors are located at that level and are at risk. Sludge pumps are located in the lower level of the building and are also vulnerable. The recommended mitigation strategy is to Flood Proof Equipment. The strategy is to replace the critical equipment with equivalent flood proof versions or place them in submersible enclosures in order to maintain their function after a flood.

Digester Tanks (2) and Sludge Control Building No. 1: The base of the tanks and first floor of the control building are 7.4 and 5.0 feet below the anticipated DFE level, respectively. The recommended mitigation strategy is to Seal the Building and Tanks. The flood pathways identified on the exterior of both structures need to be sealed, protected with temporary barriers, or replaced with watertight assemblies to prevent inundation to the higher elevation. Structural reinforcement of the exterior walls of the Sludge Control Building is also necessary to resist the flood loading. A carbon fiber reinforced polymer product that can be applied to the interior walls is recommended to provide the additional strength needed.

UV Building: The Facility was built ten years ago to be dry-flood proof to an Elevation of +36.0 feet which is now 3 feet below the DFE. The recommended mitigation strategy is to Seal the Building. The flood pathways identified on the exterior of the building, particularly those between Elevations 36.0 and 39.0 feet, need to be raised, protected with temporary barriers, or replaced with watertight assemblies to prevent inundation to the higher elevation.

DFE= 39.0 ft (City Datum)

Structure Name	Type	ELEV (City Datum)	Flood Depth (ft)	Recommended Flood Mitigation Strategy
Main Plant Switchgear Building	Structure	35.2	3.8	Seal Building
Main Pumping Station	Structure	18.0/36.0	21.0/3.0	Raise Equipment, Seal Building
Primary Sludge Pumping Station	Structure	30.0	9.0	Seal Building
Preliminary Sedimentation Tanks (4)	Tanks	22.0	17.0	Seal Structure, Flood Proof Equipment
Gravity Sludge Thickener Tanks	Tanks	29.0	10.0	Flood Proof Equipment
Sludge Control Building No. 1	Structure	34.0	5.0	Seal Building
Digester Tanks (2)	Tanks	31.6	7.4	Seal Building
UV Building	Structure	20.5	18.5	Seal Building

Flood Mitigation Strategy Recommendations

Total Project Cost and Statement of Funding

This application pertains to funding for the construction phase of the project. The total opinion of probable construction cost for the project is $5,586,110. At a CFPF Fund/City match split of 50% / 50%, the City is applying for $2,793,055 towards construction. The attached statement of funding describes the City's ability to pay the remaining $2,793,055 for their match portion.

Population Served

The Richmond WWTP is the primary treatment facility for 225,000 people including all of the residents of the City and a number of residents of surrounding communities.

In addition, the immediate area around the facility is identified as a low-income geographic area and a location of very high social vulnerability (see attached Social Vulnerability and Qualified Opportunity Zone Maps). The protection of wastewater services reduces the community's risks in a number of ways including: reducing the contamination of water resources, safeguarding public health, and preventing environmental pollutants.

Historic Flood Information

The WWTP is located in Special Flood Hazard Zone AE. The effective FIRM map was last created in July of 2014 and identified a BFE through the middle of the site of approximately 33.5 feet. FEMA's flood risk review over the course of the last two years culminated in the production of preliminary FIRM maps in February of 2022 which depicted a 3-foot rise in the BFE to 36.5 feet for the facility.

On November 14, 2020, the James River crested at 16.95 feet in NAVD 88 at the City Locks gauge, flooding portions of Richmond's Wastewater Treatment Plant (see attached Historic Flood Images). The flooding of the James River in Richmond is driven by rainfall in the upper portions of the watershed beginning in the Appalachian Mountains. The City is required to treat wastewater flows to best of their ability, and in large scale events this mandate is continually balanced against ensuring the safety of staff and facility. During this event the plant was shut down for three days due to the inundation and the facility incurred $3000 in damages. In terms of scale, the flood event did not reach the level of a ten year flood elevation (at 19.9 ft in NAVD 88), but nevertheless caused a substantial void in service to the community. The indirect cost due to loss of service was calculated for the 225,000 users at the FEMA provided rate of $41 per person per day of lost wastewater service, the total service loss came to $27,675,000.

At least four additional storm events of greater magnitude than the most recent event have occurred over the last 25 years but records regarding the amount of loss or loss of service were unavailable.

Jan 27, 2010	Flooding of the Facility. The river crested at 18.1 ft (NAVD 88) at the nearest gauge to the WWTP.
Feb 25, 2003	Flooding of the Facility. The river crested at 18.73 ft (NAVD 88) at the nearest gauge to the WWTP.
Sep 8, 1996	Flooding of the Facility. The river crested at 21.23 ft (NAVD 88) at the nearest gauge to the WWTP.
Jan 21, 1996	Flooding of the Facility. The river crested at 20.61 ft (NAVD 88) at the nearest gauge to the WWTP.

Past WWTP Flood Events

Floodplain Management Regulations

The current floodplain regulations for the City of Richmond can be found at the following site:

Chapter 14 - FLOODPLAIN MANAGEMENT, EROSION AND SEDIMENT CONTROL, AND DRAINAGE | Code of Ordinances | Richmond, VA | Municode Library

2. Need for Assistance

Currently many of the critical operations at the facility are at risk to equipment damage and induced loss of service from flood events below a 10-year level event. A recent event below a 10-year level storm halted operations at the facility for 3 days. It is reasonable to assume that a much larger event will have drastic and potentially long term effects on the wastewater service to the community.

The expected annual damages (equipment and service loss) for carrying this risk are estimated at almost $3.4 million (see Budget Narrative analysis). The project decreases this risk by dramatically increasing the protection level of critical operations to allow for a rapid recovery after events up to the 100-year level.

As previously mentioned, the immediate area surrounding the facility is identified as a low-income geographic area and a location of very high social vulnerability (see attached Social Vulnerability and Qualified Opportunity Zone Maps). The protection of wastewater services reduces the risk of untreated sewage being introduced into the waterways and environment of the surrounding community

Alternatives

The recommended project was compared to two alternatives: no action and a perimeter flood wall constructed around the facility.

No Action
A 100 year flood event could decimate many of the critical structures, tanks, and housed equipment at the facility knocking out water treatment services to the City and surrounding communities for many months.

A Perimeter Flood Wall Option around the Facility
The Richmond WWTP is located in the 100-year floodway adjacent to the James River. A costly alternative includes designing and constructing a flood wall around the entire facility to prevent the site wide inundation of flood water. The flood wall would be approximately 7800 ft in length and vary in height from 5'-20' depending on the grade elevation on the site. At an estimated cost of $225/sf the wall would have an estimated construction cost of 22 million dollars. A permanent wall at the site would have a large impact on the hydrology and flooding potential of the surrounding area that would require extensive study to limit determinantal effects.

In previous years the City and US Army Corps of Engineers have evaluated the installation of a floodwall around the facility and thus far it has been determined by the Corps to not be cost effective (low benefit to cost ratio).

3. Goals and Objectives

The flood mitigation effort at the WWTP will benefit the 225,000-person service area in the City of Richmond (and surrounding communities) by protecting the reliability of an essential resource. The long-term stabilization of wastewater service reduces community risks for a multitude of lifelines including: the protection of water resources, safeguarding public health, reducing contamination of food sources, functioning community infrastructure, and preventing environmental pollutants.

The WWTP's flood mitigation project will be cost effective. The total project benefit (risk avoided) is calculated at $42,773,800 and opinion of probable cost of mitigation is $ 5,586,110, producing a benefit to cost ratio of 7.6. Further explanation and documentation for this analysis is provided in the Budget Narrative section.

4. Approach, Milestones, and Deliverables

The flood mitigation efforts will be implemented in a traditional design-bid-build project. The start of design for the project is planned for the middle of 2022. The anticipated schedule includes 9 months of design, 3 months of procurement, and 2 years of construction (see table below). Milestones for design will include 30%, 60%, and 100% deliverables at the three, six, and nine-month points, respectively. Milestones for construction will be at 25% Construction Complete, 50% Construction Complete, 75% Construction Complete, and 100% Construction Complete. The City of Richmond's Department of Public Utilities will manage and complete the project with outside consultant Architects and Engineers.

ACTIVITY	DURATION IN MONTHS											
	3	6	9	12	15	18	21	24	27	30	33	36
Flood Mitigation Project Design	🟩	🟩	🟩									
Flood Mitigation Project Procurement				🟩								
Flood Mitigation Project Construction					🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
Milestones	30%	60%	100%			25%		50%		75%		100%

Project Schedule

5. Relationship to Other Projects

The project focuses on the protection of seven structures at the facility that have been deemed critical for the rapid recovery of baseline treatment operations. Additional secondary structures and operations at the facility will continue to be susceptible to flood hazards. The protection of these additional less critical areas is planned to be integrated into general capital improvement work for each structure.

6. Maintenance and Management Plan

All equipment and flood mitigation elements installed through this project will be maintained in perpetuity by the DPU's in-house maintenance staff at the WWTP through maintenance work orders. Maintenance work orders are used by the facility in concert with the Operation and Maintenance Manual to track, operate, and maintain all assets. All Maintenance Work Orders are funded through the Facility's Operation and Maintenance Fund. All manufacturer instruction, documentation, and recommendations for maintenance and repair of installed elements will become part of the Facility's Operation and Maintenance Manual.

7. Additional Criteria

- The City has an approved resilience plan through DCR. See attached Resilience Plan Approval letter.
- No portion of the project has been included in any application or program previously funded by the DCR.
- Evidence of an ability to provide the required match funds: see attached Statement of Funding letter.
- A link the current hazard mitigation plan: RCMR-HMP-07182017-1.pdf (planrva.org)
- A link to the current comprehensive plan: Master Plan | Richmond (rva.gov)

Budget Narrative

1. Estimated Total Project Cost

The total opinion of probable construction cost for the project is **$5,586,110**. A tabular breakdown of this cost organized in section 4 below - Opinion of Probable Flood Mitigation Costs.

2. Amount of Funds Requested from the Fund

The total amount of grant assistance requested by the fund for the Construction phase of the project is **$2,793,055.** This amount constitutes a 50% / 50% split between the Fund and the City of Richmond's match amount. The grant funds will be allocated to cover half of the estimated cost of construction.

3. Amount of cash funds available

The City of Richmond Department of Public utilities has a match amount of **$2,793,055**, which when combined with the amount of funds requested reflects the total estimated cost of the construction for the project. The City's funds will be sourced from DPU's CIP Fund. A Statement of Funding letter from the City has been included with the supporting documentation with the application**.**

A letter authorizing the request for funding from the City has also been included with the supporting documentation with the application**.**

4. Opinion of Probable Flood Mitigation Costs

This section provides a conceptual opinion of the probable construction cost for the identified mitigation strategy for each structure. The conceptual opinion of probable construction has been updated to reflect the initial structural analysis completed and the additional assessment of optimal resiliency design strategies. The conceptual opinions of construction cost provided in this report are considered AACE Class 5. The conceptual cost of sealing a building comprised of a conservative estimate for the protection of each flood pathway. The conceptual cost of raising equipment included an estimate of the platform of structure needed to raise and access the equipment and the effort to reinstall. The conceptual cost of installing flood proof equipment was considered equivalent to the replacement cost of the original piece of equipment. These construction cost opinions include materials and equipment, labor and installation, contingency, and general contractor overhead; and are based on the engineer's experience with prior projects and cost sources such as RS Means. All benefits and costs are provided in 2022-dollar values.

Opinion of Probable Construction Cost of Mitigation

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
Main Plant Switchgear Building					
Northside					
1	New Flood windows (5)	170	SF	$ 500	$ 85,000
2	Single Door w/ sidelite - Flexible Flood Cover	32	SF	$ 210	$ 6,720
Southside					
3	New Flood windows (4)	148	SF	$ 500	$ 74,000
Eastside					
4	Overhead Door - Flexible Flood Cover	50	SF	$ 280	$ 14,000
5	Single Door - Flexible Flood Cover	18	SF	$ 300	$ 5,400
Westside					
General					
6	Seal exterior pipe penetrations (1)	1	EA	$ 500	$ 500
7	Additional sump pump	1	EA	$ 2,500	$ 2,500
				Subtotal	**$ 188,120**
Main Pump Station					
Northside					
1	Overhead Door - Flood Barrier	120	SF	$ 450	$ 54,000
2	New Flood Door	24	SF	$ 625	$ 15,000
3	Raise Louver	36	SF	$ 500	$ 18,000
Southside					
4	Overhead Door - Flexible Flood Cover	60	SF	$ 280	$ 16,800
5	Single Door - Flexible Flood Cover	18	SF	$ 300	$ 5,400
6	Single Door - Flexible Flood Cover	18	SF	$ 300	$ 5,400
7	Louver - Flood Barrier	32	SF	$ 225	$ 7,200
Eastside					
8	Single Door - Flood Barrier	32	SF	$ 225	$ 7,200
9	Louvers (4) - Flood Barrier	100	SF	$ 225	$ 22,500
Westside					
10	New Flood Door	24	SF	$ 625	$ 15,000
11	Louvers (4) - Flood Barrier	156	SF	$ 225	$ 35,100
General					
12	Seal exterior pipe penetrations (4)	4	EA	$ 500	$ 2,000
13	Seal exterior conduit penetrations (4)	4	EA	$ 500	$ 2,000
14	Additional sump pump	1	EA	$ 2,500	$ 2,500
15	Seal below grade penetrations	1	LS	$ 30,000	$ 30,000
16	Structural wall reinforcement - Carbon Fiber Reinforced Polymer	5036	SF	$ 100	$ 503,600
17	Raising Interior Electrical Equipment: Control Center CC-3, Control Center Transformer, 2.4 KV Switchgear 1, Pump Auto Control Panel, Control and Indication Panel, DCU-1, Transformer, 2.4 KV Switchgear	1	LS	$ 250,000	$ 250,000
				Subtotal	**$ 991,700**
Primary Sludge Pump Station					
Northside					
1	New Flood Window (3)	144	SF	$ 500	$ 72,000
2	New Flood Window (3)	144	SF	$ 500	$ 72,000

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
3	Double Door - Flood Barrier	66	SF	$ 225	$ 14,850
Southside					
4	New Flood Window	28	SF	$ 500	$ 14,000
5	New Flood Door	24	SF	$ 625	$ 15,000
Eastside					
6	New Flood Window (2)	56	SF	$ 500	$ 28,000
7	Raise Louver	9	SF	$ 500	$ 4,500
Westside					
8	New Flood Window	28	SF	$ 500	$ 14,000
General					
9	Seal exterior pipe penetrations (4)	4	EA	$ 500	$ 2,000
10	Seal exterior conduit penetrations (3)	3	EA	$ 500	$ 1,500
11	Additional sump pump	1	EA	$ 2,500	$ 2,500
12	Seal below grade penetrations	1	LS	$ 3000	$ 3000
13	Structural wall reinforcement - Carbon Fiber Reinforced Polymer	1710	SF	$ 100	$ 171,000
				Subtotal	**$ 414,350**
Preliminary Sedimentation Tanks					
General					
1	Replaced/Floodproof Flight Drives/Collector Motors	1	LS	$ 100,000	$ 100,000
2	Replaced/Floodproof Cross and Longitudinal Drives	1	LS	$ 80,000	$ 80,000
3	Replaced/Floodproof Control Panels and Disconnets	1	LS	$ 120,000	$ 120,000
4	Removeable Flood Barrier Wall (protecting to 50 year flood) ~1300ft	11700	SF	$ 225	$ 2,632,500
				Subtotal	**$ 2,932,500**
Gravity Sludge Thickener Tanks					
General					
1	Replaced/Floodproof Thickener Drives	4	EA	$ 40,000	$ 160,000
2	Replaced/Floodproof Sludge Pumps	4	EA	$ 100,000	$ 400,000
				Subtotal	**$ 560,000**
Digester Tanks and Sludge Control Building No.1					
Digester Tank 1					
General					
1	New Flood Window	32	SF	$ 500	$ 16,000
2	New Flood Door	24	SF	$ 625	$ 15,000
3	Raise Louver	9	SF	$ 500	$ 4,500
4	Seal exterior conduit penetrations (1)	1	EA	$ 500	$ 500
Digester Tank 2					
General					
1	New Flood Window	32	SF	$ 500	$ 16,000
2	New Flood Door	24	SF	$ 625	$ 15,000
3	New Flood Hatches (2)	12	SF	$ 500	$ 6,000
4	Seal exterior conduit penetrations (1)	1	EA	$ 500	$ 500
Sludge Control Building No.1					
Northside					
1	Single Door - Flexible Flood Cover	46	SF	$ 280	$ 12,880
2	New Flood Window (2)	70	SF	$ 500	$ 35,000
Southside					

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
3	Overhead Door - Flood Barrier	56	SF	$ 225	$ 12,600
4	New Flood Window (2)	1	SF	$ 500	$ 500
Eastside					
5	New Flood Window	35	SF	$ 500	$ 17,500
Westside					
6	Single Door w/ sidelites - Flexible Flood Cover	46	SF	$ 210	$ 9,660
General					
7	Seal exterior pipe penetrations (2)	2	EA	$ 500	$ 1,000
8	Seal exterior conduit penetrations (2)	2	EA	$ 500	$ 1,000
9	Additional sump pump	1	EA	$ 2,500	$ 2,500
10	Structural wall reinforcement - Carbon Fiber Reinforced Polymer	1360	SF	$ 100	$ 136,000
				Subtotal	**$ 302,140**
UV Building					
Northside					
1	New Flood Window (3)	108	SF	$ 500	$ 54,000
Southside					
2	New Flood Window (3)	108	SF	$ 500	$ 54,000
Eastside					
3	Raise Louvers	108	SF	$ 600	$ 64,800
Westside					
4	Raise Louvers	45	SF	$ 500	$ 22,500
General					
5	Seal exterior pipe penetrations (1)	1	EA	$ 500	$ 500
6	Seal exterior conduit penetrations (3)	3	EA	$ 500	$ 1,500
				Subtotal	**$ 197,300**
				Total All Items	**$ 5,586,110**

5. Opinion of Probable Mitigated Risk

This section quantifies the present risk to the WWTP and critical assets given the probability of a future flood event. According to FEMA the replacement cost value is defined as the “cost to replace property with the same kind of material and construction without deduction for depreciation.”[1] A conceptual opinion of probable asset replacement costs are listed below.

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[1] https://www.fema.gov/national-flood-insurance-program/definitions#R

Opinion of Probable Asset Replacement Costs

Item No.	Item Description	Quantity	Unit	Unit Price	Amount
Main Plant Switchgear Building					
1	Main Switchgear	1	EA	$ 500,000	$ 500,000
2	Transformers: T-29, T-30	2	EA	$ 150,000	$ 300,000
3	Distribution Panels, Control-Panel, Automatic Transfer Switch, DCU-EB	1	LS	$ 400,000	$ 400,000
				Subtotal	**$ 1,200,000**
Main Pump Station					
1	Gate operators	1	EA	$ 100,000	$ 100,000
2	AFDs	4	EA	$ 500,000	$ 2,000,000
3	Venturi meter sensor	1	EA	$ 75,000	$ 75,000
4	AFD control panels	1	EA	$ 250,000	$ 250,000
5	4 pump Motors	4	EA	$ 250,000	$ 1,000,000
6	MCC, Transformer, switchgear	1	EA	$ 500,000	$ 500,000
7	DCS, Pump Control, DCU, Lighting trans, lighting panel	1	LS	$ 1,000,000	$ 1,000,000
				Subtotal	**$ 4,925,000**
Primary Sludge Pump Station					
1	5 primary sludge pumps	5	EA	$ 150,000	$ 750,000
2	2 scum pumps	2	EA	$ 75,000	$ 150,000
3	2 ferric chloride pumps	2	EA	$ 75,000	$ 150,000
4	pump control panel	1	EA	$ 100,000	$ 100,000
5	DCU, MCC, MCS, Lighting	1	LS	$ 400,000	$ 400,000
				Subtotal	**$ 1,550,000**
Preliminary Sedimentation Tanks					
1	Flight drives, collector motors	8	EA	$ 12,500	$ 100,000
2	Cross and longitudinal drives	16	EA	$ 5,000	$ 80,000
3	Control panels	8	EA	$ 15,000	$ 120,000
				Subtotal	**$ 300,000**
Gravity Sludge Thickener Tanks					
1	Thickener drives	4	EA	$ 40,000	$ 160,000
2	sludge pumps	4	EA	$ 100,000	$ 400,000
				Subtotal	**$ 560,000**
Digester Tanks and Sludge Control Building No.1					
1	Controllers, MCC	1	EA	$ 300,000	$ 300,000
2	Valves	12	EA	$ 40,000	$ 480,000
3	Circulating pumps	9	EA	$ 150,000	$ 1,350,000
4	Sludge heating water pumps	12	EA	$ 10,000	$ 120,000
5	CC, Steam system, lighting	1	LS	$ 500,000	$ 500,000
				Subtotal	**$ 2,750,000**
UV Building					
1	UV Reactors	1	LS	$ 1,000,000	$ 1,000,000
2	MCC UV1	1	EA	$ 300,000	$ 300,000
3	UV System Control Centers SCC-1, SCC-2	2	EA	$ 200,000	$ 400,000
4	480V Switchgear UV1, UV2	2	EA	$ 500,000	$ 1,000,000
5	VFDs	4	EA	$ 75,000	$ 300,000
				Subtotal	**$ 3,000,000**
				Total All Items	**$ 14,285,000**

Expected annual damages (EAD) for each structure were calculated based the conservative probability of flooding given the current protection level and the replacement cost value of assets at risk. A conceptual opinion of probable expected annual damages to critical assets are summarized below.

Expected Annual Damages per Structure

Structure Name	Estimated Total Asset Replacement Cost	Probability	Expected Annual Damages (EAD)
Main Plant Switchgear Building	$1,200,000	1%	$12,000
Main Pumping Station	$4,925,000	10%	$492,500
Primary Sludge Pumping Station	$1,500,000	2%	$30,000
Preliminary Sedimentation Tanks	$300,000	10%	$30,000
Gravity Sludge Thickener Tanks	$600,000	2%	$12,000
Digester Tanks/ Sludge Control Building #1	$2,750,000	1%	$27,500
UV Building	$3,000,000	1%	$30,000
	Total		**$634,000**

In addition to the asset replacement cost, the facility's mitigated risk includes a conceptual value for the loss of service to the community. FEMA estimates the economic impact of the loss of wastewater service to be $41 per person per day lost of service. The Richmond Wastewater Treatment Plant serves approximately 225,000 people. Using the data from the most recent storm event in 2020, the facility incurred 3 days of lost service for an event that did not reach the level of a 10-year storm, so a 10% probability was conservatively used. The economic impact of service loss is estimated at $27,675,000. The expected annual value is the following:

Expected Annual Value of Service Loss to a Flood Event

Name	Estimated Total Economic Impact of Service Loss	Probability	Expected Annual Value of Service Loss
WWTP	$27,675,000	10%	**$2,767,500**

In order to compare future, recurring EAD to the 2022 cost of proposed mitigation strategies, a discount rate was applied over the life of a project to establish flood risk. The useful lifetime of flood mitigation for this study was estimated at 30 years. A discount rate of 7% was used in accordance with FEMA benefit-cost analysis and as required by the Federal Government's Office of Management and Budget for 2022. The present value formula used is as follows:

Risk = $EAD\left[\frac{1-(1+r)^{-T}}{r}\right]$

Where EAD = expected annual damages

r = discount rate = 7%

T = useful life, years = 30

The table below provides a summary of the present value of the risk to critical assets at each structure.

Present Value at Risk for Each Structure

Structure Name	EAD	Mitigated Risk (Present Value)
Main Plant Switchgear Building	$12,000	$148,800
Main Pumping Station	$492,500	$6,107,000
Primary Sludge Pumping Station	$30,000	$372,000
Preliminary Sedimentation Tanks	$30,000	$372,000
Gravity Sludge Thickener Tanks	$12,000	$148,800
Digester Tanks/ Sludge Control Building #1	$27,500	$341,000
UV Building	$30,000	$372,000
Total		**$7,861,600**

The table below provides the present value of the risk to the WWTP for service loss.

Present Value at Risk for Loss of Service

Name	Expected Annual Value of Service Loss	Mitigated Risk (Present Value)
WWTP	$2,767,500	**$34,317,000**

In adding the two mitigated risk categories, the total present value of mitigated risk comes to **$42,178,600**.

The following benefit to cost ratio for the WWTP Flood Mitigation effort was determined.

Benefit to Cost Summary of Mitigated Risk

Total Benefit, Present Value Mitigated Risk	Estimated Cost of Flood Mitigation	Benefit-to-Cost Ratio
$42,178,600	**$5,586,110**	**7.6**

Supporting Documentation

- Scoring Criteria Worksheet
- Project Location Maps
- Qualified Opportunity Zone Map
- Social Vulnerability Map
- FIRMette and Preliminary FIRM Map
- Resilience Plan Approval Letter
- Historic Flood Images
- Statement of Funding Letter
- Letter Authorizing the Request for Funding
- Supporting Documentation Checklist

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Richmond

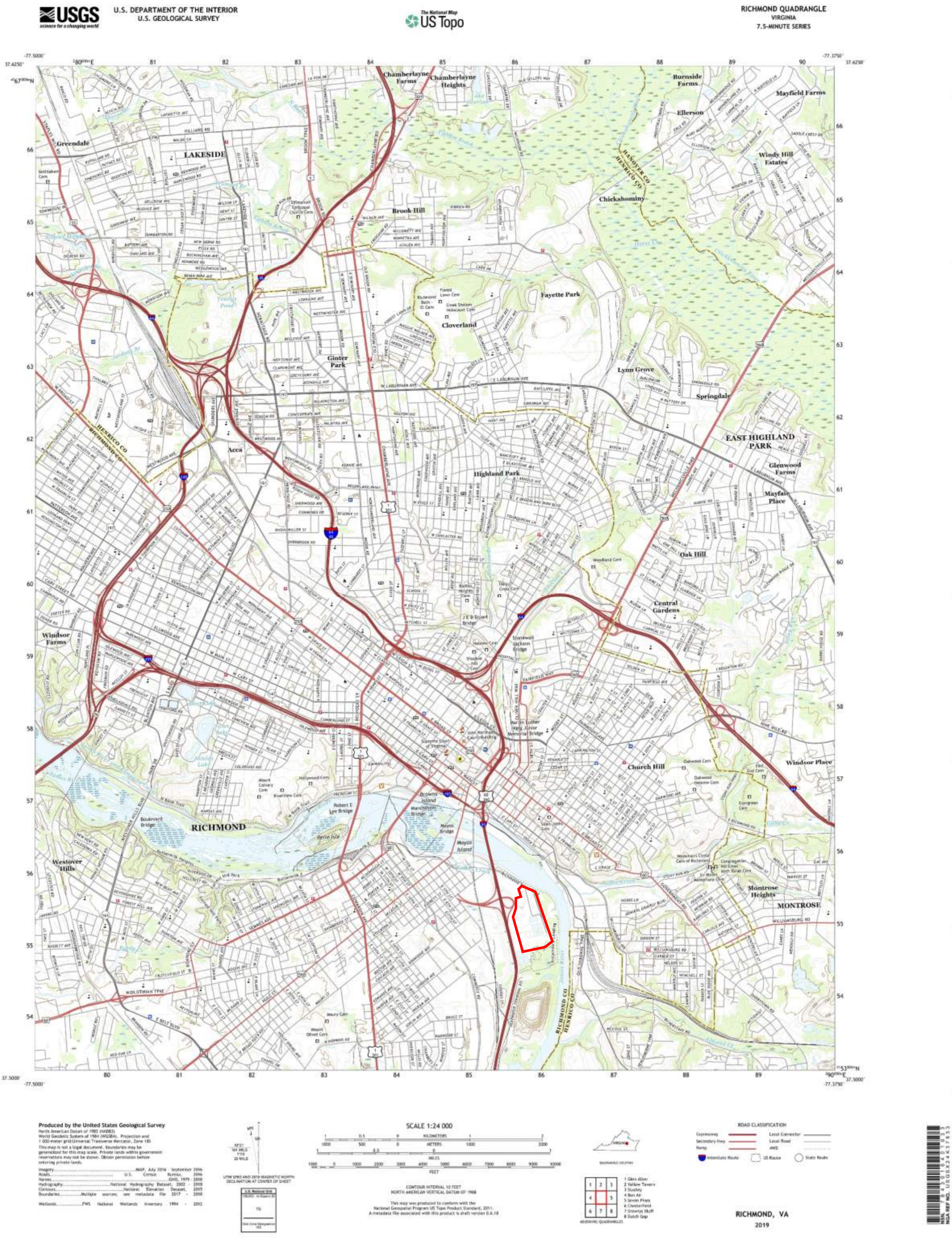
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☒ **Yes** ☐ **No**
Applicant Name:	City of Richmond DPU

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	25
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	15
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
11. Does this project provide "community scale" benefits?		
Yes	**20**	20
No	**0**	
Total Points		**70**

Project Location Maps



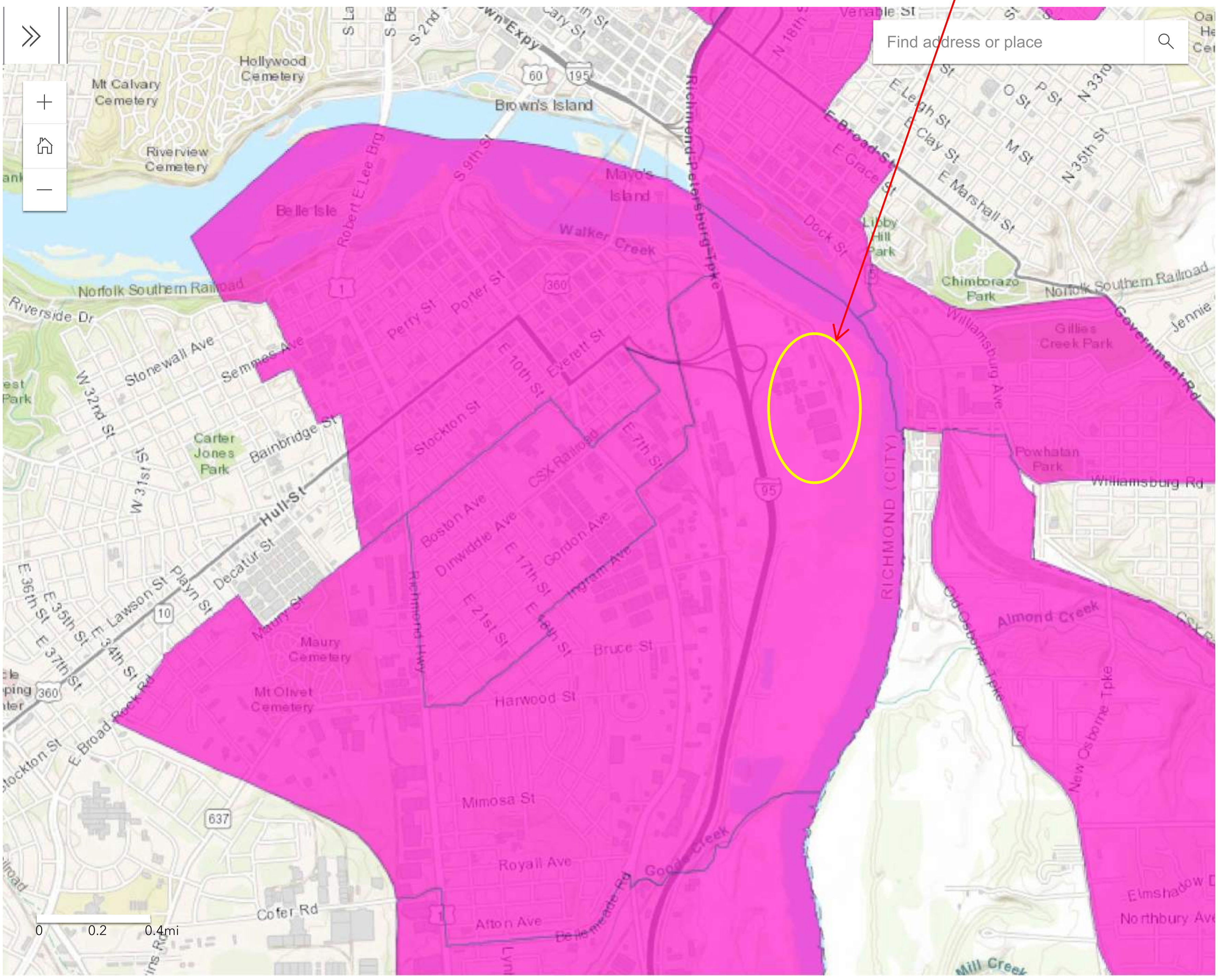
Google Maps

Imagery ©2022 CNES / Airbus, Commonwealth of Virginia, Maxar Technologies, USDA/FPAC/GEO, Map data ©2022 500 ft

Qualified Opportunity Zone Map -
Low-income geographic area

Map of Opportunity Zones

Site Location



View larger map

Interested in your State's or Territory's Opportunity Zone strategy? Click here to learn more.

Please select a State or Territory

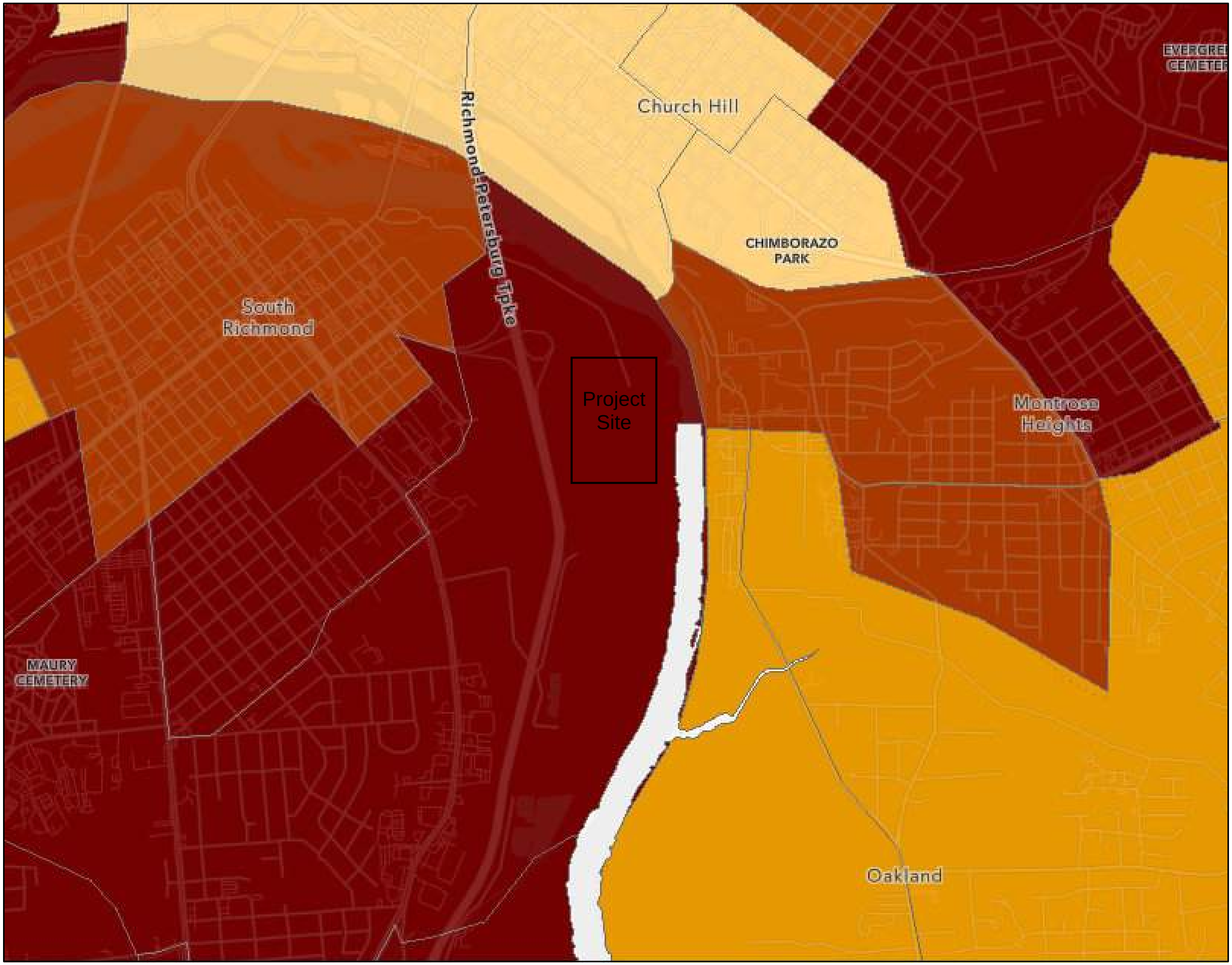
Find a census tract

For a list of the census tracts designated by the Secretary of the Treasury as Opportunity Zones in July 2018, please click here

Social Vulnerability Map - Vulnerability Index Score of 2.7

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- 🟧 Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟫 High Social Vulnerability
- 🟥 Very High Social Vulnerability
- ☒ Not inlcuded in the analysis



11/10/2021

1:36,112

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPT VA

National Flood Hazard Layer FIRMette

FEMA

FIRMette and Preliminary FIRM Maps

77°25'44"W 37°31'22"N

77°25'7"W 37°30'54"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	🟧	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	╷╷╷╷╷╷╷	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	═	Limit of Study
	═	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	- —	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

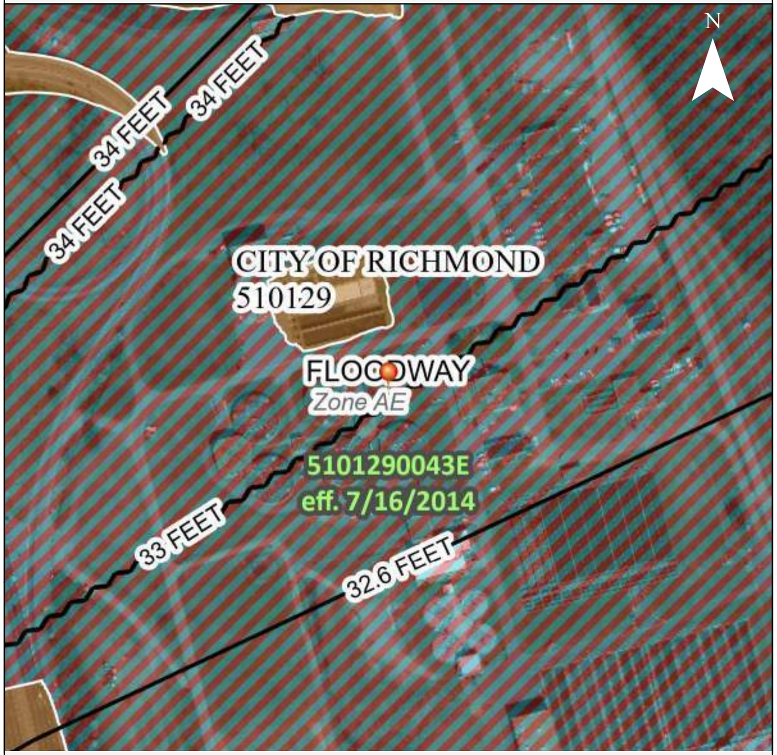
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/2/2022 at 3:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

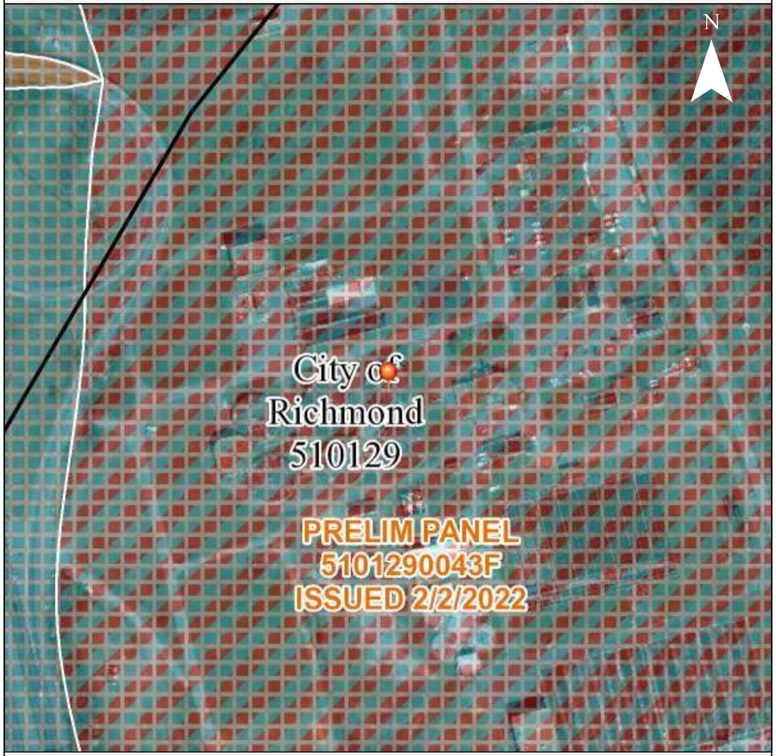
Comparison of Flood Hazard

Effective & Preliminary Flood Hazards

Effective



Preliminary



Effective

POI Longitude/Latitude	-77.4235, 37.5197
Effective FIRM Panel	5101290043E
Effective Date	7/16/2014
Flood Zone	AE
Static BFE*	Not Available
Flood Depth	Not Available
Vertical Datum	Not Available

Preliminary

POI Longitude/Latitude	-77.4235, 37.5197
Preliminary FIRM Panel	5101290043F
Preliminary Issue Date	2/2/2022
Flood Zone	AE
Estimated Static BFE*	Not Available
Estimated Flood Depth	Not Available
Vertical Datum	Not Available

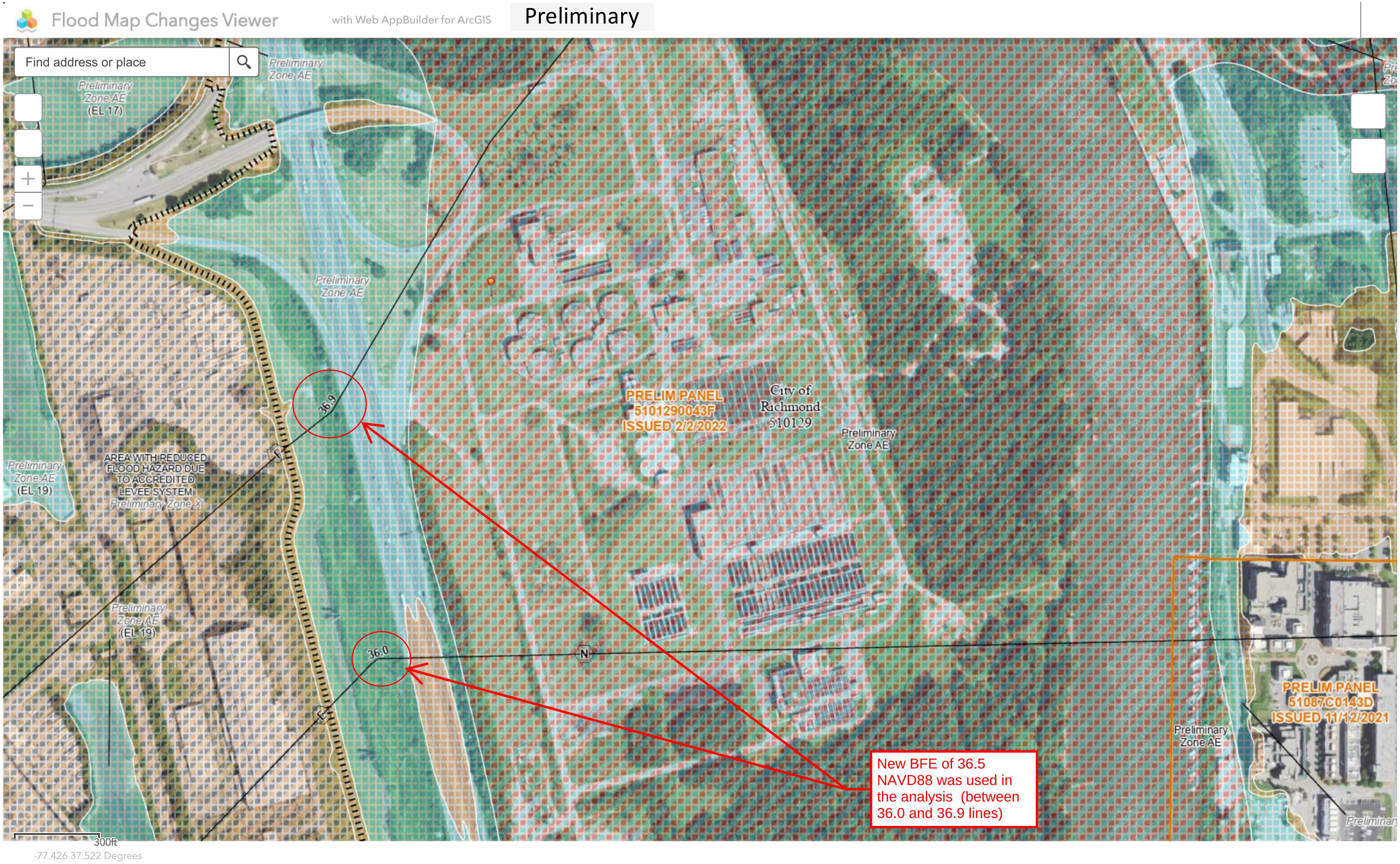
* A **Base Flood Elevation** is the expected elevation of flood water during the 1% annual chance storm event. Structures below the estimated water surface elevation may experience flooding during a base flood event.

Hazard Level	Flood Hazard Zone
High Flood Hazard	**AE, A, AH, AO, VE and V Zones.** Properties in these flood zones have a 1% chance of flooding each year. This represents a 26% chance of flooding over the life of a 30-year mortgage.
Moderate Flood Hazard	**Shaded Zone X.** Properties in the moderate flood risk areas also have a chance of flooding from storm events that have a less than 1% chance of occuring each year. Moderate flood risk indicates an area that may be provided flood risk reduction due to a flood control system or an area that is prone to flooding during a 0.2% annual chance storm event. These areas may have been indicated as areas of shallow flooding by your community. **Unshaded Zone X.** Properties on higher ground and away from local flooding sources have a reduced flood risk when compared to the Moderate and High Flood Risk categories. Structures in these areas may be affected by larger storm events, in excess of the 0.2% annual chance storm event.
Low Flood Hazard	**Insurance Note:** High Risk Areas are called 'Special Flood Hazard Areas' and flood insurance is mandatory for federally backed mortgage holders. Properties in Moderate and Low Flood Risk areas may purchase flood insurance at a lower-cost rate, known as Preferred Risk Policies. See your local insurance agent or visit https://www.fema.gov/national-flood-insurance-program for more information.

Disclaimer: This report is for informational purposes only and is not authorized for official use. The positional accuracy may be compromised in some areas. Please contact your local floodplain administrator for more information or go to msc.fema.gov to view an official copy of the Flood Insurance Rate Maps.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

4/2/2022 4:02:56 PM



New BFE of 36.5 NAVD88 was used in the analysis (between 36.0 and 36.9 lines)

Resilience Plan Approval Letter

Matthew J. Strickler
Secretary of Natural and Historic Resources and Chief Resilience Officer

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Nathan Burrell
Deputy Director of Government and Community Relations

Darryl M. Glover
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Thomas L. Smith
Deputy Director of Operations

August 19, 2021

Allen Shue, P.E.
Greeley and Hansen
9020 Stony Point Parkway, Suite 475
Richmond, VA 23235-1946

RE: City of Richmond Resilience Plan Submission - CFPF

Dear Mr. Shue:

Thank you for providing an overview of your Resilience Plan, and informing DCR of the various plans that the City of Richmond will be utilizing to fulfill the Resilience Plan submission requirements. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan complete and meets all the criteria outlined in the June 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on August 20, 2024.

The following elements were evaluated as part of this review:

1. **Element 1: It is project-based with projects focused on flood control and resilience. DCR RESPONSE**

   Meets criteria as written.

   a. Project-based: The city of Richmond lies within the James River Watershed with 24 miles of the James River flowing through the city. This has been subdivided into 4 watershed groupings, each with uniquely defined characteristics. Several projects have been completed or are phased for completion as notated in the *Richmond-Crater Hazard Mitigation Plan*. Additionally, watershed based projects have been outlined in the *RVA Clean Water Plan* and flood control and resilience projects are also identified within the *RVA Emergency Operations Plan*.

2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. DCR RESPONSE**

   Meets criteria as written.

a. Natural and nature-based flood management measures are identified for use in projects throughout the city in the *RVA Clean Water Plan*.

3. **Element 3: It includes considerations of all parts of a locality regardless of socioeconomics or race. DCR RESPONSE**

Meets criteria as written.

a. All parts of a locality: Entirety of the City of Richmond's stormwater system was evaluated as part of the watershed characterization in the *RVA Clean Water Plan;* and city-wide land use patterns described in the *2017 Richmond-Crater Hazard Mitigation Plan*.

b. Social vulnerability: FEMA TEIF 2.0 analysis used to evaluate flood risk in the *2017 Richmond-Crater Hazard Mitigation Plan*.

c. Demographic Analysis: Community profiles of the city and region-wide demographics captured in the *2017 Richmond-Crater Hazard Mitigation Plan*.

4. **Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. DCR RESPONSE**

Meets criteria as written.

a. Coordination with other local and inter-jurisdictional projects, plans and activities:
The development of the *Richmond-Regional–Crater PDC Multi-Regional Hazard Mitigation Plan* included coordination with public servants and planning officials from all but three of the 24 localities included in the Crater and Plan RVA PDC's. It also draws from several regional plans and activities as outlined on section 3.3 on page 3-12.

The Technical Workgroup which contributed to the development of *the RVA Clean Water Plan* drew on experience from 30 different entities including state agencies, community associations, conservation and planning organizations, educational and scientific institutions, and other collectives as outlined in Section 2 on pages 6-7.

b. Clearly articulated timeline or phasing plan for implementation:
Section 5 of the *RVA Clean Water Program* identifies strategies for green infrastructure, stream restoration and land & water conservation in the City. Sections 4, 7 and 8 Identify a planning framework for the prioritization projects as well as a means by which success will be measured.

5. **Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.**

Meets criteria as written.

a. The *Richmond-Regional–Crater PDC Multi-Regional Hazard Mitigation Plan* references best-available data regarding flood risk from FEMA and the NCDC in sections 5.6.6 and 5.6.9. The RVA *Clean Water Plan* is established on data from the City's 2015 *Watershed Characterization Report* as well as the City's *2017 Clean Water Modeling Report*, found in Appendix A.

VA DCR looks forward to working with you as you work to make the City of Richmond a more resilient community. If you have questions or need additional assistance, please contact us at cfpf@dcr.virginia.gov. Again, thank you for your interest in the Community Flood Preparedness Fund.

Sincerely,

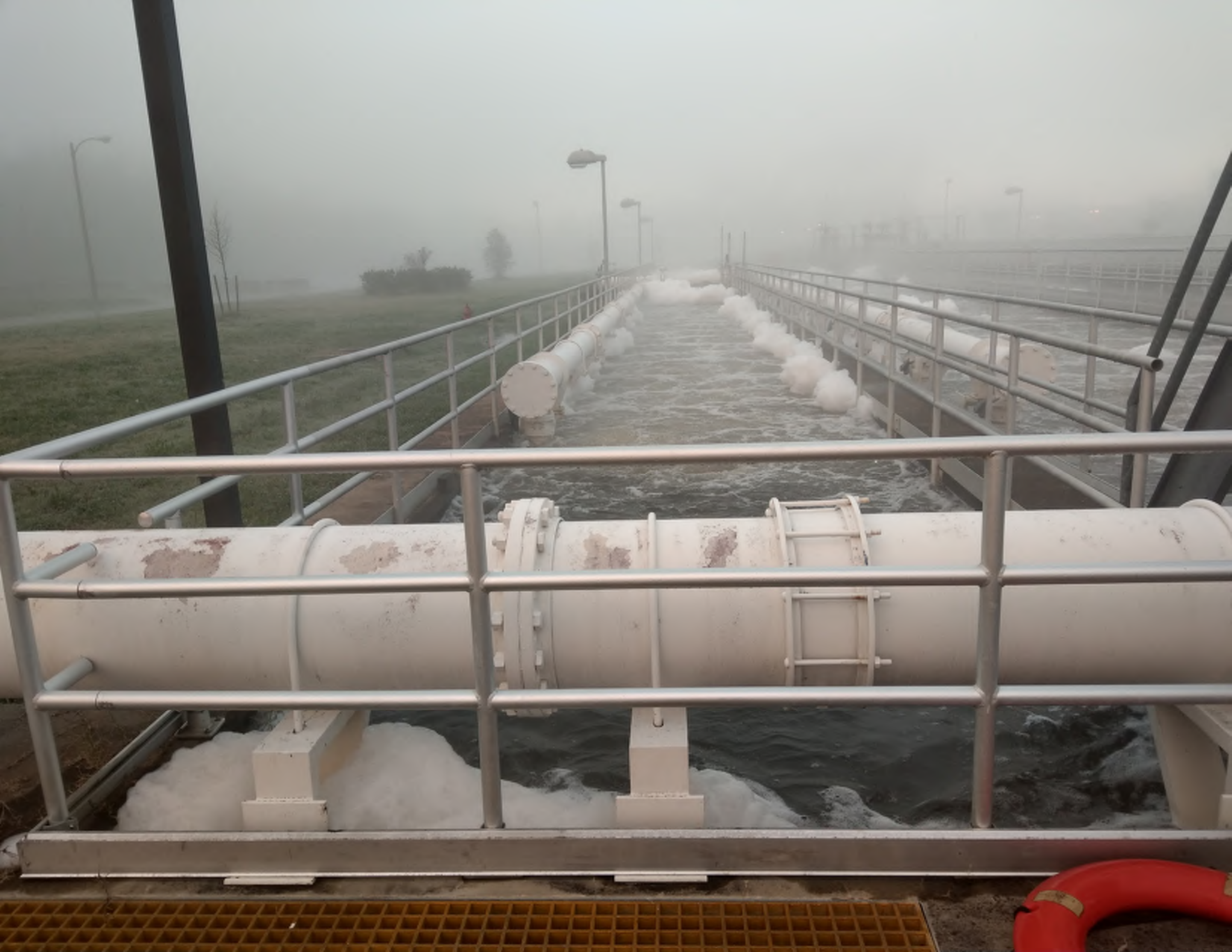
Wendy Howard Cooper

Wendy Howard Cooper, Director
Dam Safety and Floodplain Management

cc: Darryl M. Glover, DCR

Historic Flood Images - Nov 2020


SIMPLEX




018

Statement of Funding Letter

CITY OF RICHMOND

Department of Public Utilities

April 6, 2022

Virginia Department of Conservation and Recreation
600 East Main Street
24th Floor
Richmond, VA 23219-2094

Re: WWTP Flood Mitigation Project

To whom it may concern:

The total estimated cost of construction for the WWTP Flood Mitigation Project is $5,586,110. The City of Richmond, Department of Public utilities will utilize their CIP fund to cover their 50% match share of the cost ($2,793,055). DPU is committed to contributing the match amount from this fund to cover the cost of the project.

Sincerely,

John W. Vaughan, Jr.
City of Richmond, Department of Public Utilities
Deputy Department Director, Senior
(804) 646-5232

CITY OF RICHMOND

Department of Public Utilities

Letter Authorizing the Request for Funding

April 6, 2022

Virginia Department of Conservation and Recreation
600 East Main Street
24th Floor
Richmond, VA 23219-2094

Re: **Authorization for Funding**

To whom it may concern:

The City of Richmond, Department of Public has authorized this request for funding through the Virginia Community Flood Preparedness Fund Grant Program.

Sincerely,

W Vaughan

John W. Vaughan, Jr.
City of Richmond, Department of Public Utilities
Deputy Department Director, Senior
(804) 646-5232

Supporting Documentation Checklist

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☒ Yes ☐ No ☐ N/A

GREELEY AND HANSEN

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510129_CityofRichmond_CFPF-2

1 message

Sevcik, Brent <bsevcik@greeley-hansen.com> Fri, Apr 8, 2022 at 1:17 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Morgan, Stephen T. - DPU" <Stephen.Morgan@rva.gov>, "Vaughan, John \"Billy\" - DPU" <John.Vaughan@richmondgov.com>, "Lenti, John" <jlenti@greeley-hansen.com>

Division of Dam Safety and Floodplain Management-

I have attached the City of Richmond's CFPF Grant Application for the **WWTP Flood Mitigation Construction Project** (CID510129_CityofRichmond_CFPF-2).

An additional email will contain the submission for the Design Phase of the Project (CID510129_CityofRichmond_CFPF-1).

Please let me know of any questions,

Thanks,

Brent Sevcik

GREELEY AND HANSEN

Brent Sevcik AIA, EIT, LEED AP, ENV SP

Associate

100 S. Wacker Drive, Ste. 1400

Chicago, Illinois 60606

Office: 312.578.2348

Cell: 312.244.9158

greeley-hansen.com

CID510129_CityofRichmond_CFPF-2.pdf
10685K

TAZEWELL COUNTY VIRGINIA
"Bound For Progress"

Shanna E. Plaster, Vice Chair
Northwestern District

Andy Hrovatic, Member
Western District

DECEMBER 20 1799

Margaret A. "Maggie" Asbury, Member
Northern District

Charles A. Stacy, Member
Eastern District

Aaron M. Gillespie, Chair
Southern District

C. Eric Young
County Administrator

April 7, 2022

Wendy Howard-Cooper
Director for Dam Safety and Floodplain Management
Department of Recreation and Conservation
600 East Main Street, 24th Floor
Richmond VA 23219

Re: Authorization of Tazewell County CFPF Application

Dear Ms. Howard-Cooper and Members of the Review Team:

Tazewell County is proud to submit the enclosed application to the third grant round of the Community Flood Preparedness Fund. We firmly believe that the capacity-building and planning that will result from this project, should you choose to support it, will help the people of Tazewell County to work toward a more resilient community.

Tazewell County and our neighbors in Southwest Virginia have experienced devastating recurrent flooding that has increased in recent years. We are pleased to see that DCR has been willing to direct some of this new fund to mountainous and disadvantaged communities and we hope to join our neighbors in working with your program.

Please accept this letter as my authorization of the request for CFPF funding.

Also, please reach out to me, Emergency Management Coordinator David White, or any of our proposed team of consultants with questions. We look forward to working with you.

Sincerely,

C. Eric Young, Esq.
Tazewell County Administrator

197 Main Street ▪ Tazewell, Virginia 24651 ▪ (276) 385-1200 ▪ Fax (276) 988-4246
www.tazewellcountyva.org

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: ______________________

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

_____ **Project**

_____ **Study**

NFIP/DCR Community Identification Number (CID) 510160

If a state or federally recognized Indian tribe, Name of tribe ______________________

Name of Authorized Official: C. Eric Young, County Administrator

Signature of Authorized Official: ______________________

Mailing Address (1): 197 Main Street

Mailing Address (2): ______________________

City: Tazewell **State:** VA **Zip:** 24651

Telephone Number: (276) 385-1208 **Cell Phone Number:** (____) ______________

Email Address: eyoung@tazewellcounty.org

Contact Person (If different from authorized official): same

Mailing Address (1): ______________________________

Mailing Address (2): ______________________________

City: ____________________ **State:** ______________ **Zip:** ______________

Telephone Number: (____) ______________ **Cell Phone Number: (____)** ______________

Email Address: ______________________________

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☒ Floodplain Staff Capacity.

☒ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☒ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): Tazewell County, VA (see maps in attachments)

NFIP Community Identification Number (CID#):(See appendix F 510160

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): ____________________

Flood Insurance Rate Map Number(s) (If Applicable): ____________________

Total Cost of Project: $369,500

Total Amount Requested $332,550

Scope of Work Narrative

Tazewell County has long experienced challenging riverine flooding that impacts its homes, churches, community infrastructure, and businesses, as well as the coal mines that have served as the economic backbone of the region. However, as a low-income community, Tazewell County has rarely had the resources to properly address impacts of flooding and plan new approaches for the future. The Community Flood Preparedness Fund offers Tazewell County an opportunity to build toward a more resilient future, and thus the County is applying to the third CFPF round in the Capacity Building and Planning Category.

Proposal

The proposed project includes a professional engineering analysis and planning effort engaging stakeholders throughout Tazewell County, along with training for a key member of the County staff to become a Certified Floodplain Manager. By working with consultants that can help build this effort toward greater community-based natural resource management, Tazewell will lay strong groundwork for future resilience projects.

Today's Flooding Hotspots

In today's weather patterns, Tazewell's transportation network and its adjacent homes, community infrastructure, and businesses have proven to be key vulnerabilities. These are anticipated to be among the priorities revealed by the engineering analysis and plan development. The maps and FIRMettes in the supporting documentation (Attachment 1, overview maps, Attachment 2, aerial maps, and Attachments 3.1-3.8, FIRMettes) illustrate these known hotspots, but do not predetermine the projects to be identified by the plan. Brief overviews of each hotspot are:

1. Clinch River at Bottom Rd. and Kirby Rd. in Raven: This area floods to and over the road, impacting houses and churches in the vicinity.
2. Clinch River at Plant Rd.: When this area floods, access to the sewage treatment plant is cut off.
3. Clinch River at Fourth St. in Richlands: Floods in this area at times reach residential buildings on the banks of the creek.
4. Big Creek at Kentucky Avenue: Another known flooding point at a key transportation nexus.
5. Indian Creek at Banes Bottom near Indian Creek Rd.: Floods affect houses and trailers near the banks. Also, along Indian Creek Rd. leaving Cedar Bluff going toward Baptist Valley, a bridge is sometimes flooded and made impassable.
6. Bluestone River at Big. Branch Rd., Falls Mills area: The curve before Big Branch Rd. is impacted by floodwaters that cover the west side of the road heading toward Pocahontas. This is especially dangerous at night as this is an area not served by streetlights.

For additional recent history of flash flooding due to rain events, see news coverage of floods in 2020 and 2021, such as these articles (also provided as Attachment 4):

- https://www.bdtonline.com/news/state-of-emergency-declared-in-tazewell-county-due-to-flooding/article_732adc66-48fe-11ea-ab01-67b21dc9e50c.html
- https://woay.com/town-of-richlands-sees-blocked-roads-as-river-banks-flood-monday-morning/

Local elected officials and concerned citizens have begun seeking more proactive solutions. Neighboring Buchanan County's success in securing a CFPF grant to boost its resilience planning provides a model for Tazewell to apply. This effort has the active support of Delegate Will Morefield, Third District, as demonstrated in his letter of support (Attachment 5).

Existing Policies

Tazewell County has a floodplain ordinance, Attachment 6 in the supporting documentation. In developing this ordinance, the County's stated goals were "to prevent the loss of property and life, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base[.]" Those goals continue to underlie the County's flood resilience efforts today, including with this grant application.

The floodplain ordinance complements the Tazewell County Comprehensive Plan and the hazard mitigation plan for the entire Cumberland Plateau Planning District Commission, linked here:

- http://tazewellcountyva.org/wp-content/uploads/2015/11/Compplanfinal.pdf
- http://cppdc.org/Reports/Mitigation%20Plan%20Edit.pdf

Case for Support

Tazewell County meets the definition of a low-income community that the CFPF was especially designed to support. The median household income in the County is only 55% that of the Virginia median -- $42,207 per year, versus $76,398 per year, in 2020 dollars according to the US Census Bureau (Attachment 7). With this household income level, Tazewell County meets the CFPF definition of a low-income community.

Two of Tazewell County's census tracts, 202 or Bluefield and 206 or Claypool Hill, are federally designated Opportunity Zones (Attachment 8). One of the County's preliminary identified flooding hotspots, the Falls Mills area, overlaps the Census Tract 202/Bluefield Opportunity Zone. More priority resilience projects may be identified within the Opportunity Zones during the analysis and planning process. Thus the plan is expected to benefit not only the exceptionally vulnerable areas of the County, but also provide community-scale benefits as the capacity and resources of the entire County are lifted.

Tazewell County's case for support is also demonstrated in the VIMS Social Vulnerability Index. Two of the County's 11 census tracts fall into the High category of the index, while the remaining 9 of 11 census tracts fall into the Moderate category. Some of the County's preliminary identified flooding hotspots in the Doran and Richlands areas overlap zones of High social vulnerability. The Index categories are illustrated in the map in the supporting documentation (Attachment 9). Characteristics cited in the Index's assessment of housing the county typically include fragile stock, high percentage of mobile homes, low values and rents, and long term renters. These residents will benefit from the state's assistance with plans to reduce their flooding vulnerability and improve their communities' resilience.

This Scope of Work Narrative will now present further details of the proposed activities to be undertaken by Tazewell County and its project partners.

Proposed Activities

Tazewell County, working with contractors First Earth|2030 and Stantec, will undertake a process to build capacity and develop an actionable resilience plan. This process is expected to take approximately 12 months following a CFPF grant award and contractual notice to proceed.

Task 1: Initiate the Project

Task 1A: Orientation Meeting

The project partners will facilitate a project orientation meeting to review scope, schedule, and resources with a small core team, led by Shanna Plaster, Administrator for Northwestern District; Eric Young, County Administrator; Dave White, Emergency Management Coordinator; Barry Brooks, Director of Fire and Rescue and Deputy Emergency Management Coordinator; Ken Dunford, Director of Engineering; and AJ Robinson, Director of Tourism and Public Relations. The goals of the project will also be reviewed. At a minimum, goals for the plan are to:

- Understand flood risk and identification of projects for flood preparedness, control, and resilience
- Incorporate green, grey, and blue projects with an emphasis on nature-based solutions
- Integrate the whole community, regardless of socioeconomics or race
- Coordinate with existing and planned relevant projects, plans, activities
- Leverage best available science and incorporation of current and future flood data
- Develop a plan that provides a pathway to uninterrupted primary public roadway access, increased public safety, and less flooding

Key outcomes of this meeting will be to determine the Flood Resilience Planning Team members and to determine the kickoff meeting date for developing the Resilience Plan.

The project lead, Eric Young, with the assistance of the consultants, will also provide monthly reporting to DCR on progress and financial status.

Task 1B: Form the Planning Team

A Tazewell County Flood Resilience Planning Team will be formed to participate throughout the process. The Planning Team is intended to include a broad range of stakeholders vested in flood control, preparedness and resilience, including County staff, staff from the Towns of Bluefield, Cedar Bluff, Pocahontas, Richlands, and Tazewell, and other communities within the County, community leaders, emergency response and floodplain management officials, regional planners from the Cumberland Plateau Planning District Commission and state (e.g., Virginia Department of Conservation and Recreation (DCR) and Virginia Department of Emergency Management), technical experts, representatives of residents and real property owners, and the business community. Planning Team members will meet regularly (approximately monthly) and will be responsible for providing input throughout the planning process such as understanding of existing and planned projects, plans, and data, review of draft materials, and project weighting criteria (See Task 3 for more on stakeholder and community engagement).

Task 2: Data Collection and Review

In Task 2, the County will collect data and information and conduct a review of plans, data, and projects, capacities, and capabilities at the County and incorporated Town (as applicable) levels. Outcomes of this task include a draft existing conditions assessment and a capability and capacity needs assessment.

Task 2A: Data Collection and Review

Plans, Projects, Policies, Activities

A review of the County's existing plans, projects, and activities, as well as any of the same available from the five incorporated Towns, will be conducted to integrate information from these plans and inform community flood vulnerability, capabilities, and deficiencies. Plans to be reviewed and incorporated include but are not limited to the Cumberland Plateau Planning District Commission Hazard Mitigation Plan, local floodplain ordinance, Capital Improvement Plan, comprehensive plan, stormwater plan, and other documents with potential flood relevance. Further, County participation in programs that reduce flood impacts, such as the National Flood Insurance Program Community Rating System, will be reviewed.

Financial, Human, Technical Assistance, Training Resources

The team will conduct a review of available resources in this category to develop and manage flood mitigation projects. The County will likely need ongoing dedicated funding to support ongoing work. In addition, this proposed capacity-building project will enable Tazewell County to have a Certified Floodplain Manager on staff by providing funds for Tazewell County's Director of Engineering, who has volunteered for the role, to train for and take the CFM exam concurrently within this planning process. The scheduling of the next feasible training course and exam are to be determined. At the time of this application, the Towns of Bluefield and Tazewell have CFMs on staff, but there are none to serve the other three Towns or the County as a whole.

Built and Living Infrastructure and System Data

Next, GIS information will be gathered for green and gray infrastructure, systems, and assets. This includes data such as residential and non-residential structures, green space and wetlands (including identified ecosystems/wetlands/floodplains suitable for permanent protection), community dam safety inventory and risk assessment posed by the location and condition of dams, and transportation data. An understanding of criticality (those assets that provide essential services and functions) will be collected. Data will be collected in collaboration with the community stakeholder leaders, county and municipal staff, and project leadership. Once critical facilities and assets are determined, asset data (e.g., condition, location, age, material) will be collected from respective departments or utilities.

Current and Future Flood Hazard Data

Flood and climate data will be collected and reviewed to support the proposed vulnerability, risk, and resilience assessments and project identification. Flood data will be collected from local (including County engineering and/or planning staff), regional, state, and Federal agency sources, including any FEMA Flood Hazard Products, streamflow and gage data, flood studies, flood models, drainage analyses and H&H studies, as available. Data may also be available from the Virginia Department of Energy.

Best available climate data for the areas will be used to understand future flood-risk hazards. The data collected will be influenced by planning period, availability, and security sensitivity. Default data will be any community GIS data supplemented by federal data typically available to support community hazard planning, local and state climatological records of extreme events, historical records of severe weather, newspapers articles, online reports, severe event databases, and academic studies.

Existing data will be reviewed for completeness (i.e., coverage of impacted and potential project areas) and the ability to support resilience planning.

Planning Team members and stakeholders will be consulted throughout the Data Collection and Review task to understand available information and project status.

Task 2B Summarizing Data Review

Existing Conditions Summary

The data review and collection task will be summarized into an Existing Conditions assessment. The assessment will include:

- Existing community characteristics, including demographic, social, and economic factors
- Natural and social community stressors that contribute to vulnerability
- Geographic conditions and natural resources, such as those that provide natural flood-risk reduction services like wetlands, natural areas, and preservation areas
- Understanding of current flood "hot spots" throughout the county, including hot spots known through experience such as the Richlands/Doran/Raven area and areas around primary and secondary roads, as noted in the introduction to this scope of work.
- Documentation of any flood data limitations (best available data will be leverage but no new data will be developed as part of the plan)
- Existing capabilities and deficiencies in flood resilience

Capability and Capacity Needs Assessment

Building on the information above, the County, First Earth|2030, and Stantec will also prepare a Capability and Capacity Needs Assessment. This assessment will document any deficiencies or limitations in flood resilience (e.g., staff, training, data, policy, funding, technical assistance, etc.), and recommend strategies to increase overall capacity and capability. This includes reviewing flood-related policies and providing recommendations for revisions or new policy to enhance the County's capability in floodplain management. Of note, the assessment will also include a policy review, including identified incentives for restoring riparian and wetland vegetation. A lead will be identified to track capacity building and each strategy will be assigned to a responsible party and a timeline for completion will be included.

A long-term strategy to maintain capacity and capabilities will be determined, such as regular staff training and cross-training as well as potential budget strategies to support staff in that work and to maintain the newly achieved CFM certification noted above.

Task 3: Engage the Stakeholders

Stakeholders include the Planning Team, members of the public and those with an interest or need for flood protection and prevention. Stakeholders will be engaged concurrently throughout the resilience planning process via workshops, meetings, online presence, and targeted interviews, for example. This includes stakeholder education on how flood mitigation can be leveraged to achieve their vision for their community results through publicly supported, implementable flood mitigation projects. The project partners intend to provide a dedicated webpage for the project to keep the public and stakeholders apprised on draft plan and meeting information.

Of note, standard outreach methods such as public meetings, informational interviews, and surveys will need to be tailored to COVID-19 precautions, local internet capacity, and county residents' preferred methods of input to achieve whole community participation. These methods will be defined at the onset of the planning process and with input from the planning team.

Planning Team Kick-off Meeting

Once the Planning Team has been formed (Task 1B), the County project leads will facilitate a kick-off meeting to develop a project framework that establishes a successful process for community engagement and capacity building, as well as data collection and technical analysis regarding assets, climate data, and vulnerability assessments. The purpose of the meeting is to provide a detailed introduction to the project, introduce participants, identify targeted (and measurable) outcomes, define Planning Team member roles, and review project milestones and schedule. A key outcome of the meeting will be to review and refine the project's goals and objectives for whole community protection and prevention.

Public Kick-off Meeting

The County will facilitate a kick-off meeting to introduce the project, key milestones, and public participation input mechanisms.

Public Risk Assessment Results and Priority Area Identification Workshop

A joint workshop of the Planning Team and stakeholders will be held once a draft of the existing conditions and risk assessment (Task 4 below) is completed. Outcomes of the meeting include identifying high priority locations in which to focus project development.

Public Project Alternatives Review (Priority Area-Specific) Workshops

These joint workshops for the Planning Team and stakeholders will be held once project alternatives have been identified for each priority area. Workshops will then be held for priority areas (grouping areas where it's feasible) to review and refine projects. Outcomes of the workshop include gaining project buy-in from the stakeholders while informing project prioritization. Up to three workshops will be held.

Public Project Prioritization (Priority Area-Specific)

These joint workshops for the Planning Team and stakeholders will be held once project alternatives have been prioritized for each priority area. Workshops will then be held for priority areas (grouping areas where it's feasible). Outcomes of the workshop include gaining final stakeholder/public buy-in on projects. Up to three workshops will be held.

Draft Plan Review

This review is anticipated to be virtual, with posting and comment collection through the project website and social media.

Task 4: Assess Problems and Risk

Assessing risk and vulnerability is essential for identifying and prioritizing locations and projects for risk reduction. Collected and/or developed data will be used to assess risk and vulnerability, including from the concurrent public/stakeholder engagement noted in the previous section. Risk posed by flooding from riverine, pluvial (urban), and precipitation-induced mudflows will be included. Assessment of these flood hazards will include consideration of:

- A description of possible flood hazards within the community
- Descriptions of previous impacts, including property and infrastructure damages, life safety impacts, and disruptions to businesses and services, as available
- Current and projected flood risks trends including frequency and intensity
- Mapping of areas impacted by flood hazards and a description of areas impacted
- Potential impacts from cascading hazard events, such as wildfires and hurricane or tropical storm remnants
- Existing flood control measures and structures including dams/levees

Vulnerability of identified critical facilities and assets will be assessed by mapping flood hazards with critical facilities/assets to determine exposure, along with assessment of potential impacts such as physical and social vulnerability with respect to existing mitigation measures. Community stressors that contribute to vulnerability will also be considered.

Task 4.A: Identify Priority Areas

Once risk and vulnerability have been assessed, priority areas will be identified using a developed scoring methodology. At a minimum, this methodology will include factors such as flood exposure (e.g., high-risk areas), vulnerability, adaptive capacity, and social vulnerability. The federally recognized Opportunity Zones (202 or Bluefield and 206 or Claypool Hill), areas identified in the Floodplains and Flooding Resilience Category of ConserveVirginia, and vulnerable population areas will also be factors in project identification and prioritization.

Task 4.B: Identify Priority Projects

Using risk assessment results, stakeholder feedback, and priority areas, flood mitigation projects will be identified and prioritized. A wide range of project types will be considered, including but not limited to:

- Planning (e.g., land use and floodplain management ordinances, conservation overlays and easements, riparian buffers);
- Future studies - identification of future studies and analysis needed (e.g., H&H for future conditions);
- Policies and programs (buyouts/land acquisition, Community Rating System, elevation);
- Natural stream and wetland restoration or preservation;
- Structural (hardening, culvert upgrades and replacements, slope stabilization);
- Strategies to address other natural hazards that would cause, affect, or result from flooding events including:
    - Mine blow-outs,
    - Earthquakes,
    - Storage of hazardous materials,
    - Landslides/mud/debris flow/rock falls,

    - Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely,
    - Preparations for severe weather events including tropical storms, winter storms, or other severe storms,
- Emergency Response; and,
- Community Outreach and Education (e.g., education for community leaders, outreach materials for the public), including strategies for creating and supporting knowledgeable, inclusive community leaders and networks.

Once projects have been identified, they will be prioritized using various metrics. Different weights may be applied to metrics as appropriate. Prioritization metrics to be considered in the plan include:

- Risk reduction (e.g., losses avoided)
- Nature-based solution
- Equity-based
- Within priority area
- Within Census Tract 202/Bluefield and 206/Claypool Hill Opportunity Zones
- Cost-effectiveness (determined via planning level costs analysis and/or benefit-cost analysis)
- Political feasibility
- Time needed for implementation
- Other special consideration as necessary (e.g., historic or cultural)
- Co-benefits (e.g., water quality, habitat preservation or restoration, community amenities)

These projects will be presented to the planning team and the public via stakeholder workshops.

Task 5: Draft the Plan

The County will draft an actionable flood resilience plan to meet the goals of the project. The resilience plan will include the elements DCR defines for a successful resilience plan:

- Be project-based with projects focused on flood control and resilience
- Incorporate nature-based infrastructure to the maximum extent possible
- Consider all parts of Tazewell County and its communities regardless of socioeconomics or race
- Coordinate with other local and inter-jurisdictional projects, plans, and activities
- Clearly articulate a timeline and/or phasing for implementation, and
- Be based on the best available science, incorporating climate change, changes in precipitation events, and current and/or revised flood maps.

The following sections are envisioned:

- Introduction
- Background and Goals
- Planning Process (including stakeholder engagement)
- Existing Conditions (demographics, capabilities, issue understanding)
- Capacity and Capability Needs Assessment
- Risk and Vulnerability Assessment

- Priority Area Identification
- Prioritized Flood Risk-Reduction Actions
- Plan Implementation and Maintenance

Measuring Success

Performance Output	**Measurement**
An actionable plan	DCR-approved plan
Identified capability/capacity needs with strategies to remedy	Increase in staff, financial, and/or technical capacity to manage flood risk such as presence of CFM on staff, presence of risk communication program
Prioritized projects	Wide range of project types (e.g., planning, policy, structure, NBS, etc.); linkable to a funding source
Plan maintenance procedures	Procedures agreed upon by the project partners for regular meeting of the Planning Team, project status reviews, and plan updates.

A completed Scoring Criteria Sheet for this proposed project (using Appendix D for Capacity Building and Planning) is in the supporting documentation, Attachment 10.

Budget Narrative

The estimated total cost to bring the project to completion is $369,500.

Because of Tazewell County's household median income level, it meets the CFPF definition of a low-income community, and therefore this application requests 90% support from the Fund and offers a 10% match.

- The amount of grant assistance requested from the Fund is $332,550.
- The amount of cash funds available and pledged as match is $36,950. The source of these funds is First Earth|2030's operational funds, held at Virginia National Bank.

The budget table on the following page provides detailed additional information about the intended expenditures to implement this planning and capacity-building project.

The rate cards from First Earth|2030 and Stantec, the two third-party contractors, further illustrate the breakdown of expenditures (see following pages).

Please see the cover letter to this application package as the required authorization to request funding from the Fund from C. Eric Young, Esq., Tazewell County Administrator (the chief executive of the local government).

Please also see Attachment 11 for a signed pledge agreement with First Earth|2030 as the contributing organization.

TAZEWELL COUNTY FLOOD PREPAREDNESS PLAN

Budget Summary

March 30, 2022

DRAFT ESTIMATE

			Direct Expenses	Prime Contract	Sub Contract			Tazewell County Applicant
TASK #	**TASK / TASK NAME**	**PROJECT TOTAL**	**TAZEWELL COUNTY**	**FIRST EARTH|2030**	**STANTEC**	**SUBTOTAL**	MATCH	**REQUESTED CFPF FUNDS**
TASK 1:	**INITIATE THE PROJECT**							
	Task 1A: Orientation Meeting	$15,000	$0	$9,000	$6,000			
	Task 1B: Form the Planning Team	$4,500	$0	$3,000	$1,500			
						$19,500	$2,550	$16,950
TASK 2:	**DATA COLLECTION AND REVIEW**							
	Task 2A: Data Collection and Review	$42,500	$0	$3,500	$39,000			
	Task 2B: Summarizing the Data	$20,000	$0	$2,000	$18,000			
						$62,500	$0	$62,500
TASK 3:	**ENGAGE THE STAKEHOLDERS**							
	Planning Team Kickoff	$16,500	$0	$7,500	$9,000			
	Public Kickoff Meeting	$18,000	$0	$9,000	$9,000			
	Public Risk Assessment and Priority Area ID Workshop	$11,500	$0	$2,500	$9,000			
	Public Project Alternatives Review (Priority Area-Specific) Workshops	$25,500	$0	$7,500	$18,000			
	Public Prioritization (Priority-Area Specific)	$23,500	$0	$5,500	$18,000			
	Draft Plan Review	$8,500	$0	$2,500	$6,000			
						$103,500	$19,500	$84,000
TASK 4:	**ASSESS PROBLEMS AND RISK**							
	Task 4A: Identify Priority Areas	$35,000	$0	$4,000	$31,000			
	Task 4B: Identify Priority Projects	$60,500	$0	$5,500	$55,000			
						$95,500	$9,500	$86,000
TASK 5:	**DRAFT THE PLAN**	$28,000	$0	$10,000	$18,000			
						$28,000	$5,400	$22,600
ADDITIONAL ITEMS								
TASK 6:	**PROJECT MANAGEMENT**	$58,000	$0	$50,000	$8,000			
						$58,000	$0	$58,000
TASK 7:	**CFM TRAINING**	$2,500	$2,500	$0	$0			
						$2,500	$0	$2,500
		$369,500	**$2,500**	**$121,500**	**$245,500**		$36,950	**$332,550**

FIRST **EARTH | 2030**
3800 Grove Ave
Richmond | Virginia
firstearth2030.com
804.687.1869

Hiring FE 2030:
We provide unique and high-quality services for our clients. Our fees are based on transactional work or service fees. Rates are dependent on scope of work and opportunity.

Scope of Work Considerations:

- Length of contract
- Geographic focus
- Augmentation of project with grant writing/management and submission
- Federal, State, and Local obstacles/permitting
- Specialized resources, expertise, and/or use of intermediaries

FE 2030 rates are determined by the type of client engagement:

- *One-time fee* - fee based transactional work for the client
- *Monthly/Yearly retainer* - sources all investment opportunities in the time contracted, advises on projects, and provides continual service support
- *Specific project-based fee* - could involve property advice, grant writing, tax credit planning, property management, providing best use options
- *Percentage fee* – percentage of investment dependent on scope of work
- *Other* - fee specifically designed for client or project that may be based on blended and/or geographically diverse work and focus

FE general consulting rates which may vary depending on the project:

Program Manager	$250.00/ hr
Senior Project Manager	$200.00/ hr.
Project Manager	$175.00/ hr.
GIS/ Data Analyst	$120.00/ hr.
Grant Specialist	$85.00/ hr.
Technician	$75.00/ hr.
Travel Time	Quarter rate
Expenses	Bill at cost

Solutions & Offerings

First Earth | 2030 has originated and transacted over $100,000,000 of market activity for our clients by analyzing opportunities with experienced guidance and skilled management. Our goal has been to deliver financial value on important properties while simultaneously conserving, enhancing, and protecting the land's significant ecosystems.

First Earth | 2030 is a results-based environmental asset management firm delivering customized outcomes for public and private clients. Our team provides innovative conservation techniques and solutions that result in environmental and economic project lift.

FE delivers ecosystem service solutions that enhance and protect the value of open space lands, working farms, timberlands, shorelines and wetlands. We optimize our clients' eco-asset potentials of their land, water and air to generate:

- Strong risk adjusted returns
- Improved conservation values
- Increased real property values

Project costs managed by FE can often be reduced by delivering return mechanisms that include incentives such as federal and state tax deductions/ credits, carbon finance, mitigation finance, grants and project completion investment contracts.

Land Asset Management Solution Sets

- Open space, mine land and timber land solutions
- Flood preparedness & living shoreline solutions
- Outdoor recreation as economic development solutions
- Renewable energy generation solutions

Service Offerings

- Program Requirement Scoping Services
- Initial Project Design
- Project Management & Delivery
- Grant Writing
- Post Construction Monitoring & Stewardship Services

FirstEarth2030.com

Stantec

2021-22 Standard Rate Schedule

Rates effective through December 31, 2022

BUCHANAN COUNTY & FIRST EARTH 2030

Professional Staff

Labor Category	Hourly Rate	Labor Category	Hourly Rate
Senior Technical Advisor	$300	Senior Technical Lead	$220
Senior Principal	$220	Senior Project Manager	$240
Principal	$185	Project Manager	$175
Senior Process Engineer	$190	Process Engineer	$175
Engineer	Staff - $155 Mid-Level - $195 Senior- $240	Engineer-in-Training	$150
Environmental Planner	Staff - $105 Mid-Level - $155 Senior- $185	Environmental Specialist	Staff- $105 Mid-Level - $155 Senior- $185
Regulatory Specialist	Staff- $105 Mid-Level - $155 Senior- $185	Ecologist	Staff- $105 Mid-Level - $155 Senior- $185
Landscape Architect	Staff- $105 Mid-Level - $155 Senior- $185	GIS Coordinator	$175
CAD Designer	$150	CAD/GIS Technician	$125

Technical and Administrative Staff

Labor Category	Hourly Rate	Labor Category	Hourly Rate
Environmental Technician	$105	Engineering Technician	$125
Project Administrator	$110	Clerical	$90

Stantec

2021-22 Standard Rate Schedule

Rates effective through December 31, 2022

Reimbursable Expenses

Reproduction

Black & White Copies	$0.06 each	Color Copies	$1 each
In-House Plots	$10 each	Other Reproduction	At Cost*
Mileage	$0.545/mile (subject to change based on IRS standard)		
Travel and Expenses	At Cost		

** There is a 15% handling fee added unless exception provided in written agreement.*

Field Equipment

GPS Unit (sub-meter)	$25/day	Data Collection Equipment	$20/day
Laser Level	$20/day	Laser Range Finder	$20/day
Gator/ATV	$75/day	ARGO	$100/day
Boat	$250/day	Canoe	$20/day
High Pressure Spray Rig	$25/day	Backpack Sprayer	$10/day
Hatchet Injector	$10/day	Brush Cutter/Chainsaw	$20/day
Field Consumables	$5/day	Water Quality/Flow Meter	$15/day
Total Station	$50/day	Polaris ATV	$50/day

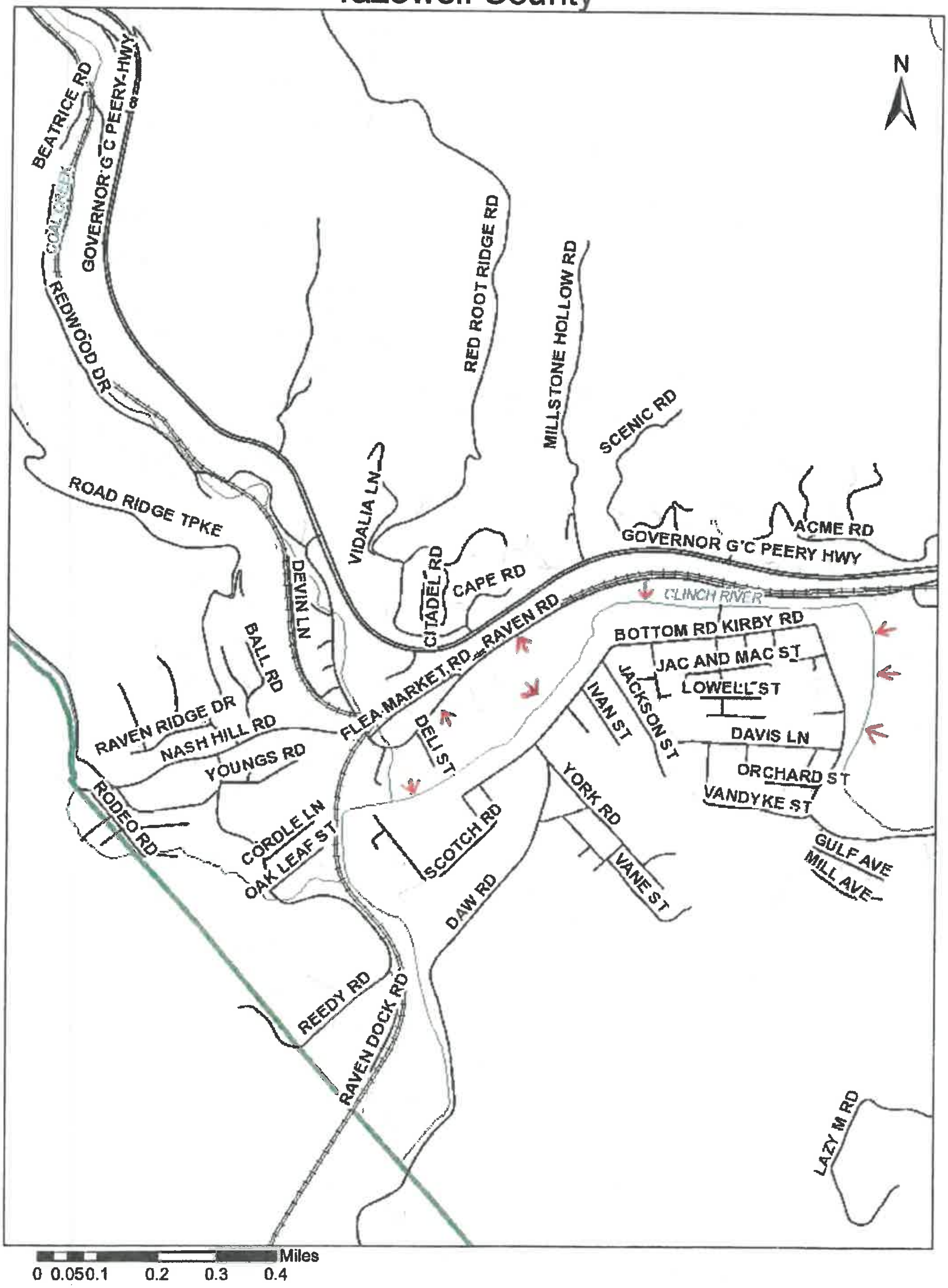
Archeological Specific Rates

Field Supply Charge	$25.50/week	Lab Fee	$15.50/week
Balloon	$36 each	DHR Archival Photos	$1 each

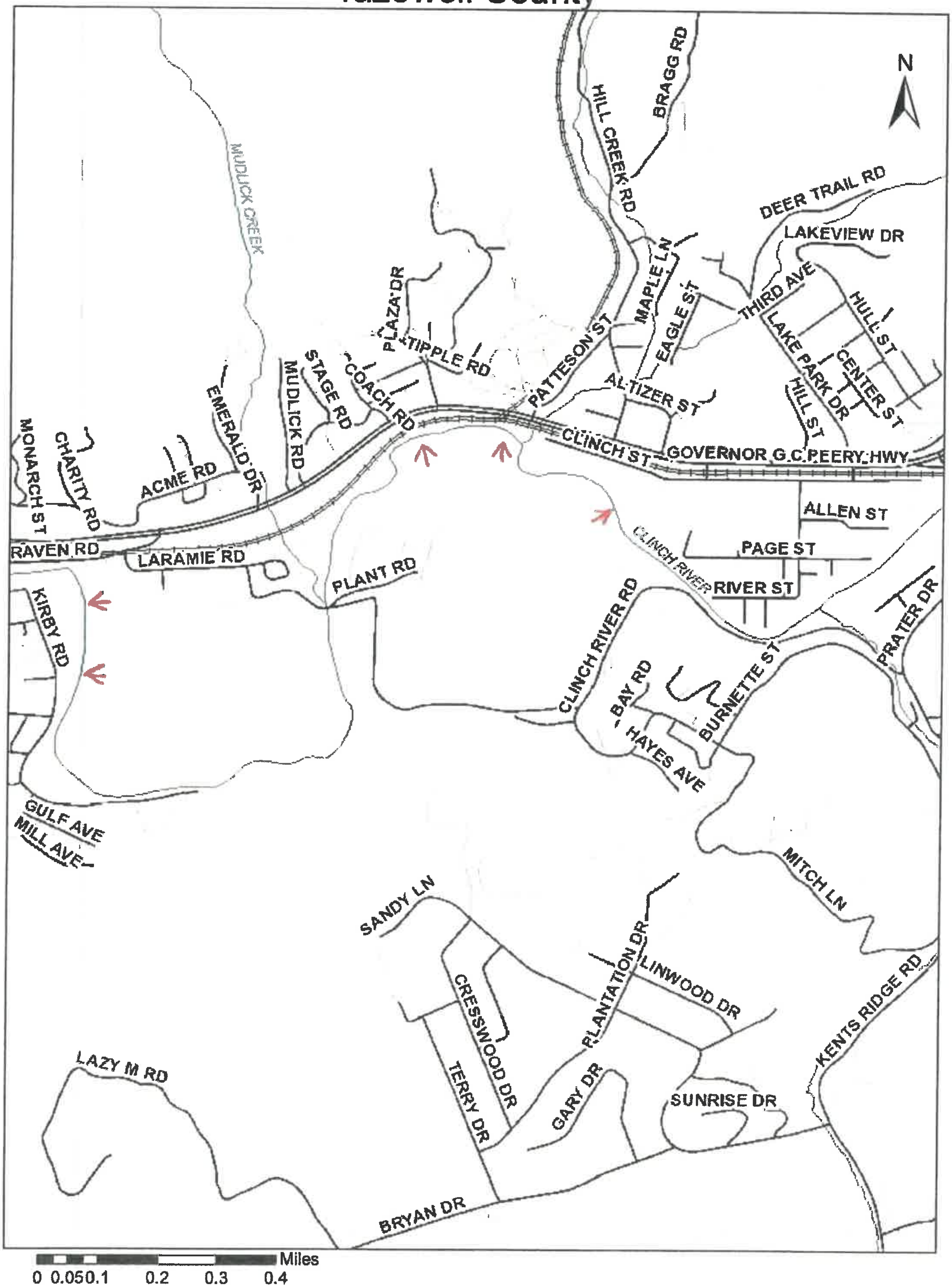
Other Direct Rates

Lab Fee	$50/day	Lamination	$3/sheet
Report Supplies	At Cost	Shipping	At Cost

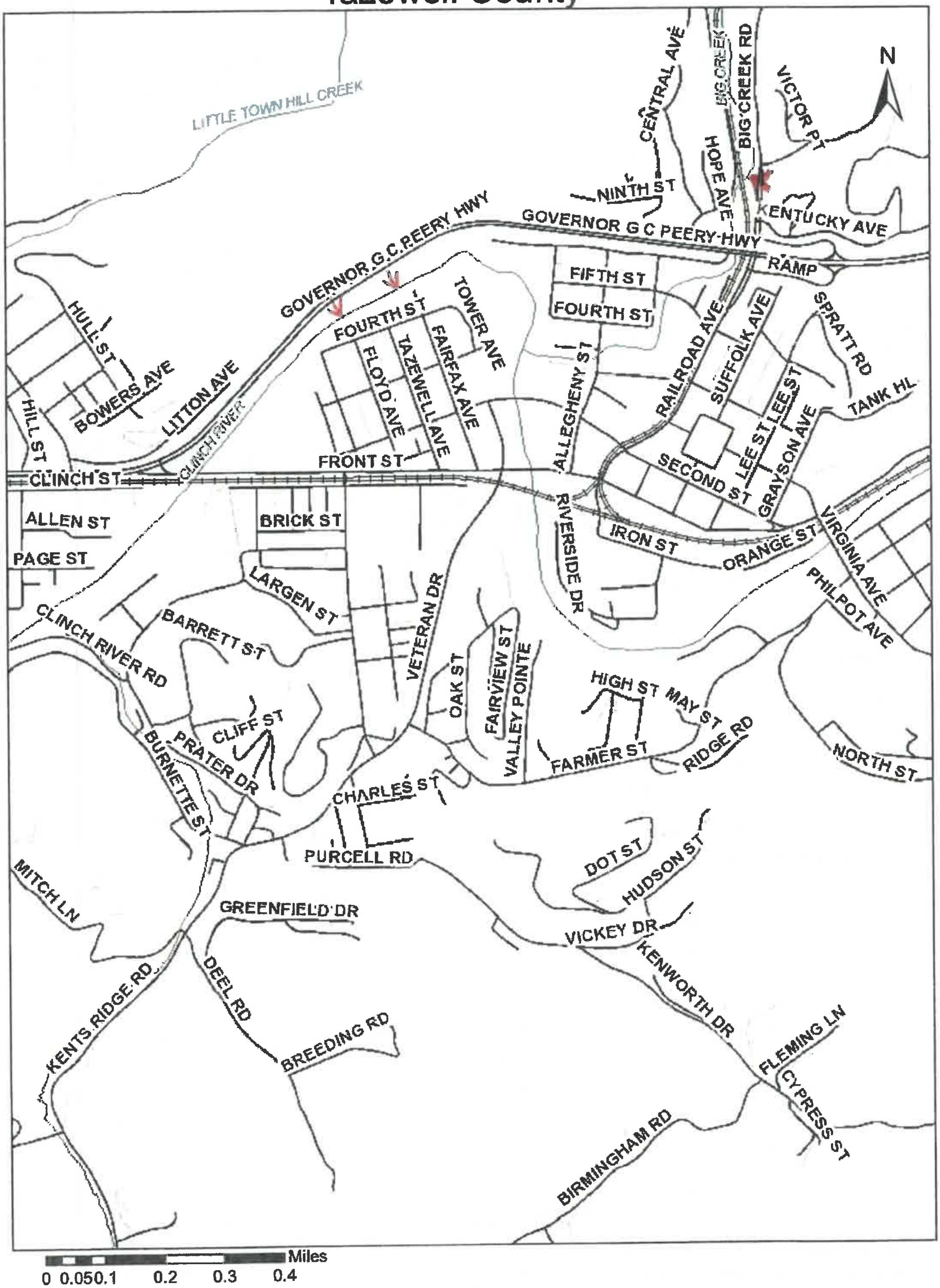
Tazewell County



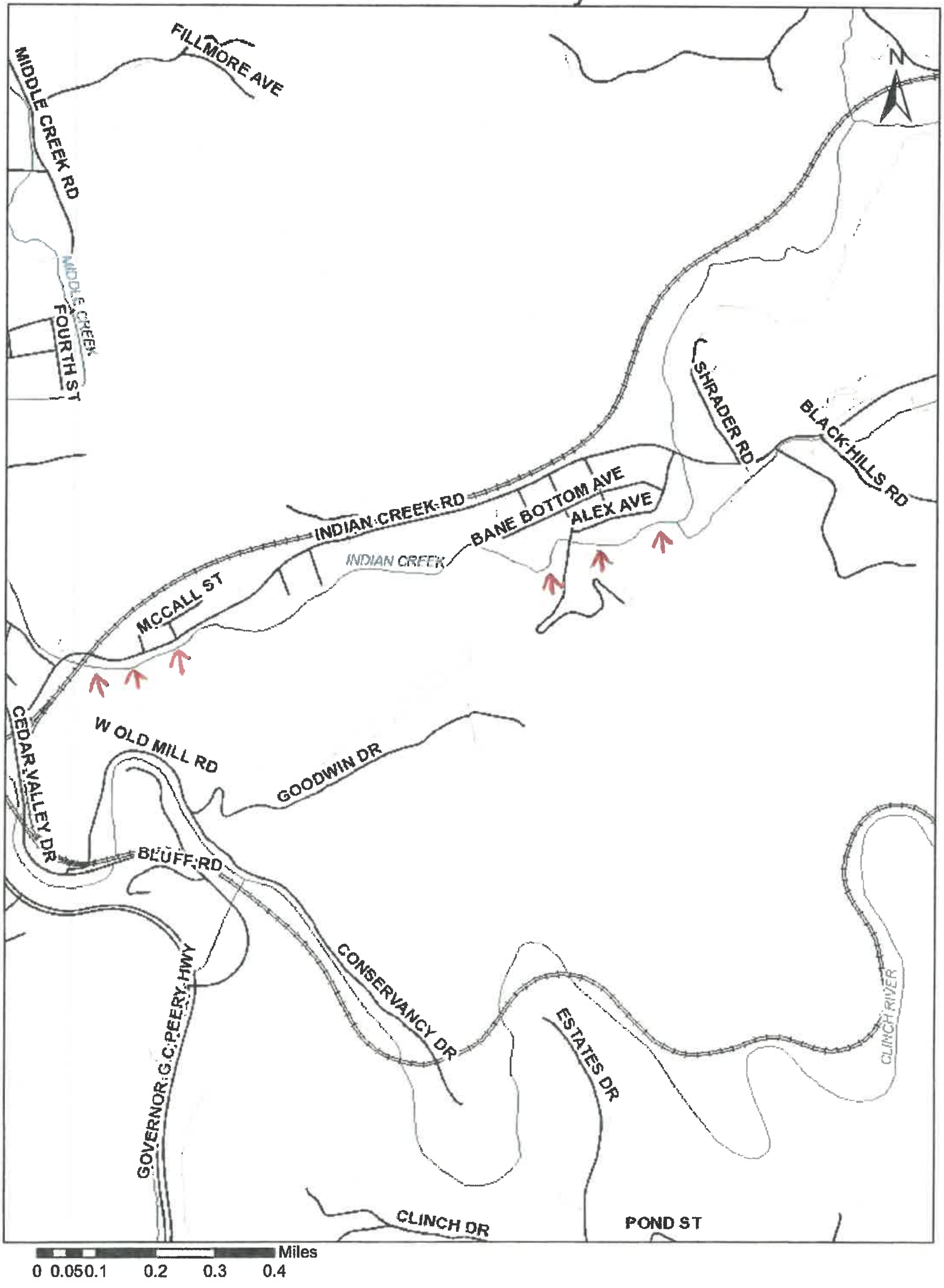
Tazewell County



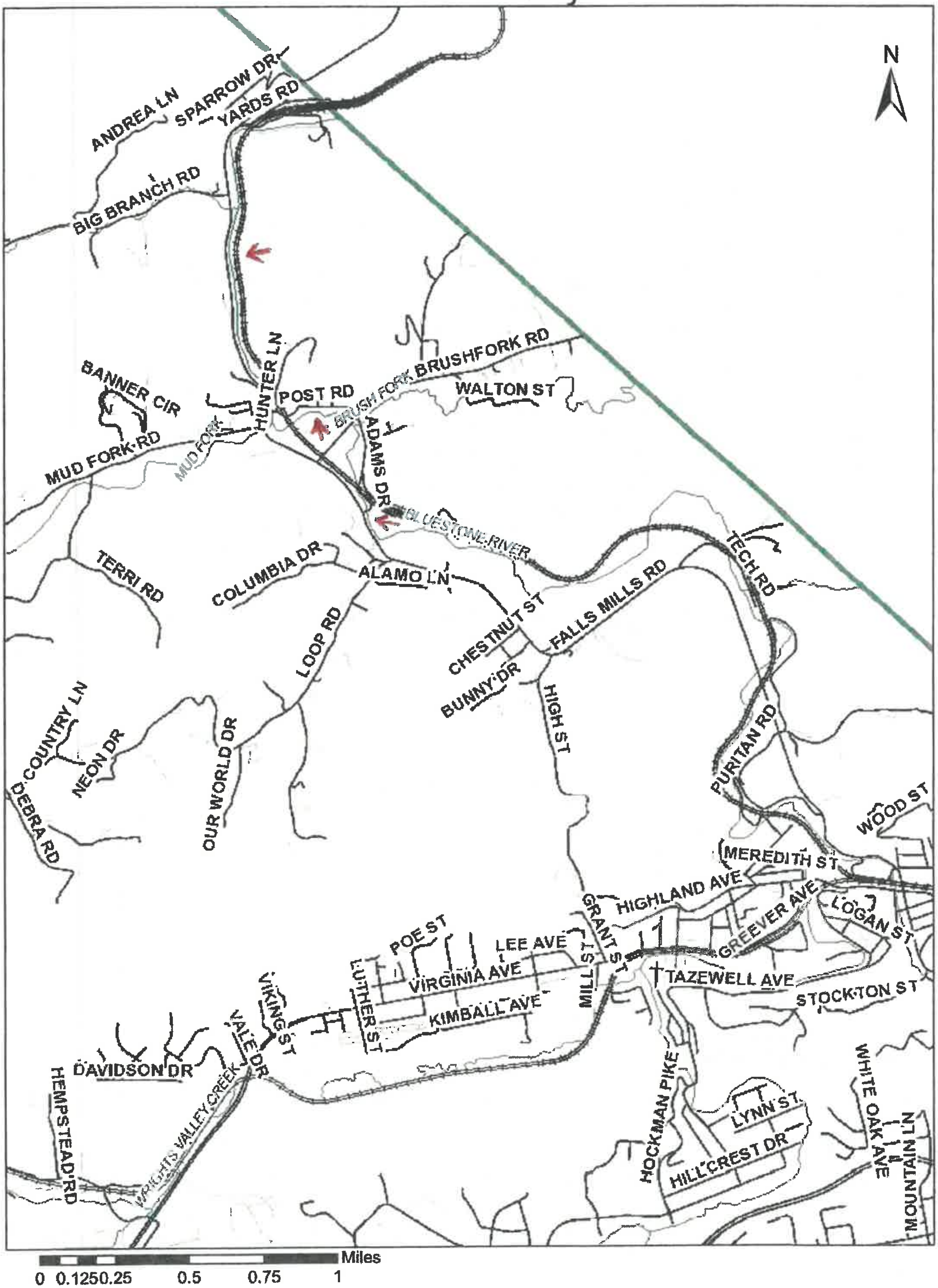
Tazewell County

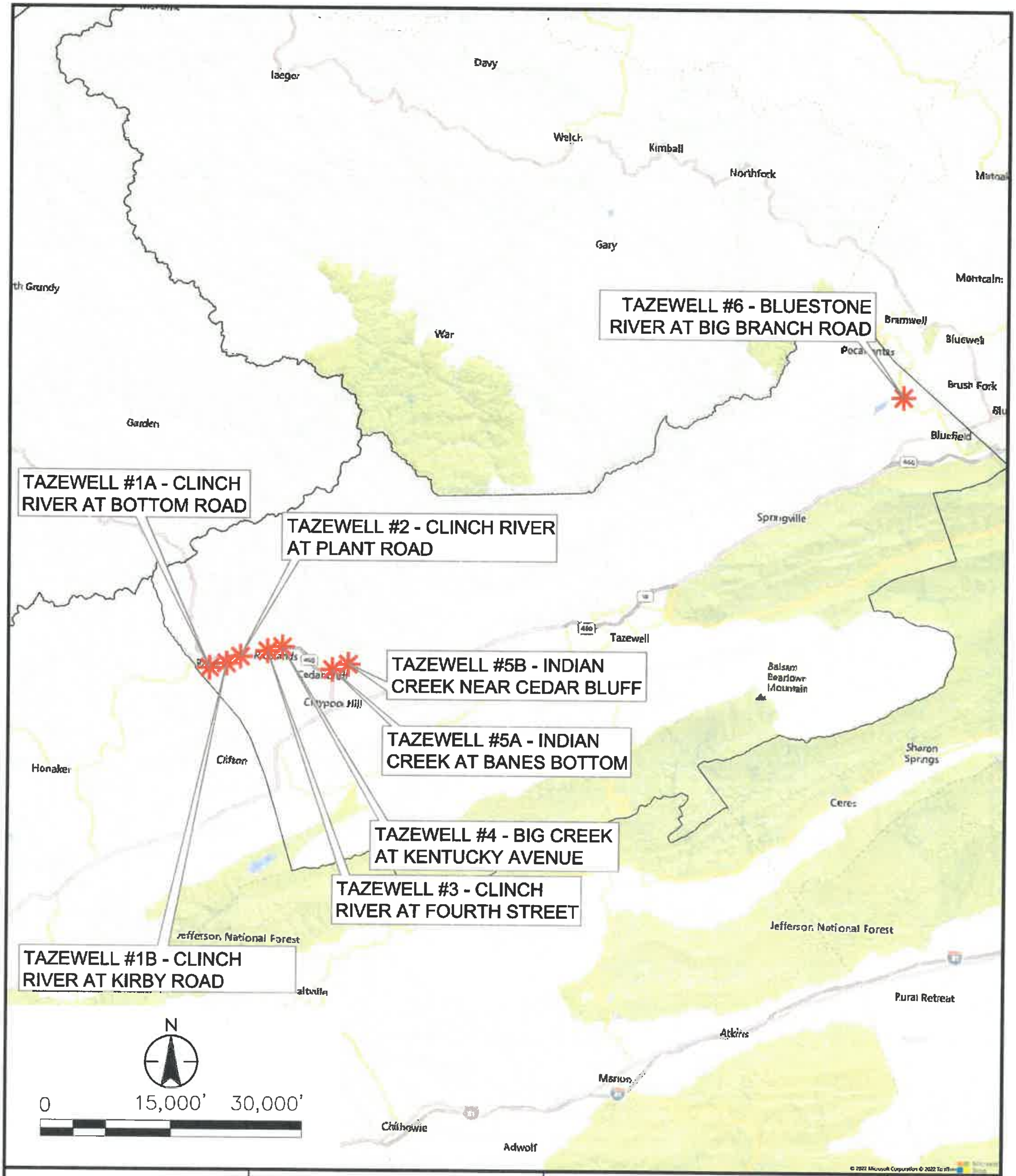


Tazewell County



Tazewell County





Stantec

5209 Center Street
Williamsburg, VA 23188
PHONE: (757) 220-6869 FAX: (757) 229-4507

FOR:

FIRSTEARTH 2030

TAZEWELL COUNTY, VIRGINIA

TAZEWELL COUNTY OVERALL

FIGURE:
1

JOB NUMBER: 203401767	DRAWN BY: SS	CHECKED BY: SS	APPROVED BY: TC	DATE: MARCH 2022

FILEPATH:C:\Users\sshelton\AppData\Local\Temp\AcPublish_23228\Unsaved Drawing2.dwg|sshelton|Mar 30, 2022 at 12:14|Layout: INDEX

NOTE: 2019 VIRGINIA GEOGRAPHIC INFORMATION NETWORK (VGIN)

Stantec

5209 Center Street
Williamsburg, VA 23188
PHONE: (757) 220-6869 FAX: (757) 229-4507

FOR: FIRSTEARTH 2030 TAZEWELL COUNTY, VIRGINIA		TAZEWELL #1A CLINCH RIVER AT BOTTOM ROAD TAZEWELL #1B CLINCH RIVER AT KIRBY ROAD		FIGURE: 2
JOB NUMBER:	DRAWN BY: SS	CHECKED BY: SS	APPROVED BY: TC	DATE: MARCH 2022

FILEPATH:C:\Users\sshelton\AppData\Local\Temp\AcPublish_23228\Unsaved Drawing2.dwg|sshelton|Mar 30, 2022 at 12:14|Layout: #2

NOTE: 2019 VIRGINIA GEOGRAPHIC INFORMATION NETWORK (VGIN)

Stantec 5209 Center Street Williamsburg, VA 23188 PHONE: (757) 220-6869 FAX: (757) 229-4507	FOR: FIRSTEARTH 2030 TAZEWELL COUNTY, VIRGINIA		TAZEWELL #2 CLINCH RIVER AT PLANT ROAD		FIGURE: 3
	JOB NUMBER:	DRAWN BY: SS	CHECKED BY: SS	APPROVED BY: TC	DATE: MARCH 2022

FILEPATH:C:\Users\sshelton\AppData\Local\Temp\AcPublish_23228\Unsaved Drawing2.dwg|sshelton|Mar 30, 2022 at 12:15|Layout: #3

NOTE: 2019 VIRGINIA GEOGRAPHIC INFORMATION NETWORK (VGIN)

Stantec

5209 Center Street
Williamsburg, VA 23188
PHONE:(757) 220-6869 FAX:(757) 229-4507

FOR:

FIRSTEARTH 2030

TAZEWELL COUNTY, VIRGINIA

TAZEWELL #3
CLINCH RIVER AT FOURTH STREET

FIGURE:
4

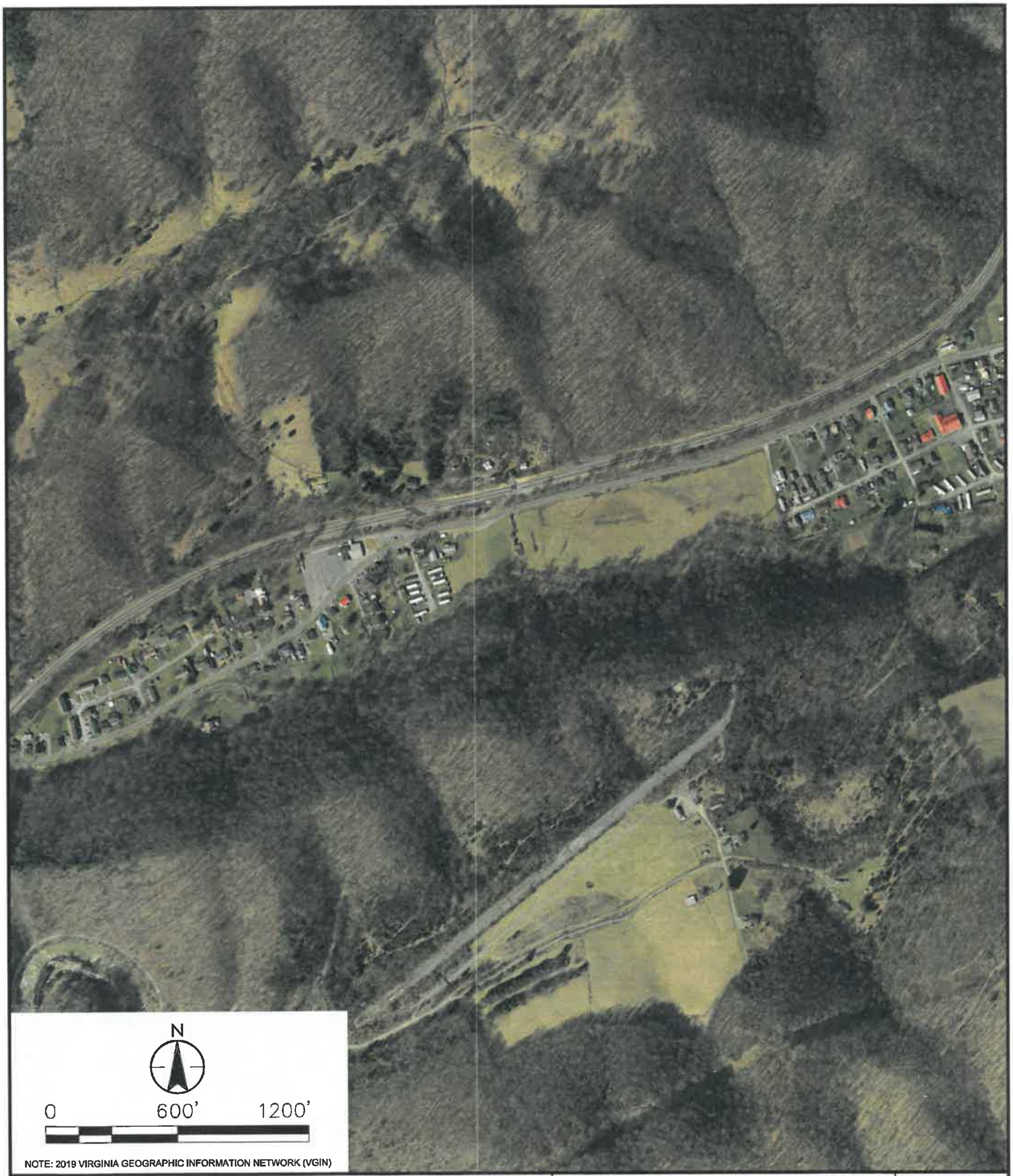
JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
	SS	SS	TC	MARCH 2022

FILEPATH:C:\Users\sshelton\AppData\Local\Temp\AcPublish_23228\Unsaved Drawing2.dwg|sshelton|Mar 30, 2022 at 12:15|Layout: #4

NOTE: 2019 VIRGINIA GEOGRAPHIC INFORMATION NETWORK (VGIN)

Stantec 5209 Center Street Williamsburg, VA 23188 PHONE: (757) 220-6869 FAX: (757) 229-4507	FOR: FIRSTEARTH 2030 TAZEWELL COUNTY, VIRGINIA		TAZEWELL #4 BIG CREEK AT KENTUCKY AVENUE	FIGURE: 5
	JOB NUMBER:	DRAWN BY: SS	CHECKED BY: SS	APPROVED BY: TC
				DATE: MARCH 2022

FILEPATH:C:\Users\sshelton\AppData\Local\Temp\AcPublish_23228\Unsaved Drawing2.dwg|sshelton|Mar 30, 2022 at 12:15|Layout: #5



NOTE: 2019 VIRGINIA GEOGRAPHIC INFORMATION NETWORK (VGIN)

Stantec 5209 Center Street Williamsburg, VA 23188 PHONE: (757) 220-6869 FAX: (757) 229-4507	FOR: FIRSTEARTH 2030 TAZEWELL COUNTY, VIRGINIA	TAZEWELL #5A INDIAN CREEK AT BANES BOTTOM TAZEWELL #5B INDIAN CREK NEAR CEDAR BLUFF	FIGURE: 6

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
	SS	SS	TC	MARCH 2022

FILEPATH:C:\Users\sshelton\AppData\Local\Temp\AcPublish_23226\Unsaved Drawing2.dwg|sshelton|Mar 30, 2022 at 12:15|Layout: #6

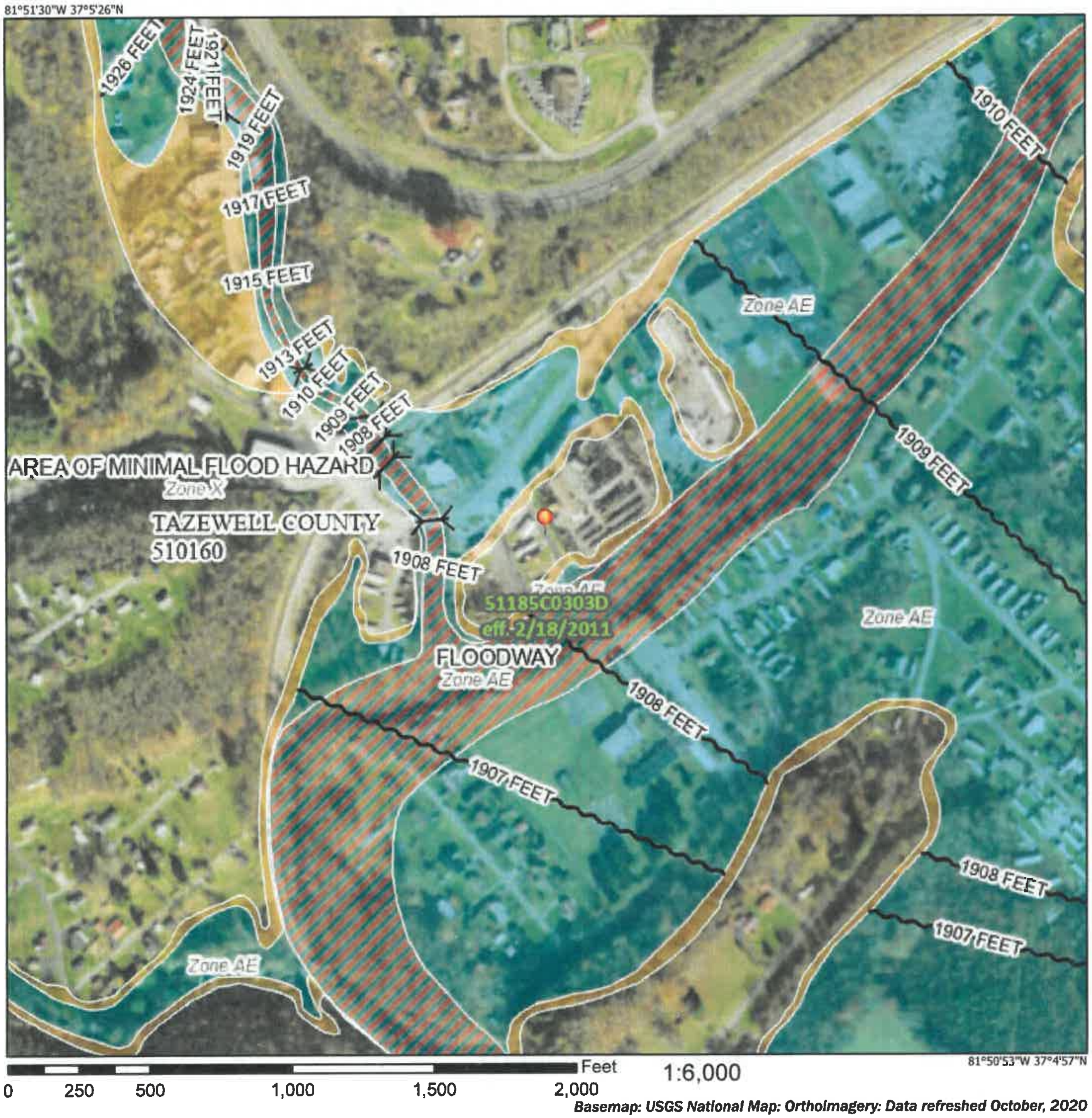
NOTE: 2019 VIRGINIA GEOGRAPHIC INFORMATION NETWORK (VGIN)

Stantec 5209 Center Street Williamsburg, VA 23188 PHONE: (757) 220-6869 FAX: (757) 229-4507	FOR: FIRSTEARTH 2030 TAZEWELL COUNTY, VIRGINIA		TAZEWELL #6 BLUESTONE RIVER AT BIG BRANCH ROAD	FIGURE: 7
	JOB NUMBER:	DRAWN BY: SS	CHECKED BY: SS	APPROVED BY: TC
				DATE: MARCH 2022

FILEPATH:C:\Users\sshelton\AppData\Local\Temp\AcPublish_23228\Unsaved Drawing2.dwg|sshelton|Mar 30, 2022 at 12:16|Layout: #7

National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	☐	Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	ııııııı	Levee, Dike, or Floodwall
OTHER FEATURES	Ⓑ 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/22/2022 at 3:56 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟨	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- - - -	Channel, Culvert, or Storm Sewer
	ıııııı	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

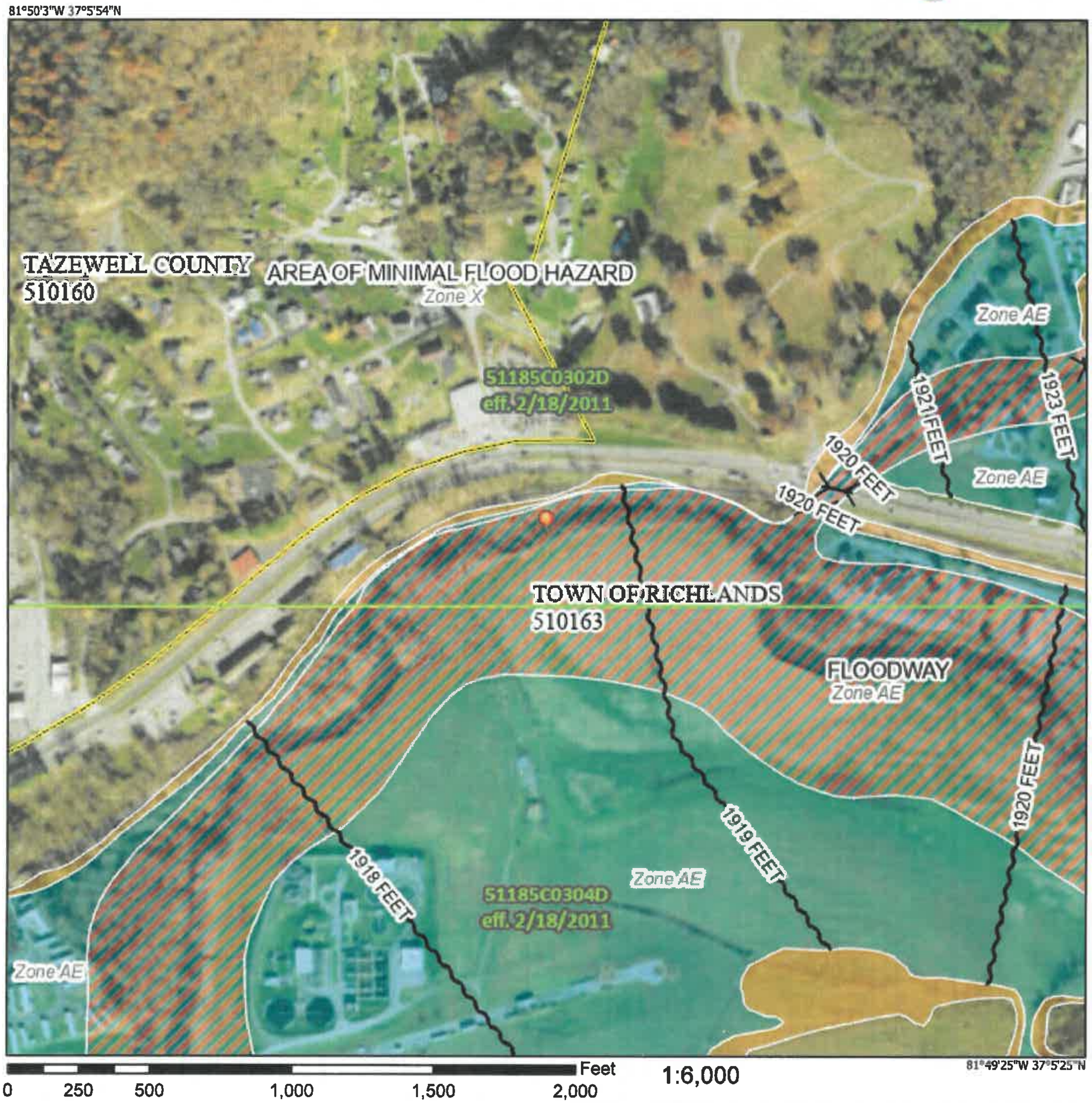
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2022 at 7:19 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	ⅼⅼⅼⅼⅼⅼⅼ	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~513~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	⬚	No Digital Data Available
	☒	Unmapped
	📍	The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2022 at 7:26 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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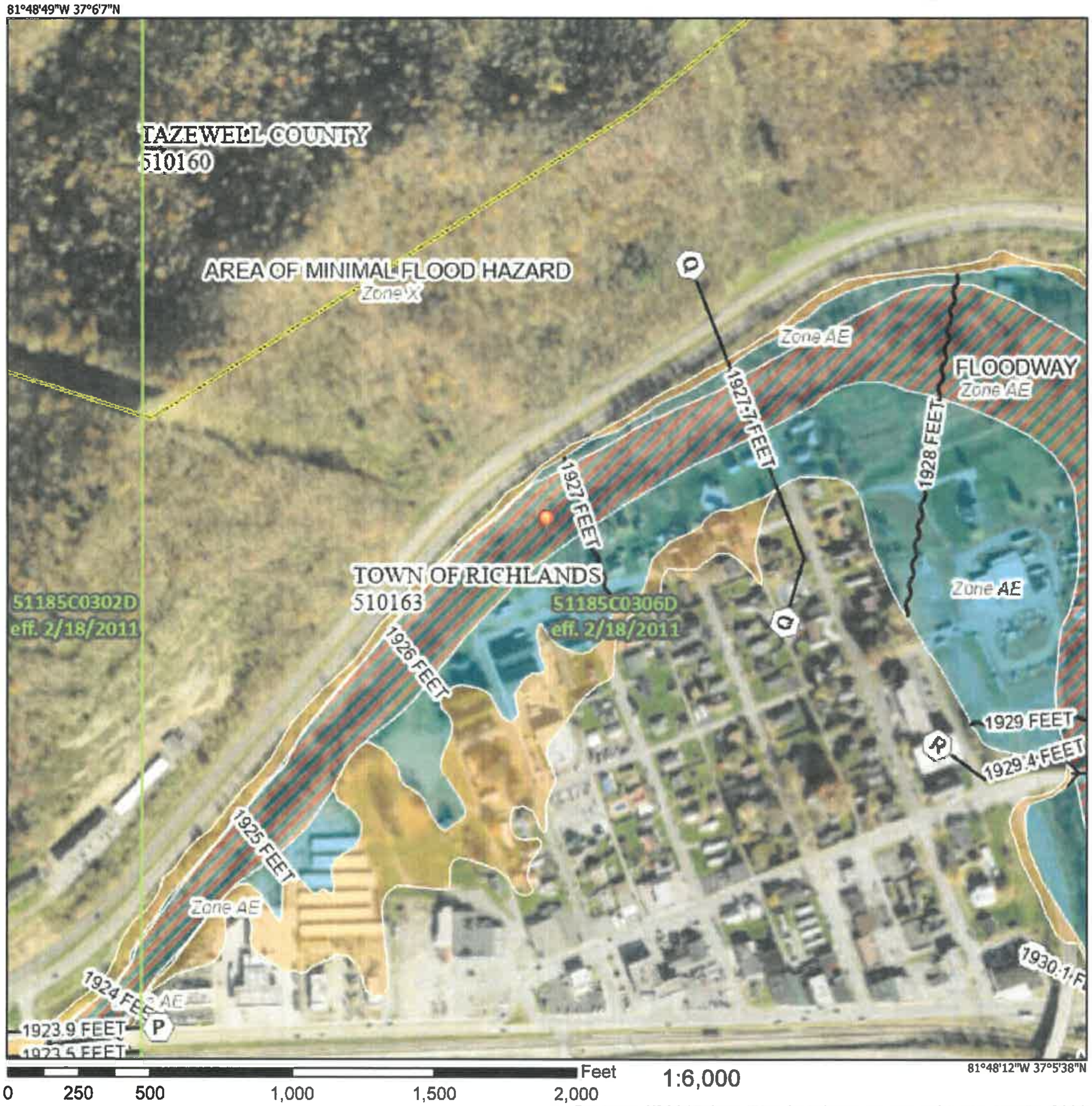
National Flood Hazard Layer FIRMette

FEMA



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟨	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	☐	Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- — - -	Channel, Culvert, or Storm Sewer
	ııııııı	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	-- --- --	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped
	📍	The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2022 at 7:35 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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National Flood Hazard Layer FIRMette

FEMA

81°48'5"W 37°6'17"N

81°47'28"W 37°5'49"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	▨	Future Conditions 1% Annual Chance Flood Hazard Zone X
	▨	Area with Reduced Flood Risk due to Levee. See Notes. Zone X
	▨	Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard Zone X
	▭	Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	– – –	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 – – –	Coastal Transect
	~~ 17 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2022 at 7:37 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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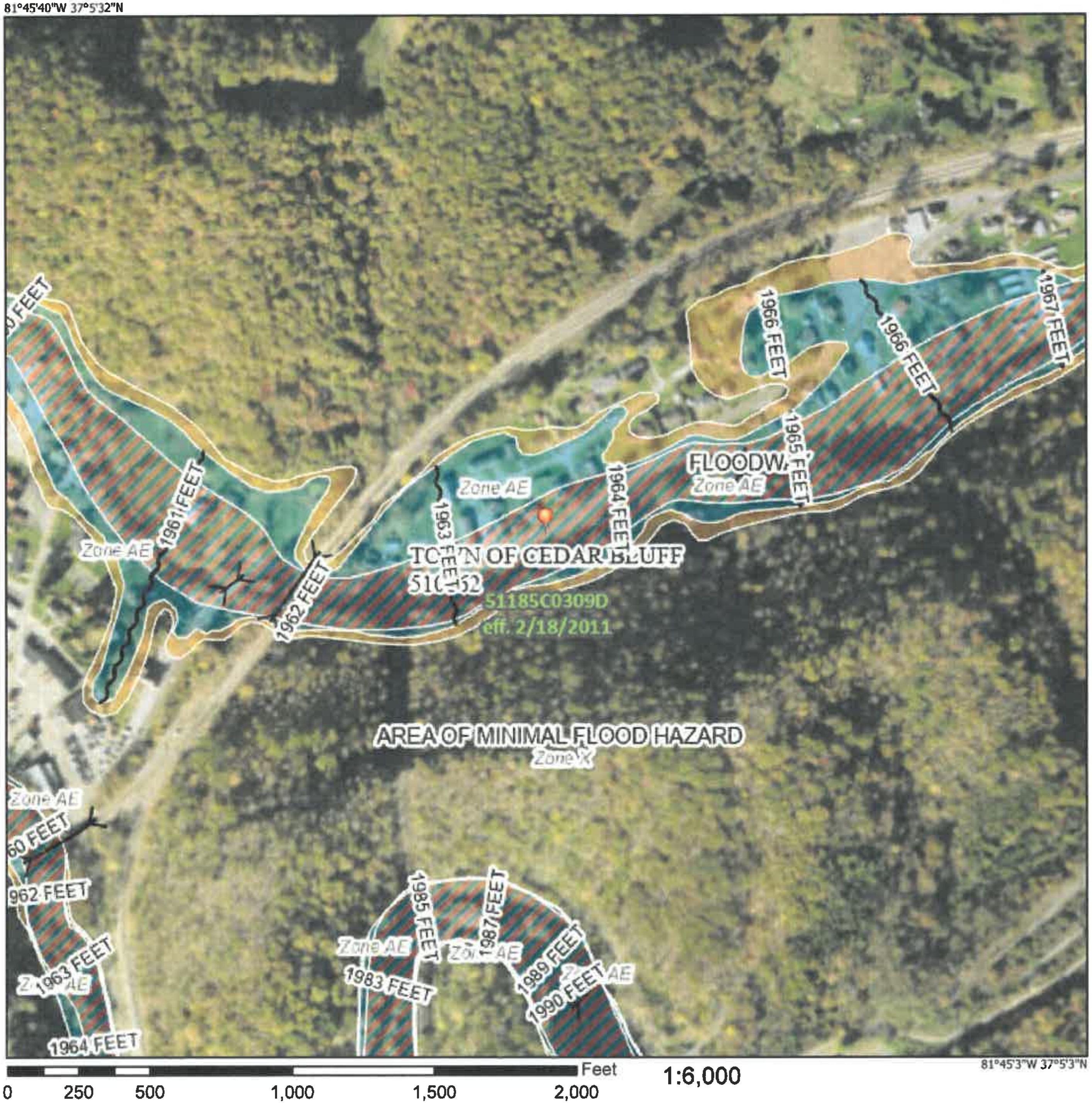
National Flood Hazard Layer FIRMette

FEMA

81°45'40"W 37°5'32"N



81°45'3"W 37°5'3"N

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- ☐ Digital Data Available
- ☐ No Digital Data Available
- ☒ Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2022 at 8:57 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

81°44'54"W 37°5'42"N

1:6,000

81°44'17"W 37°5'14"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	☐	Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	(B) 20.2	Cross Sections with 1% Annual Chance
	17.5	Water Surface Elevation
	8 — — —	Coastal Transect
	~~513~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	—	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

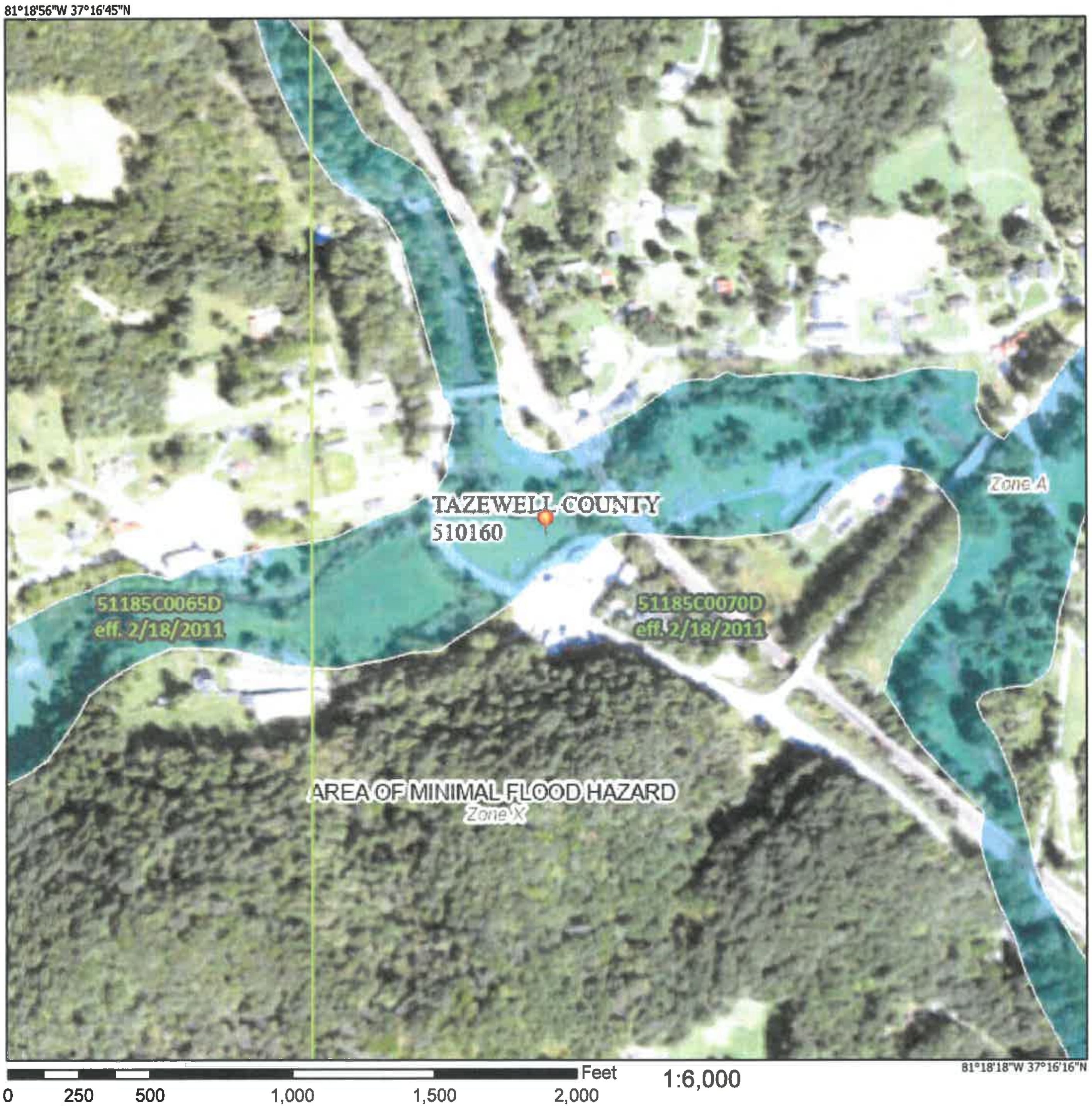
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2022 at 10:01 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟨	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	☐	Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- — - -	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 — — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	—	Limit of Study
	—	Jurisdiction Boundary
	--- ----	Coastal Transect Baseline
	- —	Profile Baseline
	—	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

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The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2022 at 9:58 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

https://www.bdtonline.com/news/state-of-emergency-declared-in-tazewell-county-due-to-flooding/article_732adc66-48fe-11ea-ab01-67b21dc9e50c.html

BREAKING FEATURED

State of emergency declared in Tazewell County due to flooding

By CHARLES OWENS Bluefield Daily Telegraph
Feb 6, 2020

Photo by Larry Hypes

The Bluestone River at Falls Mills was a roaring torrent Thursday evening with small creeks pouring water into yards and fields in the soggy weather pattern.

TAZEWELL, Va. — A state of emergency has been declared in Tazewell County due to flooding.

All county offices, the courthouse and the sheriffs office are closed for the remainder of the day, according to a statement by the Tazewell County Sheriff's Office.

The statement said currently there is one shelter open at the Richlands Police Department for anyone displaced by flooding.

A flash flood warning remains in effect for Tazewell County. According to the National Weather Service in Blacksburg, Va., significant flooding is occurring in parts of the region. The forecast warns that the Clinch River in Tazewell County may reach flood heights not seen in over 40 years.

The warning states the Clinch River is already above flood stage, and is expected to crest around 15 feet.

If this were to occur, this would be the highest readings since November of 2003 or earlier, the flash flood warning said. A local emergency has been declared and evacuations in the vicinity of the Clinch River may be needed shortly, the warning states.

Robert Beasley, a meteorologist with the National Weather Service in Blacksburg, Va. said that he and his colleagues have been monitoring this storm system for about a week.

"We have been looking at this for several days and it has been concerning us for almost a week," Beasely said. "It is a little unprecedented because we usually do not have air that is this moist at this time of the year."

According to Beasely, the situation in Tazewell,Va. remains serious. "It has been really bad more in the Richlands and Tazewell areas," he said.

As of 2:30 p.m., Tazewell County emergency dispatch stated that no water rescues have been reported there and no major problems, just a lot of minor flooding.

This story will be updated as more details become available.

Town of Richlands sees blocked roads as river banks flood Monday morning

By **Jacob Comer** - March 1, 2021 5:37 pm

RICHLANDS, VA (WOAY) – Early Monday morning, the Town of Richlands saw river banks begin to flood.

Police began to block off flooded roads and along with fire and rescue, they began knocking on doors, letting residents know about the potential danger.

"Most of the roads we've concentrated on are residential streets," Richlands Police Chief Jerry Gilbert said. "Letting people know the water was rising and they may want to consider evacuating their homes and moving to higher ground."

This isn't the first time the Town of Richlands has seen flooding of this caliber. There were two significant floods last year, one of which saw water nearly reach the main downtown roadway.

One of those previous floods happened in February of 2020, and saw more than 200 people evacuated from their homes due to rising waters. This flooding is not as serious as the previous year's, but water has begun to cross some streets and some roads are blocked off.

According to Tazewell County Public Schools, the county took precautions and even let some students go home early.

"We had some high water in the Richlands area and we wanted to make sure the students could get home safely and that our bus drivers could carry them safely on the buses," Tazewell Schools PR Director Lindsey Mullins said.

Gilbert added that while this flooding is not as bad as last year's, people should still be vigilant and never drive through flooded roadways.

"Do not drive through the water. We don't know what's underneath. We don't want anybody getting off in a ditch or anything, flooding out in the middle of the water."

Jacob Comer

✉

COMMONWEALTH OF VIRGINIA
HOUSE OF DELEGATES
RICHMOND

JAMES W. (WILL) MOREFIELD
POST OFFICE BOX 828
NORTH TAZEWELL, VIRGINIA 24630

THIRD DISTRICT

COMMITTEE ASSIGNMENTS:

APPROPRIATIONS
GENERAL LAWS
COUNTIES, CITIES, AND TOWNS

March 24, 2022

Wendy Howard-Cooper
Director for Dam Safety and Floodplain Management
Department of Recreation and Conservation
600 East Main Street, 24th Floor
Richmond VA 23219

Re: CFPF application from Tazewell County

Dear Ms. Howard-Cooper and Members of the Review Team,

I write to you in enthusiastic support of the application from Tazewell County for a grant in the Capacity Building and Planning category of the Community Flood Preparedness Fund.

I am a longtime advocate of bringing resources to bear on the recurrent flooding in my district. As we have seen ever more often in recent years, Southwest Virginia's coalfields, abandoned mines, historic towns, and critical roadways are at risk from riverine flooding. Your past support for capacity-building and problem-solving in Southwest Virginia and the Coalfields has been gladly welcomed – and it continues to be badly needed.

By creating a resilience plan with Community Flood Preparedness Fund support in the coming months, then seeking future grant support for projects to implement the plan, Tazewell County will be able to prevent flooding and stabilize its losses. As a low-income county with two federally designated Opportunity Zones, it will then be able to use its revenues for other community needs and aspirations.

Thank you for your considerations and please do not hesitate to contact me if you have any questions.

Sincerely,

Will

DISTRICT: (276) 345-4300 • RICHMOND: (804) 698-1003 • EMAIL: DELJMOREFIELD@HOUSE.VIRGINIA.GOV

Chapter 8 - FLOOD DAMAGE PREVENTION

TITLE

TAZEWELL COUNTY FLOOD DAMAGE PREVENTION ORDINANCE, IN ACCORDANCE WITH SECTION 15.1-431 OF THE CODE OF VIRGINIA, (1950), AS AMENDED. ;FL;

Footnotes:

--- (1) ---

Editor's note— *Ord. adopted Jan. 11, 2011, repealed the former Ch. 8, Arts. I—IV, §§ 8-1—8-9, 8-36, 8-37, 8-61—8-64, 8-86—8-90, and enacted a new Ch. 8 as set out herein. The former Ch. 8 pertained to similar subject matter and derived from an ordinance adopted Sept. 10, 1990.*

Cross reference— *Erosion and sediment control, Ch. 6; fire prevention and protection, Ch. 7; housing, Ch. 9; mobile homes, Ch. 11; planning and development, Ch. 15; sewers and drains, Ch. 16; subdivisions, App. A; flood provisions under subdivision ordinance, App. A, § 4-3.*

State Law reference— *Flood Damage Reduction Act, Code of Virginia, § 10.1-600 et seq.; comprehensive flood control program, Code of Virginia, §§ 10.1-658, 10.1-659.*

ARTICLE I. - GENERAL PROVISIONS

Sec. 8-1. - Statutory authorization and purpose.

This chapter is adopted pursuant to the authority granted by Code of Virginia § 15.2-2280. The purpose of these provisions is to prevent: The loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

(1) Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;

(2) Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;

(3) Requiring all those uses, activities, and developments that do occur in floodprone districts to be protected and/or floodproofed against flooding and flood damage; and,

(4) Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

(Ord. of 1-11-11(1), § 1.1)

Sec. 8-2. - Applicability.

These provisions shall apply to all privately and publicly-owned lands within jurisdiction of the unincorporated portions of Tazewell County, Virginia, and identified as being floodprone.

(Ord. of 1-11-11(1), § 1.2)

Sec. 8-3. - Compliance and liability.

(a) No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this chapter and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this chapter.

(b) The degree of flood protection sought by the provisions of this chapter is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study, but does not imply total flood protection. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This chapter does not imply that districts outside the floodplain district or land uses permitted within such district will be free from flooding or flood damages.

(c) Records of actions associated with administering this chapter shall be kept on file and maintained by the Department of Building Safety or such other custodian as may from time to time be selected by the Board of Supervisors by resolution.

(d) This chapter shall not create liability on the part of Tazewell County or any officer or employee thereof for any flood damages that result from reliance on this chapter or any administrative decision lawfully made there under.

(Ord. of 1-11-11(1), § 1.3)

Sec. 8-4. - Abrogation and greater restrictions.

This chapter supersedes any ordinance currently in effect in floodprone areas. Any ordinance, however, shall remain in full force and effect to the extent that its provisions are more restrictive.

(Ord. of 1-11-11(1), § 1.4)

Sec. 8-5. - Severability.

If any section, subsection, paragraph, sentence, clause, or phrase of this chapter shall be declared invalid for any reason whatever, such decision shall not affect the remaining portions of this chapter. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of this chapter are hereby declared to be severable.

(Ord. of 1-11-11(1), § 1.5)

Sec. 8-6. - Penalty for violations.

Any person who fails to comply with any of the requirements or provisions of this article or directions of the director of planning or any authorized employee of Tazewell County shall be guilty of a misdemeanor and subject to the penalties there for.

In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this article. The imposition of a fine or penalty for any violation of, or noncompliance with, this article shall not excuse the violation or noncompliance or permit it to continue; and all such persons shall be required to correct or remedy such violations or noncompliance within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in noncompliance with this article may be condemned, declared to be a public nuisance, and be abatable as such. Flood insurance may be withheld from structures constructed in violation of this article.

(Ord. of 1-11-11(1), § 1.6)

Secs. 8-7—8-15. - Reserved.

ARTICLE II. - DEFINITIONS

Sec. 8-16. - Definitions.

[The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:]

Base flood. The flood having a one-percent chance of being equaled or exceeded in any given year.

Base flood elevation. The Federal Emergency Management Agency designated 100-year water surface elevation. The water surface elevation of the base flood in relation to the datum specified on the community's flood insurance rate map. For the purposes of this chapter, the 100-year flood or one-percent annual chance flood.

Basement. Any area of the building having its floor sub-grade (below ground level) on all sides.

Board of appeals. The board designated by separate ordinance to review appeals made by individuals with regard to decisions of the ordinance administrator in the interpretation of this chapter until such time as an appeals board is so designated, all appeals shall be presented to the board of supervisors.

Development. Any manmade change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

Elevated building. A nonbasement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, or columns (posts and piers).

Encroachment. The advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

Flood or *flooding:*

(1) A general or temporary condition of partial or complete inundation of normally dry land areas from:
   a. The overflow of inland or tidal waters; or
   b. The unusual and rapid accumulation or runoff of surface waters from any source.
   c. Mudflows which are proximately caused by flooding as defined in paragraph (1)b. of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

(2) The collapse or subsistence of land along the shore of a lake or other body of water as a result of erosion or und caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually hi level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature such as f or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as de paragraph (1)a. of this definition.

Flood insurance rate map (FIRM). An official map of a community, on which the administrator has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has made available digitally is called a digital flood insurance rate map (DFIRM).

Flood insurance study (FIS). An examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards.

Floodplain or *floodprone area.* Any land area susceptible to being inundated by water from any source.

Floodproofing. Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

Floodway. The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

Freeboard. A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization in the watershed. When a freeboard is included in the height of a structure, the flood insurance premiums may be cheaper.

Highest adjacent grade. The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

Historic structure. Any structure that is:

(1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

(2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

(3) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or

(4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

a. By an approved state program as determined by the Secretary of the Interior; or

b. Directly by the Secretary of the Interior in states without approved programs.

Lowest floor. The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable nonelevation design requirements of Federal Code 44CFR § 60.3.

Manufactured home. A structure, transportable in one (1) or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than one hundred eighty (180) consecutive days, but does not include a recreational vehicle.

Manufactured home park or subdivision. A parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

New construction. For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after the enactment of this chapter, or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, new construction means structures for which the start of construction commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

Recreational vehicle. A vehicle which is:

(1) Built on a single chassis;

(2) Four hundred (400) square feet or less when measured at the largest horizontal projection;

(3) Designed to be self-propelled or permanently towable by a light duty truck; and

(4) Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

Special flood hazard area. The land in the floodplain subject to a one-percent or greater chance of being flooded in any given year as determined in section 8-32 of this chapter.

Start of construction. For other than new construction and substantial improvement, under the Coastal Barriers Resource Act (P.L. - 97-348), means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within one hundred eighty (180) days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Structure. For floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

Substantial damage. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.

Substantial improvement. Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the start of construction of the improvement. This term includes structures which have incurred substantial damage regardless of the actual repair work performed. The term does not, however, include either:

(1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or

(2) Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure.

Violation. The failure of a structure or other development to be fully compliant with the county's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in sections 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4), or (e)(5) is presumed to be in violation until such time as that documentation is provided.

Watercourse. A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

Zoning administrator or *ordinance administrator* or *administrator.* The public official designated by the Tazewell County Board of Supervisors, by separate ordinance or resolution, to administer, interpret and enforce the ordinance for the county.

(Ord. of 1-11-11(1))

Secs. 8-17—8-30. - Reserved.

ARTICLE III.ESTABLISHMENT - OF DISTRICTS

Sec. 8-31. - Description of districts.

(a) *Basis of districts.* The various floodplain districts shall include special flood hazard areas. The basis for the delineation of these districts shall be the flood insurance study (FIS) and the flood insurance rate maps (FIRM) for Tazewell County prepared by the Federal Emergency Management Agency, Federal Insurance Administration, and Tazewell County, dated February 18, 2011, and any subsequent revisions or amendments thereto.

The boundaries of the special flood hazard area and floodplain districts are established as shown on the flood insurance rate map which is declared to be a part of this chapter and which shall be kept on file at the Tazewell

County Building Safety office.

(1) The floodway district is delineated, for purposes of this chapter, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the 100-year flood without increasing the water surface elevation of that flood more than one (1) foot at any point. The areas included in this District are specifically defined in the above-referenced flood insurance study and shown on the accompanying flood insurance rate map.

(2) The special floodplain district shall be those areas identified as an AE zone on the maps accompanying the flood Insurance Study for which 100-year flood elevations have been provided.

(3) The approximated floodplain district shall be those areas identified as an A or A99 zone on the maps accompanying the flood insurance study. In these zones, no detailed flood profiles or elevations are provided, but the 100-year floodplain boundary has been approximated. For these areas, the 100-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific 100-year flood elevation cannot be determined for this area using other sources of data, such as the U.S. Army Corps of Engineers Flood Plain Information Reports, U.S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this elevation in accordance with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the governing body.

(b) *Overlay concept.*

(1) The floodplain districts described above shall be overlays to districts as shown on any future official zoning ordinance map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

(2) If there is any conflict between the provisions or requirements of the floodplain districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.

(3) In the event any provision concerning a floodplain district is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

(Ord. of 1-11-11(1), § 3.1)

Sec. 8-32. - District boundary changes.

The delineation of any of the floodplain districts may be revised by the Tazewell County Board of Supervisors where natural or manmade changes have occurred and/or where more detailed studies have been conducted or undertaken by the U. S. Army Corps of Engineers or other qualified agency, or an individual documents the need for such change. However, prior to any such change, approval must be obtained from the Federal Insurance Administration.

(Ord. of 1-11-11(1), § 3.3)

Sec. 8-33. - Interpretation of district boundaries.

Initial interpretations of the boundaries of the floodplain districts shall be made by the floodplain ordinance administrator (hereinafter referred to as the ordinance administrator or administrator). Should a dispute arise concerning the boundaries of any of the districts, the board of zoning appeals, or if there being none, the board of supervisors shall make the necessary determination. The person questioning or contesting the location of the district boundary shall be given a reasonable opportunity to present his case to the board and to submit his own technical evidence if he so desires.

(Ord. of 1-11-11(1), § 3.4)

Sec. 8-34. - Submitting technical data.

A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six (6) months after the date such information becomes available, a community shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and floodplain management requirements will be based upon current data.

(Ord. of 1-11-11(1), § 3.5)

Secs. 8-35—8-50. - Reserved.

ARTICLE IV. - DISTRICT PROVISIONS

Sec. 8-51. - Permit and application requirements.

(a) *Permit requirement.* All uses, activities, and development occurring within any floodplain district, including placement of manufactured homes, shall be undertaken only upon the issuance of a floodplain building permit. Such development shall be undertaken only in strict compliance with the provisions of this chapter and with all other applicable codes and ordinances, as amended, such as the Virginia Uniform Statewide Building Code (VA USBC) and the Tazewell County Subdivision Ordinance. Prior to the issuance of any such permit, the administrator shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system.

(b) *Site plans and permit applications.* All applications for development within any floodplain district and all building permits issued for the floodplain shall incorporate the following information:

(1) The elevation of the base flood at the site.

(2) The elevation of the lowest floor (including basement).

(3) For structures to be floodproofed (nonresidential only), the elevation to which the structure will be floodproofed.

(4) Topographic information showing existing and proposed ground elevations.

(Ord. of 1-11-11(1), § 4.1)

Sec. 8-52. - General standards.

The following provisions shall apply to all permits:

(1) New construction and substantial improvements shall be according to the VA USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.

(2) Manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state anchoring requirements for resisting wind forces.

(3) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(4) New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

(5) Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(6) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

(7) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters.

(8) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

In addition to provisions (1)—(8) above, in all special flood hazard areas, the additional provisions shall apply:

(9) Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U. S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, in riverine areas, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and the Federal Insurance Administrator.

(10) The flood-carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

(Ord. of 1-11-11(1), § 4.2)

Sec. 8-53. - Specific standards.

In all special flood hazard areas where base flood elevations have been provided in the flood insurance study or generated according section 8-56, the following provisions shall apply:

(1) *Residential construction.* New construction or substantial improvement of any residential structure, including manufactured homes, shall have the lowest floor, including basement, elevated to or above the base flood level of at least one (1) foot above the base flood level.

(2) *Nonresidential construction.* New construction or substantial improvement of any commercial, industrial, or nonresidential building or manufactured home shall have the lowest floor, including basement, elevated to or above the base flood level of at least one (1) foot above the base flood level. Buildings located in all A1—30, AE, and AH zones may be floodproofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the BFE plus one (1) foot are water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification, including the specific elevation to which such structures are floodproofed, shall be maintained by the ordinance administrator.

(3) *Elevated buildings.* Fully enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

a. Not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

b. Be constructed entirely of flood-resistant materials below the regulatory flood protection elevation;

c. Include, in zones A, AO, AE, and A1—30, measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:

1. Provide a minimum of two (2) openings on different sides of each enclosed area subject to flooding.
2. The total net area of all openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding.
3. If a building has more than one (1) enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.
4. The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade.
5. Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.
6. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

(4) *Standards for manufactured homes and recreational vehicles.*

a. All manufactured homes placed, or substantially improved, on individual lots or parcels, in expansions to existing manufactured home parks or subdivisions, in a new manufactured home park or subdivision or in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial damage as the result of a flood, must meet all the requirements for new construction, including the elevation and anchoring requirements in subsection 8-52(1) and (2), and subsection 8-53(1).

b. All recreational vehicles placed on sites must either:

1. Be on the site for fewer than one hundred eighty (180) consecutive days;
2. Be fully licensed and ready for highway use: A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions; or
3. Meet all the requirements for manufactured homes in sections 8-52 and 8-53(4).

(Ord. of 1-11-11(1), § 4.3)

Sec. 8-54. - Standards for the floodway district.

The following provisions shall apply within the floodway district:

(1) Encroachments, including fill, new construction, substantial improvements and other developments are prohibited unless certification such as hydrologic and hydraulic analyses (with supporting technical data) is provided demonstrating that encroachments shall not result in any increase in flood levels during occurrence of the base flood. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the ordinance administrator.

Development activities which increase the water surface elevation of the base flood may be allowed, provided that the applicant first applies, with the ordinance administrator's endorsement, for a conditional flood insurance rate map and floodway revision, and receives the approval of the Federal Emergency Management Agency.

(2) If section 8-56 is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of article IV.

(3) The placement of manufactured homes (mobile homes) is prohibited, except in an existing manufactured homes (mobile homes) park or subdivision. A replacement manufactured home may be placed on a lot in an existing manufactured home park or subdivision provided the anchoring, elevation, and encroachment standards are met.

(Ord. of 1-11-11(1), § 4.4)

Sec. 8-55. - Standards for the special floodplain district.

The following provisions shall apply within the special floodplain district:

Until a regulatory floodway is designated, no new construction, substantial improvements, or other development, including fill, shall be permitted within the areas of special flood hazard, designated as zones A1—30 and AE on the flood insurance rate map, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point on property not owned by the applicant.

Development activities in zones Al—30, AE, and AH, on the county's flood insurance rate map which increase the water surface elevation of the base flood by more than one (1) foot may be allowed, provided that the applicant first applies, with the ordinance administrator's endorsement, for a conditional flood insurance rate map revision, and receives the approval of the Federal Emergency Management Agency.

(Ord. of 1-11-11(1), § 4.5)

Sec. 8-56. - Standards for approximated floodplain.

The following provisions shall apply with the approximate floodplain district:

The approximated floodplain district shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated. Such areas are shown as zone A on the maps accompanying the flood insurance study. For these areas, the 100-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific 100-year flood elevation cannot be determined for this area using other sources of data, such as the U. S. Army Corps of Engineers Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this elevation. For development proposed in the approximate floodplain the applicant must use technical methods that correctly reflect currently accepted technical concepts, such as point on boundary, high water marks, or hydrologic and hydraulic analyses. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the ordinance administrator.

The ordinance administrator reserves the right to require hydrologic and hydraulic analyses for any development.

When such base flood elevation data is utilized, the lowest floor shall be elevated to or above the base flood level. During the permitting process, the Ordinance Administrator shall obtain:

(1) The elevation of the lowest floor (including the basement) of all new and substantially improved structures; and

(2) If the structure has been floodproofed in accordance with the requirements of this article, the elevation (in relation to mean sea level) to which the structure has been floodproofed.

(Ord. of 1-11-11(1), § 4.6)

Sec. 8-57. - Standards for subdivision proposals.

(a) All subdivision proposals shall be consistent with the need to minimize flood damage;

(b) All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

(c) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards; and

(d) Base flood elevation data shall be provided for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed fifty (50) lots or five (5) acres, whichever is the lesser.

(Ord. of 1-11-11(1), § 4.7)

Secs. 8-58—8-70. - Reserved.

ARTICLE V. - PERMIT PROCESS

Sec. 8-71. - Ordinance administrator review required.

No development or construction may be built in a flood district without a permit issued by the ordinance administrator or a certificate from the ordinance administrator that such development or construction does not come within the jurisdiction of this chapter. persons proposing development or construction in flood districts shall apply for a determination of applicability or a permit from the ordinance administrator.

(Ord. of 1-11-11(1), § 5.1)

Sec. 8-72. - Development or construction permitting.

Applications for permits shall be submitted to the building official's office who shall forward the same to the ordinance administrator. The ordinance administrator shall establish a form for applications. The board of supervisors may by resolution establish a reasonable fee for processing applications.

(1) Permit approval. The ordinance administrator shall, within ten (10) days of submission of an application, (1) determine whether the proposed Development or Construction is within the jurisdiction of this chapter and (2) whether the proposed development or construction would be permitted by this chapter. The ten-day time limit for approval shall be tolled for any application that is incomplete, while such application is incomplete, or for any application where any particular request for additional information is outstanding, until such information is supplied by the applicant.

   a. If development or construction as proposed is not within the jurisdiction of this chapter the ordinance administrator shall provide a certificate to the applicant advising that the structure is not within the jurisdiction of this chapter and advising the building inspector that such construction is not regulated by the ordinance.

   b. If the proposed development or construction is within the jurisdiction of this chapter, the ordinance administrator shall, notify the applicant in writing and advise him that the application is either approved or that it is not approved. If the application is denied the notice shall state the reasons for the denial.

(2) Any notice given pursuant to this section shall advise the applicant of their right to request a variance from ordinance requirements or to appeal any decision of the ordinance administrator to the board of supervisors or zoning board and shall include the date, location and approximate time by which the application for variance or for an appeal must be submitted to the county administrator. Such notice to the applicant shall be in writing sent by certified mail to the address shown on the application. Failure to provide the applicant notice or any defect in notice shall be remedied by tolling the time in which the applicant may request a variance or an appeal until proper notice is given. If no notice is sent to the applicant within thirty (30) days of the date of the application, the applicant may consider the application denied and proceed with an appeal, should the applicant chose to do so.

(3) The applicant shall have thirty (30) days from the date of the notice of denial to file a written request for an appeal or a variance with the county administrator. Failure to note the appeal within thirty (30) days shall forever bar the request for appeal or variance.

(Ord. of 1-11-11(1), § 5.2)

Sec. 8-73. - Appeal and variance process.

(a) Upon receipt of a notice of appeal or variance from a decision of the ordinance administrator, the county administrator shall schedule a hearing before the board of supervisors or zoning board. Where the applicant requests a variance the administrator shall cause a notice of the application for variance to be mailed to all owners of property adjoining the property upon which applicant proposes development or construction not in conformity with the ordinance. Such notice shall be sufficient if mailed by first class U.S. mail to the address of the owner as shown in the commissioner of revenue or treasurer's office. The board of supervisors by resolution may establish a fee for the costs of issuing such notice to be paid by applicants for variances. Such fee shall be established annually.

(b) The board of supervisors or zoning board shall hear the appeal or request for variance within a reasonable time. Should the Board not hear the appeal within six (6) months, the applicant may consider the appeal denied. A conditional variance granted to the applicant may be deemed a denial by the applicant. Notice of the board's decision shall be given to the applicant in the same manner as notice of denial was given to the applicant by the ordinance administrator.

(c) The applicant may appeal the board's decision to the Circuit Court for the County of Tazewell, Virginia by filing a petition with said court within ninety (90) days of the date of the notice of the board's decision.

(Ord. of 1-11-11(1), § 5.3)

Secs. 8-74—8-90. - Reserved.

ARTICLE VI. - APPEALS AND VARIANCES

Sec. 8-91. - Appeals.

Appeals are a claim that the decision of the ordinance administrator was in error. If an appeal is granted by the zoning board the ordinance administrator may appeal the decision of the zoning board to the Circuit Court of Tazewell County, Virginia, by filing a petition with said court within sixty (60) days of the notice of the board's decision.

(Ord. of 1-11-11(1), § 6.1)

Sec. 8-92. - Variances.

Variances are a request that the regulations contained in the ordinance not be applied to the applicant's proposed Development or Construction.

(Ord. of 1-11-11(1), § 6.2)

Secs. 8-93—8-100. - Reserved.

ARTICLE VII. - FACTORS TO BE CONSIDERED

Sec. 8-101. - Factors to be considered.

Variances shall be issued only upon (i) a showing of good and sufficient cause, (ii) after the board of zoning appeals or board of supervisors has determined that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) after the board of zoning appeals or board of supervisors has determined that the granting of such variance will not result in (a) unacceptable or prohibited increases in flood heights, (b) additional threats to public safety, (c) extraordinary public expense; and will not (d) create nuisances, (e) cause fraud or victimization of the public, or (f) conflict with local laws or ordinances.

While the granting of variances generally is limited to a lot size less than one-half (½) acre, deviations from that limitation may occur. However, as the lot size increases beyond one-half (½) acre, the technical justification required for issuing a variance increases. Variances may be issued by the board of zoning appeals or board of supervisors for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, in conformance with the provisions of this section.

Variances may be issued for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that the criteria of this section are met, and the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

In passing upon applications for variances, the board of zoning appeals or board of supervisors shall satisfy all relevant factors and procedures specified in other sections of the County's ordinances and consider the following additional factors:

(1) The danger to life and property due to increased flood heights or velocities caused by encroachments. No variance shall be granted for any proposed use, development, or activity within any floodway district that will cause any increase in the 100-year flood elevation.

(2) The danger that materials may be swept on to other lands or downstream to the injury of others.

(3) The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.

(4) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.

(5) The importance of the services provided by the proposed facility to the community.

(6) The requirements of the facility for a waterfront location.

(7) The availability of alternative locations not subject to flooding for the proposed use.

(8) The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.

(9) The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.

(10) The safety of access by ordinary and emergency vehicles to the property in time of flood.

(11) The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters expected at the site.

(12) The historic nature of a structure. Variances for repair or rehabilitation of historic structures may be granted upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

(13) Such other factors which are relevant to the purposes of this chapter.

The board of zoning appeals or board of supervisors may refer any application and accompanying documentation pertaining to any request for a variance to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for flood protection and other related matters.

Variances shall be issued only after the board of zoning appeals or board of supervisors has determined that the granting of such will not result in (a) unacceptable or prohibited increases in flood heights, (b) additional threats to public safety, (c) extraordinary public expense; and will not (d) create nuisances, (e) cause fraud or victimization of the public, or (f) conflict with local laws or ordinances.

Variances shall be issued only after the board of zoning appeals or board of supervisors has determined that the variance will be the minimum required to provide relief.

The board of zoning appeals or board of supervisors shall notify the applicant for a variance, in writing and signed by title of appropriate public official, that the issuance of a variance to construct a structure below the 100-year flood elevation (a) increases the risks to life and property and (b) will result in increased premium rates for flood insurance.

A record shall be maintained of the above notification as well as all variance actions, including justification for the issuance of the variances. Any variances that are issued shall be noted in the annual or biennial report submitted to the Federal Insurance Administrator.

(Ord. of 1-11-11(1))

Secs. 8-102—8-110. - Reserved.

ARTICLE VIII. - EXISTING STRUCTURES IN FLOODPLAIN AREAS

Sec. 8-111. - Existing structures in floodplain areas.

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

(1) Existing structures in the floodway area shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion would not result in an increase in the base flood elevation of more than one (1) foot.

(2) Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain areas to an extent or amount of less than fifty (50) percent of its market value shall conform to the VA USBC.

(3) The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its location in a floodplain area to an extent or amount of fifty (50) percent or more of its market value shall be undertaken only in full compliance with this chapter and shall require the entire structure to conform to the VA USBC.

(Ord. of 1-11-11(1))

Secs. 8-112—8-120. - Reserved.

ARTICLE IX. - OTHER PERMITS NOT TO BE ISSUED

Sec. 8-121. - Other permits not to be issued.

The office of building safety, or such other agency as may be delegated responsibility for enforcement of the building code, shall not issue a permit for development or construction on property located in flood districts without a letter of authorization from the ordinance administrator. The county engineer's office or such other agency as may be delegated responsibility for enforcement of the county's erosion and sediment control laws, shall not issue a permit for development or construction on property located in flood districts without a letter of authorization from the ordinance administrator.

(Ord. of 1-11-11(1))

An official website of the United States government

United States Census Bureau

QuickFacts

Tazewell County, Virginia; Virginia

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

Income & Poverty	Tazewell County, Virginia	Virginia
Median household income (in 2020 dollars), 2016-2020	**$42,207**	**$76,398**
PEOPLE		
Income & Poverty		
Median household income (in 2020 dollars), 2016-2020	**$42,207**	**$76,398**
Per capita income in past 12 months (in 2020 dollars), 2016-2020	$25,648	$41,255
Persons in poverty, percent	⚠ 16.4%	⚠ 9.2%

About datasets used in this table

Value Notes

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info ⓘ icon to row in TABLE view to learn about sampling error.

The vintage year (e.g., V2021) refers to the final year of the series (2020 thru 2021). Different vintage years of estimates are not comparable.

Users should exercise caution when comparing 2016-2020 ACS 5-year estimates to other ACS estimates. For more information, please visit the 2020 ACS Comparison Guidance page.

Fact Notes

(a) Includes persons reporting only one race
(c) Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data
(b) Hispanics may be of any race, so also are included in applicable race categories

Value Flags

\- Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper open ended distribution.
F Fewer than 25 firms
D Suppressed to avoid disclosure of confidential information
N Data for this geographic area cannot be displayed because the number of sample cases is too small.
FN Footnote on this item in place of data
X Not applicable
S Suppressed; does not meet publication standards
NA Not available
Z Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income an Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

OpportunityDb
The Opportunity Zones Database

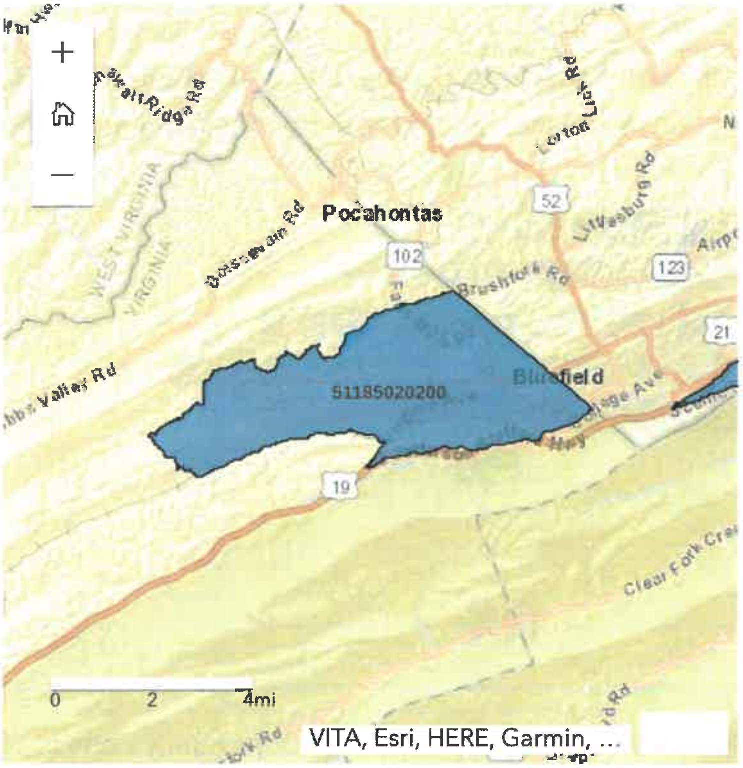
Census Tract 202, Bluefield, Virginia

Census Tract 202 is a **Low-Income Community** Opportunity Zone located in **Bluefield, Virginia**.

This **17 square mile** census tract has a population of approximately **4,900** and is one of 2 Opportunity Zones in **Tazewell County**.

The adjacent map shows the location of this Opportunity Zone in Virginia.

- Opportunity Zone Demographics
- Virginia OZ Funds
- List of Similar Opportunity Zones



View larger map

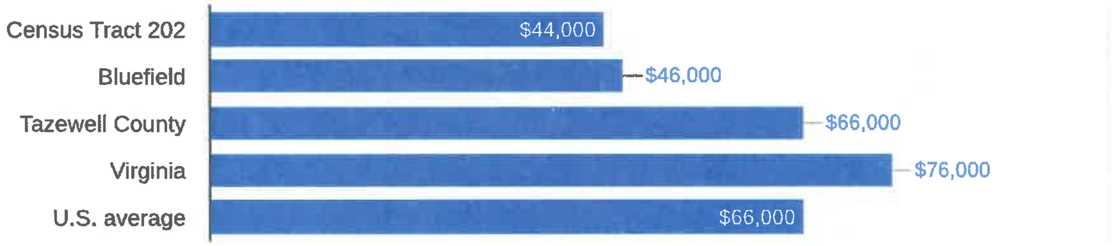
Census Tract 202 Demographics

The charts below illustrate how this Opportunity Zone compares to the broader city, county, and state on various socioeconomic indicators:

Median Household Income

$44K

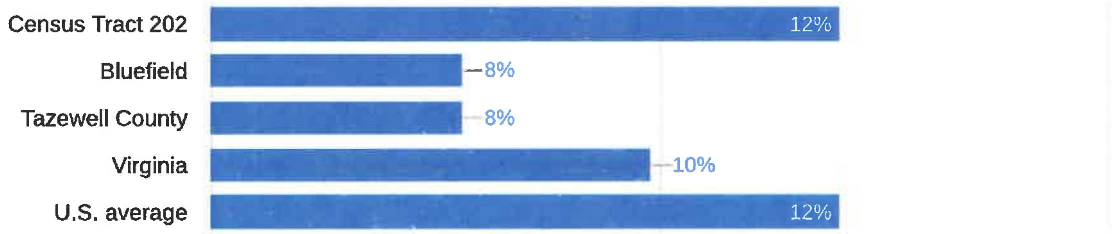
This Opportunity Zone has a **median household income** of approximately **$44,000**, which is **42% lower** than the median household income for the state of Virginia of **$76,000**.



Poverty Rate

12%

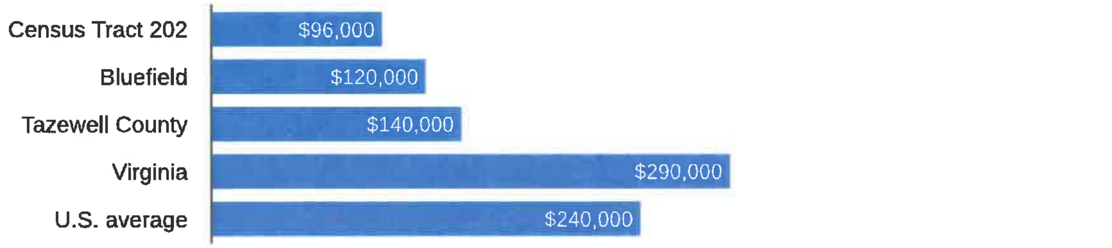
The percentage of households below the poverty line in this Opportunity Zone is **12%**, which is **2% higher** than the rate for the state of Virginia of **9.9%**.



Median Home Value

$96K

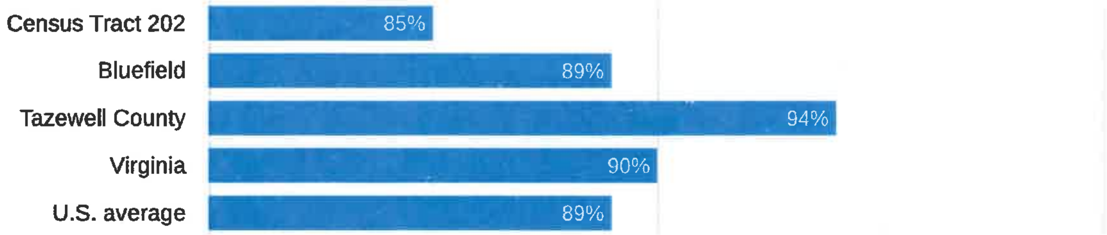
This Opportunity Zone has a **median home value** of approximately **$96,000**, which is **67% lower** than the median home value for the state of Virginia of **$290,000**.



Education

85%

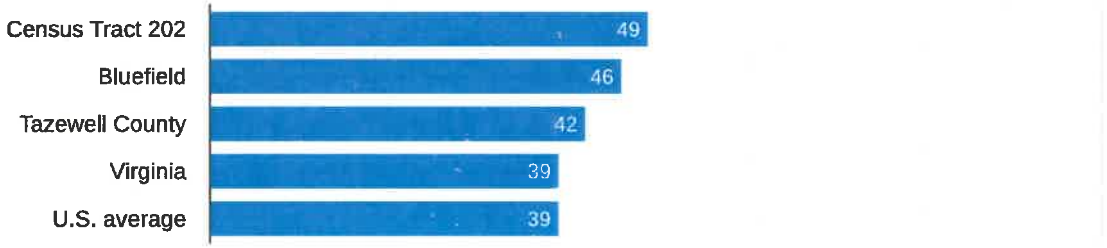
This Opportunity Zone has a **percentage of population with high school diploma** of approximately **85%**, which is **5% lower** than the rate for the state of Virginia of **90%**.



Median Age

49

This Opportunity Zone has a **median age** of approximately **49**, which is **26% higher** than the median age for the state of Virginia of **39**.



Virginia OZ Funds

There are **12 QOZ Funds** in the OpportunityDb database with an investment objective that specifically identify **Virginia** as a target market. Additional OZ funds may also invest in Virginia; see a complete list of Opportunity Zone Funds here.

Fund Name	Asset Classes	Property Types	Fund Size
Accredited Capital	Real Estate	Multi-Family Housing, Residential, Single-Family Housing	$25M

OpportunityDb
The Opportunity Zones Database

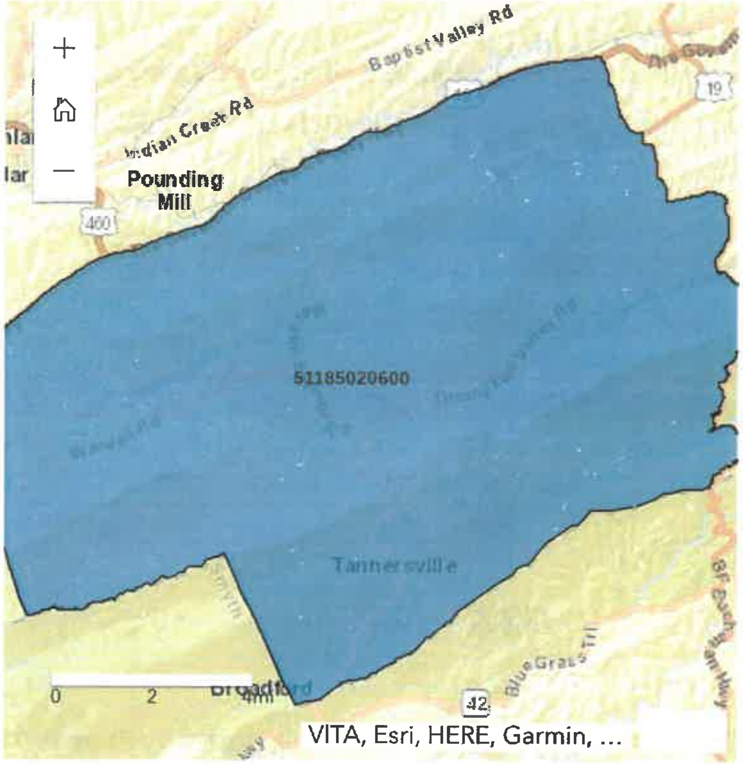
Census Tract 206, Claypool Hill, Virginia

Census Tract 206 is a **Low-Income Community** Opportunity Zone located in **Claypool Hill, Virginia**.

This **120 square mile** census tract has a population of approximately **4,500** and is one of 2 Opportunity Zones in **Tazewell County**.

The adjacent map shows the location of this Opportunity Zone in Virginia.

- Opportunity Zone Demographics
- Virginia OZ Funds
- List of Similar Opportunity Zones



View larger map

Census Tract 206 Demographics

The charts below illustrate how this Opportunity Zone compares to the broader city, county, and state on various socioeconomic indicators:

Median Household Income

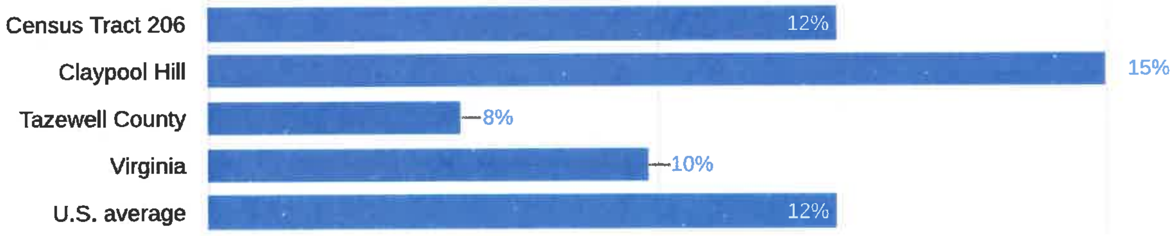
$51K

This Opportunity Zone has a **median household income** of approximately **$51,000**, which is **33% lower** than the median household income for the state of Virginia of **$76,000**.

Poverty Rate

12%

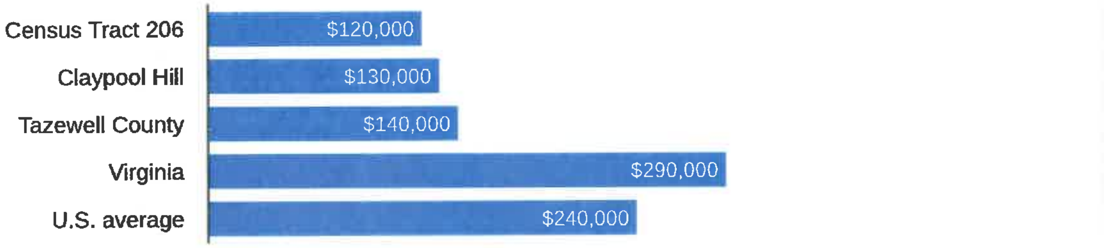
The percentage of households below the poverty line in this Opportunity Zone is **12%**, which is **2% higher** than the rate for the state of Virginia of **9.9%**.



Median Home Value

$123K

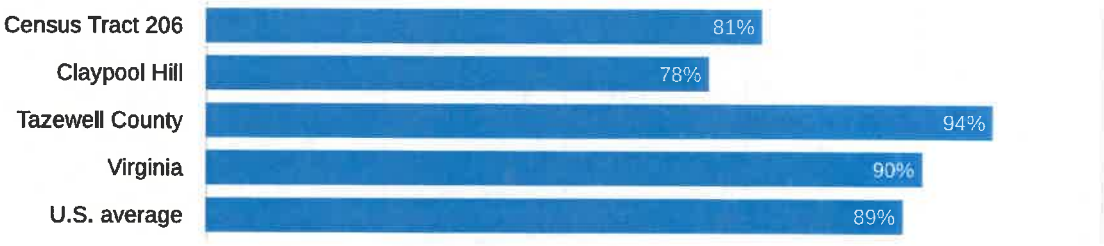
This Opportunity Zone has a **median home value** of approximately **$120,000**, which is **59% lower** than the median home value for the state of Virginia of **$290,000**.



Education

81%

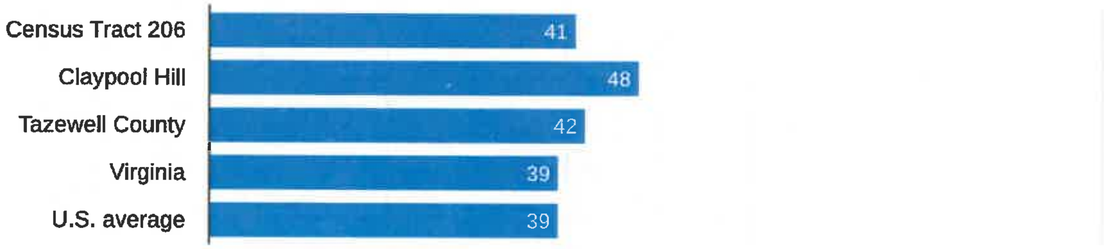
This Opportunity Zone has a **percentage of population with high school diploma** of approximately **81%**, which is **9% lower** than the rate for the state of Virginia of **90%**.



Median Age

41

This Opportunity Zone has a **median age** of approximately **41**, which is **5% higher** than the median age for the state of Virginia of **39**.



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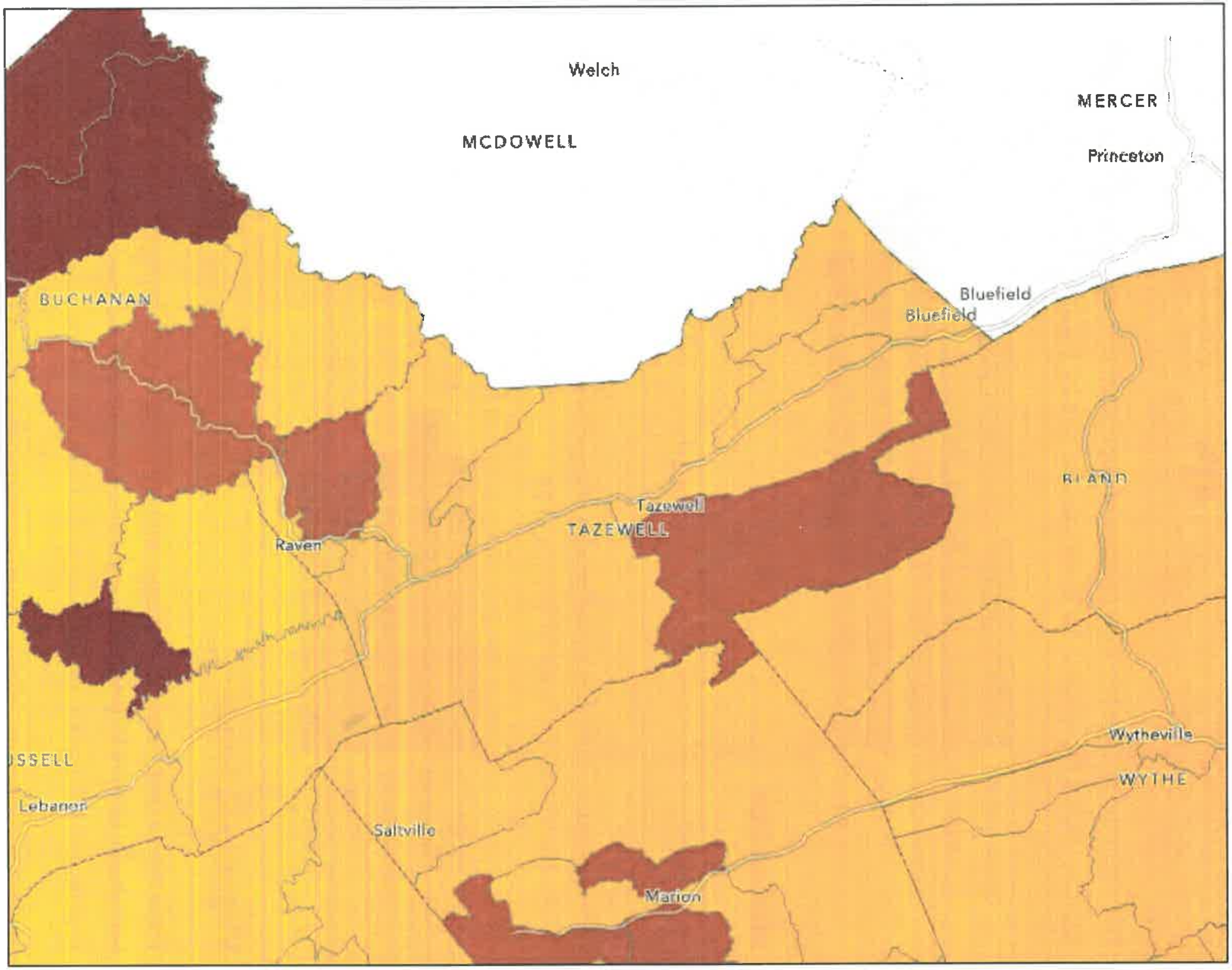
Fund Name	Asset Classes	Property Types	Fund Size
Accredited Capital	Real Estate	Multi-Family Housing, Residential, Single-Family Housing	$25M

Tazewell County Social Vulnerability Index

Social Vulnerability Index Score

- 🟨 Very Low Social Vulnerability
- 🟨 Low Social Vulnerability
- 🟧 Moderate Social Vulnerability
- 🟫 High Social Vulnerability
- 🟫 Very High Social Vulnerability
- ⊠ Not inlcuded in the analysis



March 10, 2022

1:577,791

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science
ADAPT VA

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Tazewell County

Eligibility Information

Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X (n/a)
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☒ Yes ☐ No

Applicant Name:	Tazewell County

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	55	
Development of a new resilience plan.	55	X 55
Resource assessments, planning, strategies and development.	45	X 45
Policy management and/or development.	40	X 40
Stakeholder engagement and strategies.	25	X 25
Goal planning, implementation and evaluation.	25	X 25
Long term maintenance strategy.	25	X 25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	15	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	15	
High Social Vulnerability (1.0 to 1.5)	12	
Moderate Social Vulnerability (0.0 to 1.0)	8	X 8
Low Social Vulnerability (-1.0 to 0.0)	0	
Very Low Social Vulnerability (Less than -1.0)	0	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	10	
No	0	X 0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	10	X 10
No	0	
10. Does this project provide "community scale" benefits?		
Yes	20	X 20
No		
Total Points		253

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☑ N/A
FIRMette of the project area(s) (Projects/Studies)	☑ Yes ☐ No ☑ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☑ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☑ Yes ☐ No ☐ N/A

April 7, 2022

Wendy Howard-Cooper
Director for Dam Safety and Floodplain Management
Department of Recreation and Conservation
600 East Main Street, 24th Floor
Richmond VA 23219

Re: Pledge agreement for match of Tazewell County CFPF application

Dear Ms. Howard-Cooper and Members of the Review Team:

Please accept this joint letter as a pledge agreement providing evidence of the matching contribution for Tazewell County's application to the Capacity Building and Planning (Low Income) category of the third grant round of the Community Flood Preparedness Fund.

The contributor:
First Earth|2030, 3705 Saunders Ave, Richmond VA 23227, 703-447-9505
The applicant organization:
Tazewell County
The title of the project for which the cash contribution is made:
Capacity Building and Planning for Flood Resilience in Tazewell County
The source of funding for the cash contribution:
First Earth|2030's operational funds, held at Virginia National Bank
The dollar amount of the cash contribution:
$36,950

With this letter, First Earth|2030 agrees that if the CFPF grant is awarded, First Earth|2030 will pay the cash contribution during the agreement period.

Thank you, and please contact either of us with questions. We look forward to working with DCR on this project.

Sincerely,

Charles Westbrook
Principal, First Earth|2030

C. Eric Young, Esq.
Tazewell County Administrator

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

First Earth Application Attached

1 message

Susan Jewell <susan.jewell@tazewellcounty.org> Fri, Apr 8, 2022 at 2:08 PM
To: cfpf@dcr.virginia.gov
Cc: charlie@firstearth.eco, andrea@firstearth.eco

--
Susan Jewell, Executive Assistant
Tazewell County Board of Supervisors

197 Main Street
Tazewell, Virginia 24651
276-385-1208
susan.jewell@tazewellcounty.org

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Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: Grayson County

Category of Grant Being Applied for (check one):

__X__Capacity Building/Planning

_____Project

_____Study

NFIP/DCR Community Identification Number (CID): 510243

If a state or federally recognized Indian tribe, Name of tribe ____N/A________

Name of Authorized Official: William Shepley

Signature of Authorized Official: William L. Shepley

Mailing Address (1): 129 Davis Street

City: Independence **State:** VA **Zip:** 24348

Telephone Number: (276) 773-2471 **Cell Phone Number:** (276) 768-7968

Email Address: wshepley@graysoncountyva.gov

Contact Person (If different from authorized official): Paul Hoyle

Mailing Address (1): **122 Davis Street**

Mailing Address (2): **PO Box 217**

City: **Independence** **State:** **VA** **Zip:** **24348**

Telephone Number: **(276) 773-2471 x157** **Cell Phone Number:** **(276) 768-6244**

Email Address: **phoyle@graysoncountyva.gov**

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes __X__ No _____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

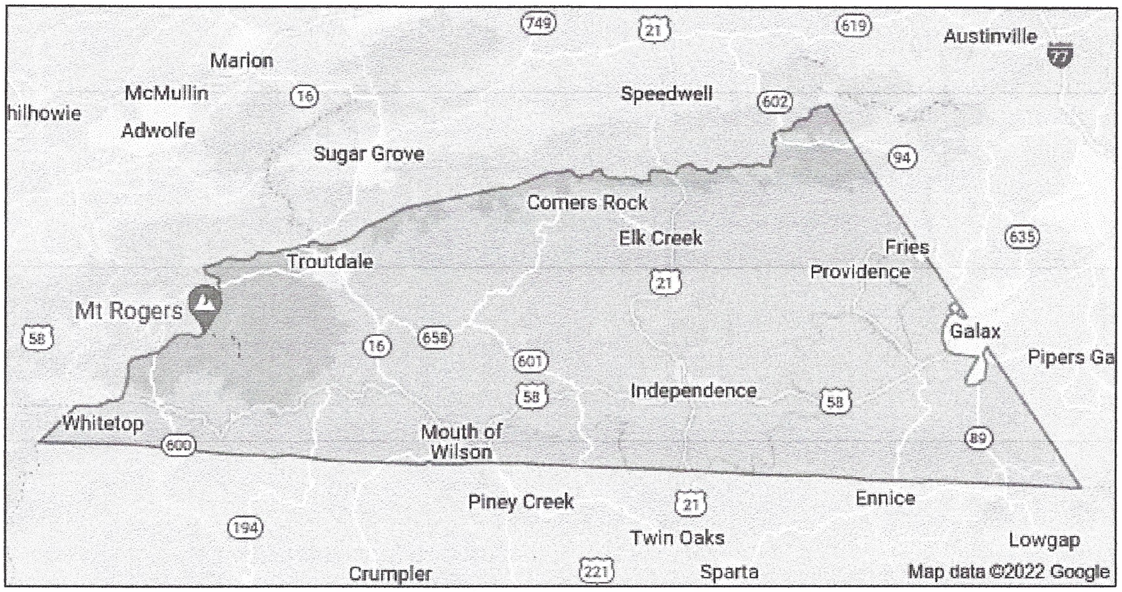
☐ Floodplain Staff Capacity.

X Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Grayson County



NFIP Community Identification Number (CID#): 510243

Is Project Located in an NFIP Participating Community? X Yes ☐ No

Is Project Located in a Special Flood Hazard Area? X Yes ☐ No

Flood Zone(s) (If Applicable): **As shown on applicable FIRM Panels covering Grayson County**

Specific maps and data of Grayson Co. and incorporated areas may be found in the FEMA FLOOD INSURANCE STUDY NUMBER 51077CV000A, found at:
https://drive.google.com/file/d/1iH9cMkPCf31OlGoPOCFBYkJPEXVBxKOr/view?usp=sharing

Flood Insurance Rate Map Number(s) (If Applicable): **Multiple FIRM Panels cover Grayson County**

Total Cost of Project: **$75,565**

Total Amount Requested **$75,565**

Scope of Work Narrative – Capacity Building and Planning

1. The key resource needed by Grayson County at this time is technical assistance in developing a Resilience Plan as outlined by DCR, and certification of the County's Floodplain Manager. The Plan will help determine knowledge, skills and abilities of existing staff and identify any additional staff and/or resources needed. Grayson will collaborate with regional resources and/or seek external funding in order to meet specific needs that may not be available at the county level. The County Emergency Services Coordinator/Director, Public Service Authority will oversee any policy changes and capacity needs as outlined through the Plan. These two key elements will strengthen Grayson's prevention and response to flooding issues working in tandem with the County's integrated system of tracking and documenting disasters and the ability for FEMA to load relevant parcel zone data for quick reporting.

A link to the County Floodplain Ordinance can be found at this link: https://www.graysoncountyva.gov/state-of-virginia-tourism/flood_plain_ordinance/ [click the box for the document to open]

The 2018 County Comprehensive Plan, https://www.graysoncountyva.gov/comprehensive-plan1/ , references flooding as a major concern:

- Strategy 8.2: Conduct education and outreach to floodplain property owners.
- The plan discusses flash flooding as an expected hazard of the mountainous topography and abundance of streams, and discusses that, "Flooding has been identified as the number one hazard for Grayson County and is listed as such in the 2018 update." (p. 11-8, County Comprehensive Plan).
- Floodplain development is guided by the Grayson County Floodplain Ordinance as mandated by Federal Emergency Management Agency (FEMA). (p.11-8)

The 2018 Mount Rogers Hazard Mitigation Plan can be found at this link, https://mrpdc.org/docs/2018%20Hazard%20Mitigation%20Final%20Plan,%2002-06-19.pdf

2. The overarching goal of the proposed project is for Grayson County to respond appropriately to existing repetitive flooding issues as well as identify and prevent potential flooding issues. The objectives are 1) to engage qualified technical assistance to develop a Resilience Plan encompassing required components as stated by DCR and 2) to provide certification of the County's Floodplain Manager. With these items in place, Grayson intends to implement the Plan and further increase capacity to respond and prevent flooding, and specifically, to apply for future DCR funding for construction of an improved stormwater drainage system in the vicinity of Fries Middle School.

3. The requested funding would be utilized to prepare a Flooding Resilience Plan and certify the County Floodplain Manager, benefitting the County and the incorporated municipalities within. Grayson County has been working with the Town of Fries, in particular, as recurrent flooding over several years has been identified at Fries Middle School. Flash flood damage

incidents have been recorded over several years including a period of four years in which the school was closed due to mold damage, with students transferred to other County schools.

4. Once funding is secured, Grayson will procure professional engineering services for a private firm to prepare the Flooding Resilience Plan and register the Floodplain Manager for certification training. The contract with the consultant would stipulate the timeframe for Plan development. It is anticipated that the required timeframe for plan development would be approximately 6-8 months. Grayson County desires to have the Plan and certification completed in sufficient time to identify and request construction funds for the highest priority need during DCR's 2023 construction funding application cycle.

5. Grayson County will engage the expertise of The Lane Group in developing the Resilience Plan. They have worked with Grayson on related projects and are familiar with the County and the region in addition to providing specific expertise for developing the Plan. The County will rely upon guidance from the Lane Group regarding the best pathway for CFM training and certification as well. We have done preliminary research through the VA and National Floodplain Manager Associations.

6. The expected result of the proposed project is a Resilience Plan as outlined by DCR and may include additional components as deemed necessary and/or relevant, and certification of the Floodplain Manager. Success will be measured by the development of said Plan and the certification process. Additional benefits will be capacity building of the County moving forward, and greater potential for funding to address identified flooding issues.

7. The County Emergency Services Coordinator/Director, Public Service Authority in conjunction with relevant partners, collaborators and consultants, will utilize the Plan as a guide in maintaining capacity going forward.

Budget Narrative - Required for All Grant Categories

- ***Estimated total project cost*:**

  The total project cost of $75,565 is composed of:

  - The estimated cost of service for a private consultant to prepare the Grayson County Flooding Resilience Plan is $75,000.
  - The estimated cost of Floodplain Manager training and certification is $565. The County will cover any travel related costs for certification.

- ***Amount of funds requested from the Fund***: This is the total amount of any grant assistance sought from the Fund. Include a detailed breakdown of how this funding is proposed to be allocated. At a minimum this should include a breakdown of salaries, fringe benefits, travel, equipment, supplies, construction, contracts and other direct costs. Please refer to the match requirements in Part II of this manual. For local governments designated as low-income geographic areas, 100 percent of the estimated total project costs should be included.

Grayson County is requesting a waiver of the 10% match, thereby requesting a total of $75,565 from DCR for this project.

As Grayson requests a waiver of the full or partial match (as deemed appropriate by DCR), we provide the following context of the County, which includes the towns of Fries (population of 444) , Troutdale (163), and Independence (877). The population of Grayson County is 15,333. About 50% are ages 50 and older, with 24% being 65 and older, many of whom live alone in remote areas. The county's unemployment rate is 5.5% compared to the state average of 4%. Median family income for Grayson County is $47,900, which is 58% of the median for Virginia, of $81,947.

According to the 2018 Mt. Rogers Planning District Commission Comprehensive Economic Development Strategy, Grayson has the lowest median income in the service area. In a comparison with state data, Kids Count (2018) indicates 27.5% of children live in poverty in Grayson County compared to 13.8% for Virginia, and 23% of children in Grayson experience child food insecurity compared to 12.5% for Virginia.

A 2020 DHCD Report on Local Vulnerability Analysis ranks Grayson County as third from the bottom in dependence on local tax revenue. Grayson joins Bland County and Galax City in highest percentage of residents working outside of the county/city, with each above 35 percent, which also contributes to decreased spending/revenue in the county of residence.

Within a larger context, the Economic Innovation Group provides a Distressed Communities Index (DCI) which examines economic well-being at the zip code level. With a Distressed Communities Index of 96.1, Grayson County ranks as a highly distressed area. The index looks at indicators such as percent obtaining a high school diploma, the poverty rate, median household income, employment, and housing vacancy. In a comparison with state data, Kids Count (2018) indicates 27.5% of children live in poverty in Grayson County compared to 13.8% for Virginia, and 23% of children in Grayson experience child food insecurity compared to 12.5% for Virginia.

As Va. Tech Economist, Dr. Sheryl Bailey shared, the pandemic delivered "deep blows to minorities, low-wage workers, women, and workers with less than college degree." Workers do not have skills for needed jobs, and workers with lower education are experiencing more impact of COVID. 21% of Grayson residents age 25+ have less than HS graduation compared to 13% in US, and 10.7% age 25+ have a bachelor's degree or more education compared to 30.3%

in US. Small and minority owned businesses are always more vulnerable: about 40% of Grayson's small businesses are owned by women.

Additionally, the Centers for Disease Control and Prevention Social Vulnerability Index (SVI) refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human caused threats, such as toxic chemical spills. The Index examines indicators of 1) socioeconomic status, 2) household composition & disability, 3) minority status and language, and 4) housing type and transportation. Index scores range from 0 (lowest vulnerability) to 1 (highest vulnerability). The Grayson County SVI score of .64 indicates a moderate to high level of vulnerability. Further breakdown of the score indicates that Grayson lies within the second highest tier of overall vulnerability, within the highest tier for socioeconomic status, the second highest tier for household composition/disability, the lowest tier for race/ethnicity/language, and the highest tier for housing/transportation.

Within the context of the recent county budget and particularly with the infusion of American Rescue Plan Act (ARPA) funding, County administration and the Board of Supervisors ranked their top priorities as 1) water and stormwater infrastructure, 2) emergency services, and 3) childcare.

Although the County has experienced repetitive flooding, attempts at addressing the issue have fallen short with lack of required foundational items to secure funding and meeting required match. Having a Resilience Plan in place and a Certified Floodplain Manager will provide the County with a good foundation to move forward. While we are requesting a waiver, Grayson understands and is willing to provide a reasonable match as deemed appropriate by DCR.

- ***Amount of cash funds available***: This amount, when combined with the amount of funding requested from the Fund, must reflect the <u>total estimated project cost</u> to demonstrate that all necessary funding has been secured to complete the project. Include a description of the source of these funds and evidence of the applicant's ability to obtain these funds to complete the project.

  While the County requests a full or partial waiver of the 10% match for Capacity Building and Planning Grants, Grayson County commits to paying the full 10% of the total estimated project cost, which would equate to $7,556.

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	**Grayson County**	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
XX Yes	Eligible for consideration	
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
XX No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
XX No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
XX Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☐ Yes ☐ No
Applicant Name:	Grayson County

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	55	
Development of a new resilience plan. XX	55	
Resource assessments, planning, strategies and development.	45	
Policy management and/or development.	40	
Stakeholder engagement and strategies.	25	
Goal planning, implementation and evaluation.	25	
Long term maintenance strategy.	25	
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	15	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	15	
High Social Vulnerability (1.0 to 1.5)	12	
Moderate Social Vulnerability (0.0 to 1.0) XX	8	
Low Social Vulnerability (-1.0 to 0.0)	0	
Very Low Social Vulnerability (Less than -1.0)	0	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	10	
No XX	0	
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes XX	10	
No	0	
10. Does this project provide "community scale" benefits?		
Yes XX	20	
No		
Total Points		

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No XX☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No XX☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No XX☐ N/A
A link to or a copy of the current floodplain ordinance	XX☐ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No XX☐ N/A
A link to or a copy of the current hazard mitigation plan	XX☐ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	XX☐ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	XX☐ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No XX☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	XX☐ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	XX ☐ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No XX☐ N/A

Grayson County Chief Executive Officer
William L. Shepley, County Administrator

129 Davis Street
P.O. Box 217
Independence, Virginia 24348

Phone (276) 773-2471
(276) 236-8149
Fax: (276) 773-3673

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

April 8, 2022

Re: Support Letter – DCR Community Flood Preparedness Fund Proposal

To Whom It May Concern:

In accordance with DCR's requirement of a 10% match for Planning and Capacity Building Grants, the sum of $7,556 is hereby authorized in covering the full match of the total estimated cost of $75,565 for the purposes of 1) a private consultant to prepare the Grayson County Flooding Resilience Plan and, 2) fees to certify the County's Floodplain Manager. The intent for this capacity building is for Grayson County to utilize these components to identify and request construction funds for the highest priority needs during DCR's 2023 construction funding application cycle, and other appropriate venues. While Grayson requests a waiver of the full or partial match, the County acknowledges that it is one among many applications and requests and is willing to provide a reasonable match as deemed appropriate by DCR.

Sincerely,

William L. Shepley

William L. Shepley
County Administrator

Commonwealth of
Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

DCR CFPF Proposal Submission - Grayson County

1 message

Deb J <ak4hdeb@gmail.com> Fri, Apr 8, 2022 at 3:39 PM
To: cfpf@dcr.virginia.gov, Linda Osborne <losborne@graysoncountyva.gov>, Leesa Gayheart <lgayheart@graysoncountyva.gov>

Hello, please find attached Grayson County's proposal submission for DCR Community Flood Preparedness Fund, Capacity Building and Planning Grant.

Thank you for consideration,
Deb Jones
Grants Consultant for Grayson County

CID510243_GraysonCounty_CFPF.pdf
14201K

COMMONWEALTH OF VIRGINIA

2022 Grant Manual for the Virginia Community Flood Preparedness Fund

2022 Grant Funding

Applications Due: 4 p.m., 04/08/2022

Developed by the Department of Conservation and Recreation
in cooperation with the Virginia Resources Authority

DCR
Virginia Department of Conservation & Recreation

VRA
VIRGINIA
RESOURCES
AUTHORITY

Contents

Part I: Introduction and Overview

Purpose of this Manual

The purpose of this manual is to provide guidance regarding the policies, criteria, conditions, and procedures for determining project eligibility and awarding grants from the Virginia Community Flood Preparedness Fund to local governments per §10.1-603.25 et seq. of the *Code of Virginia* and as required by the Clean Energy and Community Flood Preparedness Act (the Act). While the statute authorizes loans in addition to grants, this grant round will be for **grants only**. The manual describes three categories that are eligible to receive grant funds. The three grant categories are: Capacity Building and Planning, Projects, and Studies.

The Department expects to initiate one more grant and/or loan round prior to August 2022 to ensure those that need additional time to develop proposals will have an opportunity to apply in an additional grant round.

Virginia Community Flood Preparedness Fund (Fund) Overview and Authority

The Fund was established to provide support for regions and localities across Virginia to reduce the impacts of flooding, including flooding driven by climate change. The Fund will prioritize projects that are in concert with local, state, and federal floodplain management standards, local resilience plans, and the Virginia Coastal Resilience Master Plan. The Fund will empower communities to complete vulnerability assessments, and develop and implement action-oriented approaches to bolster flood preparedness and resilience. The following conditions shall apply to the use of moneys allocated from the Fund:

1. Localities shall use moneys in the Fund primarily for the purpose of implementing flood prevention and protection projects and studies in areas that are subject to recurrent flooding as confirmed by a locality-certified floodplain manager.
2. Moneys in the Fund may be used to mitigate future flood damage and to assist inland and coastal communities across the Commonwealth that are subject to recurrent or repetitive flooding.
3. No less than 25 percent of the moneys disbursed from the Fund each year shall be used for projects in low-income geographic areas (defined in the definitions section below).
4. Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk.

The Fund consists of all sums that are designated for deposit in the Fund from revenue generated by the sale of emissions allowances pursuant to subdivision C 1 of §10.1-1330 of the Code of Virginia, all sums that may be appropriated to the Fund by the General Assembly, all receipts by the Fund from the repayment of loans made by it to local governments, all income from the investment of moneys held in the Fund, and any other sums designated for deposit to the Fund from any source, public or private, including any federal grants and awards or other forms of assistance received by the Commonwealth that are eligible for deposit in the Fund under federal law.

Interest earned on moneys in the Fund shall remain in the Fund and be credited to it. Any moneys remaining in the Fund, including any appropriated funds and all principal, interest accrued, and payments, at the end of each fiscal year shall not revert to the general fund but shall remain in the Fund. All loans and grants provided under this article shall be deemed to promote the public purposes of enhancing flood prevention or protection and coastal resilience.

The Department, in consultation with the Secretary of Natural Resources and the Special Assistant to the Governor for Coastal Adaptation and Protection, have established this grant manual to establish policy and procedures regarding the distribution and prioritization of loans and grants, including loans and grants that support flood prevention or protection studies of statewide or regional significance.

The Department shall administer and direct distribution of loans and grants from the Fund. ***While grants and loan instruments are available to the Department for use under the Fund, only applications for grant funds are being solicited during this application period. In the future, the Fund may also provide loans. Details will follow in future grant manuals.***

A. Commonwealth Resilience Planning Principles

Regardless of region, the CFPF will be guided by the following principles:

1. Acknowledge climate change and its consequences, and base decision making on the best available science.
2. Identify and address socioeconomic inequities and work to enhance equity through adaptation and protection efforts.
3. Utilize community and regional scale planning to the maximum extent possible, seeking region-specific approaches tailored to the needs of individual communities.
4. Understand fiscal realities and focus on the most cost-effective solutions for the protection and adaptation of our communities, businesses, and critical infrastructure. The solutions will, to the extent possible, prioritize effective natural solutions.
5. Recognize the importance of protecting and enhancing nature-based solutions in all regions, natural coastal barriers, and fish and wildlife habitat by prioritizing nature-based solutions.

B. Definitions

Some of the terms used in this grant manual and in § 10.1-603.24 of the *Code of Virginia* have specific meanings that may vary from other contexts. For the purposes of this manual and the Fund:

“Capacity Building” means improving the ability of a local government through training of existing staff, hiring personnel, contracting with expert consultants or advisors, and other related actions that allow a local government to identify and mitigate risk and flood impacts.

“Community Scale project” means a project that provides demonstrable flood reduction benefits at the US census block level or greater.

"Cost," as applied to any project financed under the provisions of this article, means the total of all costs incurred by the local government in carrying out all works and undertakings necessary or incidental to the accomplishment of any proposed project.

"Department" means the Virginia Department of Conservation and Recreation.

"Flood prevention or protection" means the construction of hazard mitigation projects, acquisition of land, or implementation of land use controls that reduce or mitigate damage from coastal or riverine flooding.

“Eligible Applicants” are local governments, as defined below, and federally or state recognized Indian tribes. The program allows eligible applicants to join together to submit joint proposals.

"Flood prevention or protection study" means the conduct of a hydraulic or hydrologic study of a floodplain with historic and predicted floods, the assessment of flood risk, and the development of strategies to prevent or mitigate damage from coastal or riverine flooding.

"Fund or fund" means the Virginia Community Flood Preparedness Fund created pursuant to § 10.1-603.25 of the Code of Virginia.

“Hybrid Solution” means a project that incorporates nature-based and hardened solutions to achieve an outcome that is primarily nature-based.

“Locality-certified floodplain manager” means a Certified Floodplain Manager according to the Association of State Floodplain Managers (https://www.floods.org/certification-program-cfm/) who is in the employ of a local government.

"Local government" means any county, city, town, municipal corporation, authority, district, commission, or political subdivision created by the General Assembly or pursuant to the Constitution of Virginia or laws of the Commonwealth, or any state or federally recognized Virginia Indian Tribe.

"Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

“Nature-based solution” means an approach that reduces the impacts of flood and storm events through the use of environmental processes and natural systems. A nature-based solution may provide additional benefits beyond flood control, including recreational opportunities and improved water quality. This includes a project that reduces these impacts by protecting, restoring or emulating natural features.

“National Flood Insurance Program (NFIP)” means the Program as established by the United States Congress through the passage of the National Flood Insurance Act of 1968, as amended.

“Project” means activities that include the development of flood protection facilities, acquisition of land, restoration of natural features or other activities that involve design, construction or installation of facilities. Activities such as design necessary to ensure projects meet their intended purpose will be considered part of the project.

“Recurrent or Repetitive Flooding” means the flooding effects of rain events, storm surges, and tidal flooding that occur on a regular or frequent basis including areas with repetitive loss properties as defined by the Federal Emergency Management Agency under the National Flood Insurance Program.

“Resilience Plan” means a locally adopted plan that describes the entire local government’s approach to flooding and meets the following criteria:

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
5. Is based on the best available science, and incorporates climate change, sea level rise, and storm surge (where appropriate), and current flood maps.

“VRA” means the Virginia Resources Authority

“Virginia Coastal Resilience Master Plan” means the document released by Governor Northam on December 7, 2021 (https://www.dcr.virginia.gov/crmp/plan)

Part II: General Department Grant Eligibility Criteria and Application Procedures

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A. Department Conditions and Limitations for Making Grants and Loans

1. Grant assistance and loans will be awarded by category on a competitive scoring basis for eligible projects that meet the general conditions of this section and the specific criteria set out in the project category descriptions. Scoring criteria to be utilized for each project category are contained in Appendix B.

   The total amount of funds granted in any grant round, the amount of funds allocated to each of the three grant categories, and final determinations of grant awards will be set by the Department in consultation with the Chief Resilience Officer and the Special Assistant to the Governor for Coastal Adaptation and Protection. The Department anticipates that the allocations across grant categories will change with each grant round depending on demonstrated interested need.

2. Grant matching requirements are as follows*. The nature-based solution percentage will be based on the degree to which a completed project is comprised of a nature-based solution. Removal of existing infrastructure or structures may be necessary to achieve the nature-based solution.
   a. Planning and Capacity Building– Fund 75%/Match 25%.
   b. Flood Prevention and Protection Studies – Fund 50%/Match 50%.
   c. Projects that will result in nature-based solutions - Fund 70%/Match 30%.
   d. Projects that will result in hybrid solutions - Fund 60%/Match 40%.
   e. All other Projects - Fund 50%/Match 50%.
3. For projects that are located in and serve low-income geographic areas, the following match requirements shall apply:
   a. Planning and Capacity Building– Fund 90%/Match 10%*.
   b. Flood Prevention and Protection Studies – Fund 90%/Match 10%.
   c. Projects that will result in nature-based solutions - Fund 80%/Match 20%.
   d. Projects that will result in hybrid solutions - Fund 65%/Match 35%.
   e. All other Projects Fund 55%/Match 45%.

   ***Match requirements for Planning and Capacity Building in low-income geographic areas will not require match for applications requesting less than $3,000. Where a** local government is unable to secure required match funds for larger planning and study grants-contact the Department at cfpf@dcr.virginia.gov

A completed resilience plan will be required before a local government can apply for and receive funding from the Project category only. Capacity-building and planning and study grants will be available to any local government prior to having met the requirements of the Resilience Plan as defined in this manual.

4. Grant funds will be disbursed on a reimbursement basis and may be drawn down quarterly or after the completion of the approved project.

5. A total of **<u>$40 million</u>** is available for grants during this grant cycle. Of this amount, a minimum of 25% will be reserved for proposals that address low-income geographic areas. The grant amount per project will be determined based on scoring, amounts requested from eligible projects, and available funds. Based on the amount of funds available, it is possible not all projects or applications received will receive funding.

6. Minimum grant awards by category will be as follows: Project grants $50,000; Capacity Building and Planning grantavailas, and study grants: $1,000. Project grants will not be capped and final awards will be determined based on available funds following review by the Department.

7. Each application submitted must be for a discrete project to be completed after the beginning of the application period and not later than 3 years from the date of an executed agreement or by an extension date approved by the Department. These specified dates constitute the required "project completion date". Reimbursement requests must be submitted within 90 days following passage of the authorized project completion date. Projects that are proposed to extend longer than 3 years may be submitted in phases. Phases of the project that extend beyond 36 months should be submitted in future applications. Studies and capacity building proposals may also be presented in phases.

8. No project or portion thereof identified in a previously awarded grant that was reimbursed by the Department is eligible for funding.

9. The Department, the Chief Resilience Officer, the Special Assistant to the Governor for Coastal Adaptation and Protection, and the Virginia Resources Authority reserve the right to provide funding at a level less than requested by the applicant, or to refuse to fund an applicant's request. Reasons for such determinations include, but are not limited to, incomplete applications or resilience plans, low project ranking, the feasibility of the proposal, total funding determined to be necessary to complete the project, an anticipated inability to complete the project by the specified completion date, and total available funding.

10. Local governments may contract with public, private and non-profit organizations or entities to implement approved projects.

11. **<u>Applications will be accepted beginning (*01/03/2022*) and ending at 4:00 p.m. on (04/08/2022) at cfpf@dcr.virginia.gov.</u>**

12. For a grant to be authorized, an eligible capacity building activity, project or study shall satisfy the following general conditions:
    a. A complete application meeting the requirements set forth in this manual has been submitted to the Department within the specified application period.
    b. The local government has authorized requesting assistance from the Fund and has also authorized the availability of identified matching funds or a statement indicating that authorization is pending, and once approved, will be forwarded to the Department **prior to the close of the application period**. Authorizations not received prior to the close of the application period will cause the application to be disqualified for the current grant round.
    c. Where project completion is dependent on a variety of funding sources, including from the Fund, the local government has provided satisfactory assurances of all necessary funds to fully finance the project. This must include signed, written verification as outlined in requirements for the Budget Narrative on page 20.
    d. For projects that will require future maintenance, a maintenance and management plan for the projects must be provided demonstrating how the project will be maintained with funds secured by the grant recipient independent of the Fund over the lifespan of the projects
    e. If a grant is sought for capacity building and planning activity, a project, or a study that will be carried out in concert with a federal agency, the applicant must have authorization to enter into any necessary written agreement with the federal agency endorsing the application, including any provisions for cost-sharing. A copy of the agreement must be submitted with the application.
    f. **Grant funds may be used as match for other sources of funding; however, grant funds awarded from the Fund may NOT be utilized as match funds for other monies from the Fund. Monies used to match grants from the Fund may not be used as match for other grants.**

B. Application and Selection Process

1. General Submittal Information and Deadline

A complete electronic file with all required attachments **is the preferred method of submission**. **All electronic applications** should be submitted in a PDF format to cfpf@dcr.virginia.gov.

Files should be saved as follows:

- CID51XXXX_LocalgovernmentName_CFPF.pdf
    - (example: CID510090_LoudounCounty_CFPF.pdf).
- If multiple applications for the local government then please use
    - CID510090_LoudounCounty_CFPF-1.pdf; LoudounCountyCFPF-2.pdf. etc.

“Community Identification Number (CID#)” is a 6-digit designation identifying each National Flood Insurance Program (NFIP) community. The first 2 numbers are the state code. Virginia’s state code is “51”. The next 4 digits are the Federal Emergency Management Agency (FEMA)-assigned community number and can be found in Appendix F of this manual. The CID# applies to the local government where the work is being done, not necessarily where the applicant is based. Where no CID# has been assigned, CID# will be 510 plus the three digit FIPS code and Department designation (example for City of Richmond – 510760-DCR1). The list of communities without a FEMA assigned CID# is also found in Appendix F.

If electronic submittal is not possible, please submit 4 complete copies of each application (including one originally-signed copy), together with all attachments and supporting documentation, to the Virginia Department of Conservation and Recreation at the address below:

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Please ensure signature pages are completed prior to submitting electronically or mailing. Applications without signatures will be considered incomplete and will be removed from funding consideration for the current round. Applications will be accepted beginning on January 3, 2022. **All applications must be RECEIVED by 4:00 p.m. eastern daylight savings time on April 8, 2022**. Applications received after this deadline **will not be considered** during the current round.

For proposals that can only be submitted in paper format, it is important that applications be printed on one-sided pages. All pages must be sized to 8.5 x 11 inches. Photographs are acceptable. All photos and images and their captions must be on 8.5 x 11-inch paper and be of a quality suitable for reproduction by a photocopier. It is not necessary to submit 4 sets of original images, but all reproduced images must be clear and discernable. Images and photos will not be returned.

Applications will be scored, ranked, and funded based on scoring criteria in Appendix B and the availability of funds.

General Application Inquiries: For any questions regarding the application process, please contact the Department of Conservation and Recreation, Division of Dam Safety and Floodplain Management at (804) 371-6095 or via email at cfpf@dcr.virginia.gov.

2. Project, Study, Capacity Building and Planning Application Contents

Organizational Information

The Application Form (Appendix A) contains general organizational information, including the title, category, and location of the project, the amount of grant funds requested, and contact information for the applicant or the applicant’s designated contact person.

Scope of Work Narrative (as an attachment to the Application Form)
The requirements for the project's Scope of Work Narrative are outlined in Part III of this manual. A completed scoring criteria sheet must also be included to support the Scope of Work Narrative.

Budget Narrative (as an attachment to the Application Form)
The Budget Narrative establishes the proposed budget for the project. It should include evidence of the source of funds available to fully fund the project, including the required cash matching funds. A description of the Budget Narrative is outlined in Part III of this manual.

3. Application Review and Approval

Qualifying projects in each category are selected for funding on a competitive scoring basis. The Department will use the following procedure in determining the qualification of an application.

Department of Conservation and Recreation (Department) Review
The Department will review the applications for completeness in accordance with the eligible grant categories and application requirements. Department staff, in consultation with the Secretary of Natural Resources and the Special Assistant to the Governor for Coastal Adaptation and Protection, will review and rank each complete application to determine its merits in accordance with the criteria set out in this manual pursuant to the scoring criteria contained in the applicable Appendix for each of the three grant categories (Capacity Building and Planning, Projects and studies).

Virginia Resources Authority Review
Following the project acceptance and approval, and pending further necessary submittals, the application will be forwarded to VRA for the execution of a grant agreement and funding.

4. Grant Funded Activity Commencement and Schedule for Completion

Projects, capacity building and planning and studies will be required to be completed after the beginning of the application period and not later than 36 months following the issuance of a signed agreement between the applicant and VRA on behalf of the Department. Projects, capacity building and planning, and studies with a longer time horizon should be submitted in phases.

If a project, study, capacity building or planning activity does not commence in a timely fashion to allow completion within the agreement period, funding will be withdrawn and the applicant may reapply during the next grant round, should funds be available. Such funds may be redistributed to other qualifying projects at the discretion of the Department in consultation with the Chief Resilience Office and the Special Assistant to the Governor for Coastal Adaptation and Protection.

An extension may be granted at the discretion of the Department; however, all extension requests (Appendix D) must be received no later than 90 days prior to the expiration of the original agreement, and the approved activity must have commenced within the first nine months of the original agreement period.

5. Reporting and Close-Out Guidelines for Grant Recipients

Where applicable, the Department will conduct project inspections as necessary to ensure conformance to grant terms. **Final project deliverables defined in the approved Scope of Work are due to the Department within 30 days following the project end date, unless another date is approved by the Department.**

a. ***All materials shall be provided digitally to the Department at cfpf@dcr.virginia.gov.***
b. All documents must be provided in PDF and/or a Microsoft Word compatible format, including any embedded maps or other figures/illustrations.
c. All engineering files (including hydrologic and hydraulic studies) and assumptions necessary to replicate various analyses or other calculations need to be provided in a format compatible with the software used to perform those calculations; likewise, all output files are also required.
d. All tabular information not included in the engineering files above, whether contained within any report or appendix, which was used as the basis for any calculation, shall be provided in a Microsoft Excel compatible format or Microsoft Access compatible format.
e. All map data shall be delivered as a geodatabase or individual shapefiles. Additionally, maps shall be provided in a PDF format if not already included embedded within the report(s).
    - If derived from CAD or another non-GIS workflow, data must be converted into a GIS format.
    - See the Virginia Soil and Water Conservation Board's Guidance Document for specific requirements and direction for mapping - Dam Break Inundation Zone Modeling and Mapping Procedures (PDF) (09/16).
f. If digital submittal is not possible, printed materials, together with all attachments and supporting documentation, may be submitted to the Virginia Department of Conservation and Recreation at the address below:

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

6. Grant Award and Administration

After application approval, a letter will be sent from the Department to the applicants, and notice of awards will be posted on the Department Dam Safety and Floodplain Management Community Flood Preparedness Fund web page at https://www.dcr.virginia.gov/dam-safety-and-floodplains/dsfpm-cfpf.

VRA will email grant agreements to recipients using the email address provided in the original application. If no email address was provided, the Grant Agreements will be sent via U.S. mail. Recipients shall return the signed grant agreement within 90 days of receipt to:

Virginia Resources Authority
1111 E. Main Street, Suite 1920
Richmond, VA 23219

Grant agreements not signed and returned to VRA within 90 days as required will have grant funds rescinded.

Within 30 days after the project, study, capacity building or planning activity is completed the applicant shall submit digital copies of the completed work to cfpf@dcr.virginia.gov along with the completed Certificate of Approval Floodplain Management form (which will be provided along with the grant award documents from VRA for review and approval by Department staff).

Final reimbursement requests must be submitted within 90 days following passage of the authorized project completion date; this request must include completed and signed Exhibit E Reimbursement Request Form, signed Exhibit D Form of Requisition along with the signed Certificate of Approval Floodplain Management, proof of payment (canceled checks, bank statements, accounting system reports, etc.) and invoices to cfpf@dcr.virginia.gov or:

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

All forms are located in the VRA grant agreement.

Invoices must be detailed and specific to the project awarded and must provide sufficient detail to determine the work and hours actually completed related to the approved project.

7. Virginia Resources Authority Disbursement of Grant Funds

Grant funds may be disbursed on a quarterly basis. For low-income geographic areas, one-quarter of the grant award may be advanced upfront to the grant recipient to be offset against actual expenditures at the end of the grant award.

All requests for disbursement shall be provided to the Department for approval according to the reimbursement terms of the grant manual and grant agreement. The Department shall forward the approved request to VRA for payment to the applicant. VRA will not disburse funds prior to receipt of a fully executed grant agreement signed by the grant recipient and subsequently signed by VRA's Executive Director. Where applicable, the Department will conduct site visits and inspections to monitor project compliance. A checklist for reimbursement will be included in the VRA grant agreement.

Part III: Eligible Activities Descriptions: Projects, Studies, Capacity Building and Planning

A. Capacity Building and Planning

While certain local governments and regions have taken significant steps in developing and implementing comprehensive approaches to flood preparedness and resilience, many areas have yet to establish the necessary foundation for such activities, often because of a lack of resources. It is imperative that such planning activities take place.

To encourage sound planning, the Fund will provide local governments grants for capacity building efforts, prioritizing those that create or update resilience plans, as defined in this manual.

To further encourage planning, applicants applying for project grants must have an approved resilience plan, and projects must be approved by a Certified Floodplain Manager (CFM) pursuant to section one of this manual.

Capacity building and planning grants are designed to help local governments meet both of those future requirements.

Applicants may seek funds to secure services or personnel necessary to develop plans, programs, and projects within the defined project period and scope of eligible activities. More details on plan requirements are included in this section so applicants may assess whether or not they will need capacity building and planning assistance.

The Fund will strive to provide capacity building and planning grants to help any local government that does not yet have such a plan or capacity to create and implement a resilience plan to develop one to address its flood resilience needs in a comprehensive manner.

The number of grants awarded for this purpose will be dependent on available funds.

Details on Required Resilience Plans for Project Grant Applicants

A plan can be either one document or a combination of documents that meet the elements described in the definitions section of this manual. Once the Department certifies a local government has met the minimum requirements that determination will stand for a period of three years.

For this grant round, the resilience plan may be submitted before or concurrently with the submission of a project plan. Applicants may submit their resilience plans at any time. Resilience plans should be clearly identified with the name of the local government in the file name (example: CID#.Essex.resilienceplan) and submitted to cfpf@dcr.virginia.gov. The CID# is unique to each county, city or town in Virginia.

A plan for purposes of the CFPF during this grant round will meet the following criteria:

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
5. Is based on the best available science and incorporates climate change, sea level rise, and storm surge (where appropriate), and current flood maps.

Additional information on plan submittal and approval is available in Appendix G.

The Department expects to complete or begin an additional grant round prior to August 2022, so applicants should understand that even if they are unable to meet this requirement during this round, they will have additional time to complete their plan submissions and apply for project grants in the future grant round.

B. Flood Prevention and Protection Projects

The purpose of this category is to assist local governments with flood prevention or protection activities to prevent loss of life and reduce property damage caused by flooding. Flood prevention or protection project means any project to reduce coastal, riverine or inland flooding.

During this grant round, a local government may not apply for or receive funding from the Project category unless it has a completed a resilience plan certified by the Department. Planning, studies, and capacity building grants will be available to any local government prior to the adoption of a resilience plan. Further information on expected content are contained in Appendix G.

If multiple eligible entities are included in one application, applicants should list all localities with their CID#s, for example: CID510XXX-KellerTown_CID510XXX-MelfaTown_CID510XXX-PainterCFPF-1

While the grant recipient, and therefore responsible party, is defined in the Code of Virginia, projects may serve a smaller geographic area within the local government, particularly low-income geographic areas. Projects undertaken by municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these, must be consistent with resilience plans and efforts in the local government where the project takes place. Letters of support from affected localities must be included with the application.

All projects that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding will be considered.

Examples of applicable projects include:

Nature-based solutions including but not limited to: wetland restoration, floodplain restoration, swales and settling ponds, living shorelines and vegetated buffers.

Additional flood control solutions including, but not limited to: floodwalls, levees, berms, flood gates, structural conveyances and storm water systems, and medium to large scale Low Impact Development (LID) in urban areas

Preservation and creation of open space including: property acquisition and relocation and the permanent conservation of lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

C. Studies

To assist the Commonwealth and its local governments, the Fund will provide grants for various studies designed to improve long term planning and effectiveness of resilience plans and projects.

Examples of applicable projects include:

a. Studies to revise floodplain ordinances in order to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This shall include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variance procedures. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.
b. Hydraulic or hydrologic studies of a floodplain with historic and predicted floods, the assessment of flood risk, and the development of strategies to prevent or mitigate damage from coastal or riverine flooding.
c. Hydrologic and hydraulic studies of floodplains to clarify or update by FEMA Flood Insurance Rate maps (FIRMS).
d. Studies and Data Collection of Statewide and Regional Significance: Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:

1. Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.
2. Regional relative sea level rise projections for use in determining future impacts.
3. Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.
4. Flash flood studies and modeling in riverine regions of the state.
5. Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.
6. New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.
7. Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.
8. Regional hydrologic and hydraulic studies of floodplains.
9. Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.
10. Other proposals that will significantly improve protection from flooding on a statewide or regional basis.

Part IV: Required Application Components

A. Scope of Work Narrative – Capacity Building and Planning

All applications must include a Scope of Work Narrative that clearly describes the proposed activities, including supporting documentation as necessary and, at a minimum, includes the following.

1. Assess capacity needs and assets to include:
    a. Resource needs identification – financial, human, technical assistance, training.
    b. Plan for developing, increasing, or strengthening knowledge, skills and abilities of existing or new staff. This may include training of existing staff, hiring personnel, contracting with of expert consultants or advisors.
    c. Resource development strategies. Where capacity is limited by funding, what strategies will be developed to increase resources in the local government? This may include work with non-governmental organizations, or applying for grants, loans, or other funding sources.
    d. Policy management and/or development.
2. Goals and objectives tied to improving flood protection and prevention in a whole community approach to resilience. Identify and describe the goals and objectives of the project.
3. Stakeholder identification, outreach and education strategies.
4. Implementation plan and timelines for specific elements of completion such as training, certifications, plan development, etc.
5. Parties responsible for capacity building and/or plan development process.
6. Performance outputs and measures. Describe the expected results and benefits and how success will be measured.
7. Plans for maintaining capacity, as necessary, over the long term.

B. Scope of Work Narrative – Projects

All applications must include a Scope of Work Narrative that clearly describes the proposed project or study, including supporting documentation as necessary. It may be helpful to review the checklist in Appendix C to ensure that the application includes all the required elements. The Scope of Work narrative for all applications should address the following elements.

1. ***Project Information***: Describe in detail the area to be studied or protected including the following. *Note that information should be provided on the local government(s) in which the project is taking place, even if that local government it is not the grant applicant*. Projects undertaken by municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these, must be consistent with resilience plans and efforts in the local government where the project takes place. Letters of support from affected local governments must be included with the application.

- Population
    - Provide population data for the local government in which the project is taking place, including identification of any low-income geographic area and the estimated number of residents that will be impacted by this project.
- Historic flooding data and hydrologic studies projecting flood frequency
    - Provide information on the flood risk of the project area, including whether the project is in a mapped floodplain, what flood zone it is in, and when it was last mapped. If the property or area around it has been flooded before, share information on the dates of past flood events and the amount of damage sustained.
- The ability of the local government to provide its share of the cost
    - This must include an estimate of the total project cost, a description of the source of the funds being used, evidence of the local government's ability to pay for the project in full or quarterly prior to reimbursement, and a signed pledge agreement from each contributing organization.
- The administration of local floodplain management regulations
    - The Department will determine if the community is in good standing with the NFIP. If applicable, provide the Department with a link to the current floodplain ordinance, or attach a PDF or Word document of the ordinance.
- Other necessary information to establish project or study priority
    - Repetitive Loss and/or Severe Repetitive Loss Properties
        - Do not provide the addresses for these properties, but include an exact number of repetitive loss and/or severe repetitive loss structures within the project area. Work with the local floodplain administrator or emergency manager to find this information. If they do not have a list of repetitive loss/severe repetitive loss structures, the Department can assist them in accessing these lists.
    - Residential and/or Commercial Structures
        - Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of residential structures and commercial structures in the project area.
    - Critical Facilities
        - If there are critical facilities within the project area, describe each facility. Critical facilities are those that provide services and functions essential to the community, including hospitals, fire stations, police stations, storage facilities for critical records, power plants, and wastewater treatment plants, among others.

2. ***Need for Assistance*****:** Identify and describe any relevant issues or problems that will be addressed by the project.
   - Explain the local government's financial and staff resources. How many relevant staff members (floodplain administrators, planners, emergency managers, building officials, engineers) does the local government have? To what relevant software does the local government have access? What are the local government's capabilities?
   - The Department will prioritize low-income geographic areas for funding. Low-income geographic area means any locality or geographic area within a locality that may cross municipal or county boundaries, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service.
   - The Department will consider the project area's social vulnerability index score when reviewing grant applications. The Social Vulnerability Index, available through ADAPT Virginia's Virginia Vulnerability Viewer, will be used for this review.
   - This index is based on census tract data; the index score for the census tract that contains the project area should be used. If the project area falls within multiple census tracts, please provide the scores for all census tracts. The average score for the project area will be used for scoring the application.
     - For more information on social vulnerability, please see ADAPT Virginia's fact sheet.

Alternatives**:** If the project proposed does not employ a nature-based or hybrid solution and the total project cost is greater than $3 million, describe at least one alternative that could reasonably address the issue identified. Please also consider the No Action Option as a third alternative as part of the analysis. Explain these alternatives and the reason the proposed project was selected.

3. ***Goals and Objectives:*** Identify and describe the goals and objectives of the project. Include a description of the expected results of the completed project and explain the expected benefits of the project. This may include financial benefits, increased awareness, decreased risk, etc.

4. ***Approach, Milestones, and Deliverables*****:** Outline a plan of action laying out the scope and detail of how the proposed work will be accomplished with a timeline identifying expected completion dates. Determine milestones for the project that will be used to track progress. Explain what deliverables can be expected at each milestone, and what the final project deliverables will be. Identify other potential project partners.
   - If assistance is sought for a project that will be carried out in concert with a federal agency, provide evidence of an agreement with the federal agency endorsing the project.

5. ***Relationship to Other Projects*****:** Where applicable, briefly describe the relationship between this project and other past, current, or future resilience projects. If the applicant has received or applied for any other grants or loans, please identify those projects, and, if applicable, describe any problems that arose with meeting the obligations of the grant and how the obligations of this project will be met.

6. ***Maintenance Plan:*** For ongoing projects or projects that will require future maintenance, such as infrastructure, flood warning and response systems, signs, websites, or flood risk applications, a maintenance and management plan for the projects must be provided demonstrating how they will be maintained after the lifespan of this grant for a minimum of five years. Ongoing operation and maintenance will be the financial responsibility of the grantee and will not be eligible for monies from the Fund.

7. ***Criteria:*** Describe how the project meets each of the applicable scoring criteria contained in Appendix B, and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application. <u>Appendix B must be completed and submitted with the application.</u>

   For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

   1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?
   2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?
   3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?
   4. Has the applicant provided evidence of an ability to provide the required match funds?
   5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

      Documentation: As outlined in the Budget Narrative section below, the applicant must include an estimate of the project cost, a description of the source of the funds being used, evidence of the applicant's ability to pay for its share of the project, and signed authorization or a pledge agreement from each contributing organization.

C. Scope of Work Narrative – Studies

All applications for proposed studies the applicant should include the following:

1. The specific type of study proposed including whether the study is new or updates a prior study.
2. The relationship of the study to the local government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual.
3. The qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications
4. The expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach.
5. If applicable, how the study may improve Virginia's flood protection and prevention abilities in a statewide context.

D. Budget Narrative- Required for All Grant Categories

Each application must include a detailed Budget Narrative explaining all proposed expenditures. A budget narrative is applicable to requests from any category of grants in this manual. The following items must be included in the Budget Narrative:

- ***Estimated total project cost*:** This amount must reflect the total cost of bringing the project to completion. Estimates for all work to be completed by third parties (engineers, contractors, etc.) on the specified project should be included. If multiple project types are selected, a detailed breakdown of how the funding is proposed to be allocated must be included for each selected project type.

- ***Amount of funds requested from the Fund*:** This is the total amount of any grant assistance sought from the Fund. Include a detailed breakdown of how this funding is proposed to be allocated. At a minimum this should include a breakdown of salaries, fringe benefits, travel, equipment, supplies, construction, contracts and other direct costs. Please refer to the match requirements in Part II of this manual. For local governments designated as low-income geographic areas, 100 percent of the estimated total project costs should be included.

- ***Amount of cash funds available*:** This amount, when combined with the amount of funding requested from the Fund, must reflect the total estimated project cost to demonstrate that all necessary funding has been secured to complete the project. Include a description of the source of these funds and evidence of the applicant's ability to obtain these funds to complete the project.

- Authorization to request for funding: Local governments seeking funding shall also attach signed documentation authorizing the request for funding.

Where a local authorization is not applicable, a pledge agreement is required for each contribution, signed by the authorized representative of the contributing organization and the applicant organization, which must include:

- The name, address, and telephone number of the contributor;
- The name of the applicant organization;
- The title of the project for which the cash contribution is made;
- The source of funding for the cash contribution;
- The dollar amount of the cash contribution; and
- A statement that the contributor will pay the cash contribution during the agreement period.

Note: Grant funds may be used as match for other sources of funding; however, grant funds awarded from the Fund may NOT be utilized as match funds for other monies from the Fund. Monies used to match grants from the Fund may not be used as match for other grants.

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Shenandoah County

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

_____**Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510147

If a state or federally recognized Indian tribe, Name of tribe_____________________________

Name of Authorized Official: ____

Signature of Authorized Official: ____

Mailing Address (1): 600 North Main St. Suite 107

Mailing Address (2): ____

City: Woodstock **State:** VA **Zip:** 22664

Telephone Number: (540) 459-6185 **Cell Phone Number:** (____) ________________

Email Address: bmenefee@shenandoahcountyva.us

Contact Person (If different from authorized official): ________________________________

Mailing Address (1): ____

Mailing Address (2): ____

City: ___________________________ State: _________________ Zip: ___________________

Telephone Number: (____) _______________ Cell Phone Number: (____) ________________

Email Address: ____

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes _X__ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☒ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.

  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Shenandoah County, Virginia

NFIP Community Identification Number (CID#):(See appendix F 510147

Is Project Located in an NFIP Participating Community? ☑ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ Yes ☐ No

Flood Zone(s) (If Applicable): A, AE, and 0.2 PCT Annual Chance Flood Hazard

Flood Insurance Rate Map Number(s) (If Applicable): All within Shenandoah County, Va

Total Cost of Project: ______________________________

Total Amount Requested ______________________________

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☐ **Yes** ☐ **No**

Applicant Name:	Shenandoah County

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☐ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	
1.b. any other nature-based approach	**40**	
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	
11. Does this project provide "community scale" benefits?		
Yes	**20**	
No	**0**	
Total Points		

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration		☐ **Yes** ☐ **No**
Applicant Name:		
Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	
☐ Regional hydrologic and hydraulic studies of floodplains.	**45**	
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	
Total Points		

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Shenandoah County	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	N/A
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	X

Capacity Building and Planning Eligible for Consideration	☒ **Yes** ☐ **No**
Applicant Name:	Shenandoah County

Scoring Information

Criterion		**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)			
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.		**55**	
Development of a new resilience plan.		**55**	
Resource assessments, planning, strategies and development.		**45**	
Policy management and/or development.		**40**	
Stakeholder engagement and strategies.		**25**	
Goal planning, implementation and evaluation.		**25**	25
Long term maintenance strategy.		**25**	
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.		**15**	15
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)			
Very High Social Vulnerability (More than 1.5)		**15**	
High Social Vulnerability (1.0 to 1.5)		**12**	
Moderate Social Vulnerability (0.0 to 1.0)	.13	**8**	8
Low Social Vulnerability (-1.0 to 0.0)		**0**	
Very Low Social Vulnerability (Less than -1.0)		**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?			
Yes		**10**	
No		**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?			
Yes		**10**	10
No		**0**	
10. Does this project provide "community scale" benefits?			
Yes		**20**	20
No			
Total Points			78

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative

Supporting Documentation	Included
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A

Budget Narrative

Supporting Documentation	Included
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Appendix E: Extension Request Form

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Request to Amend Contract between Virginia Resources Authority and Grant Recipient of the YYYY Virginia Community Flood Preparedness Fund Grant

All projects are required to be completed no later than 36 months following the issuance of a signed agreement between the applicant and VRA on behalf of the Department. A one-year extension may be granted at the discretion of the Department provided such request is **received not later than 90 days prior to the expiration of the original agreement.** Requests should be emailed to cfpf@dcr.virginia.gov. If email is not available, please mail to:

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Grant Recipient: ____

Contact Name: ____

Mailing Address (1): ____

Mailing Address (2): ____

City: ____________________________ State: _________________ Zip: ___________________

Is this a new address? ☐ Yes ☐ No ***Has the Contact Name changed?*** ☐ Yes ☐ No

Telephone Number: (____) ________________ Cell Phone Number: (____) _________________

Email Address: _________________________________

Grant Number: ____

Title of Project: ____

NFIP/DCRCID:

____

Total Cost of Project: ____

Total Amount Awarded: ____

Current Grant End Date: ____

Requested New End Date: ____

Please provide a detailed explanation for the extension request including the reason work will not be completed during the initial grant period and a timeline for completion if approved. Please attach additional documentation as needed.

Justification for Extension

____ ______________________________

Grant Recipient Signature Date Requested

____ ______________________________

Grant Recipient Printed Name Title

THE DEPARTMENT Use Only

Virginia Department of Conservation and Recreation

Date Approved

Date Denied

Printed Name

Title

Reason for Denial

VRA Use Only

Virginia Resources Authority

Date Received

Date Grant Modified

Appendix F: Community Identification Number (CID#)

Virginia Communities Participating in the National Flood Insurance Program		
CID Number	Community Name	County
510169	ABINGDON, TOWN OF	WASHINGTON COUNTY
510050	ACCOMAC, TOWN OF	ACCOMACK COUNTY
510001	ACCOMACK COUNTY	ACCOMACK COUNTY
510006	ALBEMARLE COUNTY	ALBEMARLE COUNTY
510260	ALBERTA, TOWN OF	BRUNSWICK COUNTY
515519	ALEXANDRIA, CITY OF	ALEXANDRIA CITY
510009	ALLEGHANY COUNTY	ALLEGHANY COUNTY
510029	ALTAVISTA, TOWN OF	CAMPBELL COUNTY
510314	AMELIA COUNTY	AMELIA COUNTY
510010	AMHERST COUNTY	AMHERST COUNTY
510193	AMHERST, TOWN OF	AMHERST COUNTY
510319	APPALACHIA, TOWN OF	WISE COUNTY
510011	APPOMATTOX COUNTY	APPOMATTOX COUNTY
510194	APPOMATTOX, TOWN OF	APPOMATTOX COUNTY
515520	ARLINGTON COUNTY	ARLINGTON COUNTY
510075	ASHLAND, TOWN OF	HANOVER COUNTY
510013	AUGUSTA COUNTY	AUGUSTA COUNTY
510196	BATH COUNTY	BATH COUNTY
510016	BEDFORD COUNTY	BEDFORD COUNTY
510015	BEDFORD, TOWN OF	BEDFORD COUNTY
510242	BELLE HAVEN, TOWN OF	ACCOMACK COUNTY
510037	BERRYVILLE, TOWN OF	CLARKE COUNTY
515521	BIG STONE GAP, TOWN OF	WISE COUNTY
510100	BLACKSBURG, TOWN OF	MONTGOMERY COUNTY
510074	BLACKSTONE, TOWN OF	NOTTOWAY COUNTY
510017	BLAND COUNTY	BLAND COUNTY
510256	BLOXOM, TOWN OF	ACCOMACK COUNTY
510161	BLUEFIELD, TOWN OF	TAZEWELL COUNTY
510062	BOONES MILL, TOWN OF	FRANKLIN COUNTY
510018	BOTETOURT COUNTY	BOTETOURT COUNTY
510175	BOYCE, TOWN OF	CLARKE COUNTY
510269	BOYDTON, TOWN OF	MECKLENBURG COUNTY
510151	BOYKINS, TOWN OF	SOUTHAMPTON COUNTY
510296	BRANCHVILLE, TOWN OF	SOUTHAMPTON COUNTY
510134	BRIDGEWATER, TOWN OF	ROCKINGHAM COUNTY
510022	BRISTOL, CITY OF	BRISTOL CITY

510135	BROADWAY, TOWN OF	ROCKINGHAM COUNTY
510030	BROOKNEAL, TOWN OF	CAMPBELL COUNTY
510236	BRUNSWICK COUNTY	BRUNSWICK COUNTY
510024	BUCHANAN COUNTY	BUCHANAN COUNTY
510019	BUCHANAN, TOWN OF	BOTETOURT COUNTY
510026	BUCKINGHAM COUNTY	BUCKINGHAM COUNTY
510027	BUENA VISTA, CITY OF	BUENA VISTA CITY
510140	BURKEVILLE, TOWN OF	NOTTOWAY COUNTY
510028	CAMPBELL COUNTY	CAMPBELL COUNTY
510106	CAPE CHARLES, TOWN OF	NORTHAMPTON COUNTY
510249	CAROLINE COUNTY	CAROLINE COUNTY
510197	CARROLL COUNTY	CARROLL COUNTY
510162	CEDAR BLUFF, TOWN OF	TAZEWELL COUNTY
510198	CHARLES CITY COUNTY	CHARLES CITY COUNTY
510333	CHARLOTTE COUNTY	CHARLOTTE COUNTY
510318	CHARLOTTE COURT HOUSE, TOWN OF	CHARLOTTE COUNTY
510033	CHARLOTTESVILLE, CITY OF	CHARLOTTESVILLE CITY
510297	CHASE CITY, TOWN OF	MECKLENBURG COUNTY
510114	CHATHAM, TOWN OF	PITTSYLVANIA COUNTY
510178	CHERITON, TOWN OF	NORTHAMPTON COUNTY
510034	CHESAPEAKE, CITY OF	CHESAPEAKE CITY
510035	CHESTERFIELD COUNTY	CHESTERFIELD COUNTY
510185	CHILHOWIE, TOWN OF	SMYTH COUNTY
510002	CHINCOTEAGUE, TOWN OF	ACCOMACK COUNTY
510101	CHRISTIANSBURG, TOWN OF	MONTGOMERY COUNTY
510158	CLAREMONT, TOWN OF	SURRY COUNTY
510036	CLARKE COUNTY	CLARKE COUNTY
510209	CLARKSVILLE, TOWN OF	MECKLENBURG COUNTY
515522	CLEVELAND, TOWN OF	RUSSELL COUNTY
510038	CLIFTON FORGE, TOWN OF	ALLEGHANY COUNTY
510186	CLIFTON, TOWN OF	FAIRFAX COUNTY
510384	CLINCHCO, TOWN OF	DICKENSON COUNTY
510143	CLINCHPORT, TOWN OF	SCOTT COUNTY
510176	COEBURN, TOWN OF	WISE COUNTY
510172	COLONIAL BEACH, TOWN OF	WESTMORELAND COUNTY
510039	COLONIAL HEIGHTS, CITY OF	COLONIAL HEIGHTS CITY
510152	COURTLAND, TOWN OF	SOUTHAMPTON COUNTY
510040	COVINGTON, CITY OF	COVINGTON CITY
510313	CRAIG COUNTY	CRAIG COUNTY
510014	CRAIGSVILLE, TOWN OF	AUGUSTA COUNTY

510264	CREWE, TOWN OF	NOTTOWAY COUNTY
510041	CULPEPER COUNTY	CULPEPER COUNTY
510042	CULPEPER, TOWN OF	CULPEPER COUNTY
510043	CUMBERLAND COUNTY	CUMBERLAND COUNTY
510170	DAMASCUS, TOWN OF	WASHINGTON COUNTY
510044	DANVILLE, CITY OF	DANVILLE CITY
510136	DAYTON, TOWN OF	ROCKINGHAM COUNTY
510253	DICKENSON COUNTY	DICKENSON COUNTY
510335	DILLWYN, TOWN OF	BUCKINGHAM COUNTY
510187	DINWIDDIE COUNTY	DINWIDDIE COUNTY
510032	DRAKES BRANCH, TOWN OF	CHARLOTTE COUNTY
510211	DUBLIN, TOWN OF	PULASKI COUNTY
510240	DUFFIELD, TOWN OF	SCOTT COUNTY
510120	DUMFRIES, TOWN OF	PRINCE WILLIAM COUNTY
510144	DUNGANNON, TOWN OF	SCOTT COUNTY
510132	EASTVILLE, TOWN OF	NORTHAMPTON COUNTY
510213	EDINBURG, TOWN OF	SHENANDOAH COUNTY
510137	ELKTON, TOWN OF	ROCKINGHAM COUNTY
510047	EMPORIA, CITY OF	GREENSVILLE COUNTY/EMPORIA CITY
510048	ESSEX COUNTY	ESSEX COUNTY
510364	EXMORE, TOWN OF	NORTHAMPTON COUNTY
515525	FAIRFAX COUNTY	FAIRFAX COUNTY
515524	FAIRFAX, CITY OF	FAIRFAX CITY
510054	FALLS CHURCH, CITY OF	FALLS CHURCH CITY
510118	FARMVILLE, TOWN OF	PRINCE EDWARD COUNTY/CUMBERLAND COUNTY
510055	FAUQUIER COUNTY	FAUQUIER COUNTY
510020	FINCASTLE, TOWN OF	BOTETOURT COUNTY
510199	FLOYD COUNTY	FLOYD COUNTY
510058	FLUVANNA COUNTY	FLUVANNA COUNTY
510061	FRANKLIN COUNTY	FRANKLIN COUNTY
510060	FRANKLIN, CITY OF	FRANKLIN CITY
510063	FREDERICK COUNTY	FREDERICK COUNTY
510065	FREDERICKSBURG, CITY OF	FREDERICKSBURG CITY
510215	FRIES, TOWN OF	GRAYSON COUNTY
510167	FRONT ROYAL, TOWN OF	WARREN COUNTY
510145	GATE CITY, TOWN OF	SCOTT COUNTY
510067	GILES COUNTY	GILES COUNTY
510320	GLADE SPRING, TOWN OF	WASHINGTON COUNTY
515526	GLASGOW, TOWN OF	ROCKBRIDGE COUNTY
510289	GLEN LYN, TOWN OF	GILES COUNTY
510071	GLOUCESTER COUNTY	GLOUCESTER COUNTY
510072	GOOCHLAND COUNTY	GOOCHLAND COUNTY
510217	GOSHEN, TOWN OF	ROCKBRIDGE COUNTY

510243	GRAYSON COUNTY	GRAYSON COUNTY
510200	GREENE COUNTY	GREENE COUNTY
510073	GREENSVILLE COUNTY	GREENSVILLE COUNTY
510138	GROTTOES, TOWN OF	ROCKINGHAM COUNTY
510025	GRUNDY, TOWN OF	BUCHANAN COUNTY
510188	HALIFAX COUNTY	HALIFAX COUNTY
510301	HALIFAX, TOWN OF	HALIFAX COUNTY
510218	HALLWOOD, TOWN OF	ACCOMACK COUNTY
510352	HAMILTON, TOWN OF	LOUDOUN COUNTY
515527	HAMPTON, CITY OF	HAMPTON CITY
510237	HANOVER COUNTY	HANOVER COUNTY
510076	HARRISONBURG, CITY OF	HARRISONBURG CITY
510121	HAYMARKET, TOWN OF	PRINCE WILLIAM COUNTY
510046	HAYSI, TOWN OF	DICKENSON COUNTY
510077	HENRICO COUNTY	HENRICO COUNTY
510078	HENRY COUNTY	HENRY COUNTY
510052	HERNDON, TOWN OF	FAIRFAX COUNTY
510311	HIGHLAND COUNTY	HIGHLAND COUNTY
510305	HILLSVILLE, TOWN OF	CARROLL COUNTY
510321	HONAKER, TOWN OF	RUSSELL COUNTY
510080	HOPEWELL, CITY OF	HOPEWELL CITY
510219	HURT, TOWN OF	PITTSYLVANIA COUNTY
510238	INDEPENDENCE, TOWN OF	GRAYSON COUNTY
510220	IRON GATE, TOWN OF	ALLEGHANY COUNTY
510221	IRVINGTON, TOWN OF	LANCASTER COUNTY
510303	ISLE OF WIGHT COUNTY	ISLE OF WIGHT COUNTY
510380	IVOR, TOWN OF	SOUTHAMPTON COUNTY
510201	JAMES CITY COUNTY	JAMES CITY COUNTY
510263	JARRATT, TOWN OF	GREENSVILLE COUNTY
510086	JONESVILLE, TOWN OF	LEE COUNTY
510280	KILMARNOCK, TOWN OF	LANCASTER COUNTY
510082	KING AND QUEEN COUNTY	KING AND QUEEN COUNTY
510312	KING GEORGE COUNTY	KING GEORGE COUNTY
510304	KING WILLIAM COUNTY	KING WILLIAM COUNTY
510084	LANCASTER COUNTY	LANCASTER COUNTY
510023	LAWRENCEVILLE, TOWN OF	BRUNSWICK COUNTY
510222	LEBANON, TOWN OF	RUSSELL COUNTY
510085	LEE COUNTY	LEE COUNTY
510091	LEESBURG, TOWN OF	LOUDOUN COUNTY
510089	LEXINGTON, CITY OF	LEXINGTON CITY
510090	LOUDOUN COUNTY	LOUDOUN COUNTY
510259	LOVETTSVILLE, TOWN OF	LOUDOUN COUNTY
510309	LUNENBURG COUNTY	LUNENBURG COUNTY

510110	LURAY, TOWN OF	PAGE COUNTY
510093	LYNCHBURG, CITY OF	LYNCHBURG CITY
510094	MADISON COUNTY	MADISON COUNTY
510123	MANASSAS PARK, CITY OF	MANASSAS PARK CITY
510122	MANASSAS, CITY OF	MANASSAS CITY
510223	MARION, TOWN OF	SMYTH COUNTY
510095	MARTINSVILLE, CITY OF	HENRY COUNTY
510096	MATHEWS COUNTY	MATHEWS COUNTY
510206	MC KENNEY, TOWN OF	DINWIDDIE COUNTY
510189	MECKLENBURG COUNTY	MECKLENBURG COUNTY
510360	MIDDLEBURG, TOWN OF	LOUDOUN COUNTY
510098	MIDDLESEX COUNTY	MIDDLESEX COUNTY
510274	MIDDLETOWN, TOWN OF	FREDERICK COUNTY
510379	MONTEREY, TOWN OF	HIGHLAND COUNTY
510099	MONTGOMERY COUNTY	MONTGOMERY COUNTY
510148	MOUNT JACKSON, TOWN OF	SHENANDOAH COUNTY
510224	MT. CRAWFORD, TOWN OF	ROCKINGHAM COUNTY
510068	NARROWS, TOWN OF	GILES COUNTY
510225	NASSAWADOX, TOWN OF	NORTHAMPTON COUNTY
510102	NELSON COUNTY	NELSON COUNTY
510340	NEW CASTLE, CITY OF	CRAIG COUNTY
510306	NEW KENT COUNTY	NEW KENT COUNTY
510227	NEW MARKET, TOWN OF	SHENANDOAH COUNTY
510103	NEWPORT NEWS, CITY OF	NEWPORT NEWS CITY
510104	NORFOLK, CITY OF	NORFOLK CITY
510105	NORTHAMPTON COUNTY	NORTHAMPTON COUNTY
510107	NORTHUMBERLAND COUNTY	NORTHUMBERLAND COUNTY
510108	NORTON, CITY OF	NORTON CITY
510307	NOTTOWAY COUNTY	NOTTOWAY COUNTY
510124	OCCOQUAN, TOWN OF	PRINCE WILLIAM COUNTY
510298	ONANCOCK, TOWN OF	ACCOMACK COUNTY
510261	ONLEY, TOWN OF	ACCOMACK COUNTY
510203	ORANGE COUNTY	ORANGE COUNTY
510366	ORANGE, TOWN OF	ORANGE COUNTY
510109	PAGE COUNTY	PAGE COUNTY
510228	PAMPLIN CITY, TOWN OF	PRINCE EDWARD COUNTY/APPOMATTOX COUNTY
510226	PARKSLEY, TOWN OF	ACCOMACK COUNTY
510252	PATRICK COUNTY	PATRICK COUNTY
510229	PEARISBURG, TOWN OF	GILES COUNTY
510069	PEMBROKE, TOWN OF	GILES COUNTY

510087	PENNINGTON GAP, TOWN OF	LEE COUNTY
510112	PETERSBURG, CITY OF	PETERSBURG CITY
510302	PHENIX, TOWN OF	CHARLOTTE COUNTY
510113	PITTSYLVANIA COUNTY	PITTSYLVANIA COUNTY
510337	POCAHONTAS, TOWN OF	TAZEWELL COUNTY
510183	POQUOSON, CITY OF	POQUOSON CITY
510332	PORT ROYAL, TOWN OF	CAROLINE COUNTY
515529	PORTSMOUTH, CITY OF	PORTSMOUTH CITY
510177	POUND, TOWN OF	WISE COUNTY
510117	POWHATAN COUNTY	POWHATAN COUNTY
510239	PRINCE EDWARD COUNTY	PRINCE EDWARD COUNTY
510204	PRINCE GEORGE COUNTY	PRINCE GEORGE COUNTY
510119	PRINCE WILLIAM COUNTY	PRINCE WILLIAM COUNTY
510125	PULASKI COUNTY	PULASKI COUNTY
510126	PULASKI, TOWN OF	PULASKI COUNTY
510231	PURCELLVILLE, TOWN OF	LOUDOUN COUNTY
510232	QUANTICO, TOWN OF	PRINCE WILLIAM COUNTY
510127	RADFORD, CITY OF	RADFORD CITY
510128	RAPPAHANNOCK COUNTY	RAPPAHANNOCK COUNTY
510056	REMINGTON, TOWN OF	FAUQUIER COUNTY
510070	RICH CREEK, TOWN OF	GILES COUNTY
510163	RICHLANDS, TOWN OF	TAZEWELL COUNTY
510310	RICHMOND COUNTY	RICHMOND COUNTY
510129	RICHMOND, CITY OF	RICHMOND CITY
510079	RIDGEWAY, TOWN OF	HENRY COUNTY
510190	ROANOKE COUNTY	ROANOKE COUNTY
510130	ROANOKE, CITY OF	ROANOKE CITY
510205	ROCKBRIDGE COUNTY	ROCKBRIDGE COUNTY
510133	ROCKINGHAM COUNTY	ROCKINGHAM COUNTY
510291	ROCKY MOUNT, TOWN OF	FRANKLIN COUNTY
510279	ROUND HILL, TOWN OF	LOUDOUN COUNTY
510212	RURAL RETREAT, TOWN OF	WYTHE COUNTY
510317	RUSSELL COUNTY	RUSSELL COUNTY
510141	SALEM, CITY OF	SALEM CITY
510191	SALTVILLE, TOWN OF	WASHINGTON COUNTY/SMYTH COUNTY
510003	SAXIS, TOWN OF	ACCOMACK COUNTY
510142	SCOTT COUNTY	SCOTT COUNTY
510007	SCOTTSVILLE, TOWN OF	FLUVANNA COUNTY/ALBEMARLE COUNTY
510147	SHENANDOAH COUNTY	SHENANDOAH COUNTY
510248	SHENANDOAH, TOWN OF	PAGE COUNTY
510081	SMITHFIELD, TOWN OF	ISLE OF WIGHT COUNTY
510184	SMYTH COUNTY	SMYTH COUNTY

510153	SOUTH BOSTON, TOWN OF	HALIFAX COUNTY
510315	SOUTHAMPTON COUNTY	SOUTHAMPTON COUNTY
510308	SPOTSYLVANIA COUNTY	SPOTSYLVANIA COUNTY
510088	ST. CHARLES, TOWN OF	LEE COUNTY
515530	ST. PAUL, TOWN OF	RUSSELL COUNTY/WISE COUNTY
510154	STAFFORD COUNTY	STAFFORD COUNTY
510251	STANARDSVILLE, TOWN OF	GREENE COUNTY
510255	STANLEY, TOWN OF	PAGE COUNTY
510155	STAUNTON, CITY OF	STAUNTON CITY
510064	STEPHENS CITY, TOWN OF	FREDERICK COUNTY
510159	STONY CREEK, TOWN OF	SUSSEX COUNTY
510149	STRASBURG, TOWN OF	SHENANDOAH COUNTY
510111	STUART, TOWN OF	PATRICK COUNTY
510156	SUFFOLK, CITY OF	SUFFOLK CITY
510157	SURRY COUNTY	SURRY COUNTY
510192	SUSSEX COUNTY	SUSSEX COUNTY
510004	TANGIER, TOWN OF	ACCOMACK COUNTY
510049	TAPPAHANNOCK, TOWN OF	ESSEX COUNTY
510160	TAZEWELL COUNTY	TAZEWELL COUNTY
510164	TAZEWELL, TOWN OF	TAZEWELL COUNTY
510139	TIMBERVILLE, TOWN OF	ROCKINGHAM COUNTY
510233	TOMS BROOK, TOWN OF	SHENANDOAH COUNTY
510021	TROUTVILLE, TOWN OF	BOTETOURT COUNTY
510292	URBANNA, TOWN OF	MIDDLESEX COUNTY
510053	VIENNA, TOWN OF	FAIRFAX COUNTY
510131	VINTON, TOWN OF	ROANOKE COUNTY
515531	VIRGINIA BEACH, CITY OF	VIRGINIA BEACH CITY
510005	WACHAPREAGUE, TOWN OF	ACCOMACK COUNTY
510284	WAKEFIELD, TOWN OF	SUSSEX COUNTY
510166	WARREN COUNTY	WARREN COUNTY
510057	WARRENTON, TOWN OF	FAUQUIER COUNTY
510168	WASHINGTON COUNTY	WASHINGTON COUNTY
510288	WASHINGTON, TOWN OF	RAPPAHANNOCK COUNTY
515532	WAYNESBORO, CITY OF	WAYNESBORO CITY
510146	WEBER CITY, TOWN OF	SCOTT COUNTY
510083	WEST POINT, TOWN OF	KING WILLIAM COUNTY
510250	WESTMORELAND COUNTY	WESTMORELAND COUNTY
510235	WHITE STONE, TOWN OF	LANCASTER COUNTY
510294	WILLIAMSBURG, CITY OF	WILLIAMSBURG CITY
510173	WINCHESTER, CITY OF	WINCHESTER CITY
510295	WINDSOR, TOWN OF	ISLE OF WIGHT COUNTY
510174	WISE COUNTY	WISE COUNTY
510179	WISE, TOWN OF	WISE COUNTY

510150	WOODSTOCK, TOWN OF	SHENANDOAH COUNTY
510180	WYTHE COUNTY	WYTHE COUNTY
510181	WYTHEVILLE, TOWN OF	WYTHE COUNTY
510182	YORK COUNTY	YORK COUNTY

Virginia Communities NOT in the National Flood Insurance Program

DCR CID Assigned	Community Name	County
510051-DCR1	CLINTWOOD, TOWN OF	DICKENSON COUNTY
510181-DCR1	DENDRON, TOWN OF	SURRY COUNTY
510640-DCR1	GALAX, CITY OF	GALAX CITY
510137-DCR1	GORDONSVILLE, TOWN OF	ORANGE COUNTY
510143-DCR1	GRETNA, TOWN OF	PITTSYLVANIA COUNTY
510107-DCR1	HILLSBORO, TOWN OF	LOUDOUN COUNTY
510001-DCR2	KELLER, TOWN OF	ACCOMACK COUNTY
510117-DCR1	LA CROSSE, TOWN OF	MECKLENBURG COUNTY
510109-DCR1	LOUISA COUNTY	LOUISA COUNTY
510109-DCR2	LOUISA, TOWN OF	LOUISA COUNTY
510001-DCR3	MELFA, TOWN OF	ACCOMACK COUNTY
510109-DCR3	MINERAL, TOWN OF	LOUISA COUNTY
510193-DCR1	MONTROSS, TOWN OF	WESTMORELAND COUNTY
510175-DCR1	NEWSOMS, TOWN OF	SOUTHAMPTON COUNTY
510001-DCR4	PAINTER, TOWN OF	ACCOMACK COUNTY
510083-DCR1	SCOTTSBURG, TOWN OF	HALIFAX COUNTY
510117-DCR2	SOUTH HILL, TOWN OF	MECKLENBURG COUNTY
510061-DCR1	THE PLAINS, TOWN OF	FAUQUIER COUNTY
510077-DCR1	TROUTDALE, TOWN OF	GRAYSON COUNTY

Appendix G: Elements of Resilience Plans

As previously stated in this manual, the contents of a resilience plan for the purpose of this grant round are meant to include the following elements.

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a locality regardless of socioeconomics or race.
4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
5. Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.

As described earlier, such plans may refer to a previously adopted “stand alone” plan that meets the definition or references the elements of other plans or documents when compiled address the elements of the definition. Sources of elements of compiled plans may include sections from a local comprehensive plan or other land use plans or ordinances, a local hazard mitigation plan, a plan developed that addresses flooding and resilience but may include other elements, and plans developed for the local government by a third party that addresses any of the elements described in 1 – 5 above. These may also include regional strategies or plans in which a local government is a party. In either case, a stand-alone plan, or a document that includes the compiled elements of multiple plans or documents should be submitted and include identification of the sources of the plans or elements submitted.

The following are examples of elements of plans that local governments may possess that would be appropriate for inclusion in a submission.

- Equity based strategic polices for local government-wide flood protection and prevention.
- Proposed projects that enables communities to adapt to and thrive through natural or human hazards.
- Documentation of existing social, economic, natural, and other conditions present in the local government.
- Review of the vulnerabilities and stressors, both natural and social in the local government.
- Forward-looking goals, actionable strategies, and priorities through as seen through an equity-based lens.
- Strategies that guides growth and development away from high-risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.
- Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by *ConserveVirginia* or similar data driven tools.

- ☐ Identification of areas suitable for property buyouts in frequently flooded areas.
- ☐ Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as “lifelines” by FEMA.
- ☐ Identified ecosystems/wetlands/floodplains suitable for permanent protection.
- ☐ Identified incentives for restoring riparian and wetland vegetation.
- ☐ A framework for implementation, capacity building and community engagement.
- ☐ Strategies for creating knowledgeable, inclusive community leaders and networks.
- ☐ A community dam safety inventory and risk assessment posed by the location and condition of dams.
- ☐ A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.
- ☐ Strategies to address other natural hazards that would cause, affect or result from flooding events including:
    - Earthquakes.
    - Storage of hazardous materials
    - Landslides/mud/debris flow/rock falls.
    - Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely.
    - Preparations for severe weather events including tropical storms or other severe storms, including winter storms.

Scope of Work Narrative – Capacity Building and Planning In Shenandoah County

1. Assess capacity needs and assets to include:

    a. Resource needs identification – financial, human, technical assistance, training.
    Currently Shenandoah County does not have any staff trained or certified for Floodplain Administration and the County has not allocated funding to provide training for its team of staff.

    b. Plan for developing, increasing, or strengthening knowledge, skills and abilities of existing or new staff. This may include training of existing staff, hiring personnel, contracting with of expert consultants or advisors.
    The County intends to have its designated Zoning/Subdivision/Floodplain Administrator, Erosion And Sediment Control Administrator, and one additional staff member or community partner trained and certified. The training would be achieved through their attendance of the FEMA administered training at the Emergency Management Institute in Emmitsburg, Maryland. In addition, the staff will obtain membership in ASFPM and take the Certified Floodplain Manager exam. Their training, membership, and certification will increase the capacity and scope of work that can be performed by Shenandoah County for floodplain administration, enforcement, and related project management.

    c. Resource development strategies. Where capacity is limited by funding, what strategies will be developed to increase resources in the local government? This may include work with non-governmental organizations, or applying for grants, loans, or other funding sources.
    The County is partnering with the Northern Shenandoah Valley Regional Commission to apply for funding for a regional resilience plan. In addition, the County intends to seek grant funding in the future for studies and assessments of the current floodplain ordinance as well as projects related to the resilience plan, which will require the County to have a Certified Floodplain Manager.

    d. Policy management and/or development.
    With the training and certification of Shenandoah County staff, the County will increase its scope, capacity, and institutional knowledge to better enforce, administer, and manage floodplain related issues and its floodplain ordinance to ensure the protection of the health, safety, and welfare of the community.

2. Goals and objectives tied to improving flood protection and prevention in a whole community approach to resilience. Identify and describe the goals and objectives of the project.
The County's goal is to have professionally trained and certified staff available to address non-compliance to the floodplain ordinance, future revisions to the ordinance per the direction of FEMA and the Virginia Department of Conservation and Recreation, and to manage projects that relate to the floodplain.

3. Stakeholder identification, outreach and education strategies.
With trained and certified staff available, the County will be better prepared to engage the community on floodplain resiliency and community preparedness for flooding. The County is also working on a Master Plan for the North Fork of the Shenandoah River and its watershed in the County with over 30 other groups including Federal, State, and Local agencies and various non-profits and community organizations. With trained and certified staff, the efforts for the Master Plan will have better guidance as it relates to the floodplain.

4. Implementation plan and timelines for specific elements of completion such as training, certifications, plan development, etc.
The plan would include having all three individuals certified within 2 years. This would include attending the training in Emmitsburg, Maryland and successfully passing the CFM exam.

5. Parties responsible for capacity building and/or plan development process.
Shenandoah County's Office of Community Development will be responsible for overseeing capacity building through staff training and certification.

6. Performance outputs and measures. Describe the expected results and benefits and how success will be measured.
Success will be measured by the ability for trained CFM's to adequately address floodplain issues, ordinance changes, complaints, and questions. The expected results is for staff to be trained on how to successfully handle and understand floodplain topics which will benefit the County greatly by ensuring the Floodplain Ordinance is implemented correctly and the Shenandoah River and its tributaries are protected to the best of staff's ability.

7. Plans for maintaining capacity, as necessary, over the long term.

Once certified, the CFM's will attend continuing education opportunities through FEMA to maintain certification.

Shenandoah County Budget: Planning And Capacity Building

Shenandoah County's median household income is $57,252 compared to Virginia's $74,222. Shenandoah County meets the low-income geographic area requirement as $57,252 / $74,222 = ~77%

Item	Notes	Cost	Total For Three Individuals
Travel to Emmitsburg, MD for FEMA E0273 Course at NETC	58.5 cents/mile (2022 IRS Rate) x 103 miles*	$60.26	**$180.77**
Return Travel from Emmitsburg, MD for FEMA E0273 Course at NETC	58.5 cents/mile (2022 IRS Rate) x 103 miles*	$60.26	**$180.77**
NETC Meal Ticket	Purchase of a meal ticket is required to stay on NETC Campus	$234.28	**$702.84**
ASFPM Annual Membership (2 years)	It is more cost-effective to take the CFM exam as a ASFPM member, in order to receive the discounted rate. Cost is for 2 years of ASFPM Membership.	$330	**$990**
CFM Exam Fee	CFM Exam Fee Rate with ASFPM Membership	$185	**$555**
ASFPM CFM Biennial Renewal Fee	CFM Biennial Renewal Fee Rate with ASFPM Membership	$120	**$360**
Total		**$989.79**	**$2,969.37**
*103 miles = approximate distance from Shenandoah County, VA to Emmitsburg, MD			

Shenandoah County Budget Narrative Justification

Shenandoah County's median household income is $57,252 compared to Virginia's $74,222. Shenandoah County meets the low-income geographic area requirement as $57,252 / $74,222 = ~77%

A. Travel Costs – Total: $361.53

- Travel to Emmitsburg, MD for FEMA E0273 Course at NETC.
    - Travel to Emmitsburg, Maryland from Woodstock, Virginia is approximately 103 miles.
    - One individual's cost per the above rate is $60.255, the total derives from the individual cost being multiplied three times.
    - This was derived using the 2022 IRS Rate of 58.5¢ per mile: https://www.irs.gov/newsroom/irs-issues-standard-mileage-rates-for-2022.
- Return travel from Emmitsburg, MD for FEMA E0273 Course at NETC.
    - Travel to Woodstock, Virginia from Emmitsburg, Maryland is approximately 103 miles.
    - One individual's cost per the above rate is $60.255, the total derives from the individual cost being multiplied three times.
    - This was derived using the 2022 IRS Rate of 58.5¢ per mile: https://www.irs.gov/newsroom/irs-issues-standard-mileage-rates-for-2022.

B. Food – Total: $702.84

- Purchase of a meal ticket is required to stay on NETC Campus: https://netcmealtickets.com/
- One meal ticket costs $234.28, the total derives from the individual cost being multiplied three times.

C. Membership - Total: $990

- It is more cost-effective to take the CFM exam as a ASFPM member, in order to receive the discounted rate. Cost is for 2 years of ASFPM Membership: https://www.floods.org/membership-communities/start/join-renew/
- One ASFPM Membership costs $330, the total derives from the individual cost being multiplied three times.
- This is required in order to ensure ASFPM Membership is provided to the three staff members to be trained and certified.

D. Exam - Total: $555

- CFM Exam Fee Rate with ASFPM Membership: https://www.floods.org/certification-program-cfm/getting-certified/#cfm-fee-schedule
- One CFM Exam costs $185, the total derives from the individual cost being multiplied three times.
- This is vital to our grant application and project as without the exam we will not have the ability to have certified staff in our County.

E. ASFPM CFM Biennial Renewal Fee - Total: $360

- CFM Biennial Renewal Fee Rate with ASFPM Membership: https://www.floods.org/certification-program-cfm/getting-certified/#cfm-fee-schedule
- One CFM Biennial Renewal Fee Rate with ASFPM Membership costs $120, the total derives from the individual cost being multiplied three times.
- This is required to maintain ASFPM Membership for the three staff members to be trained and certified.

Total: $2,969.37

Shenandoah County Comprehensive Plan

https://shenandoahcountyva.us/planning/wp-content/uploads/sites/35/2019/08/2025-Comprehensive-Plan-Updated-2019.pdf

Shenandoah County Floodplain Ordinance

https://ecode360.com/9742507

Northern Shenandoah Valley Regional Commission Hazard Mitigation Plan

http://users.neo.registeredsite.com/5/4/9/18967945/assets/NSV_Hazard_Mitigation_Plan4596.pdf

Shenandoah County Social Vulnerability Score:

Over 50% of the County is listed as Moderate Social Vulnerability.

http://cmap2.vims.edu/SocialVulnerability/SocioVul_SS.html

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Virginia Community Flood Preparedness Fun 2022 Grant

2 messages

Brenna Menefee <BMenefee@shenandoahcountyva.us> Fri, Apr 8, 2022 at 3:50 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Please see the attached grant application for Shenandoah County. This grant is for the 2022 Virginia Community Flood Preparedness Fund. Shenandoah County is applying for funds under the Planning and Capacity Building section. Please advice if there is anything else we can provide.

Thank you,

Brenna Menefee

Community Development

600 North Main Street Suite 107

Woodstock, VA 22664

Ph. 540-459-6185

Fax. 540-459-6193

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5 attachments

- **Floodplain Training Grant.pdf**
  1251K
- **Scope Of Work.pdf**
  382K
- **Budget.pdf**
  165K
- **Budget Narrative.pdf**
  260K
- **Grant Links.pdf**
  88K

CFPF, rr <cfpf@dcr.virginia.gov> Fri, Apr 8, 2022 at 4:23 PM
To: Brenna Menefee <BMenefee@shenandoahcountyva.us>

Received, thank you.
[Quoted text hidden]

Northern Virginia Regional Commission

3040 Williams Drive | Suite 200 | Fairfax, VA 22031
p: 703-642-0700 | **f:** 703-642-5077
www.novaregion.org

NOTIFICATION OF TRANSMITTAL

To: Virginia Community Flood Preparedness Fund
cfpf@dcr.virginia.gov

From: Northern Virginia Regional Commission
Nora Jackson, Resiliency Planner njackson@novaregion.org

Regarding: Application to conduct a hydrologic study of Four Mile Run

Date: April 8, 2022, Time: 2:00 PM

This transmittal package contains the official and authorized application from the NVRC to DCR for the Virginia Community Flood Preparedness Fund to conduct a Hydrologic Conditions Analysis in Four Mile Run watershed.

The electronic file contained herein contains the following information:

Appendix A- Application Form for Grant Requests for All Categories
Appendix C- Scoring Criteria for Studies
Appendix D- Checklist All Categories
Scope of Work Narrative
Budget Narrative
Supporting Documentation

Cc: ngoulet@novaregion.org

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Northern Virginia Regional Commission

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

X **Study**

NFIP/DCR Community Identification Number (CID) N/A

If a state or federally recognized Indian tribe, Name of tribe______________________________

Name of Authorized Official: Robert Lazaro

Signature of Authorized Official: ______________________________

Mailing Address (1): 3040 Williams Drive Ste 200

Mailing Address (2): ______________________________

City: Fairfax **State:** VA **Zip:** 22031

Telephone Number: (703) 642-0700 **Cell Phone Number:** (____) ________________

Email Address: rlazaro@novaregion.org

Contact Person (If different from authorized official): Nora Jackson

Mailing Address (1): 3040 Williams Drive Ste 200

Mailing Address (2): ____

City: Fairfax **State:** VA **Zip:** 22031

Telephone Number: (703) 642-4369 **Cell Phone Number:** (443) 949-1158

Email Address: njackson@novaregion.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☒ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Four Mile Run Watershed (Arlington and Fairfax Counties, Cities of Falls Church and Alexandria)

NFIP Community Identification Number (CID#):(See appendix F 515520, 515519, 510054, 515525

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Zone AE, X

Flood Insurance Rate Map Number(s) (If Applicable): 5100540018D, 5155190033F, 5155190029F, 51013C0077D, 51013C0076D

Total Cost of Project: $137,947

Total Amount Requested $68,500

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration	☐ **Yes** ☐ **No**
Applicant Name:	

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	35
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☒ Flash flood studies and modeling in riverine regions of the state.	**45**	45
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☒ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	50
☒ Regional hydrologic and hydraulic studies of floodplains.	**45**	45
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	
7. Is the study area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	0
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
Total Points		175

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☐ Yes ☐ No ☒ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Proposal for Analysis of Hydrologic Conditions in Four Mile Run

Scope of Work Narrative

Study Area and Background

The Northern Virginia Regional Commission (NVRC) proposes a new study to assess changes in watershed hydrology using existing streamflow and precipitation monitoring data from Four Mile Run. By analyzing historical streamflow and precipitation data, the study aims to provide locally-specific information to inform effective watershed resource management and stormwater mitigation efforts.

Rapid population growth in Northern Virginia following World War II (>500% between 1930 and 1960) resulted in extensive land development and the construction of impervious surfaces such as roads, rooftops, and other hardscapes. By the time stormwater regulations and requirements were introduced in the 1970s, much of the Four Mile Run watershed was already developed. Since then, watershed jurisdictions have been working to retroactively improve stormwater infrastructure while also managing continued urbanization and accompanying expansion of impervious surfaces.

Sub-hourly measurements of streamflow and precipitation are available at the Four Mile Run stream gage since the beginning of water years (Oct.1 – Sept. 30) 1998 and 2005, respectively. Additionally, peak annual and mean daily streamflow records date back to 1951, though multiple gaps exist in the daily streamflow record during periods when the gage was not operational. The long duration of this dataset, facilitated by an ongoing long-term partnership between USGS and the NVRC, presents a unique opportunity to evaluate multi-decadal change in a suite of hydrologic metrics in an urban watershed. Since 1998, when the current period of monitoring began, and 1951 when data were first collected, the watershed has been subjected to multiple pressures such as changing climate and urbanization. Understanding how these forces have, and continue to, collectively alter watershed hydrology, is critical for addressing issues such as flooding, water-quality degradation, channel instability, and reductions in stream health.

Frequent flash flooding occurred in the Arlandria section of the watershed prior to the completion of a multi-million dollar channel modification project in 1977. This frequent flash flooding was attributed to the cumulative impacts of development from all four jurisdictions that share the watershed. Residential and commercial areas located between the Potomac River and I-395 sustained over $40 million worth of property damages from seven major floods that ravaged the watershed throughout the 1960s and early 1970s.

More recent flooding events and their economic impacts on the region are noted in the 2017 Northern Virginia Hazard Mitigation Plan. However, the region continues to experience intense rain events and frequent localized flooding outside of mapped FEMA floodplains, often overwhelming stormwater systems and leading to infrastructure damages. See Figures 1-3 for photos of damages from a 2019 rain event.

During the Fall of 2020, the Federal Emergency Management Agency (FEMA) held a series of Community Coordination and Outreach (CCO) Meetings for the jurisdictions of Arlington County, City of Alexandria and the City of Falls Church to update their Flood Insurance Rate Maps (FIRM). The following preliminary FIRM maps have been released within the Four Mile Run watershed and are included in this application: 5100540018D, 5155190033F, 5155190029F, 51013C0077D, 51013C0076D.

The watershed encompasses a large and diverse area that ranges from Very Low to High Social vulnerability, less than -1 to 1.4 on Adapt VA's Social Vulnerability Index. When compared to other watersheds in the Northern Virginia region, Four Mile Run has a greater concentration of vulnerable neighborhoods. The census tracts with high social vulnerability scores all shared the same housing characteristic of dense housing/older stock/lacking plumbing. See the table below for a sample list of scores:

Census Tract	**Social Vulnerability Index Classification**	**Social Vulnerability Index Score**
4514	High Social Vulnerability	1.4
1020.03	High Social Vulnerability	1.4
2012.03	High Social Vulnerability	1.1
1020.03	High Social Vulnerability	1.4
1024	Low Social Vulnerability	-0.9
4527	Moderate Social Vulnerability	0.5
1029.1	Very Low Social Vulnerability	-1.9
1028.01	Low Social Vulnerability	-0.4
2008.01	Low Social Vulnerability	-1.0
1010	Very Low Social Vulnerability	-1.3
1027.01	Moderate Social Vulnerability	0.2
1011	Very Low Social Vulnerability	-1.7

Scope of Work

Utilizing data from the existing USGS streamgage and precipitation gage (USGS Station ID 01652500), located on Four Mile Run at Shirlington Road on the border of Arlington County and Alexandria, the objectives of this proposed effort are to:

1. Compute a suite of hydrologic metrics to characterize the flow regime,
2. Investigate multi-decadal trends in those metrics,
3. Compare metrics at Four Mile Run to other monitored streams in the region where similar analyses have been conducted.

To investigate changes in the flow regime, multiple methods will be explored to compute trends in mean daily streamflow. Trends will also be analyzed on a record of peak annual streamflows, which are available continuously from 1951 to present. These data quantify the magnitude of the largest streamflow event each year and may have increased over this period due to urban activities that promote rapid runoff such as the development of impervious surfaces, stream channelization, and construction of storm sewers; as well as climate factors such as changes in rainfall volume and intensity.

Evaluations of the flow regime will also include hydrograph separations to quantify the portions of streamflow that occur as baseflow (discharging groundwater) or stormflow (runoff), runoff ratios to investigate relations between precipitation and stormflows, and stream flashiness to characterize the frequency and rapidity of short-term changes in streamflow. Although changes may occur throughout the entire flow regime, particular focus will be placed on changes in stormflow hydrology. A common feature of urbanization is an increase in impervious cover, leading to an increase in storm runoff. The four jurisdictions draining Four Mile Run, the cities of Falls Church and Alexandria, and the counties of Arlington and Fairfax have approximately 60, 43, 42, and 22 percent of their lands covered by impervious surfaces, respectively. Likewise, changes in climate have been linked to an increase in the volume, intensity, and recurrence of storm events in both recent and future decades. Individual storm events will be extracted from the long-term record and used to describe the duration, volume, rate of change, magnitude, and timing of storm hydrographs. Collectively, these event-based analyses will be used to characterize the transport of precipitation from land to stream and determine if and how those processes have changed over time.

Duration metrics that reflect the volume and intensity of precipitation, as well as the volume and timing of water inputs to the stream, which are functions of watershed storage and transport, will be computed. Event duration will be characterized with three metrics: 1) total duration, 2) duration of the rising limb, and 3) duration of the falling limb. Increased stormflow volume and runoff rates result in increased peak streamflow. In addition to exacerbating flooding issues, the increased energy exerted on the stream channel leads to bank and bed instability that can damage infrastructure and cause ecological harm. Change in magnitude of stormflows will be assessed by computing a trend on the peak streamflow from each storm event that occurred throughout the study period.

This effort will culminate in a published peer-reviewed scientific journal article characterizing patterns and trends in the long-term hydrologic and precipitation data at the existing Four Mile Run streamgage. A summary of the findings will be presented to all stakeholders in the region.

Target criteria for the chosen consultant includes:

1) extensive hydraulic and hydrologic analysis experience,
2) streamflow trend calculations
3) peer-reviewed scientific journal publication development

The selected vendor will work with NVRC and local government staff to complete the analysis and share the results with the appropriate audience.

Expected Future Use and Applicability Across the Region and State

A sustainable and resilient watershed incorporates water management solutions that are specific to the characteristics of its landscape, therefore understanding how the flow regime has changed and computing trends is critical to implement successful management and mitigation practices. The results of this study will inform regional coordination and planning efforts and provide a comprehensive understanding of multi-decadal changes in an urban watershed.

Advancing resilience in the face of climate change is a statewide need and priority. Since changes in climate have been linked to an increase in the volume and intensity rain events in both recent and future decades, the Commonwealth expressed the need for predictive floodplain mapping to assist localities with understanding future risk in Phase 1 of VA's Coastal Resilience Master Plan (CRMP). In order to more accurately model changes in the watershed, we need to understand how land development has altered stream hydrology, especially with respect to the extreme rain events the region has already experienced. The increase in stormflow volume and runoff rates can not only harm water quality but also damage critical infrastructure, causing injuries and even loss of life.

Phase 1 of the CRMP outlined the need for a full riverine and coastal gauge indication and warning system. Virginia has relatively few coastal gauges and even fewer that have data over a usable timespan showing accurate trends. The proposed study would support efforts in Phase 2 of the CRMP to build a statewide gauge system and provide crucial information to local planners and emergency managers.

If funded, this study would complete the initial step in a comprehensive evaluation of the Four Mile Run watershed and address iterative work needs outlined in the CRMP. Building on this effort, additional studies could analyze of the relative influence of the potential drivers of change such as climate and urbanization. More and better-integrated data is critical to anticipate the severity of flood events and better prepare Virginians for the hazards posed by floods.

Budget Narrative

Estimated total project cost: $137,947.00
Amount of funds requested from the Fund: $68,500
Amount of cash funds available: $ $69,447.00

The Commission estimates the cost of this study at $137,947. The requested funds will cover the cost of a contractor analysis and journal publication, and NVRC will provide 50% match to manage the project through existing Stormwater Resiliency and Four Mile Run Watershed Management budget programs.

Total Budget Worksheet

Category	**CFPF Request**	**Matching Funds**	**Total**
Personnel	$ 3,500.00	$ 44,270.00	$ 47,770.00
Fringe		$ 23,518.35	$ 23,518.35
Travel			$ -
Supplies			$ -
Contractual	$ 65,000.00		$ 65,000.00
Total Direct Costs	$ 68,500.00		**$ 68,500.00**
Indirect Costs		$ 1,658.65	$ 1,658.65
Total	$ 68,500.00	**$ 69,447.00**	**$ 137,947.00**

Additional Links:

- Arlington Adopted Area Plan- https://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2018/12/4mrv-adopted-area-plan.pdf
- Arlington County Floodplain Ordinance- https://www.arlingtonva.us/files/sharedassets/public/county-board/documents/code/ch48_floodplainmanagement.pdf
- FY22 Approved Budget- https://www.novaregion.org/DocumentCenter/View/13067/FY-2022-Adopted-Budget-PDF

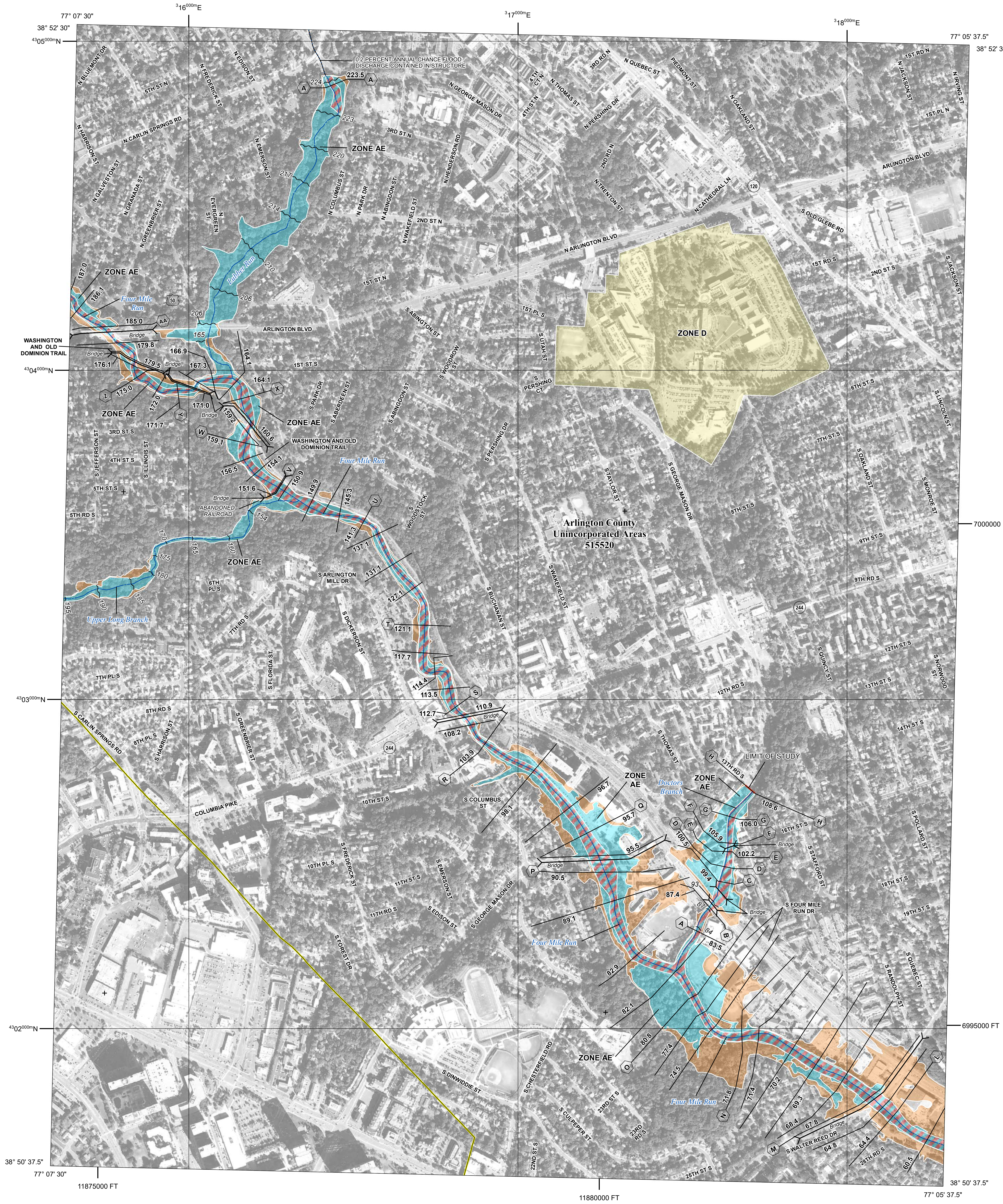
Supporting Documents:

1. Map of HUC12: 020700100301
2. ADAPT VA Social Vulnerability Index Map
3. Preliminary FIRM maps- 5100540018D, 5155190033F, 5155190029F, 51013C0077D, 51013C0076D
4. Authorization to request and accept funding- signed resolution
5. Approved NVRC budget- Four Mile Run Watershed Management and Stormwater Resiliency work programs
6. Flood damage photos- https://www.arlnow.com/2019/07/09/arlington-estimates-3-5-million-in-flood-damage-to-county-property/

Figure 1: Damage in Glencarlyn Park, along Four Mile Run (photo courtesy Mark Wigfield)

Figure 2: Pedestrian bridge washed away along Lubber Run (photo by Ashley Hopko)

Figure 3: Damage in Glencarlyn Park, along Four Mile Run (photo courtesy Amanda Lowenberger)



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A,V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟫	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Areas of Minimal Flood Hazard *Zone X*
	🟨	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- - - - - - - -	Channel, Culvert, or Storm Sewer
	||||||||||	Levee, Dike, or Floodwall
	E 18.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 - - - -	Coastal Transect
	—·—·—	Coastal Transect Baseline
	—·—·—	Profile Baseline
	———	Hydrographic Feature
	~~ 513 ~~~~	Base Flood Elevation Line (BFE)
	═══	Limit of Study
OTHER FEATURES	———	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

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For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Department of Agriculture - Aerial Photography Field Office (USDA - APFO), National Agriculture Imagery Program (NAIP). This information was derived from digital orthophotography at a 2-foot resolution from photography dated 2019.

SCALE

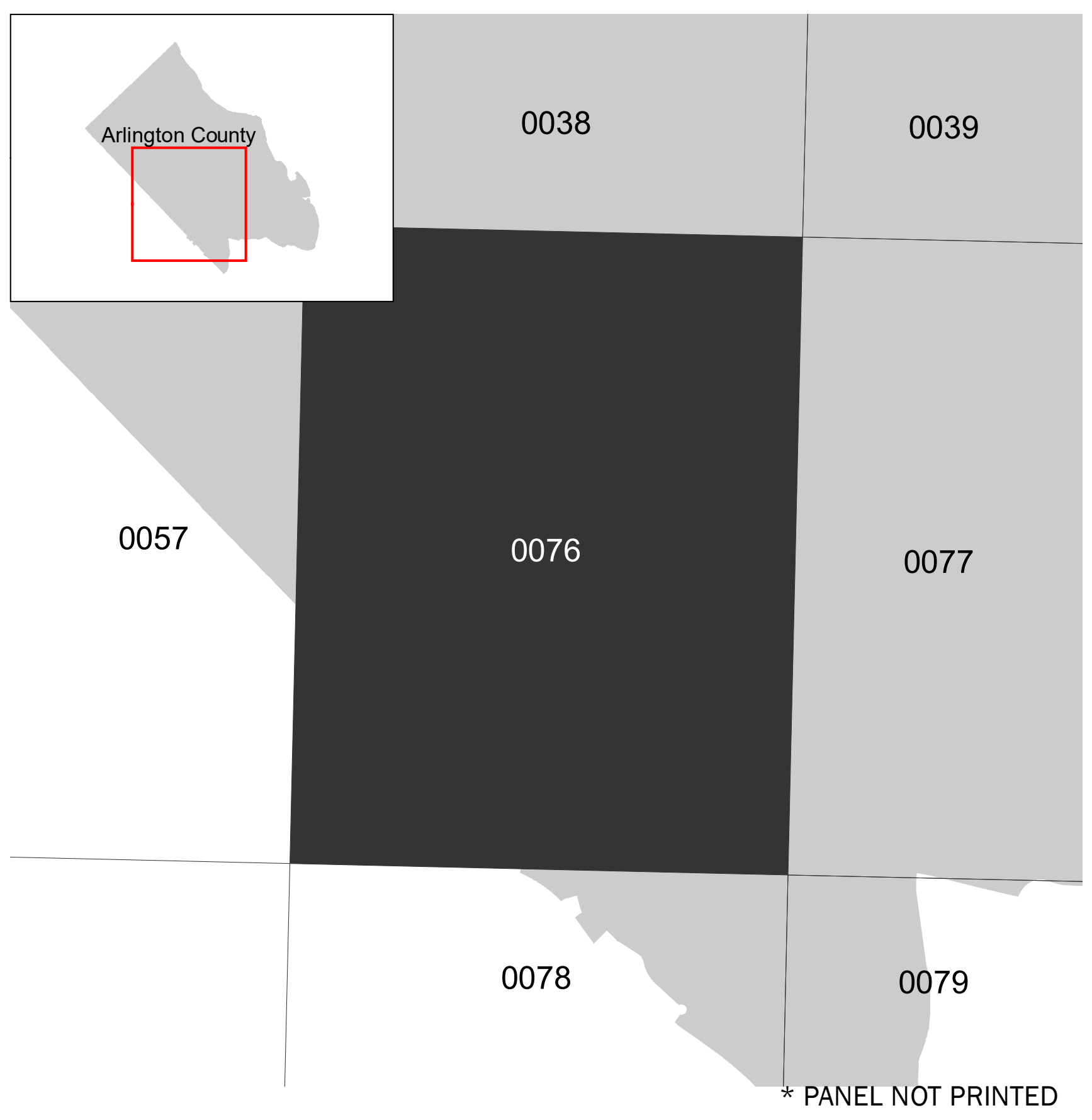
Map Projection:
NAD 1983 UTM Zone 18N;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet **1:6,000**

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

ARLINGTON COUNTY, VIRGINIA
(All Jurisdictions)

PANEL **76** OF **83**

FEMA

Panel Contains:

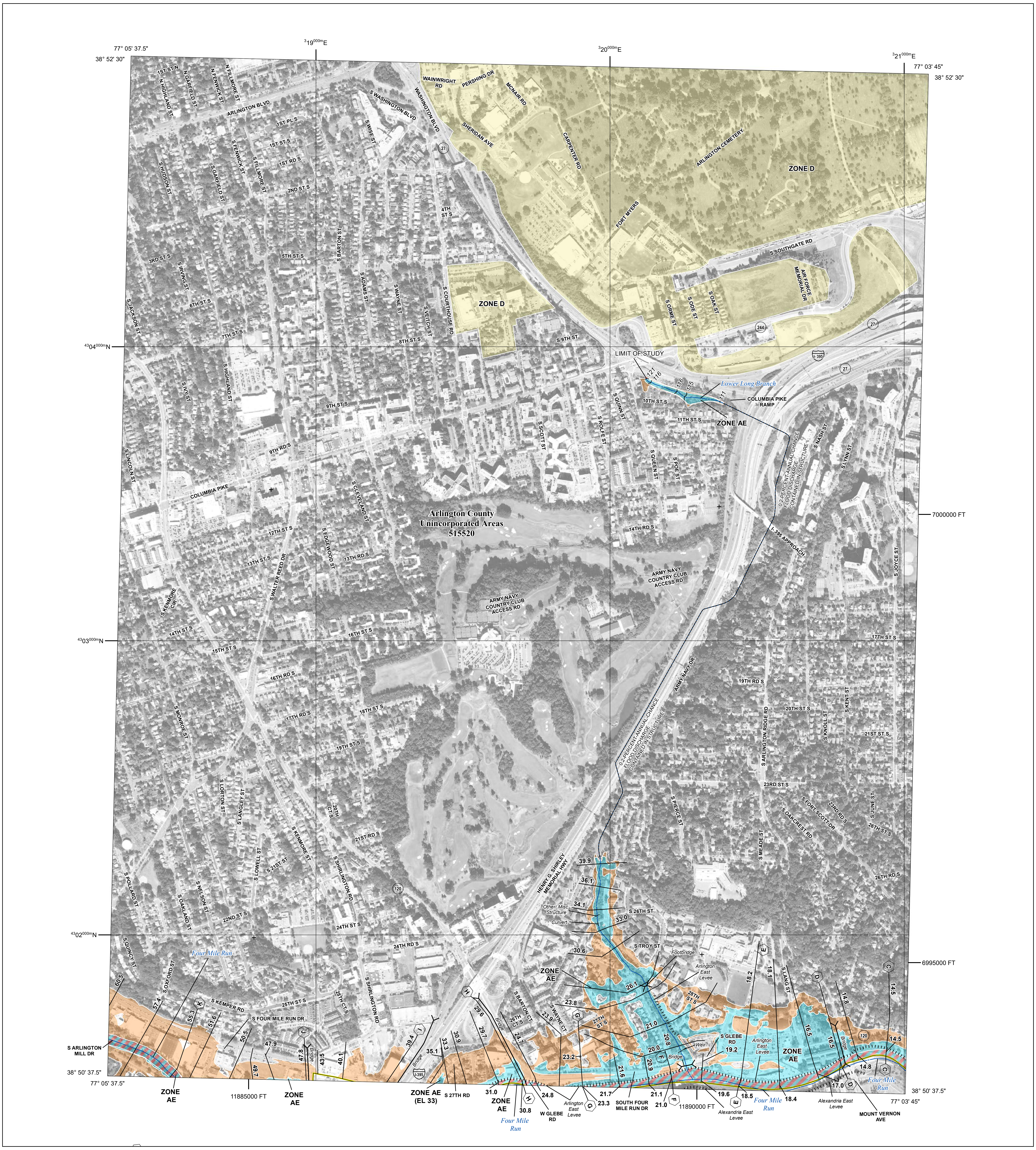
COMMUNITY	NUMBER	PANEL	SUFFIX
ARLINGTON COUNTY	515520	0076	D

PRELIMINARY
9/18/2020

VERSION NUMBER
2.6.4.6

MAP NUMBER
51013C0076D

MAP REVISED



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SPECIAL FLOOD HAZARD AREAS	▨	Without Base Flood Elevation (BFE) *Zone A,V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	▨	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Areas of Minimal Flood Hazard *Zone X*
	▨	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- - - - - - - -	Channel, Culvert, or Storm Sewer
	ıııııııııııııııı	Levee, Dike, or Floodwall
OTHER FEATURES	Ⓔ 18.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	⑧ - - - -	Coastal Transect
	—— - - —— - -	Coastal Transect Baseline
	—— - ——	Profile Baseline
	————	Hydrographic Feature
	~~ 513 ~~~~	Base Flood Elevation Line (BFE)
	════	Limit of Study
	────	Jurisdiction Boundary

NOTES TO USERS

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SCALE

N

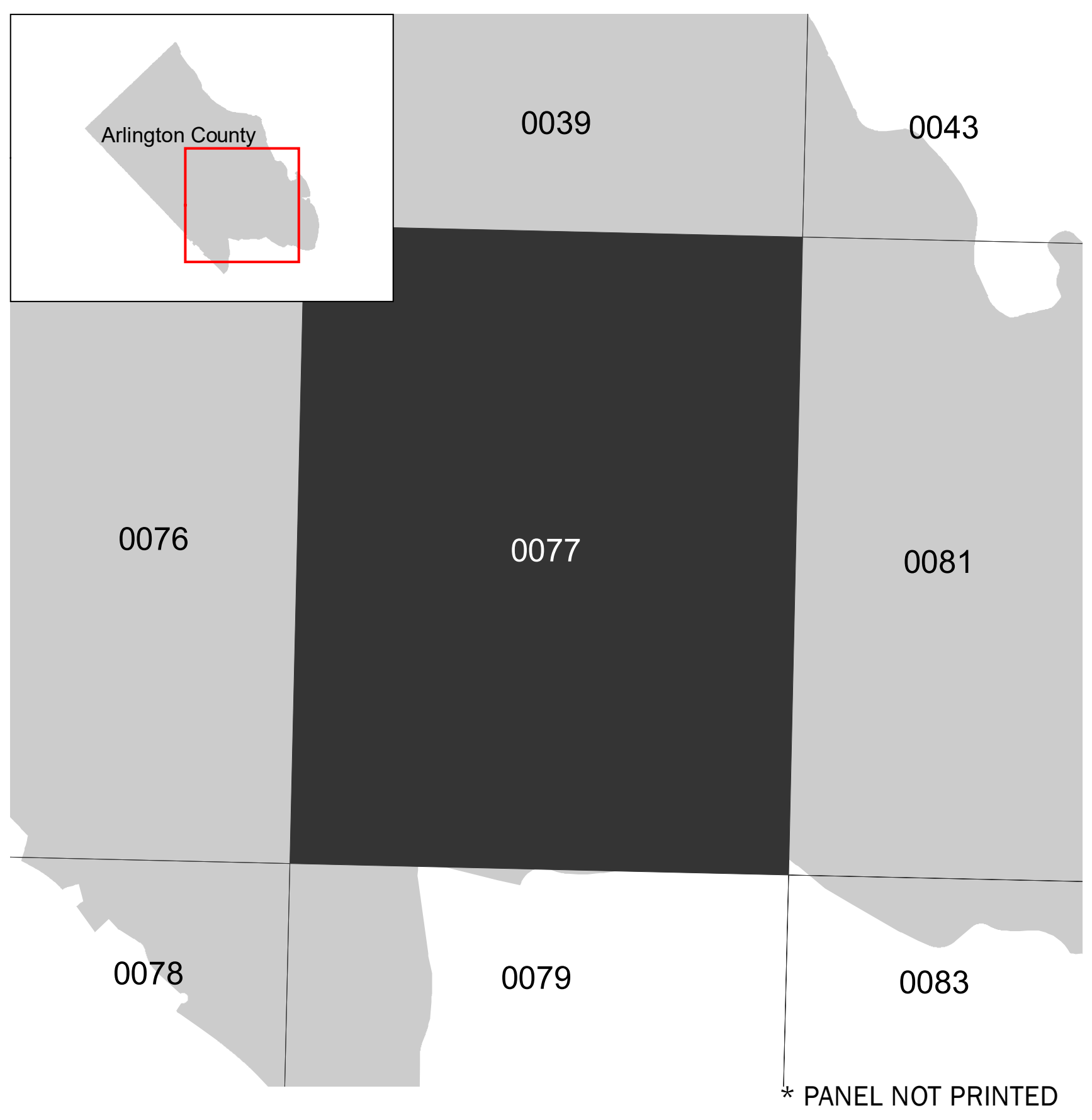
Map Projection:
NAD 1983 UTM Zone 18N;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet **1:6,000**

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

ARLINGTON COUNTY, VIRGINIA
(All Jurisdictions)

PANEL 77 OF 83

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ARLINGTON COUNTY	515520	0077	D

PRELIMINARY
9/18/2020

VERSION NUMBER
2.6.4.6
MAP NUMBER
51013C0077D
MAP REVISED

FLOOD HAZARD INFORMATION

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SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A,V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟫	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Areas of Minimal Flood Hazard *Zone X*
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	ııııııııııııııı	Levee, Dike, or Floodwall
	E 18.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 - - - -	Coastal Transect
	—·—·—	Coastal Transect Baseline
	—·—·—	Profile Baseline
	———	Hydrographic Feature
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	═══	Limit of Study
OTHER FEATURES	———	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

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For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Department of Agriculture - Aerial Photography Field Office (USDA - APFO), National Agriculture Imagery Program (NAIP). This information was derived from digital orthophotography at a 2-foot resolution from photography dated 2019.

SCALE

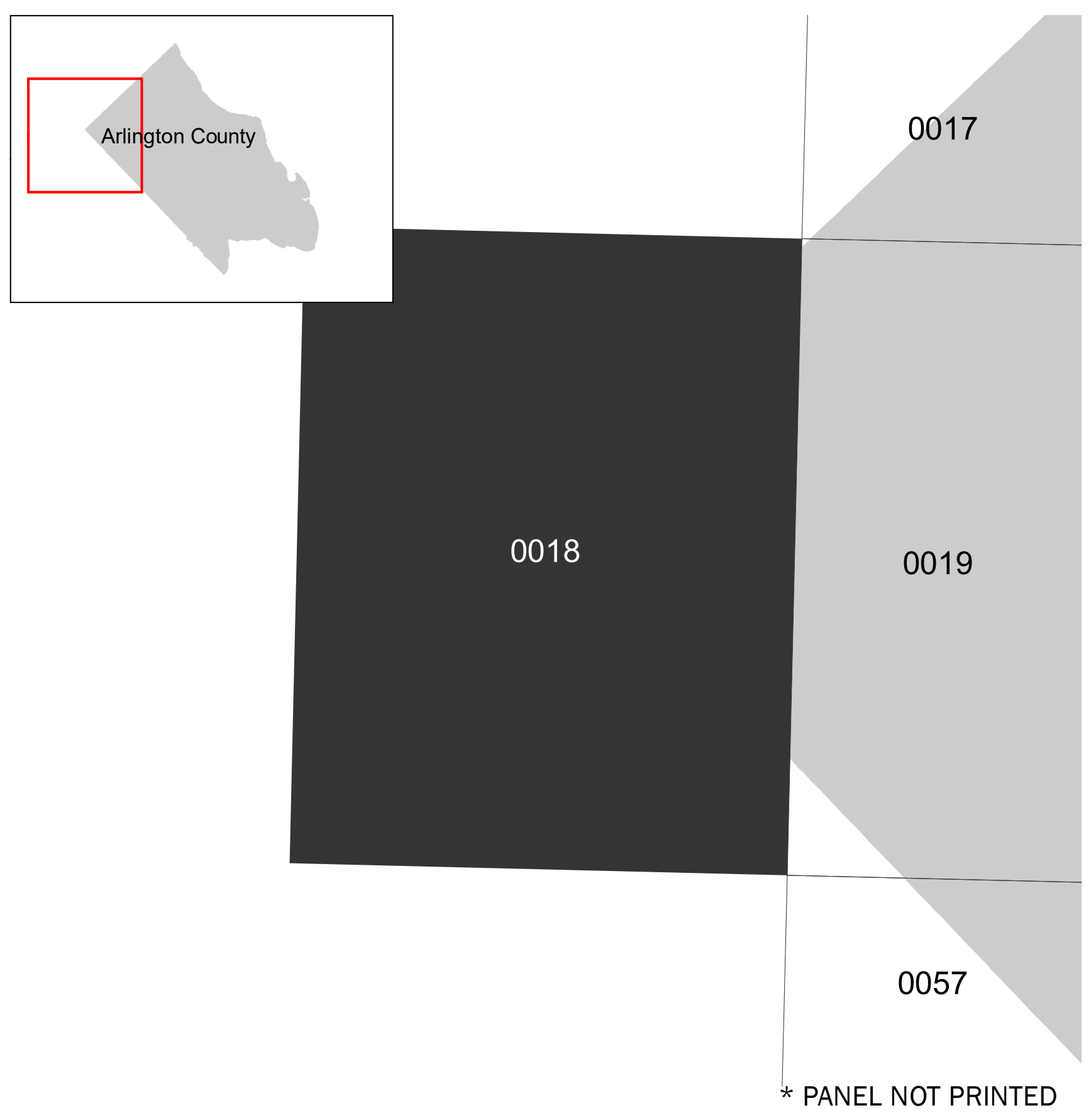
Map Projection:
NAD 1983 UTM Zone 18N;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet **1:6,000**

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

ARLINGTON COUNTY, VIRGINIA
(All Jurisdictions)

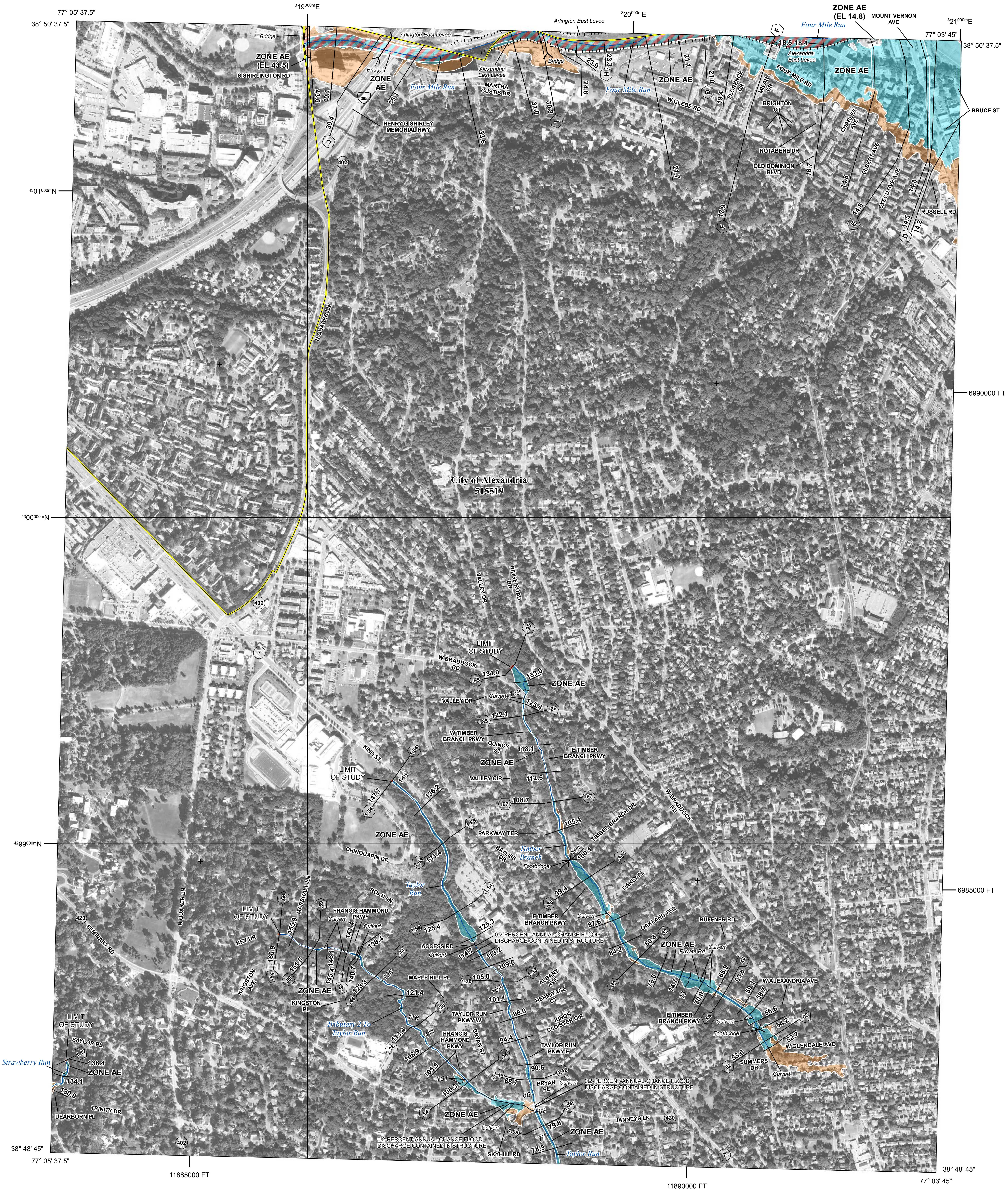
PANEL **18** OF **83**

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ARLINGTON COUNTY	515520	0018	D

PRELIMINARY
9/18/2020

VERSION NUMBER
2.6.4.6
MAP NUMBER
51013C0018D
MAP REVISED



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT **HTTPS://MSC.FEMA.GOV**

SPECIAL FLOOD HAZARD AREAS	▨	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	▨	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Areas of Minimal Flood Hazard *Zone X*
	▨	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- - - - - - -	Channel, Culvert, or Storm Sewer
	┼┼┼┼┼┼┼	Levee, Dike, or Floodwall
OTHER FEATURES	(E) 18.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	(8) - - - -	Coastal Transect
	—·—·—	Coastal Transect Baseline
	—·—·—	Profile Baseline
	——	Hydrographic Feature
	~~ 513 ~~~~	Base Flood Elevation Line (BFE)
	——	Limit of Study
	——	Jurisdiction Boundary

NOTES TO USERS

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For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

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SCALE

N

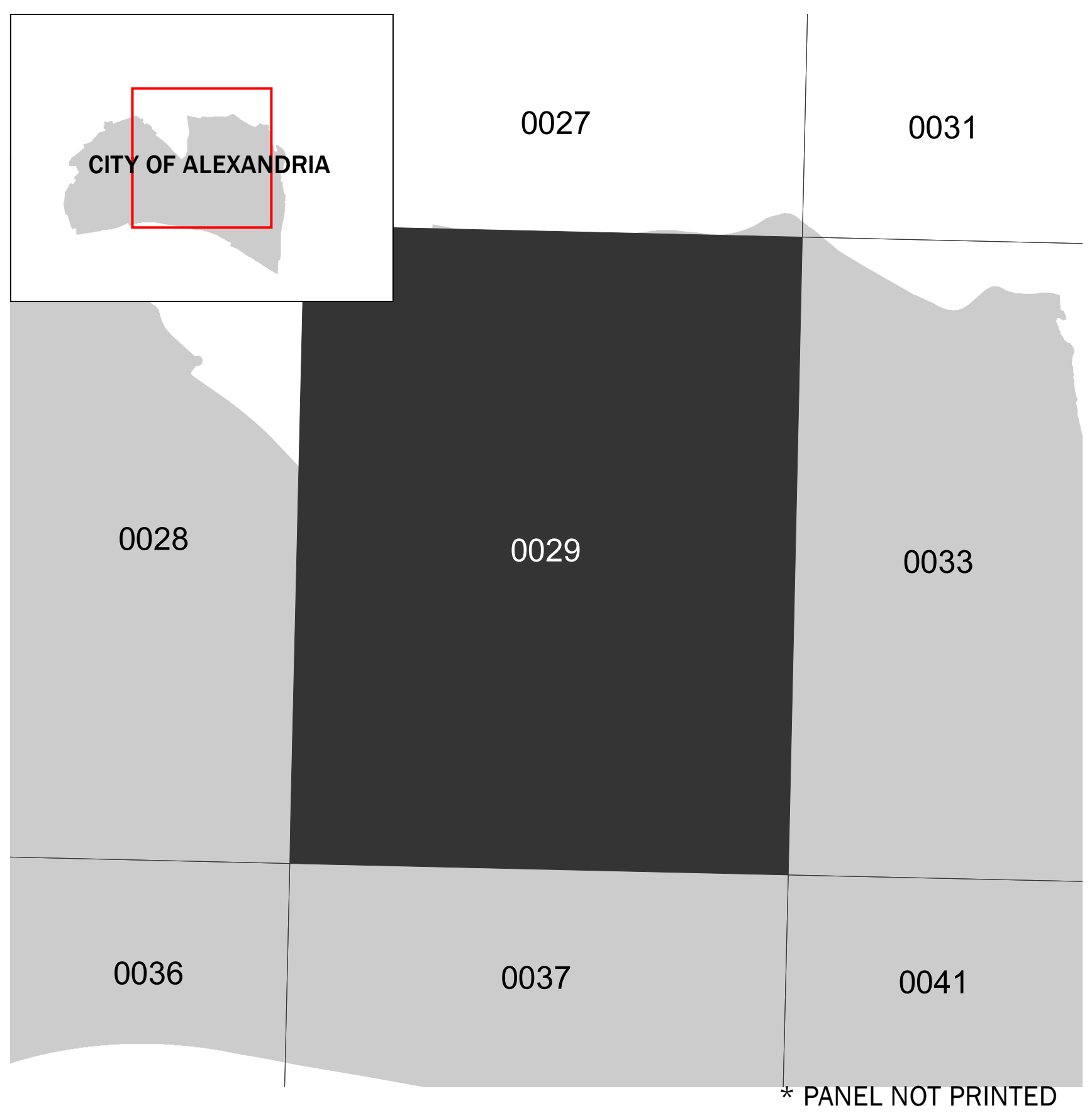
Map Projection:
NAD 1983 UTM Zone 18N;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

CITY OF ALEXANDRIA, VIRGINIA

Independent City

PANEL **29** OF **45**

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF	515519	0029	F

PRELIMINARY
9/30/2020

VERSION NUMBER
2.6.4.6

MAP NUMBER
5155190029F

MAP REVISED

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	▨	Without Base Flood Elevation (BFE) *Zone A,V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	▨	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Areas of Minimal Flood Hazard *Zone X*
	▨	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	------------	Channel, Culvert, or Storm Sewer
	IIIIIIIIIIIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 - - - -	Coastal Transect
	—·-·—	Coastal Transect Baseline
	—·-·—	Profile Baseline
	——	Hydrographic Feature
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	——	Limit of Study
	——	Jurisdiction Boundary

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SCALE

N

Map Projection:
NAD 1983 UTM Zone 18N;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet **1:6,000**

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR

* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

CITY OF ALEXANDRIA, VIRGINIA
Independent City
PANEL 33 OF 45

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF	515519	0033	F

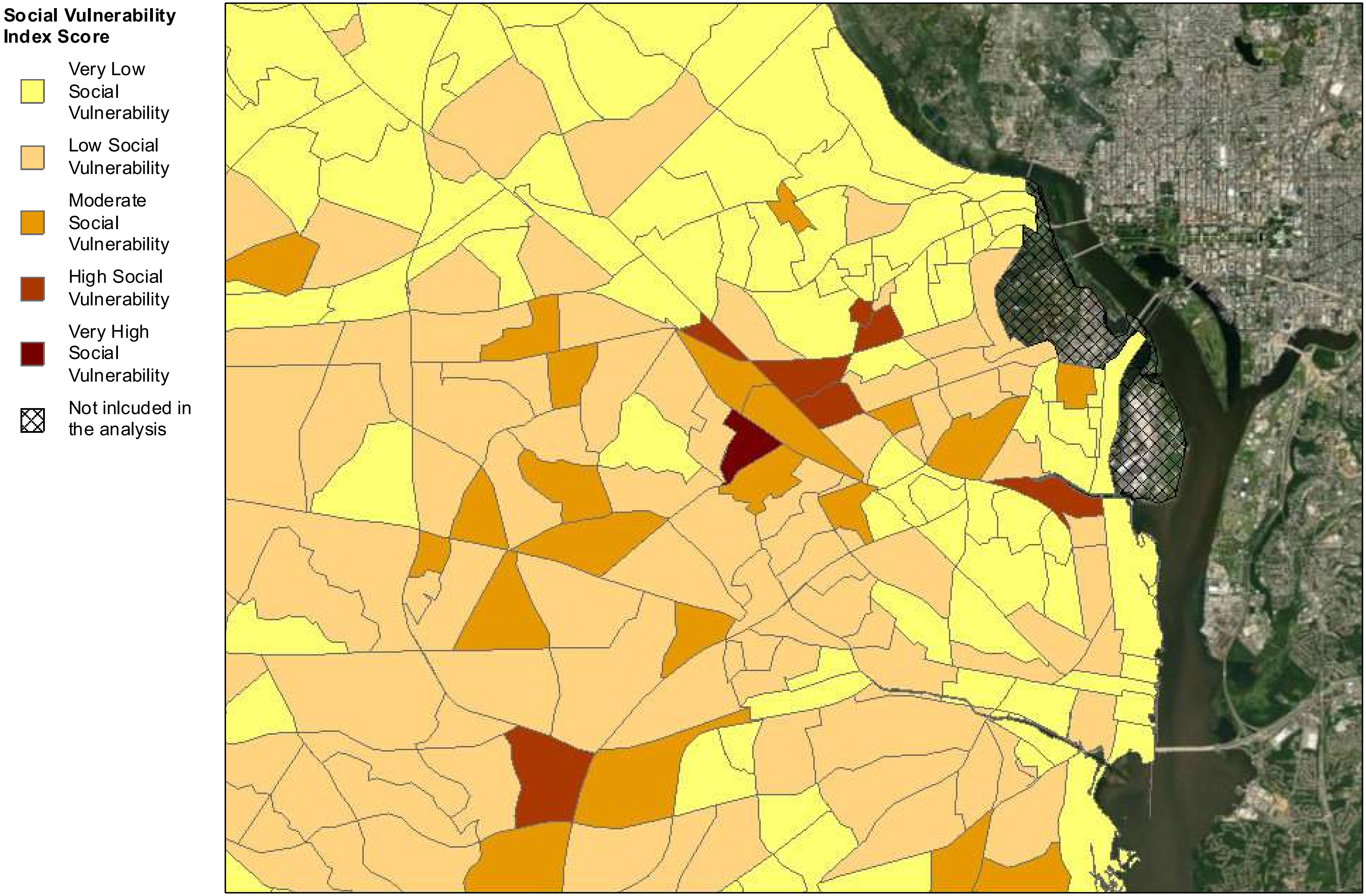
PRELIMINARY
9/30/2020

VERSION NUMBER
2.6.4.6

MAP NUMBER
5155190033F

MAP REVISED

Four Mile Run Vulnerability Index



April 5, 2022

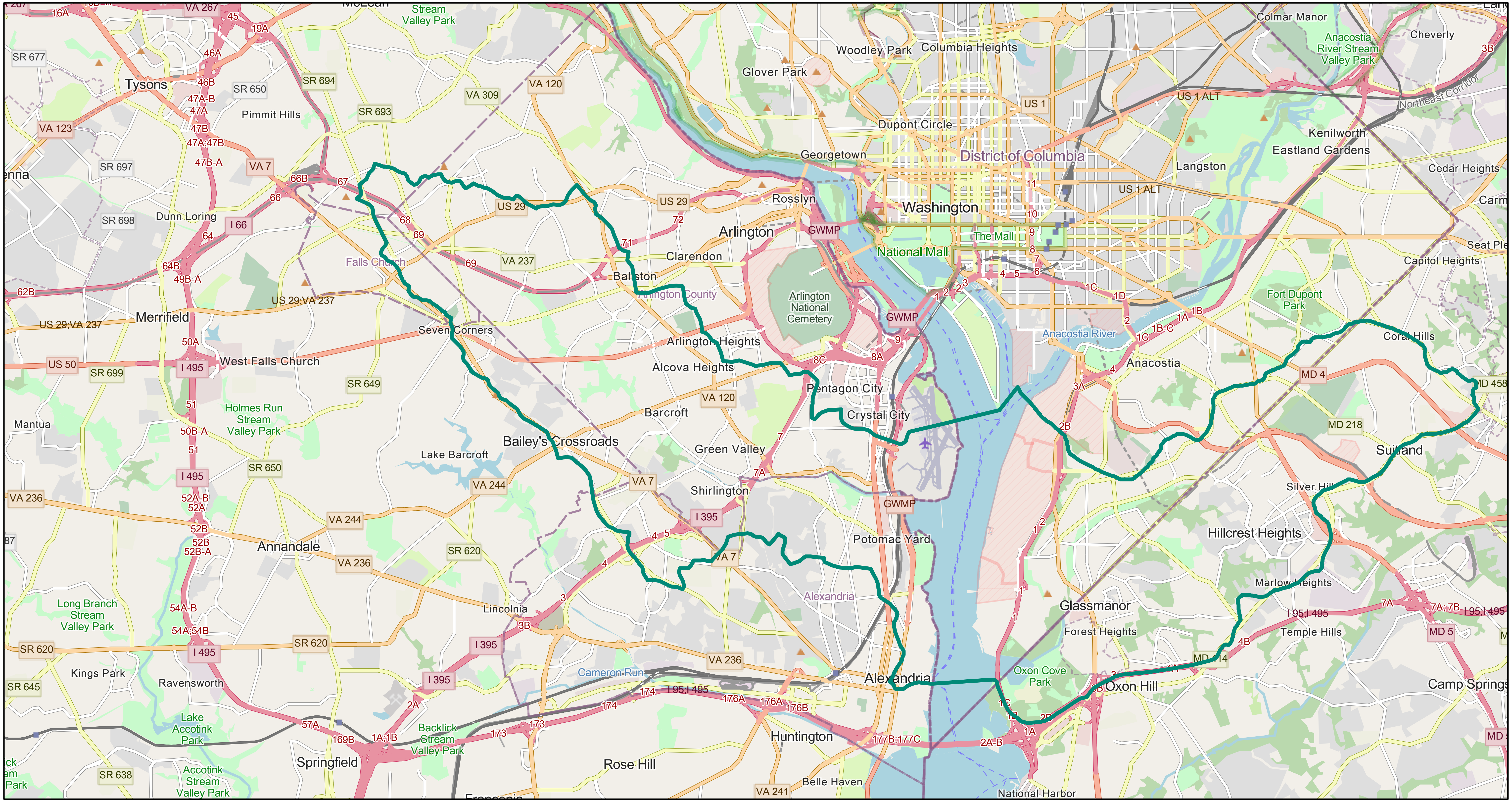
1:144,448

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science
ADAPT VA

Four Mile Run Watershed



4/6/2022

1:102,728

Map data © OpenStreetMap contributors, Microsoft, Esri Community Maps contributors, Map layer by Esri

nvrc
Northern Virginia Regional Commission

3040 Williams Drive | Suite 200 | Fairfax, VA 22031
p: 703-642-0700 | f: 703-642-5077
www.novaregion.org

RESOLUTION

Resolution No. 22-25

PATRON: Robert W. Lazaro, Jr.
Executive Director
DATE: March 24, 2022

AUTHORIZATION TO SUBMIT A HYDROLOGIC STUDY PROPOSAL TO THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION

WHEREAS, the Four Mile Run watershed is one of the most heavily urbanized drainage basins in the Northern Virginia region; and

WHEREAS, the United States Geological Survey owns and operates a rainfall-runoff gage for the watershed; and

WHEREAS, hydrologic data for the watershed is available starting in 1947 and throughout the urbanized development of watershed; and

WHEREAS, these records are strongly representative of the cumulative, downstream impacts of land use changes and stormwater management actions during a period of rapid development; and

WHEREAS, floods are one of the most common natural hazards in our region and can result in significant damage as an increasing number of localized heavy downpour events overwhelm stormwater conveyance systems; and

WHEREAS, inland flooding due to extreme rainfall is increasing with warming temperatures; and

WHEREAS, evaluating long-term rainfall-runoff dynamics in the watershed would provide insight into the effectiveness of past management actions and help inform future management actions; and

WHEREAS, the Northern Virginia Regional Commission has over a 20-year history coordinating the Four Mile Run Watershed Program; and

WHEREAS, the Virginia Department of Conservation And Recreation has grant funding available for conducting flood protection and prevention studies; and

THEREFORE BE IT RESOLVED, that the Northern Virginia Regional Commission authorizes the Executive Director to apply for a grant not to exceed $95,000 from the Department of Conservation And Recreation in support of furthering a hydrologic study in Four Mile Run watershed;

BE IT FURTHER RESOLVED that the Northern Virginia Regional Commission authorizes the Executive Director to enter into a contract with the Virginia Resources Authority, should the proposal be accepted for funding.

SEAL
1969

CERTIFICATION

The undersigned certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the Northern Virginia Regional Commission on March 24, 2022.

ROBERT W. LAZARO, JR., CERTIFYING OFFICER

Northern Virginia Regional Commission

3040 Williams Drive | Suite 200 | Fairfax, VA 22031
p: 703-642-0700 | f: 703-642-5077
www.novaregion.org

RESOLUTION

Resolution No. P21-34

PATRON: Robert W. Lazaro, Jr.
Executive Director
DATE: June 24, 2021

ADOPTON OF THE FY 2022 ANNUAL BUDGET AND PROGRAMS

WHEREAS, the Commission considers a *Preliminary Budget* each fall for the upcoming fiscal year; and

WHEREAS, the sources and amounts of expected funds have altered since the Commission adopted the *FY 2022 Preliminary Budget* on October 22, 2020; and

WHEREAS, in accordance with the Commission's budget policy, the Executive Director has prepared a draft *Annual Budget and Programs* for FY 2022;

THEREFORE BE IT RESOLVED, that the Northern Virginia regional Commission adopts the draft proposed *FY 2022 Annual Budget and Programs* dated June 24, 2021, including member government general dues contributions at a rate of $0.60 per capita and total projected revenue and expenditures as follows:

Revenue:	$7,942,690
Expenditures:	$7,806,578
Contingency/reserves:	$ 136,112

BE IT FURTHER RESOLVED, that in approving the *FY 2022 Annual Budget and Programs*, the Commission acknowledges and authorizes the staff positions as detailed in the Personnel Schedule (pp.8-9), subject to modification in accordance with the Commission's *Personnel and Administrative Policies and Practices.*

Fiscal Year 2022 Budget

nvrc
Northern Virginia Regional Commission

NORTHERN VIRGINIA
REGIONAL COMMISSION

FY 2022

Annual Budget and Programs

June 24, 2020

FY 2022 Annual Budget Summary (Schedules)

FY 2022 Annual Budget Work Program

Northern Virginia Regional Commission

3040 Williams Drive | Suite 200 | Fairfax, VA 22031
p: 703-642-0700 | f: 703-642-5077
www.novaregion.org

June 24, 2021

Dear Chairman Tarter and Honorable Members of the Northern Virginia Regional Commission:

I am pleased to submit for your consideration the *Budget and Programs for Fiscal Year 2022*. The budget in my opinion supports the work of the Commission and helps us to continue to provide value to our local government partners.

The proposal contains no per capita dues increase to our local government members nor does it rely on speculative revenue to balance it. The proposal is conservative in nature and allows the Commission full flexibility in making future changes.

I am proud that working together we have had more than four years of positive financial performance. As you know, as of the end of FY2019 we have eliminated the structural deficit and made our first contribution to the Commission's Reserve Fund consistent with Commission policy. The Budget before the Commission projects to make a contribution to the Reserve Fund as well. While we must be mindful of events outside of our control, I am pleased to report our staff continues to provide excellent results for our region and partner local governments.

Highlights of the Budget include:

- No increase in per capita dues
- Reflects an increase of funding from the Commonwealth of Virginia in the amount of $14,000
- Budget remains in balance
- Anticipates the award of a $3 Million grant from Virginia Housing for affordable housing
- Provides $250,000 in funding from the District of Columbia for the Commuter Fast Ferry
- Adds one new position dedicated to the issue of resiliency planning and flooding
- Adds funding for the required Regional Water Supply Plan which is mandated by State regulation. This is the first major update in more than ten years. All jurisdictions regardless of NVRC membership are required to participate in the plan.

I am thankful for this opportunity to present the budget to the Commission for approval.

Sincerely,

Robert W. Lazaro, Jr.
Executive Director

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\##

FY 2022 REVENUE

June 24, 2021

	FY 2020 Actual Revenue June 30, 2020	FY 2021 Adopted Revenue June 25,2020	FY 2022 Proposed Revenue October 22 ,2020	FY 2022 Proposed Revenue June 24, 2021
LOCAL GOVERNMENTS				
Annual Contributions	1,496,223	1,509,032	1,512,326	1,512,326
Special Contributions:	530,874	516,519	516,519	516,519
Occoquan Watershed Management Program	211,043	204,520	204,520	204,520
Four Mile Run Watershed Management Program	149,786	135,639	135,639	135,639
Northern Virginia Waste Management Program	82,545	88,860	88,860	88,860
Regional Energy Strategy	87,500	87,500	87,500	87,500
Member government planning assistance	**106,051**	**311,968**	**117,950**	**117,950**
Subtotal:	**2,133,148**	**2,337,519**	**2,146,795**	**2,146,795**
COMMONWEALTH OF VIRGINIA (state and indirect federal)				
Annual Contribution (DHCD)	151,943	151,943	151,943	165,943
Contracts:	2,267,538	2,566,724	2,871,892	2,649,245
Department of Environmental Quality	117,493	115,875	96,833	96,833
Virginia Department of Transportation	19,435	-	-	-
Virginia Department of Health	1,870,351	2,088,917	2,400,000	1,977,969
Virginia Department of Motor Vehicles	107,823	157,690	125,074	125,074
Virginia Department of Housing & Comm Dvlpmt (Go VA)	152,436	204,242	249,985	249,994
Virginia Housing				199,375
Subtotal:	**2,419,481**	**2,718,667**	**3,023,835**	**2,815,188**
FEDERAL (direct)				
National Park Service	15,885	50,441	50,221	50,220
MARAD	10,229	-	-	-
Military installations				13,500
Subtotal:	**26,114**	**50,441**	**50,221**	**63,720**
OTHER INCOME				
District of Columbia	2,299,954	2,721,000	2,792,213	2,424,816
Shared facilities income (NVTA / HSA)	180,134	188,668	193,176	193,176
Other contracts/fees/contributions	115,881	206,062	136,100	295,995
Interest	14,940	3,000	3,000	3,000
Misc	-	-	-	-
Subtotal:	**2,610,910**	**3,118,730**	**3,124,489**	**2,916,987**
TOTAL REVENUE	**$ 7,189,652**	**$ 8,225,357**	**$ 8,345,340**	**$ 7,942,690**

FY 2022 LOCAL CONTRIBUTIONS 1/

June 24, 2021

Jurisdiction	Population for FY 2022 Dues Calculation 2/	FY 2020 Dues 3/	FY 2021 Dues 3/	FY 2022 Dues 3/	Change FY 22-FY 21
Alexandria	159,152	$ 96,431	$ 96,630	$ 95,491	(1,139)
Arlington County	242,152	143,444	144,619	145,291	672
City of Fairfax	23,943	14,295	14,731	14,366	(365)
Falls Church	14,331	8,561	8,676	8,599	(77)
Fairfax County	1,102,442	661,412	662,926	661,465	(1,461)
Herndon #	24,601	14,719	14,727	14,761	34
Vienna	16,485	9,926	9,934	9,891	(43)
Loudoun County	359,819	205,112	211,463	215,891	4,428
Leesburg	53,727	32,529	32,350	32,236	(114)
Manassas City	41,757	25,070	25,232	25,054	(178)
Manassas Park	16,636	9,685	9,917	9,982	65
Prince William County	459,576	270,456	274,687	275,746	1,059
Dumfries	5,922	3,138	3,140	3,553	413
TOTAL	2,520,543	$ 1,494,779	$ 1,509,033	$ 1,512,326	3,294
PER CAPITA RATE		0.60	0.60	0.60	

1/ Does not include the assessments for four programs which are separately as agreed to by the participating localities and agencies. The contributors, and the proposed level of their financial participation for FY 2021, are depicted in separate tables below.

2/ Source: Weldon Cooper Center for Public Service (Counties and Cities); US Census (Towns) - July 1, 2018 estimates

3/ Formula for computation of jurisdictional contributions set by Bylaws: straight per capita basis, with the rate (dollars/cents) per capita established annually by the Commission.

Northern Virginia Waste Management Program

Participating Jurisdictions	FY 2022 Contributions
Alexandria	$ 13,329.00
Arlington County	13,329.00
Fairfax County	13,329.00
Loudoun County	13,329.00
Pr. William County	13,329.00
Dumfries	2,776.88
City of Fairfax	2,776.88
Falls Church	2,776.88
Herndon	2,776.88
Leesburg	2,776.88
Manassas	2,776.88
Manassas Park	2,776.88
Vienna	2,776.88
	$ 88,860.04

Occoquan Watershed Management Program

Participating Jurisdictions	FY 2022 Contributions
Fairfax County	$ 48,110
Fairfax Water	45,390
Fauquier County	10,590
Loudoun County	5,650
City of Manassas	7,920
City of Manassas Park	1,140
Prince William County	42,070
Prince William Co. Service Auth.	43,650
	$ 204,520

Four Mile Run Watershed Management Program

Participating Jurisdictions	FY 2022 Contributions
Alexandria	$ 48,830
Arlington County	62,394
Fairfax County	20,346
Falls Church	4,069
	$ 135,639

Regional Energy Strategy

Participating Jurisdictions		FY 2022 Contributions
Arlington	$	-
Fairfax		-
Loudoun County		35,000
Prince William		-
Alexandria		35,000
City of Fairfax		2,500
Falls Church		2,500
Manassas		2,500
Manassas Park		2,500
Herndon		2,500
Leesburg		2,500
Dumfries		-
Vienna		2,500
	$	87,500

FY 2022 EXPENDITURES
June 24, 2021

Budget Category	Line Item	FY 2020 Actual Expenditures June 30, 2020	FY 2021 Adopted Expenditures June 25, 2020	FY 2022 Proposed Expenditures October 22, 2020	FY 2022 Proposed Expenditures June 24, 2021
PERSONNEL COST	Salaries and Wages	1,532,871	1,635,600	1,678,198	1,862,942
	Fringe Benefits	452,641	642,646	551,377	637,275
	Subtotal:	**1,985,512**	**2,278,246**	**2,229,575**	**2,500,217**
CONTRACT SERVICES	Consultants/Contract Services	618,932	734,384	738,233	1,039,918
	RW/HOPWA Subgrants	3,303,298	4,029,103	4,388,100	3,450,000
	Other Subgrants	19,435	-	-	-
	Subtotal:	**3,941,665**	**4,763,487**	**5,126,333**	**4,489,918**
HOUSEKEEPING EXPENSES	Postage	2,085	7,407	3,697	2,935
	Rent	524,344	539,464	550,963	550,963
	Telephone	7,378	8,300	8,280	8,435
	Audit & Insurance	21,353	26,700	26,700	26,700
	Equipment Repair	1,395	5,000	5,000	5,000
	Depreciation	25,084	25,000	25,000	25,000
	Advertising (not employment)	3,911	7,750	8,600	8,150
	Subtotal:	**585,550**	**619,621**	**628,240**	**627,183**
OPERATING EXPENSES	Memberships & Subscriptions	12,802	11,427	13,907	14,702
	Education Materials	364	-	-	-
	Office Supplies	14,191	36,008	23,892	19,580
	Equipment Rental	903	904	904	904
	IT Expenses	54,718	50,735	59,510	63,933
	Subtotal:	**82,978**	**99,074**	**98,213**	**99,119**
DUPLICATING	Reproduction	13,487	14,105	14,583	14,556
	Printing	27,347	35,844	26,044	26,544
	Subtotal:	**40,833**	**49,949**	**40,627**	**41,100**
TRAVEL AND CONFERENCES	Local Travel	5,318	10,849	8,446	9,196
	Non-Local Travel	7,805	14,239	11,675	11,675
	Meetings	56,027	15,300	15,050	16,170
	Subtotal:	**69,150**	**40,388**	**35,171**	**37,041**
RECRUITMENT AND DEVELOPMENT	Employment Advertising	377	2,000	2,000	2,000
	Employee Relocation	-	-	-	-
	Educational Assistance	838	5,000	5,000	5,000
	Subtotal:	**1,215**	**7,000**	**7,000**	**7,000**
OTHER	Interest expense (line of credit)				
	Uncollectable receivable (write off)				
	Bank service fees	4,314	5,000	5,000	5,000
	Loss on disposal of assets	-	-	-	-
	Subtotal:	**4,314**	**5,000**	**5,000**	**5,000**
TOTAL EXPENDITURES		**$ 6,711,217**	**$ 7,862,765**	**$ 8,170,159**	**$ 7,806,578**

PROGRAM EXPENDITURES AS A PERCENT OF TOTAL BUDGET: FY 2020 - FY 2022

June 24, 2021

	2020 Actual June 30, 2020	%	2021 Adopted June 25, 2020	%	2022 Proposed October 22, 2020	%	2022 Proposed June 24, 2021	%
Regional Council Services	$672,231	10.0%	$640,969	8.2%	$752,086	9.2%	$745,503	9.5%
Demographics/GIS	188,496	2.8%	289,463	3.7%	240,333	2.9%	242,444	3.1%
Environmental Services Programs	849,421	12.7%	988,594	12.6%	1,142,263	14.0%	1,138,070	14.6%
Energy Management	111,003	1.7%	172,434	2.2%	111,816	1.4%	112,735	1.4%
Regional Planning Services	51,537	0.8%	8,868	0.1%	27,854	0.3%	27,963	0.4%
Trails, Open Space and Heritage Resources	203,947	3.0%	274,677	3.5%	259,870	3.2%	259,643	3.3%
Human Services Programs	4,238,791	63.2%	5,088,370	64.7%	5,321,823	65.1%	4,614,535	59.1%
Regional Economic Vitality Planning	395,791	5.9%	399,390	5.1%	314,113	3.8%	665,685	8.5%
Total	**$6,711,216**	**100.0%**	**$7,862,765**	**100.0%**	**$8,170,158**	**100.0%**	**$7,806,578**	**100.0%**

FY 2022
PERSONNEL SCHEDULE
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Regular Positions	Grade	Rate*	FTE	Amount	
Executive					
Executive Director	n/a	163,060	1.00	163,060	
Deputy Executive Director	14	152,388	1.00	152,388	
Management Analyst	7	76,880	1.00	76,880	
Executive Assistant	5	-	-	-	*Vacated due to promotion*
Financial Manager	7	-	-	-	
Receptionist (job share) **	3	-	-	-	*To be filled with contract employee during FY22*
Receptionist (job share) **	3	-	-	-	*To be filled with contract employee during FY22*
Environmental & Resiliency Planning					
Director, Environmental and Resiliency Planning	13	128,212	1.00	128,212	
Four Mile Run Program Manager/PE or equiv	11	-	-	-	*To be covered with existing staff and contractor*
Senior Regional Planner - energy and climate change	12	100,145	1.00	100,145	
Envrionmental Planner- solid and hazardous waste	11	95,283	1.00	95,283	
Environmental Planner - coastal and ChesBay	11	80,653	1.00	80,653	
Environmental Planner - flood control	8	68,500	1.00	68,500	NEW FY22
Water Resources Planner/GIS Analyst	8	69,870	1.00	69,870	
Regional Demographer/Analyst	11	107,100	1.00	107,100	
GIS Program Manager	9	-	-	-	*To remain unfilled pending additional funding.*
Human Services					
Director, Human Services Programs	12	121,460	1.00	121,460	
Deputy Division Director, Human Services	11	-	-	-	*To remain unfilled pending additional funding.*
Human Services Planner	7	86,882	0.75	65,162	
Federal Grants Data Analyst	7	78,200	1.00	78,200	
Federal Grants Quality Manager	8	73,403	1.00	73,403	
HOPWA Contract Monitor/Resources Specialist 70440	7	70,440	0.34	23,909	
Federal Grants Contract Monitor	7	68,969	1.00	68,969	
AIDS Program Analyst	7	-	-	-	*To remain unfilled pending additional funding.*
Administrative Assistant	3	-	-	-	*To remain unfilled pending additional funding.*
Housing Development Coordinator	11	88,500	1.00	88,500	NEW FY22
Director Military Partnerships	12	129,249	1.00	129,249	
TDM Outreach	7	73,537	0.75	55,153	
SUBTOTAL - Regular Positions (funded)			17.84	$ 1,746,095	

* Excutive Director pay set by Commission Resolution No. 21-26. Annualized rates of other employees are as of June 30, 2021. Pay adjustments between July 1, 2021 and June 30, 2022 to be made within the allowance detailed below.

FY 2022
PERSONNEL SCHEDULE
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Allowance for Merits and Promotions (pool equals 4.0% of total regular salaries & wages)	$	69,844
Temporary Help		
** Receptionist/Secretary (2,080 hrs of coverage @ $20.29/hr)		42,203
Intern - waste management program		800
SUBTOTAL - Temporary Help	$	43,003
Other Compensation: Accrued Leave	$	4,000
GRAND TOTAL - Salaries and Wages	$	1,862,942

FY 2022 INDIRECT COSTS
June 24, 2021

Budget Category	Line Item	2020 Actual Expenditures June 30,2020	2021 Adopted Expenditures June 25, 2020	2022 Proposed Expenditures June 24, 2021
PERSONNEL COST	Salaries and Wages	247,241	330,505	311,029
	Fringe Benefits	53,425	116,858	94,133
	Subtotal:	300,666	**447,363**	**405,162**
CONTRACT SERVICES	Consultants/Contract Services	48,351	71,979	78,518
	RW/HOPWA Subgrants	-	-	-
	Subtotal:	**48,351**	**71,979**	**78,518**
HOUSEKEEPING EXPENSES	Postage	367	425	425
	Rent	346,985	354,851	361,842
	Telephone	5,137	6,200	6,200
	Audit & Insurance	21,353	24,200	24,200
	Equipment Repair	1,395	3,500	3,500
	Depreciation	22,584	25,000	25,000
	Advertising (not employment)	-	750	-
	Subtotal:	**397,821**	**414,926**	**421,167**
OPERATING EXPENSES	Memberships & Subscriptions	1,546	1,500	2,400
	Education Materials	-	-	-
	Supplies	7,301	10,250	8,750
	Equipment Rental	903	904	904
	IT Expenses	27,191	24,500	21,889
	Subtotal:	**36,942**	**37,154**	**33,943**
DUPLICATING	Reproduction	5,038	4,715	5,215
	Printing	386	3,000	500
	Subtotal:	**5,424**	**7,715**	**5,715**
TRAVEL AND CONFERENCES	Local Travel	-	100	100
	Non-Local Travel	-	-	-
	Meetings	1,566	2,000	2,000
	Subtotal:	**1,566**	**2,100**	**2,100**
RECRUITMENT AND DEVELOPMENT	Employment Advertising	207	2,000	2,000
	Employee Relocation	-	-	-
	Educational Assistance	338	5,000	5,000
	Subtotal:	**545**	**7,000**	**7,000**
OTHER	Interest expense (line of credit)	-	-	-
	Uncollectable receivable (write off)	-	-	-
	Bank service fees	4,309	-	-
	Loss on disposal of assets	-	-	-
	Subtotal:	4,309	-	-
TOTAL EXPENDITURES		**795,624**	**988,237**	**953,605**

• Subject to audit

Indirect costs, which support all projects, are allocated based on the ratio of the individual project's direct salaries, leave and fringe benefits to total direct salaries, leave and fringe benefits.

The audited indirect cost rate for FY 2020 was 47.40% calculated as follows:

FY 2020 Indirect cost pool	795,624
Total direct salaries, leave, fringe	1,678,720

The budgeted indirect cost rate for 2021 is 53.98% calculated as follows:

FY 2021 Indirect cost pool	988,237
Total direct salaries, leave, fringe	1,830,883

The proposed budgeted indirect cost rate for 2022 is 45.52% calculated as follows:

FY 2022 Indirect cost pool	953,605
Total direct salaries, leave, fringe	2,095,055

Regional Council Services

a. Hold monthly Commission meetings including presentations / learning opportunities for Commissioners, focusing on topics directed by the Commission.

b. Review and restate the Commission's mission and role in addressing important, current or emerging regional issues.

c. Provide a daily weekday e-newsletter, *"News from the Region and State,"* summarizing news related to local and statewide issues.

d. Convene, host and participate in (where appropriate) meetings of regional peer groups composed of local government counterparts – including chief elected officers, chief administrative officers, and others – to share information, and strategies on issues that are likely to benefit from a regional perspective.

e. Work toward strengthening the capacity of Virginia's network of 21 planning district commissions to serve as a reliable statewide resource for information and technical services, by continuing active involvement in the Virginia Association of Planning District Commissions.

f. Continue to work with international partners – especially from Germany, France, United Kingdom, Sweden, Canada, Japan, Switzerland, South Korea, Italy, Belgium and Ireland – that have economic connections (i.e., in trade and foreign direct investment) with Northern Virginia, to achieve transfer of policy and technical innovations from overseas that will benefit the economies, environment and communities of the Northern Virginia region.

g. Establish and maintain strategic alignments with Northern Virginia's commercial, civil society, academic, scientific and research communities engaged in parallel international work (e.g., George Mason University, Northern Virginia Community College, Northern Virginia Technology Council).

h. Work with the Community Foundation for Northern Virginia to diversify opportunities for funding and carrying out projects and programs benefiting the Northern Virginia region.

i. Continue to serve as program administrator of the Commonwealth's "GO Virginia" initiative for regional economic projects.

FTE *1 = 2080 hr*	0.96	Expenses		Revenue	
		Personnel	$204,015	Grants/contracts	$ 249,994
		Contract	214,000	Fees	-
		Subgrants	-	Local designated funds	1,200
		Other	234,626	Other	193,176
		Share of indirect costs	92,862	General Funds	301,133
		TOTAL	$745,503	TOTAL	$745,503

Community - Military Partnership

a. Direct the Partnership program to protect, preserve and enhance Northern Virginia military installations and community partnerships by supporting bi-monthly meetings. Encourage regular communication on military facility viability; exploration of privatization opportunities such as autonomous vehicles and cybersecurity; and on issues affecting readiness, public safety and security. Facilitate cooperative and constructive relationships among the military installations in the region, and collaboration among military installations and the civilian sector, on critical topics such as land use, critical infrastructure, cybersecurity, veterans' needs, GIS, first- and last-mile transportation needs, environmental and energy issues, and other common areas where partnerships will lead to the "base of the future." Specifically, direct focus on:

- Engaging with regional bases (Joint Base Myer-Henderson Hall, Fort Belvoir and Marine Corps Base Quantico, as well as regional Army Reserves, Virginia National Guard Units, and Reserve Marine Corps.
- Tracking legislation, Executive Orders and appropriations, in order to inform local governments of compliance and funding matters that could have a bearing on their responses to any future Base Realignment and Closure decisions.
- Working with state officials in advocating for the defense industry in the Commonwealth of Virginia.
- Participating with the Secretary of Veterans and Defense Affairs on the Virginia Military Advisory Council.
- Continuing work with military, public and private institutions with respect to coordination of efforts related to a cyber-ready workforce.
- Promoting the military value of the installations within the region, providing awareness of the state of current and future mission readiness, and providing demographic and economic data to support the missions.

b. Continue to support the concept of transportation alternatives with outreach and education through Commuter Centers at Fort Belvoir, Quantico and Joint Base Myer-Henderson Hall by assisting military and defense workers find viable commuter options that relieve Northern Virginia's congestion from single-occupancy vehicles on the roads and at the gates, by working with the Transportation Demand Management County representatives.

c. Continue to partner with non-profits and other private-sector resources to support the military and their families with services from the community.

d. Conduct research, analysis, and assessment of models and practices that will place the Northern Virginia region in a strategically advantageous position for upcoming Base Realignment and Closure and cyber threats.

e. Work toward reaching the "Base of the Future" with partnership opportunities.

f. Assist bases in Northern Virginia with strategic public-public and public-private partnerships.

FTE *1 = 2080 hr*	1.29	Expenses		Revenue			
		Personnel	$225,675	Grants/contracts	$	159,895	
		Contract	23,350	Fees		13,500	
		Subgrants	-	Local designated funds		126,027	(5¢ per capita)
		Other	8,267	Other		-	
		Share of indirect costs	102,721	General Funds		60,591	
		TOTAL	$360,013	TOTAL		$360,013	

Workforce

a. Continue the Commission's initiative engaging academic, business, government, and non-profit sectors in preparing a regional workforce for the labor requirements of the Northern Virginia region. Such efforts include coordination with the US Military, public school divisions and the private sector.

b. Continue to partner with the region's public school districts, institutions of higher learning, and private sector, to help foster improved coordination of cyber workforce initiatives.

c. Leverage funding with the Commission's investment, to help plan and carry out actions that help meet the program's objectives.

FTE *1 = 2080 hr*	0.14	Expenses		Revenue		
		Personnel	$ 37,543	Grants/contracts	$ -	
		Contract	-	Fees	-	
		Subgrants	-	Local designated funds	50,411	(2¢ per capita)
		Other	300	Other	-	
		Share of indirect costs	17,089	General Funds	4,521	
		TOTAL	$ 54,932	TOTAL	$ 54,932	

Demographics/Geographical Information System (GIS)

a. Provide information and analysis related to trends, issues and other matters that impact the region to Commissioners, local government partners and the public. Demographer will coordinate efforts with Environmental, Human Services and Community/Military in-house staff and work with local government partners.

b. Provide meeting space and participate in regional workgroups of local governments, Virginia Geographical Information Network (VGIN), demographers, data analysts and GIS Managers

c. Respond to requests for demographic and GIS information

d. Provide internet presence of updated demographic and GIS information that accurately reflects the region.

e. Undertake special studies at the direction of the Commission and / or Executive Director.

FTE *1 = 2080 hr*	0.88	Expenses		Revenue	
		Personnel	$152,848	Grants/contracts	$ -
		Contract	5,000	Fees	-
		Subgrants	-	Local designated funds	-
		Other	15,025	Other	-
		Share of indirect costs	69,571	General Funds	242,444
		TOTAL	$242,444	TOTAL	$242,444

Four Mile Run Watershed Management

a. Continue to implement the Four Mile Run Watershed Management Program, which was established to ensure that drainage modification projects in the Four Mile Run Watershed do not increase runoff peaks in a manner that could impair the effectiveness of the U.S. Army Corps of Engineer's Flood Control Project, and which now includes activities designed to improve the quality of the surface and ground waters in the Four Mile Run watershed.

- Operate the Four Mile Run computer model as a tool for planning around and preparing for channel impacts.
- Update the model incorporating new data from participating jurisdictions on watershed changes to maintain the accuracy and validity of assumptions; incorporate more recent and standard versions of the software; coordinate with the Technical Review Committee in implementing the best option; and work with the jurisdictions to update the model with the best available GIS data.
- Continue to gather precipitation and discharge data in the watershed to assist with model calibration.
- Continue to co-fund the U.S. Geological Survey stream gauge at Shirlington and the tidal gage near Rt. 1, to provide continuous stage, flow and precipitation data.
- Continue to provide participating jurisdictions with information on the effectiveness of local programs for controlling storm water runoff to prevent flooding in the US Army Corps of Engineers flood control channel in lower Four Mile Run. Provide assessments of the impact of proposed individual land surface, storm drain network, or stream channel changes.
- Continue to provide liaison with non-local agencies (e.g., VDOT, US Army Corps of Engineers, Virginia Department of Environmental Quality, USGS and others) to ensure their awareness of and cooperation with the Four Mile Run Watershed Management Program.
- Maintain a library of historic information related to the Four Mile Run watershed and management program and manage an Internet webpage of relevant Four Mile Run documents, announcements, etc.

b. Continue to assist with modeling and coordination to meet the requirements of FEMA's National Floodplain Insurance Program (NFIP) along Four Mile Run, which contains a FEMA-designated Special Flood Hazard Area regulated by the NFIP.

c. Continue to run the Four Mile Run model on an as-needed basis to evaluate the effect of developmental projects on the flood control channel volume. When those projects are not sponsored by a Four Mile Run partner, the Commission will seek reimbursement for time and expenses from the developmental entity.

d. Oversee contractor for a Chesapeake Bay Trust grant for the development of a regional Intensity, Duration, Frequency (IDF) Curves to assist localities in the development of stormwater planning in the context of climate change. Joint project with Occoquan Watershed Management Program.

FTE *1 = 2080 hr*	0.16	Expenses		Revenue	
		Personnel	$ 19,548	Grants/contracts	$ -
		Contract	120,000	Fees	10,000
		Subgrants	-	Local designated funds	135,639
		Other	325	Other	-
		Share of indirect costs	8,898	General Funds	3,132
		TOTAL	$148,771	TOTAL	$148,771

Occoquan Watershed Management

a. Provide ongoing program management for the Occoquan Reservoir water supply protection program, including:

- Managing the modeling contract between NVRC and the Occoquan Watershed Monitoring Lab.
- Developing water quality projections for the Occoquan Reservoir based upon the Occoquan Model and projected population and development growth within the watershed or other scenarios based upon input from the Occoquan Watershed Modeling Subcommittee.
- Continuing to develop education and outreach tools for the Occoquan watershed management plan and as a way of promoting watershed stewardship, including control of pollution from runoff.

b. Participate in Chesapeake Bay Program activities affecting the Occoquan Program, including the Water Quality Goal Implementation Team, the Watershed Technical Workgroup, the Modeling Workgroup, and the Urban Stormwater Workgroup. Continue to serve as the Chairman of the Urban Stormwater Program.

c. Participate in Metropolitan Washington Council of Governments' activities affecting the Occoquan Program, including the Chesapeake Bay Policy Committee and the Water Resources Technical Committee.

d. Continue to serve on Commonwealth Technical Advisory Committees and Policy Advisory Committees in development of water resource regulations and policies.

e. Continue to research alternate stormwater BMPs and participate in the Chesapeake Bay Urban Stormwater BMP Expert Panels.

f. Oversee contractor for a Chesapeake Bay Trust grant for the development of a regional Intensity, Duration, Frequency (IDF) Curves to assist localities in the development of stormwater planning in the context of climate change – a joint project with the Four Mile Run Program.

g. Continue to develop coordination, education and outreach tools for the SaMS salt reduction effort to reduce the impact to the Occoquan Reservoir.

FTE *1 = 2080 hr*	0.50	Expenses		Revenue	
		Personnel	$ 82,748	Grants/contracts	$ 3,333
		Contract	116,000	Fees	-
		Subgrants	-	Local designated funds	204,520
		Other	5,716	Other	-
		Share of indirect costs	37,664	General Funds	34,275
		TOTAL	$242,128	TOTAL	$242,128

Northern Virginia Waste Management Board

a. Continue to provide ongoing program management for the Northern Virginia Waste Management Board and serve as a liaison between state and local and federal agencies and associations.

b. Conduct the biannual residential solid waste services and management practices survey for Washington metropolitan area jurisdictions, working with the Board to improve data quality and collection.

c. Track proposed changes to federal and state solid waste regulations and report to the Board. Convene ad-hoc "review and comment" committees as necessary, coordinating input from the Board on legislative issues to the Commission.

d. Continue to maintain the Know Toxics education campaign to identify audiences and most effective messages for campaigns on proper management of hazardous waste.

e. Pursue special projects related to solid waste as directed by the waste board.

FTE *1 = 2080 hr*	0.41	Expenses		Revenue	
		Personnel	$ 67,844	Grants/contracts	$ -
		Contract	1,600	Fees	-
		Subgrants	-	Local designated funds	88,860
		Other	3,818	Other	-
		Share of indirect costs	30,880	General Funds	15,282
		TOTAL	$104,142	TOTAL	$104,142

Coastal Resources Management

a. Provide coordination and technical support to eligible member governments in Northern Virginia on coastal resources management issues. Continue to serve as a point of information exchange and as a liaison between local governments and state agencies including the Governor's Special Assistant for Coastal Resiliency, Virginia Department of Conservation and Recreation Chesapeake Bay Local Assistance, the Virginia Department of Environmental Quality Coastal Resources Management Program, and the Department of Conservation and Recreation.

  - Work with stakeholders in the region on issues related to litter and marine debris..

b. Continue to provide expertise and information to local governments and Northern Virginia residents in order to promote sustainable development along the Potomac River, taking into consideration changes to sea level rise, storm surge, and other coastal hazards.

c. Manage the Northern Virginia Climate Resiliency Project, which seeks to increase the resilience of critical built infrastructure in Northern Virginia. Continue to coordinate and work with a stakeholder group to identify tools and information that can help determine priorities and actions that can be taken to decrease the severity of future consequences emanating from climate and extreme weather.

d. Continue to implement the Northern Virginia Clean Water Partners – Regional Stormwater Education Campaign, in coordination with local government partners and other interested parties. The campaign is a region-wide education and outreach strategy aimed at reducing nonpoint source pollution through individual behavioral changes and supports Northern Virginia local jurisdictions in meeting their stormwater permit requirements.

e. Serve as representative of NVRC on the Virginia Coastal Policy Team.

f. Coordinate on a quarterly basis with the Virginia Coastal Zone Management Program and Virginia's eight other Coastal planning district commissions.

g. Speak and give presentations about NVRC projects at applicable meetings or conferences when required.

h. Write proposals for new projects that include scope of work, budgets, deliverables and schedule for implementation.

FTE *1 = 2080 hr*	0.67	Expenses		Revenue	
		Personnel	$ 91,751	Grants/contracts	$ 64,500
		Contract	110,000	Fees	-
		Subgrants	-	Local designated funds	-
		Other	1,895	Other	110,000
		Share of indirect costs	41,763	General Funds	70,999
		TOTAL	$245,409	TOTAL	$245,409

Municipal Separate Storm Sewer (MS4) Workgroup

a. Continue to implement a regional program for managing storm water in Northern Virginia, convening an MS4 Workgroup composed of local staff, and assisting member governments in addressing the following goals:

- Effectively address state and federal regulations;
- Foster regional cooperation and share professional knowledge and experience;
- Lessen the expenditures of each local government by conducting cooperative activities wherever possible;
- Facilitate the efficient collection and distribution of information to agencies;
- Cost effectively facilitate training to governmental staff and the development community;
- As possible and where feasible negotiate as one collective entity with the EPA and state agencies;

b. Continue to serve as a vital source of information and analysis on the Chesapeake Bay TMDL, the associated Watershed Implementation Plan (WIP) development process, stormwater and municipal separate storm sewer systems (MS4) regulatory development for local governments, and as a vehicle for EPA and the Commonwealth to reach local stakeholders

c. Participate in the upcoming Department of Environmental Quality (DEQ) Advisory Committee to discuss revising the phosphorus water quality standard to meet water quality requirements of the Virginia Stormwater Management Program.

d. Continue to participate as a stormwater expert in the Secretary of Natural Resource's Chesapeake Bay Stakeholder Advisory Group which has been tasked with overseeing the development of Virginia's Chesapeake Bay Watershed Implementation Plan.

FTE *1 = 2080 hr*	0.55	Expenses		Revenue		
		Personnel	$ 93,173	Grants/contracts	$ 29,000	
		Contract	-	Fees	-	
		Subgrants	-	Local designated funds	75,616	3¢ per capita
		Other	4,930	Other	-	
		Share of indirect costs	42,410	General Funds	35,897	
		TOTAL	$140,513	TOTAL	$140,513	

Other Environmental Services

a. Coordinate 2023 Northern Virginia Water Supply Plan update with participating jurisdictions and the regions Water Authorities

b. Coordinate with the Interstate Commission on the Potomac River Basin to incorporate its demand, supply and needs assessments through 2050 for the Virginia participants in the CO-OP Water Supply Program into the Northern Virginia Plan.

c. Continue to develop demand, supply and needs assessments through 2050 for all jurisdictions and utilities outside of the CO-OP Program.

d. Aid in the development of alternative scenarios for water supply and work with local governments to find consensus on the alternatives.

e. Continue to coordinate with other environmental agencies, particularly the Metropolitan Washington Council of Governments, the Potomac Watershed Roundtable, and the local Soil and Water Conservation Districts.

f. Assist the Department of Conservation and Recreation (DCR) and the Department of Environmental Quality (DEQ to meet the requirements of Virginia's commitments to the Chesapeake Bay Agreement by serving as a catalyst for intergovernmental communication.

g. Develop partnerships and grant opportunities to educate and coordinate water infrastructure efforts and initiatives.

FTE *1 = 2080 hr*	0.57	Expenses		Revenue	
		Personnel	$ 95,558	Grants/contracts	$ -
		Contract	-	Fees	-
		Subgrants	-	Local designated funds	116,750
		Other	6,325	Other	-
		Share of indirect costs	43,494	General Funds	28,627
		TOTAL	$145,377	TOTAL	$145,377

Stormwater Resiliency

a. Assist in responding to the 2016 Northern Virginia Hazard Mitigation Plan update, which determined that most of the Northern Virginia jurisdictions have a 'Highly Likely' probability of continued flood risk due to a 'High' vulnerability to flood hazards.

b. Coordinate a regional approach to addressing a critical part of the flood response strategy: communicate with the public about flood risk and provide education about overland relief encroachments, flood insurance and ways to prepare for floods, by

- Assembling stakeholders to determine education and outreach needs and opportunities.
- Identifying existing public information efforts.
- Identifying hazardous areas and properties and hazard types.
- Assembling flood insurance information.
- Determining coordinated messages.
- Creating a website with all relevant information.
- Delivering messages on various platforms at coordinated times.
- Developing "Soak it Up" workshop guides/materials.
- Conducting a series of "Soak it Up" Workshops.

FTE *1 = 2080 hr*	0.66	Expenses		Revenue	
		Personnel	$ 76,781	Grants/contracts	$ -
		Contract	-	Fees	-
		Subgrants	-	Local designated funds	
		Other	-	Other	-
		Share of indirect costs	34,949	General Funds	111,730
		TOTAL	$111,730	TOTAL	$111,730

Energy Management

a. Expand regional energy management activities to enhance local energy programs through common actions or shared service delivery.

- Expand residential and commercial building energy efficiency programs to additional communities across the NVRC region.
- Identify policy roadblocks to implementing local energy policies and develop alternatives to remove the roadblocks.
- Sustain integration of energy and sustainability policy programs

b. Strengthen regional and local energy planning and projects.

- Coordinate NVRC energy program actions with regional groups and localities.
- Support public utility and other energy company energy initiatives.
- Facilitate involvement of universities, research, commercial, NGO and other education institutions in regional sustainability and local energy efforts.
- Work with partners on the implementation of programs supported in the Virginia Clean Economy Act and Solar Freedom Act that are beneficial to the region.
- Continue to operate programs that promote renewable energy, sustainability and energy efficient efforts (Solarize NoVA).

c. Identify, track, and analyze energy-based state legislative actions related to Northern Virginia jurisdictions' legislative priorities.

d. Enhance energy best practices through international exchanges, policy transfer and lesson learning opportunities to help the region replicate successful practices for energy management, sustainability and security.

FTE *1 = 2080 hr*	0.41	Expenses		Revenue	
		Personnel	$ 75,822	Grants/contracts	-
		Contract	-	Fees	10,000
		Subgrants	-	Local designated funds	87,500
		Other	2,400	Other	-
		Share of indirect costs	34,513	General Funds	15,235
		TOTAL	$112,735	TOTAL	$112,735

Regional Planning Services

a. Assist member governments and other parties in sharing industry best practices related to sustainability, through a region-wide sustainability network.

FTE	0.11	Expenses		Revenue	
1 = 2080 hr		Personnel	$ 19,065	Grants/contracts	$ -
		Contract	-	Fees	-
		Subgrants	-	Local designated funds	-
		Other	220	Other	-
		Share of indirect costs	8,678	General Funds	27,963
		TOTAL	$ 27,963	TOTAL	$ 27,963

Trails, Open Space and Heritage Resources

a. Promote bicycle and pedestrian safety by working with Virginia Department of Motor Vehicles and others, by providing outreach and training on "sharing the road," especially areas where there is a high incidence of bicyclist and pedestrian crashes.

a. Continue partnership with the National Park Service in developing the Potomac Heritage National Scenic Trail in Northern Virginia, through activities such as:

- Organizing and promoting outdoor recreation, heritage tourism and conservation interests to demonstrate the value of increased outdoor recreation opportunities for residents and visitors.
- Maintaining an inventory of gaps in the trail network and working to support gap closures and more equitable access to trails from communities.
- Implementing projects, in support of public water access plans, in consultation with a regional advisory group, for increasing water access from trail segments while conserving viewsheds and integrating access to public transit.
- Conducting scenic resource inventories.
- Promoting and supporting recognition of the PHNST in Northern Virginia.

FTE *1 = 2080 hr*	0.55	Expenses		Revenue	
		Personnel	$ 89,362	Grants/contracts	$175,295
		Contract	90,550	Fees	-
		Subgrants	-	Local designated funds	-
		Other	39,056	Other	-
		Share of indirect costs	40,675	General Funds	84,348
		TOTAL	$259,643	TOTAL	$259,643

Other Human Services Programs

a. Accept and award funds received from the Virginia Housing PDC Grant Program to local affordable/workforce housing development projects that will result in new habitable units within three years of the grant award. From the $3M funding anticipated monies will be used to underwrite partial NVRC staff time, limited direct costs, public opinion polling re: proposed projects, and an $83,000 (each) contribution toward the production of at least 30 new affordable housing units.

b. Continue to host the Northern Virginia Aging Network (local Agency on Aging staff and related agencies) web presence at www.novaregion.org/nvan. Offer the meeting venue, with conference call support to this group. Provide fiduciary services receiving payments for NVAN's annual Legislative Breakfast.

c. Continue to support the *Quick Guide Online;* seek external resources (e.g., foundation support) to further modernize this resource.

d. Update and maintain the regional lists of local homeless shelters, winter overflow shelters, and homeless day programs.

e. Convene and provide program and administrative support to the Northern Virginia Human Service Officials (HSOs) Committee, which may include joint planning, creation of new methods to advance human services, visioning and implementation of service regionalization activities developed by HSO consensus.

FTE *1 = 2080 hr*	1.12	Expenses		Revenue	
		Personnel	$176,722	Grants/contracts	$199,375
		Contract	50,000	Fees	-
		Subgrants	-	Local designated funds	-
		Other	9,140	Other	6,100
		Share of indirect costs	80,437	General Funds	110,824
		TOTAL	$316,299	TOTAL	$316,299

HIV / AIDS Programs

a. Provide critical medical care, housing, and supportive services via subcontract service providers to low-income, uninsured people with HIV/AIDS. This includes:

- $2.0 million in Ryan White Part B funds split between subcontracts to serve people living with HIV in Northern Virginia (and statewide) and technical consulting on various HIV issues from NVRC staff to Virginia Department of Health.
- $2.4 million in Housing Opportunities for Persons with AIDS (HOPWA) funds to support long-term housing subsidies, homelessness prevention, and essential support services for persons with HIV and their families in 16 Virginia localities, including all NVRC member localities.

b. Advocate for the appropriate allocation of Ryan White and HOPWA resources to Northern Virginia from the DC Department of Health, HIV/AIDS, Hepatitis, STD & TB Administration (HAHSTA), and from the Virginia Department of Health.

c. Continue to add key referral information to the HIV Resources Project website, focusing on information useful to the greater Northern Virginia community, e.g., affordable housing programs. Make minor expansions to the website to improve how-to information on various housing topics among persons living with HIV. (This material will be appropriate for a statewide audience.) About $50,000 is set aside within the HOPWA allocation to support this activity as well as limited telephone counseling for persons with HIV in need of housing assistance.

FTE *1 = 2080 hr*	4.90	Expenses		Revenue	
		Personnel	$ 559,632	Grants/contracts	$4,152,785
		Contract	23,400	Fees	-
		Subgrants	3,450,000	Local designated funds	-
		Other	10,475	Other	-
		Share of indirect costs	254,728	General Funds	145,451
		TOTAL	$4,298,236	TOTAL	$4,298,236

Commuter Ferry

a. Procure expert consultant services to begin development of a business case for a commuter fast ferry service on the M-495 Marine Highway designated by the US Department of Maritime Administration, to serve as a foundation for public and private investment in this mode of commuter service along the waterfront communities on the Anacostia, Potomac, and Anacostia rivers that border eastern Prince William and southern Fairfax Counties, suburban Maryland, several military bases including Joint Base Anacostia-Bolling/Department of Homeland Security, and other locations into the District of Columbia.

b. Address in this initial work the following types of questions:

- What service models, governance options and financial models should be considered?
- What feedback can be obtained from the industry on potential delivery/service options?
- What information can be gleaned about private investment funding by conducting private sector sounding exercises?
- What freight options are available?

c. Coordinate meetings of, and input from, the M495 Stakeholders as an advisory group on the project.

FTE *1 = 2080 hr*	0.12	Expenses			Revenue		
		Personnel	$	26,966	Grants/contracts	$	250,000
		Contract		207,500	Fees		-
		Subgrants		-	Local designated funds		-
		Other		4,000	Other		-
		Share of indirect costs1		12,274	General Funds		740
		TOTAL	$	250,740	TOTAL	$	250,740

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CFPF Four Mile Run Study Proposal

1 message

Nora Jackson <njackson@novaregion.org> Fri, Apr 8, 2022 at 2:06 PM
To: "CFPF, rr" <cfpf@dcr.virginia.gov>
Cc: Normand Goulet <NGoulet@novaregion.org>

Good afternoon,

Attached please find the Northern Virginia Regional Commission's official application to DCR to conduct an Analysis of Hydrologic Conditions in Four Mile Run. Let me know if there is anything else I can provide.

Best,

Nora

Nora Jackson
Resiliency Planner
Northern Virginia Regional Commission
3040 Williams Drive, Suite 200
Fairfax, VA 22031

Office: 703-642-4369
Website: www.novaregion.org

nvrc
Northern Virginia Regional Commission

CID51_NOVARegionalCommission_CFPF.pdf
13076K

A-NPDC
ACCOMACK-NORTHAMPTON PLANNING DISTRICT COMMISSION
P.O. BOX 417 • 23372 FRONT STREET • ACCOMAC, VIRGINIA 23301
(757) 787-2936 • TOLL FREE (866) 787-3001 • FAX: (757) 787-4221
WEBSITE: www.a-npdc.org

April 8, 2022

Wendy Howard-Cooper
Director for Dam Safety and Floodplain Management
Virginia Department of Conservation and Recreation
cfpf@dcr.virginia.gov

RE: Eastern Shore of Virginia Regional Resilience Community Plan Development CFPF Application

Dear Ms. Howard-Cooper and Members of the Review Team:

The Eastern Shore, being a land between two waters, is extremely vulnerable to flooding as a result of storm events, sea level rise, climate change, and increased rainfall. In addition to these vulnerabilities, both Accomack and Northampton Counties are considered low-income geographic areas with median household incomes falling below the $59,377.60 threshold. According to the US Census Bureau QuickFacts table, Accomack County median household income equals $46,178 and Northampton County median household income equals $50, 819. The development of a regional resilience plan, guided by a steering committee made up of community leaders and region-wide stakeholders, is a critical need of the counties and localities in the Eastern Shore Region for both sustainability of the region and for prioritization of mitigation projects. A plan is also a critical prerequisite when seeking potential funding to aid in flood preparedness and mitigation.

In an effort to increase the number of community flood mitigation projects that meet criteria for the Community Flood Preparedness Fund (CFPF), staff at the Accomack-Northampton Planning District Commission (A-NPDC) are applying for funds from CFPF Round 3. This will increase the A-NPDC's capacity to address the critical needs across the Shore for a region-wide resilience plan. A regional resilience plan is instrumental in increasing coastal resilience and protection for the community and its culture, preserving natural habitats, and using nature-based solutions (NBS) where possible. The A-NPDC currently leads the Climate Adaptation Working Group (CAWG), focused on identifying resilience needs in the region, and working with members of the community and local government to connect these region-wide resilience needs (projects, studies, plans, etc.) with appropriate funding sources. The CAWG has developed a living database of Eastern Shore Regional Resiliency Projects, 85 of which were submitted for the Virginia Coastal Resilience Master Plan, Phase 1. The next step in these efforts is the development of a comprehensive regional resilience plan that describes the entire local government's approach to flooding. The completion of this Regional Resilience Plan will build capacity across Eastern Shore communities by qualifying flood protection and mitigation projects for various funding, including the Community Flood Preparedness Fund.

This Eastern Shore Regional Resilience Plan will be project-based with a focus on flood control and resilience; it will simultaneously incorporate nature-based infrastructure to the greatest extent possible, and be based on the best available science, incorporating climate change, sea level rise, storm surge (as appropriate), and current flood maps. This plan will consider all parts of local government and include the coordination with other local and inter-jurisdictional projects, plans, and activities, and lastly will have clearly articulated phasing for plan implementation. Regardless of socioeconomics and race, public outreach will be conducted and community input will be requested to ensure the development of a truly comprehensive Regional Resilience Plan.

Sincerely,

Jessica Steelman

Jessica Steelman, Coastal Planner
Accomack-Northampton Planning District Commission
jsteelman@esvaplan.org

Cc: Anne Doyle, Director of Planning
Accomack-Northampton Planning District Commission
adoyle@a-npdc.org

Cc: Elaine Meil, Executive Director
Accomack-Northampton Planning District Commission
emeil@a-npdc.org

Accomack-Northampton
Planning District Commission

Application For The

Community Flood Preparedness Fund

Round 3

Capacity Building: Development of the Eastern Shore Regional Community Resilience Plan

Jessica Steelman, Coastal Planner
Accomack-Northampton Planning District Commission
April 8, 2022

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	✓Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	✓Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	✓Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	✓Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	✓Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	✓Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	✓Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	✓Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	✓Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	✓Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	✓Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ✓N/A

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: Accomackk-Northampton Planning District Commission (A-NPDC)

Category of Grant Being Applied for (check one):

__✓__**Capacity Building/Planning**

_____**Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510001 and 510105

If a state or federally recognized Indian tribe, Name of tribe NA

Name of Authorized Official: Elaine Meil, Executive Director

Signature of Authorized Official: Elaine K Meil

Mailing Address (1): PO Box 417

Mailing Address (2): 23372 Front Street

City: Accomac **State:** VA **Zip:** 23301

Telephone Number: (757) 787-2936 **Cell Phone Number:** (____) ________________

Email Address: emeil@a-npdc.org; Cc: jsteelman@esvaplan.org; Cc: adoyle@a-npdc.org

Contact Person (If different from authorized official): Jessica Steelman, Coastal Planner

Mailing Address (1): PO Box 417

Mailing Address (2): 23372 Front Street

City: Accomac **State:** VA **Zip:** 23301

Telephone Number: (757) 787-2936 **Cell Phone Number:** (____) ________________

Email Address: jsteelman@esvaplan.org; Cc: adoyle@a-npdc.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? **Yes** ___X_____ No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

- ☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.
- ☐ Studies and Data Collection of Statewide and Regional Significance.
- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- ☐ Other relevant flood prevention and protection project or study.

__Capacity Building and Planning Grants__

- ☑ **Floodplain Staff Capacity.**
- ☑ **Resilience Plan Development.**
- ☑ **Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.**
- ☑ **Resource assessments, planning, strategies and development.**
  - **Policy management and/or development.**
  - **Stakeholder engagement and strategies.**

Location of Project (Include Maps): __Eastern Shore, VA region__

NFIP Community Identification Number (CID#):(See appendix F): __FIRMette Product IDs listed below.__

Accomack County All Jurisdictions - FIRMette Panels			
Product ID	**Effective Date**	**Product ID**	**Effective Date**
51001CIND0B	05/18/2015	51001C0455G	05/18/2015
51001C0020G	05/18/2015	51001C0460G	05/18/2015
51001C0040G	05/18/2015	51001C0465G	05/18/2015
51001C0045G	05/18/2015	51001C0470G	05/18/2015
51001C0065G	05/18/2015	51001C0480G	05/18/2015
51001C0070G	05/18/2015	51001C0485G	05/18/2015
51001C0090G	05/18/2015	51001C0505G	05/18/2015
51001C0135G	05/18/2015	51001C0595G	05/18/2015
51001C0145G	05/18/2015	51001C0605G	05/18/2015
51001C0155G	05/18/2015	51001C0610G	05/18/2015
51001C0170G	05/18/2015	51001C0615G	05/18/2015
51001C0195G	05/18/2015	51001C0620G	05/18/2015
51001C0205G	05/18/2015	51001C0630G	05/18/2015
51001C0210G	05/18/2015	51001C0635G	05/18/2015
51001C0215G	05/18/2015	51001C0640G	05/18/2015
51001C0220G	05/18/2015	51001C0645G	05/18/2015
51001C0230G	05/18/2015	51001C0655G	05/18/2015
51001C0235G	05/18/2015	51001C0660G	05/18/2015
51001C0240G	05/18/2015	51001C0665G	05/18/2015
51001C0245G	05/18/2015	51001C0755G	05/18/2015
51001C0255G	05/18/2015	51001C0760G	05/18/2015
51001C0260G	05/18/2015	51001C0765G	05/18/2015
51001C0265G	05/18/2015	51001C0770G	05/18/2015
51001C0270G	05/18/2015	51001C0780G	05/18/2015
51001C0280G	05/18/2015	51001C0785G	05/18/2015
51001C0285G	05/18/2015	51001C0790G	05/18/2015
51001C0290G	05/18/2015	51001C0795G	05/18/2015
51001C0295G	05/18/2015	51001C0805G	05/18/2015
51001C0360G	05/18/2015	51001C0810G	05/18/2015
51001C0380G	05/18/2015	51001C0815G	05/18/2015
51001C0390G	05/18/2015	51001C0820G	05/18/2015
51001C0395G	05/18/2015	51001C0830G	05/18/2015
51001C0415G	05/18/2015	51001C0840G	05/18/2015
51001C0420G	05/18/2015	51001C0855G	05/18/2015
51001C0430G	05/18/2015	51001C0860G	05/18/2015
51001C0435G	05/18/2015	51001C0880G	05/18/2015
51001C0440G	05/18/2015	51001C0885G	05/18/2015
51001C0445G	05/18/2015		

Northampton County All Jurisdictions - FIRMette Panels			
Product ID	**Effective Date**	**Product ID**	**Effective Date**
51131CIND0B	03/02/2015	51131C0305F	03/02/2015
51131C0065F	03/02/2015	51131C0310F	03/02/2015
51131C0070F	03/02/2015	51131C0315F	03/02/2015
51131C0090F	03/02/2015	51131C0320F	03/02/2015
51131C0095F	03/02/2015	51131C0330F	03/02/2015
51131C0155F	03/02/2015	51131C0335F	03/02/2015
51131C0160F	03/02/2015	51131C0340F	03/02/2015
51131C0165F	03/02/2015	51131C0345F	03/02/2015
51131C0170F	03/02/2015	51131C0355F	03/02/2015
51131C0180F	03/02/2015	51131C0410F	03/02/2015
51131C0185F	03/02/2015	51131C0430F	03/02/2015
51131C0190F	03/02/2015	51131C0435F	03/02/2015
51131C0195F	03/02/2015	51131C0440F	03/02/2015
51131C0205F	03/02/2015	51131C0445F	03/02/2015
51131C0210F	03/02/2015	51131C0455F	03/02/2015
51131C0215F	03/02/2015	51131C0460F	03/02/2015
51131C0220F	03/02/2015	51131C0465F	03/02/2015
51131C0285F	03/02/2015	51131C0555F	03/02/2015
51131C0295F	03/02/2015	51131C0560F	03/02/2015

Is Project Located in an NFIP Participating Community? ☑ **Yes**, the project covers both communities currently participating in a NFIP and those not yet participating in a NFIP. ☐ No

Is Project Located in a Special Flood Hazard Area? ☑ **Yes** ☐ No

Flood Zone(s) (If Applicable): The Eastern Shore, VA region falls within Flood Zone X.

Flood Insurance Rate Map Number(s) (If Applicable): Refer to FIRMette Product ID tables above.

Total Cost of Project: $375,000

Total Amount Requested $375,000

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	A-NPDC	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	**Eligible for consideration**	✓
No	**Not eligible for consideration**	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	**Eligible for consideration under all categories**	
No	**Eligible for consideration for studies, capacity building, and planning only**	✓
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	**Eligible for consideration**	✓
No	**Not eligible for consideration**	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	**Not eligible for consideration**	
No	**Eligible for consideration**	✓
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	**Eligible for consideration**	✓
No	**Not eligible for consideration**	
N/A	**Match not required**	
Capacity Building and Planning Eligible for Consideration		✓ **Yes** ☐ **No**

Applicant Name:	A-NPDC		
Scoring Information			
Criterion		**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)			
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.		**55**	
Development of a new resilience plan.		**55**	
Resource assessments, planning, strategies and development.		**45**	
Policy management and/or development.		**40**	
Stakeholder engagement and strategies.		**25**	
Goal planning, implementation and evaluation.		**25**	
Long term maintenance strategy.		**25**	
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.		**15**	
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)			
Very High Social Vulnerability (More than 1.5)		**15**	
High Social Vulnerability (1.0 to 1.5)		**12**	
Moderate Social Vulnerability (0.0 to 1.0)		**8**	
Low Social Vulnerability (-1.0 to 0.0)		**0**	
Very Low Social Vulnerability (Less than -1.0)		**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?			
Yes		**10**	
No		**0**	
9. Is the proposed project in a low-income geographic area as defined in this manual?			
Yes		**10**	
No		**0**	
10. Does this project provide "community scale" benefits?			
Yes		**20**	
No			
Total Points			

Scope of Work Narrative

Assessment of Capacity Needs and Assets

The Eastern Shore is considered a part of *Rural Coastal Virginia* and features the Nation's longest stretch of undeveloped barrier islands – key land formations in protecting the mainland from storm events that cause flooding. According to the Virginia Coastal Resilience Master Plan (CRMP), the Eastern Shore is at risk of losing up to 171,830 total acres of Tidal Wetlands, Beaches and Dunes, Upland Habitat, and Conserved Lands, respectively, by 2080 due to flooding. This loss significantly impacts the economy of the region, driven by commercial/recreational fishing, aquaculture, and ecotourism where the region's "natural landscapes are fundamental to its identity, attracting visitors and new residents alike" (CRMP, 2021). Critical Sectors across the Eastern Shore are also at risk of being impacted negatively by flooding; where the CRMP shows a +1029% change in Energy Assets exposed and a +13,185% change in Water, Wastewater, and Waste assets impacted by 2080. Community resources on the Eastern Shore are also highly susceptible to hazards from flood events. By the year 2080, the region will see an increase of +3,816% in Residential Population exposed – from 200 residents in 2020 to 7,800 residents in 2080. Annualized Structure Losses are predicted to hit $289M by 2080, a +1,299% change, and Agricultural Land Acres exposed will increase +236% from 5,300 acres in 2020 to nearly 18,000 acres in 2080 (CRMP, 2021). As referenced in the CRMP, current and future flood events can "result in increased soil salinity, potentially harming crop health and viability to harvest for years after a flood. These effects may lead to reduced profits, interruptions to the supply chain, and damage agricultural ways of life, leading to economic and social impacts locally and regionally" (CRMP, 2021).The Eastern Shore has a social vulnerability index average rating of 0.9 (high moderate vulnerability), not including Wallops or Assateague Island, according to ADAPT VA's Virginia Vulnerability Viewer (2016). According to the Center for Disease Control (CDC) Social Vulnerability Index (2018), where possible scores range from 0 (lowest vulnerability) to 1 (highest vulnerability), Accomack County rates a 0.8025 and Northampton County rates a 0.6764.

Localities across the Eastern Shore have town governments made up of volunteers; some are teachers, some are business owners, etc. While this demonstrates a passion and love for the place they live, it also highlights a lack of capacity in the number of full-time local government and non-profit staff to develop individual plans in the area of environmental and coastal resilience. The Accomack-Northampton Planning District Commission (A-NPDC) seeks to provide coastal management technical assistance to localities across the region to address the lack of capacity at the local level. One way the A-NPDC can do this is through the development of a region-wide resilience plan that all localities and counties can utilize to prioritize mitigation projects and reference when seeking future flood preparedness and hazard funds. Currently, the Eastern Shore also lacks financial resources to plan and implement flood preparedness and mitigation projects. The development of a regional resilience plan will act as a bridge for localities to qualify for available and future flood and coastal resilience funds.

A regional resilience plan is instrumental in increasing coastal resilience and protection for the community and its culture, preserving natural habitats, and using nature-based solutions (NBS) where possible. The A-NPDC currently leads the Climate Adaptation Working Group (CAWG), focused on identifying resilience needs in the region, and working with members of the community and local government to connect these region-wide resilience needs (projects, studies, plans, etc.) with appropriate funding sources. The CAWG has developed a living database of Eastern Shore Regional Resiliency Projects, 85 of which were submitted for the Virginia Coastal Resilience Master Plan, Phase 1. The A-NPDC was awarded CFPF Round 1 funds to develop an agriculture study, examining crop impacts from flood events; this information is intended to be incorporated into the regional resilience plan. The next step in this effort is the development of a comprehensive regional resilience plan that includes every local government's approach to flooding. The completion of this regional resilience plan will build capacity across Eastern Shore communities by prioritizing and qualifying flood protection and mitigation projects for various funding avenues, including the Community Flood Preparedness Fund.

This Eastern Shore Regional Community Resilience Plan will be project-based with a focus on flood control and resilience; it will simultaneously incorporate nature-based infrastructure to the greatest extent possible, and be based on the best available science, incorporating climate change, sea level rise, storm surge (as appropriate), and current flood maps. This plan will consider all local governments and include coordination with other local and inter-jurisdictional plans, programs, and activities, and lastly will have clearly articulated phasing for plan implementation. The Planning District Commission will conduct broad, inclusive public outreach and community response will be recorded and quantified to ensure the development of a truly comprehensive regional resilience plan. Through public engagement, including public listening sessions, surveys, and educational materials, this effort will raise awareness across the region about flood hazard areas, the social vulnerability of coastal communities, and steps to manage these risks. Planning District Commission staff will further build capacity within the region by utilizing these funds to become trained and certified in stormwater management, using coursework offered by the Department of Environmental Quality (DEQ). If funded, the Planning District Commission will establish an internship program to increase capacity for resource assessment, data collection, plan compilation, and public engagement.

Goals & Objectives

1. Develop a Regional Resilience Plan

A. Guided by a Steering Committee consisting of local officials, experts in coastal resilience, and Eastern Shore leaders.

B. Basis in community-wide approach to flood resilience, identifying economic impacts, critical assets at risk, and communities facing forced migration.

C. Incorporate relevant data and plan segments from other published regional, local, and county plans (i.e., Hazard Mitigation Plan, Comprehensive Plans, Coastal Resilience Master Plan maps, etc.).

D. Make available to localities updated data/resources for incorporation into local plans.

E. Develop general template of policy language relevant to the regional resilience plan, as determined by the Steering Committee, for use by counties and localities in the revision or modification of existing plans.

F. Adoption of the Regional Community Resilience Plan by counties/localities.

2. Seek Department of Conservation and Recreation (DCR) certification that the plan meets minimum requirements

A. Build rapport with DCR representative who can provide guidance in the development of a regional resilience plan that will meet minimum requirements for future funding.

B. Develop a plan with these minimum requirements in mind.

3. Publish and Distribute the Regional Resilience Plan

A. Make available, copies of the DCR certified regional resilience plan in the A-NPDC library and online.

B. Distribute electronic file of the regional resilience plan to localities, academia and nonprofits (i.e., VIMS, Eastern Shore Community College, TNC, etc.), and public libraries.

C. Provide one (1) print copy of the regional resilience plan to each County.

4. Capacity Building, Training, and Education

A. Certify A-NPDC staff member(s) in stormwater management and/or erosion and sediment control, as course is available from DEQ and feasible to attend (location or virtual) to increase floodplain staff capacity.

B. Engage and educate community members impacted by the region's floodplains through public meetings and providing information about available trainings and workshops facilitated by state entities.

C. Hire a student intern to assist in research development and assessment, plan compilation, and public outreach.

Stakeholders, Outreach, and Education

Stakeholders

The following table lists potential stakeholders.

	Stakeholder	Entity
1	Residents	Community
2	Property Owners	Community
3	Students	Community
4	Business Owners (Agriculture, Aquaculture, Restaurants, Shops, Attractions, etc.)	Community
5	Accomack County	Local Government
6	Accomack County Public Works	Local Government
7	Northampton County	Local Government
8	Northampton County Public Works	Local Government
9	Towns/Communities	Local Government
10	Virginia Tech Eastern Shore AREC	Higher Education
11	College of William and Mary Virginia Institute Marine Science	Higher Education
12	UVA Coastal Research Center	Higher Education
13	The Nature Conservancy	Non-Profit 501 (c)(3)
14	Virginia's Eastern Shore Land Trust	Non-Profit 501 (c)(3)
15	Eastern Shore Regional Navigable Waterways Committee	Professional/State Government
16	DCR Region Steward	State Government
17	US Army Corps of Engineers	Federal Government
18	Accomack-Northampton PDC	Professional/State Government
19	Chesapeake Bay Foundation	Non-Profit 501 (c)(3)
20	Wetlands Watch	Non-Profit 501 (c)(3)
21	Citizens for a Better Eastern Shore (CBES)	Non-Profit 501 (c)(3)

Steering Committee Members

The following table lists who will be invited to participate on the Steering Committee.

	Steering Committee Invitee	Entity
1	Accomack County Official/Staff	County Government
2	Accomack County Public Works Representative	County Government

3	Northampton County Official/Staff	County Government
4	Northampton County Public Works Representative	County Government
5	Town or County Official/Staff/Leader	County Government
6	Virginia Tech Eastern Shore AREC	Higher Education
7	College of William and Mary Virginia Institute Marine Science	Higher Education
8	UVA Coastal Research Center	Higher Education
9	The Nature Conservancy	Non-Profit 501 (c)(3)
10	Virginia's Eastern Shore Land Trust	Non-Profit 501 (c)(3)
11	Eastern Shore Regional Navigable Waterways Committee Member	Professional/State Government
12	DCR Region Steward	State Government
13	US Army Corps of Engineers Representative	Federal Government
14	Accomack-Northampton PDC *(Lead)*	Professional/State Government
15	Chesapeake Bay Foundation	Non-Profit 501 (c)(3)
16	Wetlands Watch	Non-Profit 501 (c)(3)
17	Citizens for a Better Eastern Shore (CBES)	Non-Profit 501 (c)(3)

Outreach & Education Strategies

Community members, including, but not limited to: community leaders, students, influencers, and business owners will be engaged through public meetings held during the planning process and other means of gathering public input (i.e., surveys, email campaigns, etc.). Trainings and workshops offered by state entities will be shared through social media channels to provide education opportunities for community members.

Implementation Plan & Timeline

The Planning District Commission will complete all grant activities within twenty-four (24) months following a CFPF award, allowable for this round of CFPF grant funds. During this time, the following activities will be conducted: resource assessment, data collection, report compilation, community engagement, and plan development. Within the first three (3) months, a steering committee will be established to begin the guidance of the regional resilience plan development. The steering committee will create a timeline for meeting each objective and set a public input meeting for stakeholders across the region's communities. Staff training for stormwater management and/or erosion and sediment control through DEQ will occur within the project's development period. The intern will be hired in the first half of the grant period to build capacity for data/report compilation, resource assessment, and public outreach.

Parties Responsible

The Resilience Plan Steering Committee, led by Planning District Commission staff, will be charged with guiding the development of the resilience plan. Planning District Commission staff will be responsible for overseeing and implementing all grant activities.

Performance Outputs and Measures

The key short-term result of this project will be the development of the Eastern Shore's Regional Community Resilience Plan. Achieving the publication of this plan within eighteen (18) months, while remaining on budget, would be considered a success. Another short-term result with long-term benefits would be the training of an A-NPDC staff member to become certified in stormwater management and/or erosion and sediment control. This has the potential to enable the A-NPDC to conduct regulatory inspections for a Virginia stormwater management program, review erosion and sediment control (ESC) plans and stormwater management (SWM) plans, and build knowledge in the following areas: Virginia stormwater management law and regulations, basic stormwater principles, construction general permit requirements, stormwater BMPs, Virginia erosion and sediment control law and regulations, fundamentals of erosion and stormwater runoff, and erosion and sediment control measures. The output of this request will be a comprehensive approach to flood mitigation, preparedness, and coastal resilience in the form of a regional resilience plan.

Plans for Maintaining Capacity

Once the resilience plan has been finalized, there is no anticipated need for continuing support in its immediate development. The Eastern Shore region will utilize the plan for subsequent grant requests and project proposals for a period of three (3) years in accordance with the 2021 CFPF manual and as a resource for managing flood mitigation, preparedness, and coastal resilience. It is intended to align this regional resilience plan with the region's Hazard Mitigation Plan (HMP) and, if funding is available, update the regional resilience plan every five (5) years.

Supporting Documents

Hazard Mitigation Plan 2016

http://www.a-npdc.org/wp-content/uploads/2016/04/FullHMP2016.pdf

Note: HMP 2022 Update has been completed; awaiting final approval from FEMA.

Current Floodplain Ordinances

Accomack County –
https://library.municode.com/va/accomack_county/codes/code_of_ordinances?nodeId=CO_CH106ZO_ARTXVFLHAOVDI

Northampton County –
https://codelibrary.amlegal.com/codes/northamptoncounty/latest/northampton_va/0-0-0-16924

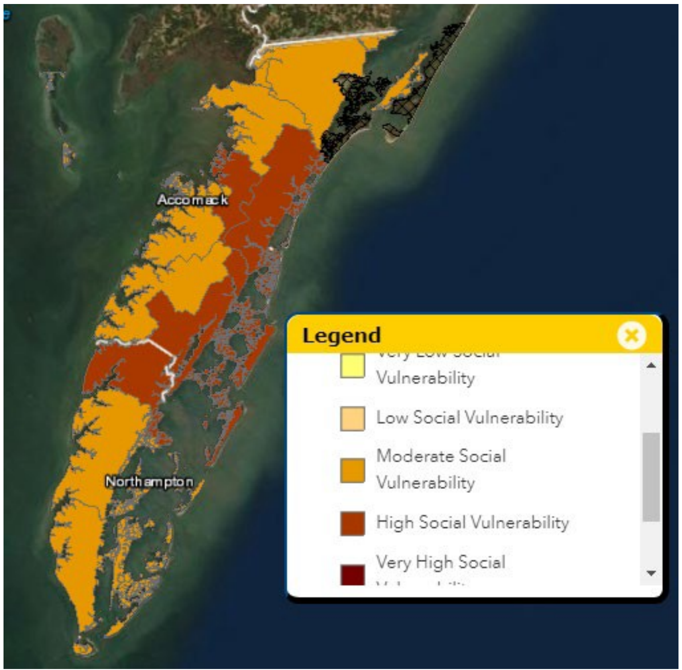
Comprehensive Plans

Accomack County –
https://www.co.accomack.va.us/home/showpublisheddocument/10669/636761702081200000

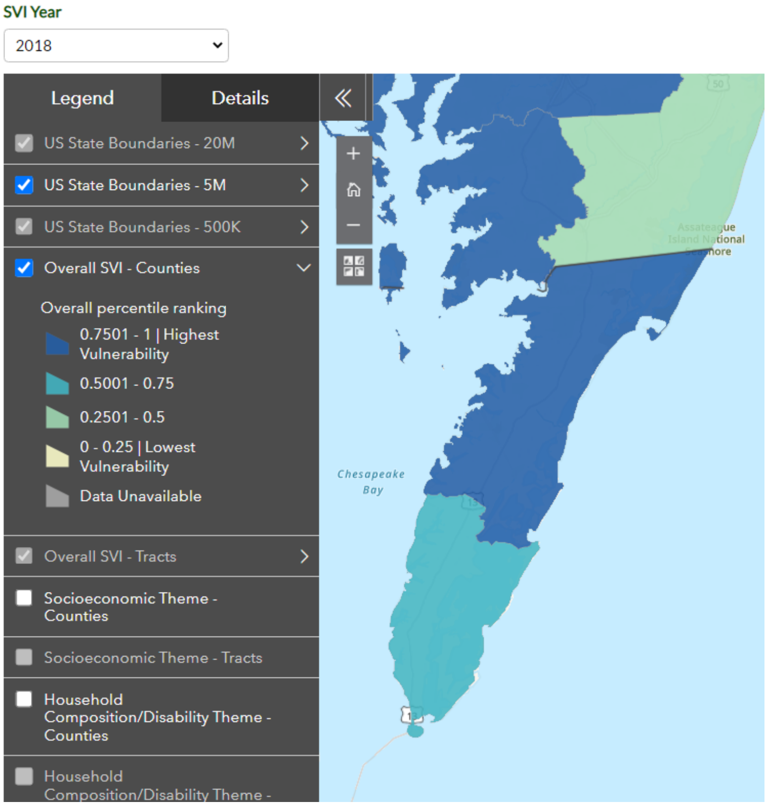
Northampton County –
https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_14877142/File/I%20Want%20To%E2%80%A6/Volunteer/Comp%20Plan/Complete_Comp_Plan_Apr_2009.pdf

Social Vulnerability Scores

The Eastern Shore has a social vulnerability index average rating of 0.9 (high moderate vulnerability), not including Wallops or Assateague Island, according to ADAPT VA's Virginia Vulnerability Viewer (2016).



According to the Center for Disease Control (CDC) Social Vulnerability Index (2018), where possible scores range from 0 (lowest vulnerability) to 1 (highest vulnerability), Accomack County rates a 0.8025 and Northampton County rates a 0.6764.



SVI Year: 2018

Historic Flood Damage

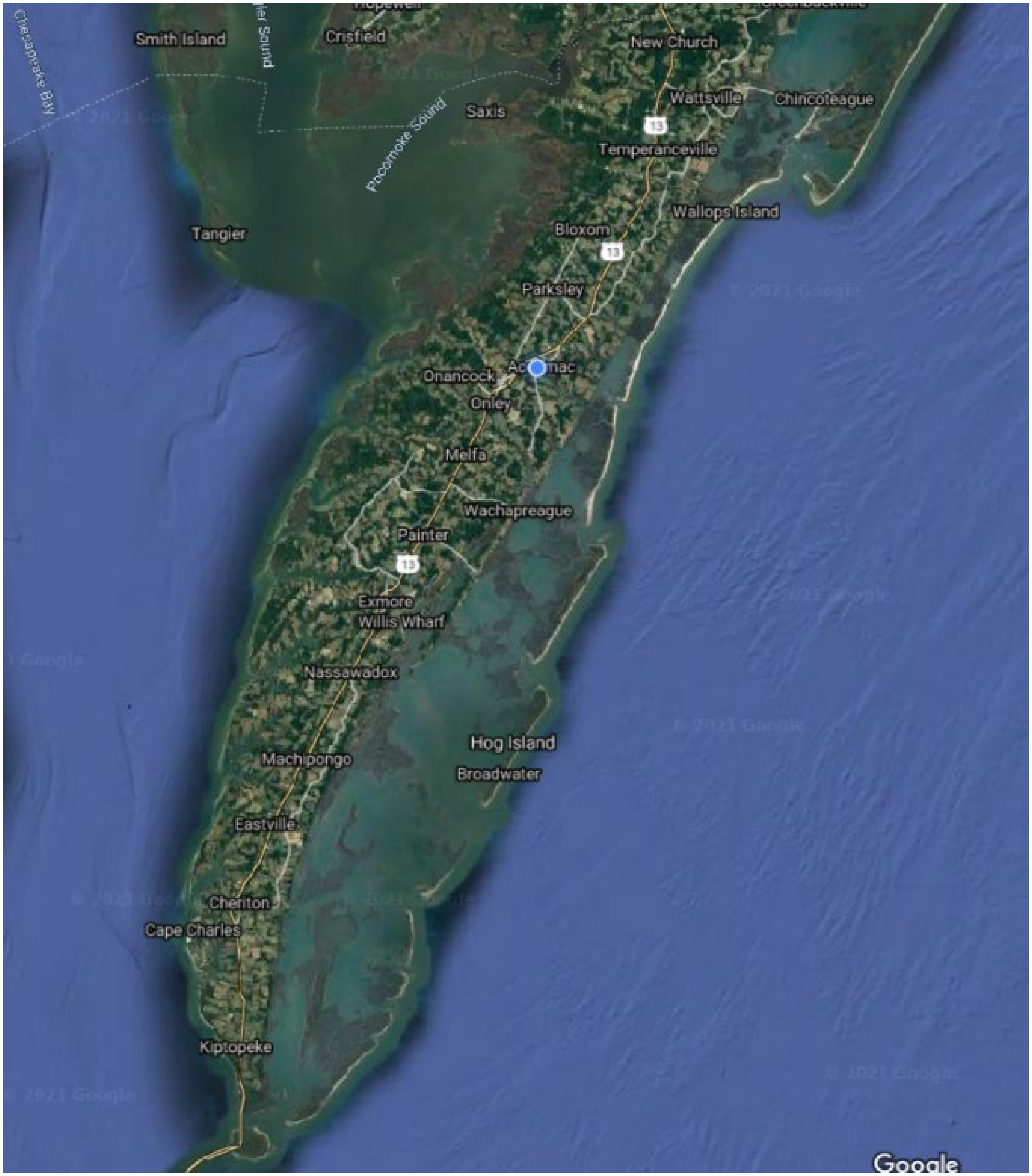
Further historical flood damage data dating back to pre-1564 can be viewed in The Eastern Shore of Virginia Hazard Mitigation Plan 2016 (linked below) on pages 5-7 of Chapter 1: Hazards on the Shore.

Flooding on Randolph Avenue, 3 ½ blocks from the Chesapeake Bay, in Cape Charles from one of the 1930s hurricanes. Photo Credit: U.S. Army Corps of Engineers Flood Plain Cape Charles Report

Flooding during the Ash Wednesday Storm of 1962. Photo printed in the Army Corp of Engineers Flood Plain Report for Wachapreague

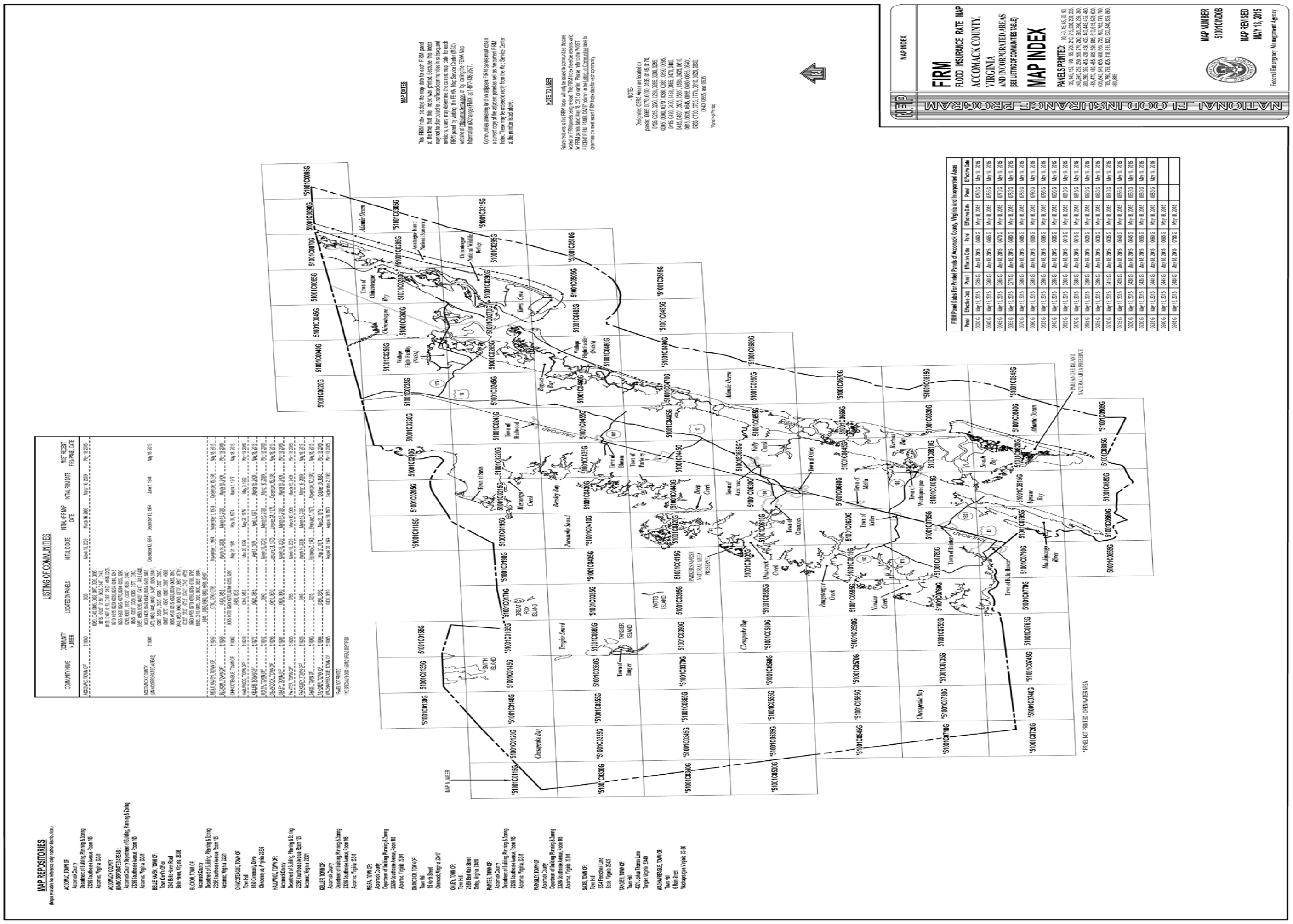
Storm water flooding on U.S. Route 13 during Tropical Depression Ernesto in 2006. Photo Credit: Jay Diem, Eastern Shore News

Detailed Map of the Region



FIRMettes of Project Areas

Accomack County



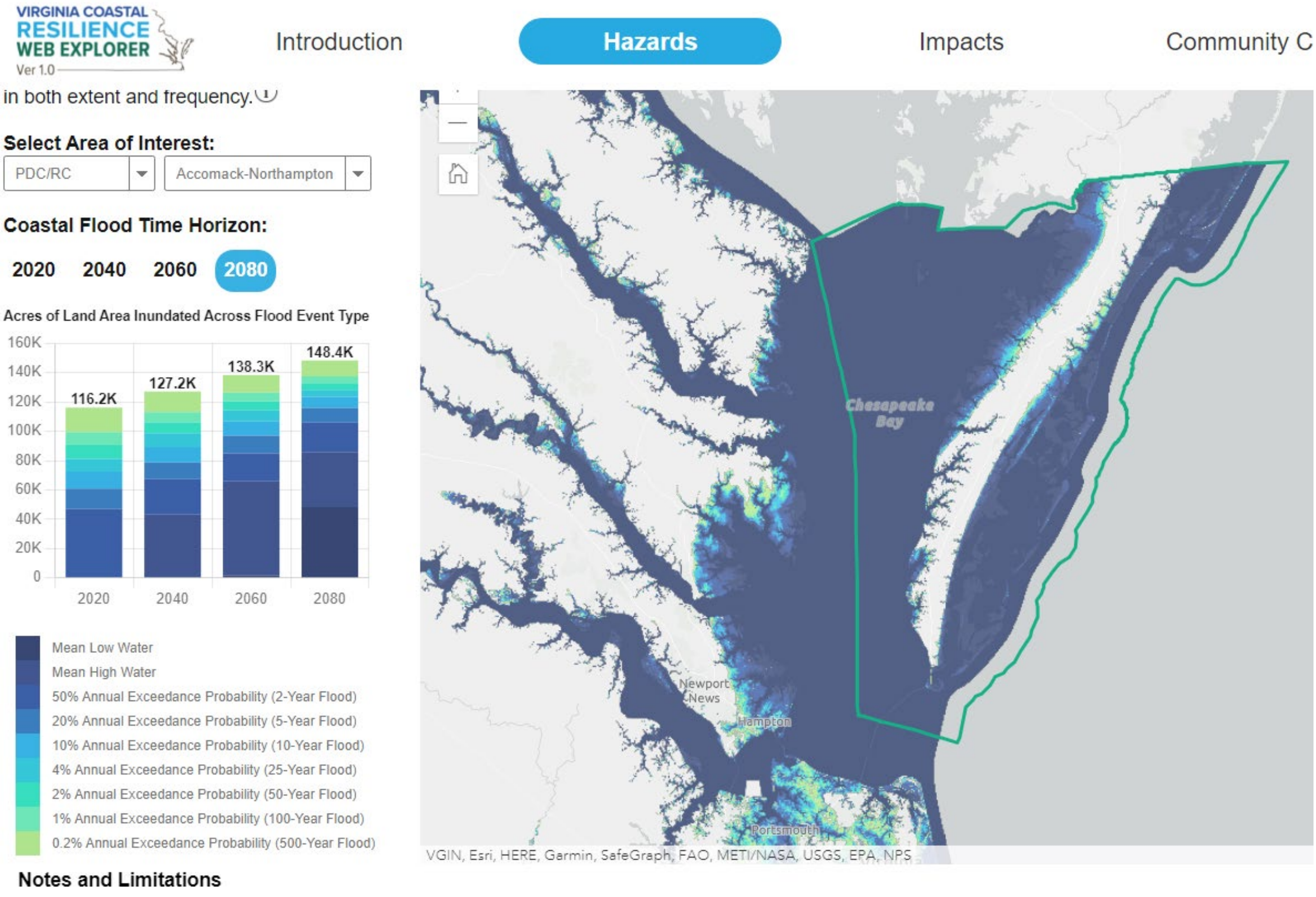
Northampton County

Non-Fund financed Maintenance and Management Plan

While the development of this plan will take only one to two years for full completion, the intention is to update it every five years, in alignment with other regional plans, such as the Hazard Mitigation Plan. A-NPDC staff will aim to do this with non-fund finances, seeking alternative coastal management and resilience funds to support staff time necessary to facilitate and publish update(s) of the Regional Resilience Plan.

Maps Showing Region's 2080 Inundation & Floodplain

Virginia Coastal Resilience Web Explorer, *Virginia Coastal Resilience Master Plan*



in both extent and frequency.ⓘ

Select Area of Interest: PDC/RC | Accomack-Northampton

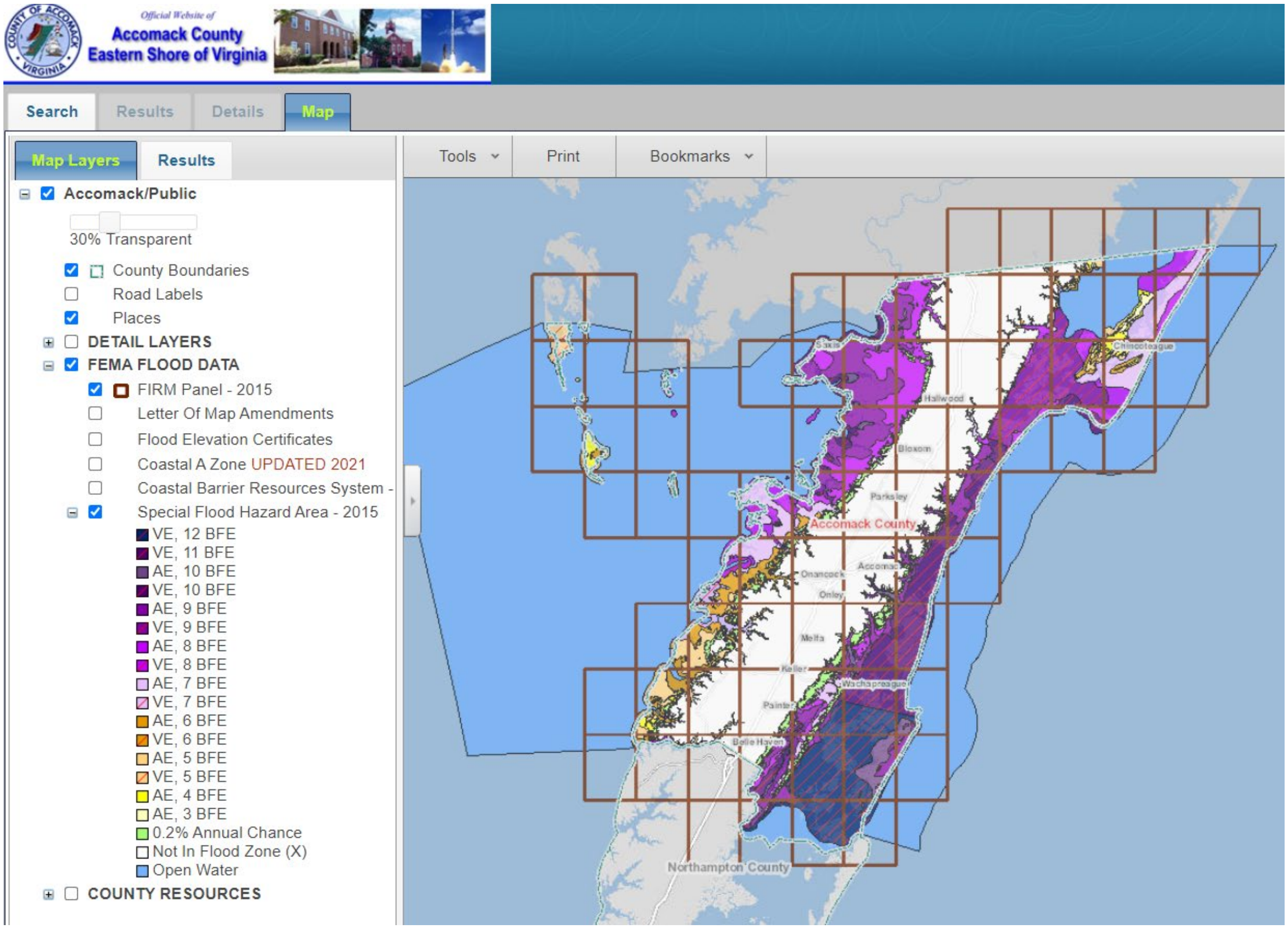
Coastal Flood Time Horizon: 2020 2040 2060 [✓ 2080]

FEMA Flood Data

Accomack County

Accomack County FEMA Flood Data

According to the County, the area is *"… a relatively flat area between two major bodies of water. Large portions of the County consist of hydric soils or have a high-water table that are poorly drained and subject to ponding. Tides play a role in possible flooding. Accomack is also subject to severe impacts from nor'easters, tropical storms and hurricanes. During these events and other periods of strong winds rainfall entering ditches and creeks can flood an area if a rising tide is pushing the water back up into creeks. This combination of flat terrain, climate, coastal location, and tides creates large areas subject to flood risk."*



⊟ ☑ Accomack/Public

30% Transparent

- ☑ County Boundaries
- ☐ Road Labels
- ☑ Places

⊞ ☐ DETAIL LAYERS

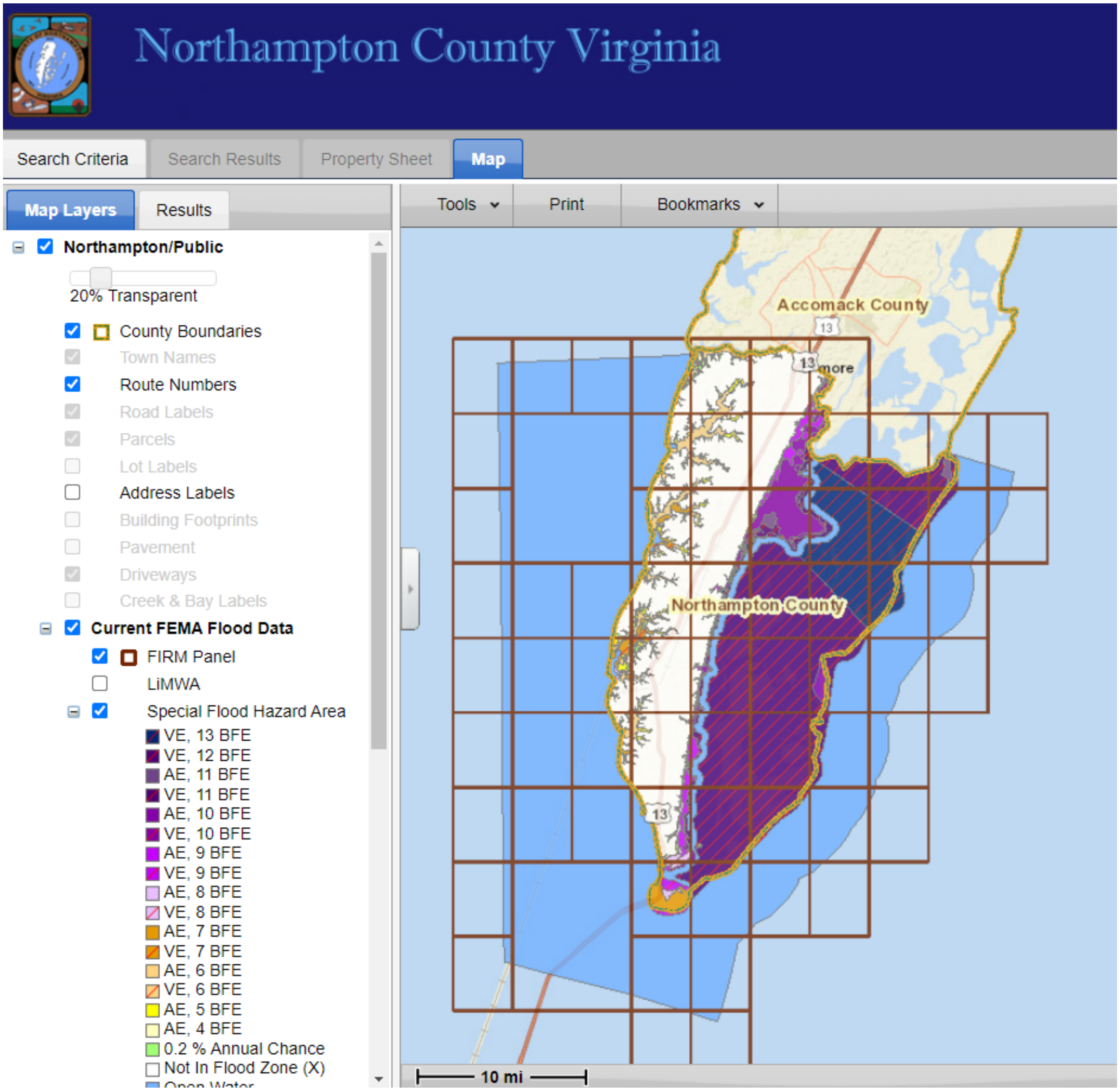
⊟ ☑ FEMA FLOOD DATA

- ☑ FIRM Panel - 2015
- ☐ Letter Of Map Amendments
- ☐ Flood Elevation Certificates
- ☐ Coastal A Zone UPDATED 2021
- ☐ Coastal Barrier Resources System -
- ⊟ ☑ Special Flood Hazard Area - 2015
  - ■ VE, 12 BFE
  - 🟪 VE, 11 BFE
  - 🟪 AE, 10 BFE
  - 🟪 VE, 10 BFE
  - 🟪 AE, 9 BFE
  - 🟪 VE, 9 BFE
  - 🟪 AE, 8 BFE
  - 🟪 VE, 8 BFE
  - 🟪 AE, 7 BFE
  - ▨ VE, 7 BFE
  - 🟧 AE, 6 BFE
  - 🟧 VE, 6 BFE
  - 🟧 AE, 5 BFE
  - ▨ VE, 5 BFE
  - 🟨 AE, 4 BFE
  - 🟨 AE, 3 BFE
  - 🟩 0.2% Annual Chance
  - ☐ Not In Flood Zone (X)
  - 🟦 Open Water

⊞ ☐ COUNTY RESOURCES

Northampton County

Northampton County FEMA Flood Data



☑ Northampton/Public

20% Transparent

☑ County Boundaries
☑ Town Names
☑ Route Numbers
☑ Road Labels
☑ Parcels
☐ Lot Labels
☐ Address Labels
☐ Building Footprints
☐ Pavement
☑ Driveways
☐ Creek & Bay Labels

☑ Current FEMA Flood Data
☑ FIRM Panel
☐ LiMWA
☑ Special Flood Hazard Area
▨ VE, 13 BFE
▨ VE, 12 BFE
■ AE, 11 BFE
▨ VE, 11 BFE
■ AE, 10 BFE
▨ VE, 10 BFE
■ AE, 9 BFE
▨ VE, 9 BFE
■ AE, 8 BFE
▨ VE, 8 BFE
■ AE, 7 BFE
▨ VE, 7 BFE
■ AE, 6 BFE
▨ VE, 6 BFE
■ AE, 5 BFE
■ AE, 4 BFE
🟩 0.2 % Annual Chance
□ Not In Flood Zone (X)

Letters of Support

1. Accomack County
2. Northampton County
3. Chesapeake Bay Foundation
4. Wetlands Watch
5. Virginia Institute of Marine Science
6. CBES

Additional Supporting Documents

1. Shoreline News, April 2022, *Flooded Roads: Maintain or Abandon?*, p. 24, by Sue Mastyl
2. Potential Economic Disruptions Due to Flooding, NOAA database

COUNTY OF ACCOMACK
OFFICE OF THE COUNTY ADMINISTRATOR

23296 Courthouse Ave – Room 203 | P.O. Box 388 | Accomac, Virginia 23301
(757) 787-5700 | administration@co.accomack.va.us
www.co.accomack.va.us

Michael T. Mason, CPA
County Administrator

March 30, 2022

Virginia Department of Conservation and Recreation (VDCR)
RE: Community Flood Preparedness Fund, Round 3
cfpf@dcr.virginia.gov

To Whom It May Concern:

On behalf Accomack County, I fully support the efforts of the Accomack-Northampton Planning District Commission (A-NPDC) in seeking funding from the Community Flood Preparedness Fund (CFPF) for Capacity Building & Planning through the development of a regional resilience plan.

The Eastern Shore, being a land between two waters, is extremely vulnerable to flooding as a result of storm events, sea-level rise, climate change, and increased rainfall. In addition to these vulnerabilities, Accomack County is considered a low-income geographic area with median household incomes falling below the $59,377.60 threshold. According to the US Census Bureau QuickFacts table, Accomack County's median household income equals $46,178. The development of a regional resilience plan, guided by a steering committee made up of community leaders and region-wide stakeholders is a critical need of Accomack County and its localities in the Eastern Shore region for both sustainability of the region and for prioritization of mitigation projects. A plan is also a critical prerequisite when seeking potential funding to aid in flood preparedness and mitigation.

The anticipated regional resilience plan will directly impact Accomack County, increasing assets the localities of Accomack County have when seeking funding for flood preparedness and mitigation projects. With this resilience plan, Accomack County is hopeful that more localities will seek flood funding to address critical projects and identified needs within their community.

Sincerely,

Michael T. Mason,
County Administrator

Cc: Jessica Steelman, Coastal Planner
Accomack-Northampton Planning District Commission
jsteelman@a-npdc.org

Board of Supervisors of Northampton County
P.O. Box 66 • Eastville, Virginia 23347

Charles Kolakowski
County Administrator

PHONE: 757-678-0440
FAX: 757-678-0483

BOARD OF SUPERVISORS
M.E. "Betsy" Mapp, Chairman
Oliver H. Bennett, Vice Chairman
John R. Coker
L. Dixon Leatherbury
Ernest L. Smith, Jr.

March 25, 2022

Ms. Jessica Steelman
Coastal Planner
Accomack-Northampton Planning District Commission
jsteelman@a-npdc.org
(757) 787-2936 x114

Re: Support for *Capacity Building: Development of the Eastern Shore Regional Community Resilience Plan*

Dear Mrs. Steelman:

On behalf of Northampton County, I fully support the efforts of the Accomack-Northampton Planning District Commission (A-NPDC) in seeking funding for a Community Flood Preparedness Fund (CFPF) grant through the Virginia Department of Conservation & Recreation to develop a Regional Resilience Plan.

A Regional Resilience Plan is instrumental in increasing coastal resilience and protection for the community and its culture, preserving natural habitats, and using nature-based solutions (NBS) where possible. The A-NPDC currently leads the Climate Adaptation Working Group (CAWG), focused on identifying resilience needs in the region, and working with members of the community and local government to connect these region-wide resilience needs (projects, studies, plans, etc.) with appropriate funding sources. The CAWG has developed a living database of Eastern Shore Regional Resiliency Projects, 85 of which were submitted for the Virginia Coastal Resilience Master Plan, Phase 1. The next step in these efforts is the development of a comprehensive regional resilience plan that describes the entire local government's approach to flooding. The completion of this Regional Resilience Plan will build capacity across Eastern Shore communities by qualifying flood protection and mitigation projects for various funding, including the Community Flood Preparedness Fund.

This Eastern Shore Regional Resilience Plan will be project-based with a focus on flood control and resilience; it will simultaneously incorporate nature-based infrastructure to the extent possible, and be based on the best available science, incorporating climate change, sea level rise, storm surge (as appropriate), and current flood maps. This plan will consider all parts of local government and include the coordination with other local and inter-jurisdictional projects, plans, and activities, and lastly will have clearly articulated phasing for plan implementation. Regardless of socioeconomics and race, public outreach will be conducted and community input will be requested to ensure the development of a truly comprehensive Regional Resilience Plan.

If you have any questions, please advise.

Sincerely yours,

CHARLES KOLAKOWSKI
County Administrator
ckolakowski@co.northampton.va.us

Cc: Anne Doyle, Director of Planning
Accomack-Northampton Planning District Commission
adoyle@a-npdc.org

CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

April 8, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

To Whom It May Concern:

On behalf of the Chesapeake Bay Foundation (CBF), I submit this letter of support for the Accomack-Northampton Planning District Commission (ANPDC) Eastern Shore Regional Community Resilience Plan.

CBF is a nonprofit organization dedicated to saving the Chesapeake Bay with more than 91,000 members in Virginia. CBF carries out its mission through restoration, advocacy, education, and litigation from offices in Richmond, Virginia Beach, and other locations in the Bay watershed, including Virginia's Eastern Shore.

ANPDC's application to the Virginia Community Flood Preparedness Fund (CFPF) is aligned with the Commonwealth's objectives for resilience laid out in the Coastal Resilience Master Plan (CRMP) and the preferences included in the CFPF. ANPDC's proposal to develop a plan that is protective of communities in Accomack and Northampton Counties as well as their natural resources makes it an ideal candidate for CFPF support.

Sea level rise and increased flooding threaten communities around the Commonwealth. However, many smaller localities do not have the personnel or resources to begin assessing those impacts, or the funds necessary to implement solutions. The proposal from ANPDC would help Eastern Shore communities with the essential first step of developing a resilience plan. Their projects-based approach builds upon the work of the CRMP by opening the door for Eastern Shore localities to receive CFPF awards, as well as federal dollars dedicated to resilience efforts.

Rising waters carry potential impacts to habitat and water quality throughout the Chesapeake Bay watershed which is why the CFPF included a strong preference for nature-based designs. The proposal acknowledges the risks to the tidal wetlands, beaches, and dunes, as well as uplands, and as such, will focus on those projects that maximize nature-based designs. Additionally, given the region-wide focus of the proposal, it also meets CFPF objectives for community scale.

ANPDC has a demonstrated track record of coordinating regional resilience efforts through the Climate Adaptation Working Group (CAWG) and their numerous partnerships with localities. It is the ideal organization to help coordinate the creation of this regional plan. We hope the agency will look favorably upon this application.

Sincerely,

Margaret L. (Peggy) Sanner
Virginia Executive Director

WETLANDS
WATCH

April 6, 2022

Wendy Howard-Cooper
Director of Dam Safety & Floodplain Management
Virginia Department of Conservation & Recreation
cfpf@dcr.virginia.gov

Re: Eastern Shore of VA Regional Resilience Community Plan Development CFPF Application

Dear Ms. Howard-Cooper,

I am writing as Wetlands Watch's Executive Director to communicate our organization's support of Accomack-Northampton Planning District Commission's (A-NPDC) application to the Virginia Community Flood Preparedness Fund (CFPF) for the development of the "Eastern Shore of VA Regional Community Resilience Plan."

Understanding the risks facing a region and planning to address the impacts of those risks is critical to build community-wide resilience. Virginia's Eastern Shore is experiencing a number of flood risks related to current and projected future conditions. Recurrent tidal flooding and increased rainfall makes many roads impassable, farmlands not farmable, tree buffers die, and septic systems fail. Planning for these impacts will help educate local government staff, community decision makers, residents, businesses, and many other stakeholders about their specific risks so they can take action during and after flood events. The creation of the Resilience Community Plan will also allow those Eastern Shore local governments participating in the plan to apply for future CFPF project funding that is essential to implement strategies identified in the resultant plan.

We strongly support ANPDC's application to the Community Flood Preparedness Fund. We believe the state resources invested in the development of the Eastern Shore Regional Community Resilience Plan will enhance flood safety and community resilience in communities where staff capacity is low and resources are scarce. We look forward to work with the A-NPDC and Eastern Shore communities on this endeavor.

Sincerely,

William A. Stiles, jr

William "Skip" Stiles, Jr.
Executive Director
Wetlands Watch

VIMS | WILLIAM & MARY
VIRGINIA INSTITUTE OF MARINE SCIENCE
Eastern Shore Laboratory

6 April 2022

Wendy Howard-Cooper
Director for Dam Safety and Floodplain Management
Virginia Department of Conservation and Recreation
cfpf@dcr.virginia.gov

RE: Eastern Shore of Virginia Regional Resilience Community Plan Development CFPF Application

Ms. Howard-Cooper and Members of the Review Team:

I am writing to you in support of the application by the Accomack-Northampton Planning District Commission (A-NPDC) for funding from the Community Flood Preparedness Fund (CFPF) to support development of a regional resilience plan.

As I'm sure you are aware, the topography of the Eastern Shore of Virginia (ESVA) is, well, there is little to no topography here. Storm water infiltrates and pools in flooded woodlands as much or more than it runs off, and we are in an area with one of the highest relative level rise rates. Farm land and houses are being lost to rising salt water on both Seaside and Bayside, where small increases in sea level impact significant horizonal area due to the flat terrain. It is an economically depressed area, dominated by agriculture and use of marine resources (wild harvest fisheries and aquaculture). Many of our residents lack the education, resources, and scope of attention beyond survival to address future needs, reacting rather than planning.

The development of a regional resilience plan under the leadership of A-NPDC would be a great service to the residents of the ESVA and the local governments struggling to meet basic services for their citizens.

I started my current position with VIMS here in Wachapreague in 2015. I quickly realized that the A-NPDC was a leader in addressing economic and environmental issues for the ESVA, providing critical planning resources for individuals, communities, and local government, and securing and managing grants and contracts to improve conditions here on the ESVA. I have always found them to be highly professional and practically oriented. They are well qualified for the proposed task.

Please contact me if any further information is needed.

Sincerely,

Richard A Snyder
Professor and Director
rsnyder@vims.edu

PO Box 350 • 40 Atlantic Avenue • Wachapreague, Virginia 23480 USA
757.787.5816 • FAX 757.787.5831 • www.vims.edu/esl

Since 1988
CBES CITIZENS FOR A BETTER EASTERN SHORE

Non-profit Organization "Protecting What You Love About the Shore Since 1988"
PO Box 882 • Eastville, VA 23347 • 757-678-7157 • info@cbes.org • www.cbes.org

April 6, 2022

Virginia Department of Conservation and Recreation
RE: Eastern Shore of Virginia Regional Resilience Community Plan Development CFPF Application

To Whom It May Concern:

I am writing to you on behalf of CBES Board and membership in support of the Accomack-Northampton Planning District Commission's [A-NPDC] grant application to develop a regional resilience plan for the Eastern Shore.

As a 34-year nonprofit with a focus on conservation, natural resource protection and community action, we have long recognized and advocated for the need to comprehensively address rising sea levels and the ramifications of increased and more intense storm events on our vulnerable peninsula.

Our monthly *ShoreLine News Journal* has covered this issue extensively including our latest edition which addressed maintaining or abandoning flooded roads.

CBES knows the solid track record of the A-NPDC and firmly believes they are the agency our community can depend on to facilitate the development of a Shore wide regional plan. Such a planning, project-based strategy is not a luxury but a necessity for the protection of our community's future.

Godspeed,

Donna Bozza, CBES Executive Director

Cc: Jessica Steelman, Coastal Planner
Accomack-Northampton Planning District Commission

Flooded Roads: Maintain or Abandon?

By Sue Mastyl

A spring 2020 paper from the Virginia Coastal Policy Center (VCPC) of William & Mary Law School outlines the potential liability issues of closing roads due to increased flooding.[1]

As policymakers continue to update plans for flooding due to sea-level rise (SLR), increased precipitation, and more frequent storm events, one area of concern is road flooding. Some roads on the Eastern Shore and throughout coastal Virginia already flood on a regular basis with king tides and storms; this will only increase in severity and frequency.

Failure to maintain a flooded road could leave a locality open to liability. Abandoning a section of road due to flooding may also create liability.

Flooded Roads on the Eastern Shore

The Virginia Department of Transportation (VDOT) oversees 57,867 miles of roads in Virginia – 1,516 miles on the Shore. The 2021 VTrans (Virginia's Transportation Plan) cited 32,100 miles of roads at risk of flooding due to SLR, storm surge, and inland/riverine flooding.[2]

A 2015 study by Accomack-Northampton Planning District (A-NPDC) and VDOT assessed the vulnerability of Eastern Shore roads to flooding.[3] They determined that with 1 foot of SLR (currently projected by 2040[4]), 33 miles of roads would be vulnerable to inundation; the number rises to 371 miles (24.5% of all roads) with 6 feet of SLR, which could occur as early as 2090 under the NOAA intermediate-high scenario.[5] Over 80% of the vulnerable roads were in Accomack County. The study noted that the SLR predictions "represent stillwater conditions," without considering wind, storm events, or astronomical tides, so that "a larger number of roads may be subject to flooding than what is indicated by this study."

The A-NPDC study showed that:

- 100% of roads on Tangier will be inundated with 1 foot of SLR; this will occur for Chincoteague and Saxis with 4 feet of SLR, and for Wachapreague with 6 feet of SLR.
- Major access roads will be inundated with 2 feet of SLR, including:
  - Bell's Neck Road, Chincoteague Causeway, Crystal Beach Road, East Point Road, Greenbackville/State Line Road, Hopkins Road, North Chesconessex/Northside Road, Saxis Causeway, and Schooner Bay Road in Accomac County
  - Bayford Landing, Church Neck/Bayside Road, Johnsons Cove/Old Neck Road, Webbs Island, and Wise Point Landing in Northampton County

The study noted that estimating costs to maintain or elevate roads vulnerable to flooding is difficult. A 2003 study for 3 Chesapeake Bay communities in Maryland estimated costs from $385,000 to $1.5 million per lane mile; a 2009 study for 6.75 miles of roads on the Middle Peninsula of Virginia estimated $5.3 million for short-term solutions and $26.5 million for long-term plans. All of these estimates would have to be adjusted for inflation.

Potential Liabilities

The VCPC paper notes that local governments will play a key role in deciding whether to 1) replace roads vulnerable to flooding (including the option to elevate the roads), 2) continue to maintain them in place, or 3) abandon them altogether. Some policymakers are taking steps to address the threat of SLR on roads, including plans by the U.S. Fish & Wildlife Service and National Park Service to move the road and parking lot for the beach on Assateague Island to a more stable location.[6,7] However, communities are already seeing pushback on some plans, including homeowners in Gloucester County who threatened to sue after the county and VDOT posted "Road May Flood" signs, because it might decrease property values; and homeowners in Florida who successfully sued the county when it stopped repairing a low-lying, flood-prone road due to increasing costs.

The primary source of funding for roads in Virginia is the SMART SCALE program; importantly, only historical flooding, and not future SLR, is factored in, and only with respect to disruption to traffic. Environmental quality is only 1 of 6 factors considered in evaluations.

In deciding to abandon a road, the governing body must determine that either there is "no public necessity" (which could include scenic value alone) for continuing its use, or "the safety and welfare of the public" are best served by the abandonment. Once abandoned, it may not be possible to add the road back into the system.

Of the options outlined above, replacing or elevating sections of road will be the most expensive in many cases. Maintaining roads in place also has significant costs, while failure to maintain a flooded road could leave a locality open to liability under the takings clause, either by preventing access to property or by causing damage to property. Abandoning a section of road due to flooding may also create liability if a property owner feels they have been denied access to their property.

To avoid these liabilities, the VCPC authors recommend including the community in the process, with early

See **Flooded Roads**, *cont'd on p. 5*

VIMS | William & Mary
Virginia Institute of Marine Science

Calling All Anglers

You Too Can Be a Fisheries Scientist

By George Mapp

Birdwatchers have excellent phone apps to help identify birds in the field. Simply take a picture, submit it, and if the picture is detailed enough, the app will identify the bird. Or submit a sound recording. If it's a new species for you, click and it's added to your life list. More importantly, your observation is added to a database, catalogued, and made available to researchers and the public. For users, it's convenient – there's no need for field guides or notebooks. For the rest of us, the data reveal what both sexes look like and sound like at all ages, when and where species normally occur, and enables estimates of abundance and migration patterns.

Now the Virginia Institute of Marine Science (VIMS) has developed a similar app for anglers. RecFish (https://www.recfish.org/) is now available on mobile devices and as a website. The initial version is not fully functional, as it can only recognize a few species. It takes several thousand pictures of each species to "train" the machine learning software – software also used for facial recognition and optical character readers. So, the goal of this first version is to gather pictures. As more and more are added, identification "skill" will improve.

The goal is to identify the fish, estimate size and weight, and determine if it is legal to keep. Future enhancements may include whether it is edible, legal regulations, and the citation size and weight. One possible enhancement – virtual fishing tournaments. Like the birder databases, this one will add to our knowledge of the appearance of both sexes at all ages, migration patterns, abundance, and size and weight statistics.

VIMS has been doing trawl surveys for 67 years, but only in waters deeper than 9 feet. While the data are invaluable for managing fisheries, it misses shallow waters – important fish habitats of grass beds and oyster reefs.

There are approximately 300 fish species reported in the Bay, but only about 30 year-round resident species. The rarer the species, the more important the pictures are. Anglers are not inclined to pose with throw-back fish, but by photographing them, they will be doing a good deed. Those who prefer not to divulge the location of their favorite fishing spot can opt to provide an approximate location or no location at all.

More and more anglers, like birders, are content to observe without harming the animals. For anglers, this is catch-and-release. Injuries to fish can be minimized in several ways, for example, by using barbless hooks, leaving the fish in the water while carefully removing the hook, and releasing promptly.

Sources

Malmquist, David. VIMS scientists want to hear your fish tales. VIMS.Edu, 2021. https://www.vims.edu/newsandevents/topstories/2021/recfish.php

Techniques to reduce catch-and-release mortality. Florida Fish and Wildlife Conservation Commission, 2022. https://myfwc.com/research/saltwater/fish/snook/reduce-catch-release-mortality/

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Flooded Roads, *cont'd from p. 4*

discussions and negotiations with affected property owners; ongoing education of citizens about current and predicted flooding risks in the community; and developing alternative plans to provide access to affected properties.

As SLR increases and storm events increase in frequency and intensity, localities "will need to consider whether it is worth the expense to continuously maintain roads that are repeatedly damaged by flooding," the authors note. "Localities will ... have to consider the option of abandoning certain roads that become problem areas for repeated flooding," which may remove the legal risk and costs associated with ongoing maintenance, "but does come with its own potential legal risks, ... from landowners who lose sole access to their properties."

Sources:

[1] Howieson W, Tentilucci M. Closing roads due to increased flooding: potential liability issues in Virginia. College of William & Mary Law School, Virginia Coastal Policy Center, spring 2020. https://law.wm.edu/academics/programs/jd/electives/clinics/practicum_list/vacoastal/reports/transportation-paper-4-26-213.pdf

[2] VTrans: Virginia's Transportation Plan. Long-term risks & opportunity register. Jan. 21, 2022. https://vtrans.org/long-term-planning/long-term-risk-register

[3] Accomack-Northampton Planning District. Eastern Shore of Virginia transportation infrastructure inundation vulnerability assessment. May 2015. http://www.a-npdc.org/wp-content/uploads/2016/05/TIIVA-Report-ANPDC-May2015_final-no-appendices.pdf

[4] Virginia Institute of Marine Science. Sea-level report cards: Chesapeake Bay. 2022.

[5] ADAPTVA. Virginia sea level: evidence-based planning for changing climate. 2022. http://adaptva.com/info/virginia_sea_level.html

[6] U.S. Fish & Wildlife Service and National Park Service. Your new beach experience: a project to support and sustain the local tourism-based economy, Chincoteague, VA. May 2017. https://www.fws.gov/uploadedFiles/New%20Beach%20Experience%20-%20May%20update%202017.pdf

[7] U.S. Fish & Wildlife Service. Finding of no new significant impact: environmental assessment for the recreational beach relocation. Dec. 11, 2018. https://www.fws.gov/uploadedFiles/2018%20EA%20for%20Beach%20Relocation.pdf

GeoId	GeoName	stateName	SquareMiles	Year	SectorID	SectorName	Establishments	Employment	Wages	RealWages	GDP	RealGDP
51001	Accomack, VA	Virginia	4.49E+02	2019	NALL	Total, all industries	1130	13214	525592554	472010924	1300267456	1142114943
51001	Accomack, VA	Virginia	4.49E+02	2019	NCONS	Construction	91	391	15810968	14199116	31812843	23684736
51001	Accomack, VA	Virginia	4.49E+02	2019	NFINA	Financial Activities	70	245	11115629	9982444	78637758	63041296
51001	Accomack, VA	Virginia	4.49E+02	2019	NHAED	Education and Health Services	271	1491	66535867	59752856	85340725	76494676
51001	Accomack, VA	Virginia	4.49E+02	2019	NINFO	Information	13	81	3804494	3416644	10979628	12201322
51001	Accomack, VA	Virginia	4.49E+02	2019	NLAHS	Leisure and Hospitality	113	1422	25021340	22470535	52362066	41850687
51001	Accomack, VA	Virginia	4.49E+02	2019	NMANU	Manufacturing	25	3285	117564188	105579085	358511388	323994574
51001	Accomack, VA	Virginia	4.49E+02	2019	NNATR	Natural Resources and Mining	21	150	7084971	6362692	26320144	32423436
51001	Accomack, VA	Virginia	4.49E+02	2019	NOTHR	Other Services	108	364	8969569	8055165	20262045	16430168
51001	Accomack, VA	Virginia	4.49E+02	2019	NPABS	Professional and Business Services	118	1265	83466431	74957430	142202680	136695204
51001	Accomack, VA	Virginia	4.49E+02	2019	NPUBA	Public Administration	55	1253	77950661	70003966	393655933	336810997
51001	Accomack, VA	Virginia	4.49E+02	2019	NTRAD	Trade, Transportation, and Utilitie	239	1830	59276249	53233321	149571095	133464877
51131	Northampton, VA	Virginia	2.12E+02	2019	NALL	Total, all industries	597	4359	141241026	126842184	349417259	306917373
51131	Northampton, VA	Virginia	2.12E+02	2019	NCONS	Construction	30	113	4498681	4040062	9051681	6738997
51131	Northampton, VA	Virginia	2.12E+02	2019	NFINA	Financial Activities	31	136	4980512	4472773	35234740	28246528
51131	Northampton, VA	Virginia	2.12E+02	2019	NHAED	Education and Health Services	225	603	19565926	17571274	25095793	22494471
51131	Northampton, VA	Virginia	2.12E+02	2019	NINFO	Information	1	0	0	0	0	0
51131	Northampton, VA	Virginia	2.12E+02	2019	NLAHS	Leisure and Hospitality	46	744	13727590	12328128	28727677	22960764
51131	Northampton, VA	Virginia	2.12E+02	2019	NMANU	Manufacturing	12	234	8526951	7657669	26002893	23499382
51131	Northampton, VA	Virginia	2.12E+02	2019	NNATR	Natural Resources and Mining	40	797	30408961	27308914	112967045	139162604
51131	Northampton, VA	Virginia	2.12E+02	2019	NOTHR	Other Services	64	159	4136623	3714914	9344534	7577333
51131	Northampton, VA	Virginia	2.12E+02	2019	NPABS	Professional and Business Services	33	91	3975854	3570535	6773706	6511362
51131	Northampton, VA	Virginia	2.12E+02	2019	NPUBA	Public Administration	24	294	11849499	10641500	59840744	51199586
51131	Northampton, VA	Virginia	2.12E+02	2019	NTRAD	Trade, Transportation, and Utilitie	86	536	15090559	13552149	38077838	33977514

The National Oceanic and Atmospheric Administration (NOAA) recently released a first of its kind database that helps communities understand the potential economic disruptions due to flooding.

The database provides employment in coastal inundation zones statistics, and is one of the newest products available from NOAA’s Digital Coast.

Information about the number of businesses and employees that could be impacted by flood events can be hard to find and can leave a big gap in a risk analysis. To help fill this data gap, NOAA’s Office for Coastal Management partnered with the Bureau of Labor Statistics to create employment statistics for different coastal inundation zones. These highly anticipated data include the number of establishments—and the number of people employed by those business establishments—that fall within various coastal inundation footprints. These data are reported as aggregated statistics at state and county levels.

https://coast.noaa.gov/digitalcoast/data/coastal-inundation-zones.html

Budget Narrative

The total cost for capacity building and planning is $350,000. The A-NPDC respectfully requests full funding of this project and a waiver of match funds. Both counties within the region – Accomack and Northampton – are significantly vulnerable to flood hazards and climate change being surrounded by the Chesapeake Bay to the west and the Atlantic Ocean to the east. According to the grant manual for CFPF Round 3, on p. 24, "For local governments designated as low-income geographic areas, 100 percent of the estimated total project costs should be included". It is crucial that the Eastern Shore possess a Regional Community Resilience Plan and the CFPF would allow this process to be initiated and implemented far sooner than possible than seeking local funds. Additionally, this regional plan is a key criterion for localities to apply for future CFPF for projects, 85 of which have already been identified as needed during the past year's efforts to provide projects for the Virginia Coastal Resilience Master Plan and an additional 43 which are still in pre-planning stages.

Task	Project Budget
Resilience Plan	$340,000
Community Engagement (Four county-wide sessions, 14 town and site-specific sessions, and 2 regional sessions, to include all advertisement and marketing materials)	$20,000
Steering Committee meetings and materials	$5,000
Staff Training	$2,000
Internship Program (12-16 weeks) conducted over two years	$8,000
Total	**$375,000**

A-NPDC

ACCOMACK-NORTHAMPTON PLANNING DISTRICT COMMISSION
P.O. BOX 417 • 23372 FRONT STREET • ACCOMAC, VIRGINIA 23301
(757) 787-2936 • TOLL FREE (866) 787-3001 • FAX: (757) 787-4221
WEBSITE: www.a-npdc.org

Authorization to Request Funding

The Executive Director has authorized the submission of this grant application in the amount of $375,000 to the Community Flood Preparedness Fund for project titled *Capacity Building: Development of the Eastern Shore Regional Community Resilience Plan.*

Elaine Meil, Executive Director
Name & Title

Accomack-Northampton Planning District Commission
Organization

Elaine KU Meil
Signature

Date 4/8/2022

Cc: Anne Doyle	Cc : Jessica Steelman
Director of Planning	Coastal Planner
Accomack-Northampton PDC	Accomack-Northampton PDC
adoyle@a-npdc.org	jsteelman@esvaplan.org
(757) 787-2936	(757) 787-2936 x114

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510001_CID510105_Accomack-NorthamptonPDC_CFPF Round 3 Application

1 message

Jessica Steelman <jsteelman@esvaplan.org> Fri, Apr 8, 2022 at 3:55 PM
To: cfpf@dcr.virginia.gov
Cc: jsteelman@esvaplan.org, Anne Doyle <adoyle@a-npdc.org>, "Elaine K. N. Meil" <emeil@a-npdc.org>

Dear Ms. Howard-Cooper and Members of the Review Team:
Please see attached our application for CFPF Round 3.
Thank you,

PS - NEW EMAIL, Same Planner! Please note and update my email in your contacts as we begin transitioning our domain.

Jessica Steelman
Coastal Planner
Accomack-Northampton Planning District Commission
PO Box 417/23372 Front Street, Accomac, VA 23301
o. 757-787-2936 x114
f. 757-787-4221
jsteelman@esvaplan.org

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6605K

CVPDC

Central Virginia Planning
District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504
Office: (434) 845-3491
cvpdc.org

April 5, 2022

Virginia Department of Conservation and Recreation
Attn: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, VA 23219

To Whom it May Concern:

It is my pleasure to, on behalf of our member localities, to submit a Community Flood Preparedness Fund (CFPF) Planning and Capacity Building application to develop a Central Virginia Planning District Commission (CVPDC) Regional Resiliency Plan.

The CVPDC completed the Central Virginia Planning District Commission Hazard Mitigation Plan 2020 Update, adopted by FEMA and all ten CVPDC localities in 2021. The regional HMP provides the foundation for the Regional Resiliency Plan and, more importantly, specifies within the Mitigation Strategies the need to execute "studies or maps that provide easily identifiable and understandable to evaluate vulnerable areas" and "encourage development of local or regional Resiliency Plans".

The CVPDC Commissioners, at their March 17, 2022, meeting unanimously endorsed the submittal of a CFPF to develop a Regional Resiliency Plan. Should the fiscal evaluation factors eliminate our region from a match waiver, the CVPDC is prepared and will fund the full cash match on its localities' behalf. Further, this letter confirms recognition that the CFPF is a reimbursement program and that the CVPDC has sufficient funds to cover costs preceding grant disbursement.

The HMP development effort highlighted the need for more detailed flood prone area evaluation. The Regional Resiliency Plan will develop priority project and engineering evaluations that will allow for the project mitigation implementation to protect identified vulnerable areas. We respectfully request approval of this application within the Round 3 Community Flood Preparedness Fund awards.

Sincerely,

Gary Christie

Gary Christie
Executive Director
434 941-5859

CENTRAL VIRGINIA
PLANNING DISTRICT COMMISSION

Round 3 Application for the
Virginia Community Flood
Preparedness Fund
2022 Grant Funding

Capacity and Planning
Resiliency Plan Development

Contents

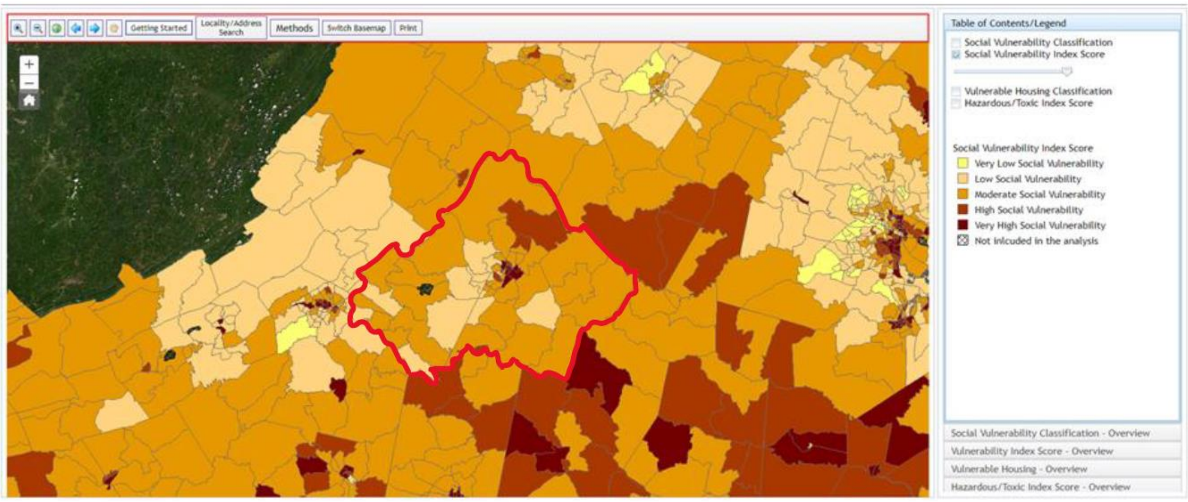
Introduction

The Central Virginia Planning District Commission ("CVPDC"), Planning District 11, is comprised of 4 counties, one city, and a number of towns, each listed below with links to their comprehensive plans and local floodplain ordinances:

- Amherst County - Comprehensive Plan and Floodplain Ordinance
- Appomattox County - Comprehensive Plan and Floodplain Ordinance
- Bedford County - Comprehensive Plan and Floodplain Ordinance
- Campbell County - Comprehensive Plan and Floodplain Ordinance
- City of Lynchburg - Comprehensive Plan and Floodplain Ordinance
- Town of Altavista - Comprehensive Plan and Floodplain Ordinance
- Town of Amherst - Comprehensive Plan and Floodplain Ordinance
- Town of Appomattox - Comprehensive Plan and Floodplain Ordinance
- Town of Bedford - Comprehensive Plan and Floodplain Ordinance[1]
- Town of Brookneal - Comprehensive Plan and Floodplain Ordinance

Most of the communities' comprehensive plans address flooding issues to some degree, and the CVPDC itself has a regional Hazard Mitigation Plan (*Central Virginia Planning District Commission Hazard Mitigation Plan 2020 Update*; "CVPDC HMP;" link) with a flood risk component detailing the number of flooding events in each county, the number of NFIP repetitive loss structures, and the dollar amount of property damage caused by flooding. However, what is missing is a region-wide overview of flooding issues, the specific communities that flooding affects, and a prioritized list of projects and an implementation roadmap to begin to address flooding resilience at a regional and local scale; the CVPDC is seeking funds from the Virginia Community Flood Preparedness Fund to support the development of a regional Resilience Plan to address the gaps.

According to the AdaptVA Social Vulnerability Tool, the Social Vulnerability Score of Census Tracts within the CVPDC (outlined in red in the image below) range from *Low* to *Very High* vulnerability, with a maximum Social Vulnerability Index Score of 3.0, and a minimum of -0.9.



(Source: AdaptVA Vulnerability Viewer)

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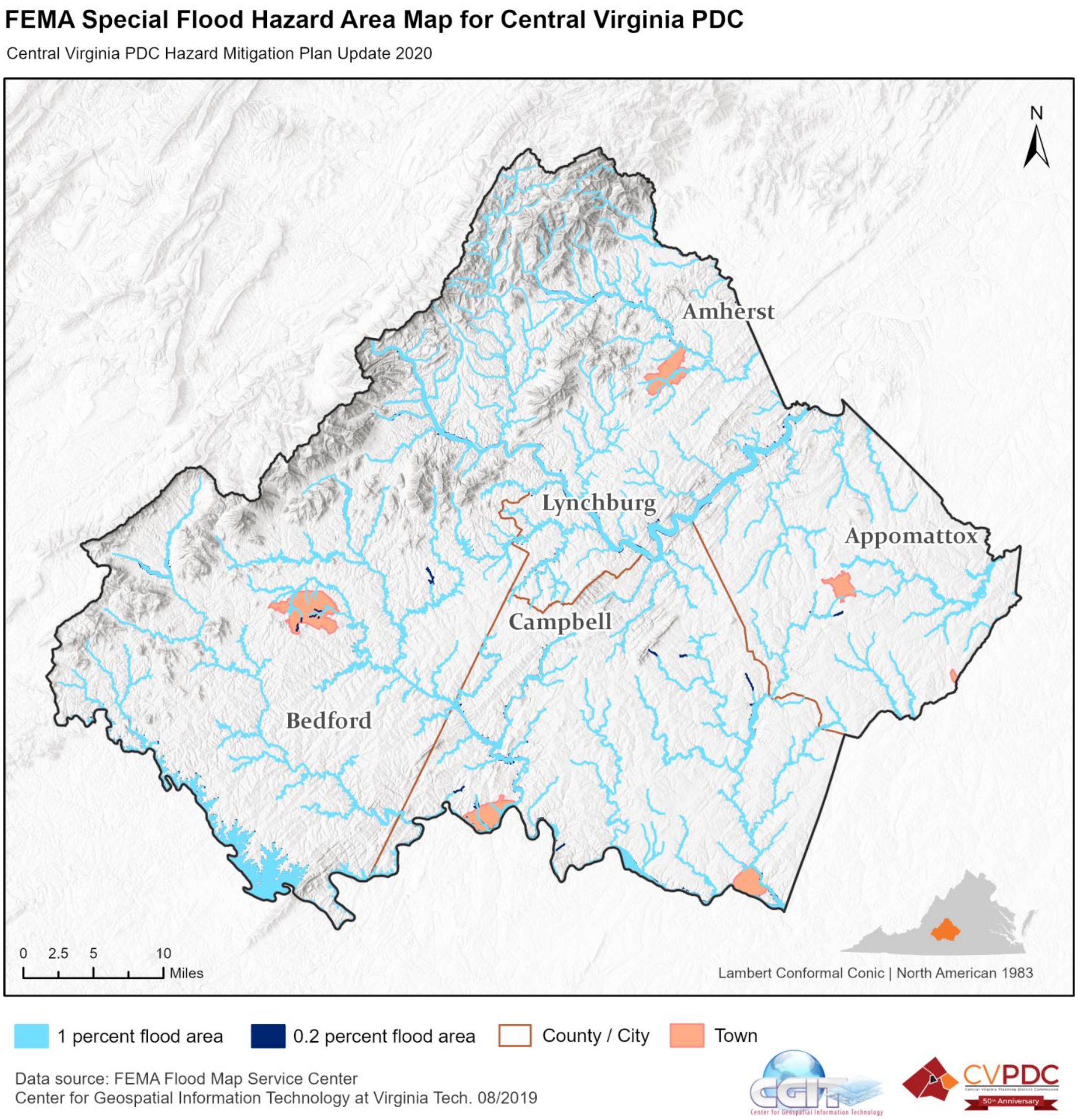
[1] Note: Town of Bedford Floodplain Overlay District repealed in 2010.



(Source: CVPDC Hazard Mitigation Plan)

In addition to containing several Census Tracts with Very High Social Vulnerability, the average of median household incomes of CVPDC localities ($52,296.20) ranks below 80% of the state median ($61,118.40), making the CVPDC a Low-income Geographic Area. Additionally, portions of each of the CVPDC's five localities are designated as qualified opportunities zones.

	CVPDC Counties and Cities						**Virginia**
	Amherst County	**Appomattox County**	**Bedford County**	**Campbell County**	**City of Lynchburg**	**Average**	
Median household income (in 2020 dollars), 2016-2020	$57,368	$55,457	$67,136	$52,319	$49,201	**$56,296.20**	$76,398
							80% of Virginia Median Household Income = $61,118.40

(Source: U.S. Census Bureau)

The Resilience Plan will help to inventory specific flooding issues from member localities and develop a region-wide plan for responding to them, especially those that occur in the most vulnerable communities. It will also provide for the prioritization of projects, to include cost estimates and provide an implementation roadmap to support local efforts. It will strive to address overarching region-wide goals, such as characterizing communities and their social vulnerability and their dependence on the built environment that is threatened by flooding, identifying areas for possible land acquisition or repetitive loss property buyouts, strategies and a roadmap toward shovel-ready projects for abating the worst flooding, and creating a region-wide knowledge base for the public and policy-makers.

Development of the Resilience Plan, including the identification, evaluation and prioritization of flood mitigation projects, is a direct mitigation strategy identified in the CVPDC HMP. Additional related objectives and strategies identified in the CVPDC HMP that will be addressed through the development of the Resilience Plan include:

- *Establish or update local flood and high hazard studies or maps that provide easily identifiable and understandable property identification to evaluate vulnerable properties and areas* (pg. 6-5);
- *Expand data capacity to assist in mitigation program analysis and project implementation* (pg. 6-5);
- *Encourage development of local and regional Resiliency Plans* (pg. 6-6);
- *Initiate studies in areas of repetitive flooding* (pg 6-7); and
- *Seek funding and technical assistance to assist in establishing sustainable evaluation and protection actions* (pg. 6-8).

Scope of Work Narrative

The development of the CVPDC Resilience Plan will involve three principal tasks:

- Kick-off meeting with CVPDC Staff and identified stakeholders (anticipated to include representatives of CVPDC local jurisdictions) to focus the development of the Plan and collect initial input;

- Development of a draft Resilience Plan with consultation and direction from PDC staff and identified stakeholders, and drawing upon the CVPDC HMP - adopted by FEMA and all ten CVPDC localities in 2021 - the draft Plan will describe the CVPDC's and localities' approach to flooding and meet the following criteria:

    1. It is project-based with projects focused on flood control and resilience.
    2. It incorporates nature-based infrastructure to the maximum extent possible.
    3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
    4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.

5. It is based on the best available science and incorporates climate change and current flood maps.

   Additionally, the Plan will include an action and implementation component, identifying regional and locality-level actions and projects, prioritize such actions and projects, and develop an implementation roadmap with identified cost estimates and potential funding sources.

- Based upon feedback and comments, a final Resilience Plan will be prepared and presented to the CVPDC Commission for consideration and adoption. Once adopted, the Plan will be submitted to the Virginia Department of Conservation and Recreation for approval. Following approval, the CVPDC will support local adoption of the Plan, as requested.

Development of the Resilience Plan will address the following, as detailed:

1. **The Plan will assess capacity needs and assets to include**:

   a. **Resource needs identification - financial, human, technical assistance, training.** In developing the Resilience Plan, the CVPDC is building off of the CVPDC HMP, member locality Comprehensive Plans, and local knowledge of flooding issues to provide for a more complete inventory and assessment of the flooding problems in the region, the specific communities and geographies they affect, and potential projects to mitigate them.

   b. **Plan for developing, increasing, or strengthening knowledge, skills and abilities of existing or new staff. This may include training of existing staff, hiring personnel, contracting with expert consultants or advisors.** The Plan will identify education or resource capacity needs of the CVPDC and localities and present recommendations and best practices to address prioritized issues and opportunities.

   c. **Resource development strategies. Where capacity is limited by funding, what strategies will be developed to increase resources in the local government? This may include work with non-governmental organizations, or applying for grants, loans, or other funding sources.** The Plan will work to identify strategies to address identified resource capacity needs. Initiation of the development of the Plan by the CVPDC demonstrates a commitment to supporting the localities; further opportunities to leverage the CVPDC as a resource will be explored. Additionally, the Plan itself will qualify the CVPDC and localities (with local adoption) for further project funding, and will be leveraged to support other funding opportunities, such as FEMA HMA, BRIC, and FMA, among others.

   d. **Policy management and/or development.** The Plan will work to identify and inventory local policies pertaining to flooding and related resilience. Consistent with the CVPDC HMP, the Plan will also explore the relationship between resilience to flooding, and economic resilience of the region and its localities.

2. **Goals and objectives tied to improving flood protection and prevention in a whole community approach to resilience. Identify and describe the goals and objectives of the project.** The Resilience Plan will identify communities most affected by flooding and use a stakeholder engagement and data-focused approach to identify community-wide and region-wide benefits when selecting potential flood remediation projects. The Resilience Plan will be used as a tool for future flood planning.

3. **Stakeholder identification, outreach and education strategies.** At a minimum stakeholders will include representatives from CVPDC member localities and may also include emergency managers, state agency representatives, community champions, and other parties. Outreach and meetings will be mostly if not entirely virtual. The Resilience Plan may be disseminated online or otherwise used to inform the public and illustrate the work necessary to alleviate flooding issues.

4. **Implementation plan and timelines for specific elements of completion such as training, certifications, plan development, etc.** After receipt of award notice, a kick-off meeting will be held within 30 days. The Resilience Plan will be delivered within 60 days of that kick-off meeting. See "Scope of Services" below.

5. **Parties responsible for capacity building and/or plan development process.** CVPDC will utilize professional and non-professional services consultants to develop the plan in coordination with CVPDC staff and other stakeholders.

6. **Performance outputs and measures. Describe the expected results and benefits and how success will be measured.** Success will be measured firstly by adequately meeting the five requirements of a Resilience Plan as outlined by the Community Flood Preparedness Fund Manual, while also providing robust project prioritization metrics and carry-through to local adoption. The Resilience Plan will include an implementation roadmap, the success of which will be measured by its utility in leading to flood mitigation project implementation.

7. **Planning for maintaining capacity, as necessary, over the long term.** The Resilience Plan is an additional step in building institutional knowledge for the mitigation and prevention of flooding issues in the region and represents a direct mitigation action from the CVPDC HMP. The CVPDC is committed to helping its member localities tackle the threat to property, lives, and livelihoods resulting from preventable flood damage.

Budget Narrative

ESTIMATED TOTAL PROJECT COST

The estimated total project cost is $60,000, based upon a scope of services provided by The Berkley Group (Attachment 1) with additional incidentals accounted for to support Plan development and engagement.

AMOUNT OF FUNDS REQUESTED

The total amount of requested grant assistance is $54,000, or 90% of total project costs, as the project is located in and serves a low-income geographic area.

AMOUNT OF CASH FUNDS AVAILABLE

The Central Virginia Planning District Commission will appropriate the requisite 10% or $6,000 in required local cash match funds, to be combined with the $54,000 in grant assistance to equal the total estimated project cost. CVPDC's commitment to the match is addressed in the authorization to request funding, as the Application cover letter; as noted therein, the CVPDC maintains sufficient funds to cover the total costs of the project pending reimbursement of awarded funds.

AUTHORIZATION TO REQUEST FUNDING

The authorization to request funding is addressed in the Application cover letter.

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government: Central Virginia Planning District Commission

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

_____**Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510016, 510030, 510028, 510093 510010, 510193, 510029, 510011, 510194

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Gary Christie, Executive Director

Signature of Authorized Official: Gary F Christie

Mailing Address (1): 828 Main Street, 12th Floor

Mailing Address (2): ______

City: Lynchburg **State:** Virginia **Zip:** 24504

Telephone Number: (434) 845-3491 **Cell Phone Number:** (434) 941-5859

Email Address: Gary.Christie@cvpdc.org

Contact Person (If different from authorized official): Kelly T. Hitchcock

Mailing Address (1): Same as above

Mailing Address (2): ____________________

City: ____________ **State:** ____________ **Zip:** ____________

Telephone Number: (434) 845-3491 **Cell Phone Number:** (434) 523-8712

Email Address: Kelly.Hitchcock@cvpdc.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☐ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☐ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

- ☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.
- ☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.
- ☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.
- ☐ Studies and Data Collection of Statewide and Regional Significance.
- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- ☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

- ☐ Floodplain Staff Capacity.
- ☒ Resilience Plan Development
  - ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  - ☒ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Central Virginia Planning District

NFIP Community Identification Number (CID#):(See appendix F 510016, 510030, 510028, 510093 510010, 510193, 510029, 510011, 510194

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Various; this proposal covers a region

Flood Insurance Rate Map Number(s) (If Applicable): See attached*

Total Cost of Project: $60,000

Total Amount Requested $54,000

*Flood Insurance Rate Map Numbers

Amherst County
51009CIND0A
51009C0020B
51009C0050B
51009C0060B
51009C0125B
51009C0140B
51009C0145B
51009C0150B
51009C0155B
51009C0160B
51009C0165B
51009C0170B
51009C0180B
51009C0190B
51009C0210B
51009C0230B
51009C0235B
51009C0240B
51009C0245B
51009C0255B
51009C0265B
51009C0275B
51009C0280B
51009C0281B
51009C0282B
51009C0283B
51009C0284B
51009C0290B
51009C0295B
51009C0315B
51009C0320B
51009C0325B
51009C0336B
51009C0360B
51009C0380B
51009C0385B
51009C0395B
51009C0405B
51009C0410B
51009C0415B
51009C0420B
51009C0430B
51009C0431B

Appomattox County
51011CIND0A
51147CIND0A
51011C0014C
51011C0020C
51011C0040C
51011C0050C
51011C0059C
51011C0067C
51011C0080C
51011C0085C
51011C0100C
51011C0125C
51011C0163C
51011C0200C
51011C0205C
51011C0210C
51011C0225C
51011C0250C
51011C0255C
51011C0281C
51011C0325C
51011C0330C
51147C0050C
51011C0150C

Bedford County
51019CIND0A
51019C0030D
51019C0035D
51019C0045D
51019C0055D
51019C0065D
51019C0070D
51019C0090D
51019C0120D
51019C0140D
51019C0150D
51019C0175D
51019C0180D
51019C0190D
51019C0200D
51019C0205D
51019C0210D
51019C0290D
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51019C0340D
51019C0345D
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51019C0365D
51019C0370D
51019C0405D
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51019C0585D
51019C0590D

Campbell County
51031CIND0A
5100280125B
51031C0040D
51031C0045D
51031C0085D
51031C0089D
51031C0091D
51031C0092D
51031C0095D
51031C0103D
51031C0110D
51031C0115D
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51031C0391D
51031C0405D
51031C0410D
51031C0412D
51031C0420D
51031C0429D
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51031C0436D
51031C0437D
51031C0441D
51031C0445D

City of Lynchburg
510093IND0A
5100930009D
5100930017D
5100930027D
5100930028D
5100930029D
5100930033D
5100930036D
5100930037D
5100930038D
5100930039D
5100930041D
5100930042D
5100930043D
5100930044D
5100930061D
5100930063D
5100930064D
5100930082D
5100930101D
5100930102D
5100930103D
5100930104D
5100930106D

Appendix D: Scoring Criteria for Capacity Building & Planning

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	☑
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	☑
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	☑
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☑ **Yes** ☐ **No**
Applicant Name:	

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	
Development of a new resilience plan.	**55**	55
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development.	**40**	40
Stakeholder engagement and strategies.	**25**	25
Goal planning, implementation and evaluation.	**25**	25
Long term maintenance strategy.	**25**	25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	15
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)]		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		**272**

Appendix D: Checklist All Categories

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☑ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current floodplain ordinance	☑ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☑ N/A
A link to or a copy of the current hazard mitigation plan	☑ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☑ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☑ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☑ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☑ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☑ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☑ N/A

BERKLEY
GROUP

February 24, 2022

Mr. Gary F. Christie
Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, Virginia 24504

RE: Task Order #5: Grant Assistance and Resilience Plan

Dear Mr. Christie:

We are pleased to present the attached scope and fee to prepare an application for a Virginia Community Flood Preparedness Fund grant and to develop a Resilience Plan for the Central Virginia Planning District Commission. Assisting on this project as subconsultant, with a focus on the development of the action and implementation component of the Resilience Plan, will be Weston & Sampson, an interdisciplinary design, engineering, and environmental services firm (www.westonandsampson.com).

If you have any questions or need additional information, please feel free to contact me at any time.

Sincerely,

Andrew D. Williams, AICP
Chief Executive Officer

I have reviewed the scope and fee for the associated work order, and I hereby give the consultant notice to proceed for the work described herein.

____ ______________________
Mr. Gary Christie, Executive Director Date

SCOPE OF SERVICES

The Scope of Services will include the following phases, tasks, and deliverables:

Phase 1 - Grant Application

Task 1 - Application Preparation

The Berkley Group will work with the PDC to prepare an application seeking a grant under Round 3 of the Virginia Community Flood Preparedness Fund for the development of a Resilience Plan for the PDC.

Deliverables: The Berkley Group will provide the final application to the PDC no later than April 1, 2022, one week prior to the April 8, 2022 submittal deadline. The PDC will be responsible for filing the application.

Phase 2 - Development of Resilience Plan

Phase 2 is contingent upon the PDC being successfully awarded a Community Flood Preparedness Fund grant in the amount requested for the development of a Resilience Plan.

Task 1 - Project Management and Coordination

The Berkley Group, along with subconsultant Weston & Sampson, ("the Project Team") will manage the project and coordinate with PDC staff as needed to collect input, provide updates, and share information related to the project. This scope assumes that all meetings, as well as the associated tasks noted herein, will be conducted virtually. The Berkley Group will have overall responsibility for project management.

Task 2 - Kick-Off Meeting

The Project Team will conduct a kick-off meeting with PDC staff, as well as any stakeholders identified by PDC staff (anticipated to include representatives of PDC local jurisdictions), to review the scope, expectations, schedule, deliverables, and any additional considerations associated with the development of the Resilience Plan. This kick-off meeting will occur within 30 days of the Berkley Group's receipt of a notice to proceed with Phase 2 from the PDC (presumed to follow the award of the grant and/or the execution of a contract between the PDC and the funding agency).

Task 3 - Draft Plan

With consultation and direction from PDC staff and stakeholders identified by the PDC (presumed to include coordination and engagement with PDC local jurisdictions), and drawing upon the PDC's Hazard Mitigation Plan 2020 Update, the Project Team will prepare a draft of the Resilience Plan for the PDC with a focus on flooding. Pursuant to Virginia Department of Conservation and Recreation and Community Flood Preparedness Fund standards and requirements, the draft Plan will describe the PDC's and PDC localities' approach to flooding and meet the following criteria:

1. It is project-based with projects focused on flood control and resilience.
2. It incorporates nature-based infrastructure to the maximum extent possible.
3. It includes considerations of all parts of a local government regardless of socioeconomics or race.
4. It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
5. It is based on the best available science and incorporates climate change and current flood maps.

Additionally, the Plan will include an action and implementation component, where the Project Team will work with PDC staff and stakeholders to identify regional and locality-level actions and projects, prioritize such actions and projects, and develop an implementation roadmap with identified cost estimates and potential funding sources.

Deliverables: The Project Team will provide a draft of the Resilience Plan to the PDC for review. The draft of the Resilience Plan will be provided to the PDC no later than 60 days following the date of the kick-off meeting conducted under Phase 2, Task 1.

Task 4 - Final Plan

Once all feedback and comments have been received from the PDC, the Project Team will address comments, make final revisions to the Plan, and produce a final Plan.

Deliverables: The Project Team will provide a final Resilience Plan to the PDC for review. The final Resilience Plan will be provided to the PDC no later than 30 days following the Project Team's receipt of feedback and comments from the PDC.

Task 5 - Plan Adoption

The Project Team will assist PDC staff, as requested, with the presentation of the Resilience Plan to the Commission for adoption. The Project Team will make any revisions to the Plan as requested by the Commission. Contingent upon the PDC's adoption of the Plan, the Project Team will assist the PDC in the submission of the Plan to the Virginia Department of Conservation and Recreation for approval. The Project Team will make any revisions to the Plan as requested by the Department of Conservation and Recreation which are necessary for Department approval.

Deliverables: Contingent upon revisions necessary under Phase 2, Task 4, the Project Team will provide a final Resilience Plan to the PDC incorporating revisions requested by the Commission and the Department of Conservation and Recreation.

ASSUMPTIONS

1. **Contact Person:** The PDC will provide a single staff contact that will be responsible for collecting and transmitting data, resources, and other related information to the Project Team.
2. **Deliverables:** Deliverables will be provided in digital format to the PDC.
3. **Covid-19:** The Project Team will adhere to all public health best practices as recommended by the Center for Disease Control (CDC) or state/local regulations, whichever is more stringent. When engaging in face-to-face meetings with clients and citizens, the Project Team will adhere to the Commonwealth of Virginia's prevailing guidelines as it pertains to social gatherings for business sectors and/or the locality's, in the event they are more stringent. For meetings where attendance from the general public is expected, the locality should consider if/how the prevailing safety guidelines will be enforced and what acceptable measures will be taken for those refusing compliance and communicate those plans to the Project Team prior to the meeting date.

FEE

The fee for the services to be provided under Phase 1 of the Scope of Services will be based upon the hours necessary to complete the work, at the following rates, but shall not exceed $3,600.

Hourly Rates	
Owner/Principal	$175
Executive Manager	$120
Director	$100
Principal Planner	$80
Senior Planner	$65
Planner	$50

The lump sum fee for services to be provided under Phase 2 of the Scope of Services for the development of a Resilience Plan is $55,000.

Town of
Altavista
Virginia
Treasured Past, Innovative Future.

P.O. Box 420
510 Seventh Street
Altavista, VA 24517
Phone (434) 369-5001
Fax (434) 369-4369

April 6, 2022

Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Gary:

We understand and support the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by FEMA, the CVPDC, and all ten localities.

We understand that a cash match waiver, designed for low-income geographic areas, will be submitted within the application. We further recognize and support, that the CVPDC is prepared to fund, on behalf of the region's localities, the full match.

I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Gary Shanaberger

Gary L. Shanaberger,
Town Manager

AMHERST
Perfect Slice of Virginia

COUNTY OF AMHERST

OFFICE OF THE COUNTY ADMINISTRATOR

TELEPHONE (434) 946-9400
FAX (434) 946-9370

AMHERST COUNTY ADMINISTRATION BUILDING
153 WASHINGTON STREET
P. O. Box 390
AMHERST, VIRGINIA 24521

April 6, 2022

Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Gary:

We understand and support the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

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I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Dean C. Rodgers
County Administrator

TOWN OF AMHERST
P.O. Box 280 174 S. Main Street Amherst, VA 24521
Phone (434)946-7885 Fax (434)946-2087

April 6, 2022

Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Mr. ~~Christie:~~ Gary,

We understand and support the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by FEMA, the CVPDC, and all ten localities.

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I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Sara E. McGuffin
Town Manager

APPOMATTOX COUNTY
BOARD OF SUPERVISORS
P.O. Box 863, Appomattox, VA 24522 Phone: (434) 352-2637
www.AppomattoxCountyVA.gov

April 5, 2022

Gary Christie
Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, Virginia 24504

RE: Letter of Support
Community Flood Preparedness Fund
Regional Resiliency Plan

Dear Gary:

We are pleased to offer a letter of support for the Central Virginia Planning District Commission's (CVPDC) efforts to secure funding through the Virginia Community Flood Preparedness Fund for a Planning and Capacity Building grant, the purpose of which is the development of a regional resiliency plan that will focus on flood issues. This important planning document will help our region reduce the impacts of flooding, prioritize projects related to floodplain management and empower our region to complete vulnerability assessments, while developing an action-oriented implementation approach to enhance flood preparedness and resiliency throughout the Central Virginia region.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by the Federal Emergency Management Agency (FEMA), the CVPDC, and all ten partner localities.

We understand that a cash match waiver, designed for low-income geographic areas, will be submitted within the application. We further recognize and support, that the CVPDC is prepared to fund, on behalf of the region's localities, the full match.

I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Johnnie Roark
Deputy Director of Operations/
Director of Community Development

P.O. BOX 705
210 LINDEN STREET
APPOMATTOX, VA 24522

PHONE: (434) 352-8268
FAX: (434) 352-2126
www.townofappomattox.com

TOWN MANAGER
GARY L. SHANABERGER

Town of Appomattox

1925

MAYOR
RICHARD C. CONNER

COUNCIL MEMBERS:
JAMES J. BOYCE, SR.
TIMOTHY W. GARRETT
CLAUDIA G. PUCKETTE
NATHAN A. SIMPSON
MARY LOU SPIGGLE
AARON M. TILTON

CLERK OF COUNCIL
ROXANNE W. CASTO, MMC

April 6, 2022

Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Gary:

We understand and support the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by FEMA, the CVPDC, and all ten localities.

We understand that a cash match waiver, designed for low-income geographic areas, will be submitted within the application. We further recognize and support, that the CVPDC is prepared to fund, on behalf of the region's localities, the full match.

I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Roxanne Casto

Roxanne Casto,
Interim Town Manager

April 6, 2022

Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Gary:

We understand and support the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by FEMA, the CVPDC, and all ten localities.

We understand that a cash match waiver, designed for low-income geographic areas, will be submitted within the application. We further recognize and support, that the CVPDC is prepared to fund, on behalf of the region's localities, the full match.

I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Robert Hiss
County Administrator

215 E. MAIN STREET
BEDFORD, VA 24523

TOWN OF
BEDFORD VA
LIFE. LIBERTY. HAPPINESS.

(P) 540.587.6001
(F) 540.587.6143

April 6, 2022

Mr. Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Gary:

We understand and support the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by FEMA, the CVPDC, and all ten localities.

We understand that a cash match waiver, designed for low-income geographic areas, will be submitted within the application. We further recognize and support, that the CVPDC is prepared to fund, on behalf of the region's localities, the full match.

I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Barrett F. "Bart" Warner
Town Manager

BFW:dba

Town of
BROOKNEAL
Virginia

215 Main St. Brookneal VA 24528
P.O. Box 450
434 376 3124

April 6, 2022

Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Gary:

We understand and support the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by FEMA, the CVPDC, and all ten localities.

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I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Russell B. Thurston

Russell B. Thurston,
Town Manager

Campbell County
Virginia

Office of the County Administrator
Frank J. Rogers
P.O Box 100, Rustburg, VA 24588
administration@campbellcountyva.gov
Phone: 434-332-9525; 592-9525; 283-9525
Fax: 434-332-9617

April 6, 2022

Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Gary:

Campbell County understands and supports the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by FEMA, the CVPDC, and all ten localities.

We understand that a cash match waiver, designed for low-income geographic areas, will be submitted within the application. We further recognize and support, that the CVPDC is prepared to fund, on behalf of the region's localities, the full match.

I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Frank Rogers
County Administrator

Office of the City Manager
900 Church Street • Lynchburg, VA 24504
Phone: (434) 455-3990 • Fax: (434) 847-1536
www.lynchburgva.gov

April 6, 2022

Gary Christie, Executive Director
Central Virginia Planning District Commission
828 Main Street, 12th Floor
Lynchburg, VA 24504

Dear Gary:

We understand and support the effort by the Central Virginia Planning District Commission to seek funding through the Virginia Community Flood Preparedness Fund (CFPF) by submitting an application to the Planning and Capacity Building grant for the purpose of developing a regional resiliency plan that will focus on flood issues.

It is understood that this effort represents an identified mitigation strategy from the *CVPDC Hazard Mitigation Plan – 2020 Update*, which has been adopted by FEMA, the CVPDC, and all ten localities.

We understand that a cash match waiver, designed for low-income geographic areas, will be submitted within the application. We further recognize and support, that the CVPDC is prepared to fund, on behalf of the region's localities, the full match.

I hereby give the CVPDC authorization to submit a regional proposal on our behalf.

Sincerely,

Wynter C. Benda
City Manager

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

Round 3 CFPF Application - Central Virginia Planning District Commission

1 message

Kelly Hitchcock <Kelly.Hitchcock@cvpdc.org>
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Gary Christie <Gary.Christie@cvpdc.org>

Fri, Apr 8, 2022 at 1:16 PM

Round 3 CFPF Application

Central Virginia Planning District Commission (CVPDC) Capacity and Planning Application

On behalf of the localities of the Central Virginia Planning District Commission (CVPDC), it is my pleasure to submit the attached **CFPF Round 3 Capacity and Planning Application** to develop a the CVPDC Regional Resiliency Plan. The Resiliency Plan will be developed for all ten CVPDC member localities, which include Lynchburg City (CID 510093), Amherst County (CID 510010), Amherst Town (CID 510193), Appomattox County (CID 510011), Appomattox Town (CID 510194), Bedford County (CID 510016), Bedford Town (CID 510015), Campbell County (CID 510028), and towns of Brookneal (CID 510030)and Altavista (CID 510029). Support for this project has been provided by all the member localities

Developing regional or individual locality resiliency plans, identifying priority stormwater projects, to include project evaluation and cost estimates, and evaluation of vulnerable communities are identified mitigation strategies from the *CVPDC Hazard Mitigation Plan – 2020 Update*, adopted by FEMA and all member localities in 2021. Our region and member localities are eager to execute this project and respectfully request inclusion within the Round 3 CFPF application awards.

Your consideration of this application is appreciated. I am available to respond to any questions.

Kind regards,

Kelly Hitchcock
Deputy Director of Planning
Central Virginia Planning District Commission
D: 434-818-7604 | O: 434-845-3491 | M: 434-534-2531

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HAMPTON ROADS
PDC
PLANNING DISTRICT COMMISSION

ANDRIA P. McCLELLAN, CHAIR • DAVID JENKINS, VICE-CHAIR • RANDY R. KEATON, TREASURER
ROBERT A. CRUM, JR., EXECUTIVE DIRECTOR/SECRETARY

MEMBER JURISDICTIONS
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PORTSMOUTH
SMITHFIELD
SOUTHAMPTON
SUFFOLK
SURRY
VIRGINIA BEACH
WILLIAMSBURG
YORK

April 8, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety & Floodplain Management
600 East Main Street, 24th Floor
Richmond, VA 23219

RE: 2022 Virginia Community Flood Preparedness Fund

Dear Sir or Ma’am:

Please accept this written correspondence as signed documentation authorizing the Hampton Roads Planning District Commission’s request for funding from the 2022 Virginia Community Flood Preparedness Fund (CFPF).

At its meeting on November 18, 2021, the HRPDC board authorized the staff to develop and submit proposals for the CFPF in consultation with the HRPDC Coastal Resiliency Committee. The studies described in this proposal would help inform local and regional resiliency planning efforts, identify specific activities for local capital improvement programs, and support the development and adoption of local and regional higher standards for more resilient development. The total cost of the proposed studies is $244,874.03. Following the 50% Fund/50% Match requirements for this category, the HRPDC respectfully requests funding from the CFPF in the amount of $115,000.00. Furthermore, the HRPDC will provide the 50% matching contribution in the amount $129,874.03 as in-kind services and additional cash support from its Coastal Resiliency Program.

Thank you for consideration of this grant proposal. If you have any questions about this proposal, please contact Ben McFarlane at bmcfarlane@hrpdcva.gov.

Sincerely,

Robert A. Crum, Jr.
Executive Director
Hampton Roads Planning District Commission

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Hampton Roads Planning District Commission

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

_____**Project**

X **Study**

NFIP/DCR Community Identification Number (CID) N/A

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Robert Crum

Signature of Authorized Official: ______________________

Mailing Address (1): 723 Woodlake Drive

Mailing Address (2): ______________________

City: Chesapeake **State:** VA **Zip:** 23464

Telephone Number: (757) 420-8300 **Cell Phone Number:** (____) ________________

Email Address: rcrum@hrpdcva.gov

Contact Person (If different from authorized official): Benjamin McFarlane

Mailing Address (1): 723 Woodlake Drive

Mailing Address (2): ____________________

City: Chesapeake **State:** VA **Zip:** 23464

Telephone Number: (757) 420-8300 **Cell Phone Number:** (____) ________________

Email Address: bmcfarlane@hrpdcva.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☒ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☒ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☒ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☒ Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

  ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  ☐ Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): Hampton Roads Planning District

NFIP Community Identification Number (CID#):(See appendix F N/A

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): N/A

Flood Insurance Rate Map Number(s) (If Applicable): N/A

Total Cost of Project: $244,874.03

Total Amount Requested $115,000

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration	☒ **Yes** ☐ **No**
Applicant Name:	

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	30
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	

☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	**45**	
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	**50**	
☐ Regional hydrologic and hydraulic studies of floodplains.	**45**	
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	**40**	40
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	**35**	35
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	**15**	15
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	
No	**0**	0
Total Points		120

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative

Supporting Documentation	Included
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☐ Yes ☐ No ☒ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☐ Yes ☐ No ☒ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☒ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative

Supporting Documentation	Included
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Study Proposal:

Hampton Roads Regional Resiliency Studies and Analyses

Scope of Work Narrative

1. ***The specific type of study proposed including whether the study is new or updates a prior study***

The Hampton Roads Planning District Commission (HRPDC) proposes to complete a set of new studies of regional significance to support the development and implementation of local and regional resilience plans, policies, and projects. These studies will collectively inform locality capital improvements programs as well as stormwater, floodplain, and other ordinances and land use and development regulations, including comprehensive plans. Guidance and research from federal and state sources on best practices for implementing forward-looking policies and incorporating future expected conditions into local decision-making is limited. Individual communities often do not have the knowledge or the capacity to consider these factors without such assistance. The studies identified in this proposal will directly support the needs of Hampton Roads communities to better address current and future flood risk and become more resilient to climate change.

The proposed studies, which are described below, were identified in consultation with the HRPDC's Coastal Resiliency Committee and will build upon previous and ongoing efforts by the committee and the HRPDC staff.

I. Assessment of local hydraulic and hydrologic data and models

Local governments in Hampton Roads individually maintain stormwater infrastructure data and models for their individual systems. As a result, the extent, format, and quality of the data and models varies across the region. A comprehensive, regional hydraulic and hydrologic (H&H) model would help enable localities to 1) better identify areas at risk from current and future flooding, and 2) development and implement for reducing that risk individually and cooperatively. A regional model would support potential multi-jurisdictional projects that follow watershed boundaries instead of political boundaries. Before a regional H&H model can be developed, the stormwater infrastructure data currently maintained by each locality will need to be collected to identify gaps and assess compatibility. This information will inform a plan for creating a comprehensive regional model or suite of sub-regional models. Tasks to complete this study will be performed by the HRPDC staff and a contractor to be selected and will include:

a) Meeting with locality public works and stormwater staff individually and collectively to identify existing data and models
b) Obtaining existing stormwater infrastructure data and H&H models from each Hampton Roads locality
c) Evaluating existing data and models for quality, extent, and format to determine compatibility
d) Developing priorities for data acquisition and model development to support the creation of a regional H&H model or sub-regional models

II. Assessment of local, state, and federal policies and regulations regarding hazardous materials or contaminated sites and vulnerability to flooding and sea level rise, including development of policy recommendations

To better understand hazardous or contaminated sites in Hampton Roads that are vulnerable to flooding and sea level rise, the HRPDC has been inventorying industrial sites within potential inundation areas. This mapping effort supports the development of a risk assessment and associated regulatory, policy, and infrastructure response. This assessment will help determine which sites are most susceptible to climate risks, such as increased rainfall, coastal flooding, sea level rise, and storm surge, that may result in the release of hazardous chemicals, fuels, and other contaminants into surrounding communities or waterways. Federal and state laws and regulations exist to curtail certain disasters; however, it is unclear how many facilities are truly protected by these laws and regulations and whether those laws and regulations account for increased risks due to climate change. In addition, it is unclear to what extent local governments are requiring additional protections. To identify policy gaps, a detailed local-level ordinance review is required. Tasks to complete this study will be performed by the HRPDC staff and a contractor to be selected and will include:

a) A review of existing federal, state, and local laws, regulations, and ordinances concerning industrial facilities, hazardous materials, and contaminated sites, including a thorough review of building and fire codes and stormwater, zoning, and waste control ordinances in Hampton Roads localities
b) Development of a matrix and report documenting existing policies in place that local governments can utilize for siting, maintaining, and/or regulating hazardous material and fuels in the floodplain or other areas vulnerable to flooding from sea level rise or increased precipitation, including enforcement actions
c) Completion of a risk assessment and gap analysis using the data collected to identify vulnerable watersheds and communities
d) Development of potential policy or other recommendations for implementation by federal, state, or local authorities

III. Case study analysis of potential costs and benefits of implementation of regional resilient stormwater management design guidelines

The HRPDC has been working with its Coastal Resiliency Committee on the development of regional recommendations for resilient stormwater management design guidelines that account for projected climate change impacts. These guidelines include sea level rise planning scenarios (based on NOAA-published regional sea level rise projections), design tailwater elevations (based on FEMA and USACE analyses and incorporating sea level rise), precipitation depths (based on analysis by RAND/MARISA on behalf of the Chesapeake Bay Program), and design storms that account for both rainfall and tidal conditions (based on analysis and policy development by the City of Virginia Beach). The intended purpose of these recommendations is that they are incorporated into local ordinances and design standards, such as public facilities manuals. This analysis will help develop an understanding of the practical implications on site development of incorporating higher standards into local codes and ordinances, which will inform local decision-making on whether to adopt all or some of the regional recommendations. Tasks to complete this study will be performed by the HRPDC staff and a contractor to be selected and will include:

a) Development of case studies of representative uses (such as ultra-urban, suburban commercial, and residential development) and associated inputs and conditions for stormwater models, such as the Runoff Reduction Method spreadsheet
b) Conversion of regional resilient stormwater management design guidelines to equivalent inputs for stormwater calculations
c) Running models for each of the representative uses under existing standards and proposed resilient standards using inputs developed in B, including the identification of measures to address compliance
d) Comparison of required measures to comply with existing versus proposed standards and estimated associated costs

IV. Assessment of the performance of water quantity management practices in the Coastal Plain

As part of a project funded by the Virginia Coastal Zone Management Program and NOAA, in 2012-2013 the HRPDC assessed various water quality stormwater best management practices (BMPs) for their performance in the coastal plain, which introduces several potential constraints on BMP performance such as flat terrain, poorly drained soils, and a high water table. The report, *Land and Water Quality Protection in Hampton Roads Phase II*[1], included a table classifying sixteen BMPs as either preferred, accepted, or restricted. This assessment will evaluate those previously identified BMPs and others more specifically intended for water quantity control to identify which perform the best under those conditions found in Hampton Roads communities. Tasks to complete this study will be performed by the HRPDC staff and a contractor to be selected and will include:

a) Literature review of research since 2012 on performance of stormwater BMPs in the coastal plain for water quality and water quantity
b) Assessment of BMP suitability from *Land and Water Quality Protection in Hampton Roads Phase II* report to determine whether any updates or amendments should be made to BMP suitability assessment
c) Identification and assessment of water quantity management practices for their suitability to use under coastal plain conditions as described in *Land and Water Quality Protection in Hampton Roads Phase II* report and including assessment of vulnerability to performance degradation due to sea level rise or other climate change impacts

2. *The relationship of the study to the local government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual.*

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[1] https://www.hrpdcva.gov/uploads/docs/11212013-PDC-E3A.pdf

Communities in Hampton Roads are vulnerable to flooding from multiple sources, including storm surge, high tides, rainfall, and river discharge. Increasingly, due to climate change, flooding is being caused due to a combination of these factors. Current and future flood vulnerability have been documented in the region's hazard mitigation plan (the public comment period for the draft 2022 Hampton Roads Hazard Mitigation Plan closed on March 9, 2022[2]) and in several studies completed with assistance from the Virginia Coastal Zone Management Program, which are available on the HRPDC's website.[3] The HRPDC is currently pursuing several initiatives to support local and regional resilience efforts, including development of regional resilience standards and the installation of a regional network of roadway flooding sensors. The proposed studies included in this proposal will support the HRPDC's comprehensive resiliency program in additional to efforts by individual localities.

3. The qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications

The proposed studies will be completed by contractors to be selected by the HRPDC under direction from and with support from the HRPDC's Water Resources Department. The contractor will be selected from those qualified firms already under "on-call" contract with the HRPDC. These firms have already been evaluated and selected by the HRPDC to provide various services and expertise, including those related to:

- Policy and regulatory analysis
- General engineering studies
- Water resources and environmental planning
- Coastal engineering, sea level rise, climate change, and recurrent flooding studies
- Water quality
- GIS

The HRPDC will issue a task order solicitation to those qualified firms to determine the best overall approach to completing the proposed studies.

4. The expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach.

These regional studies and analyses will support local, regional, and state resiliency initiatives. These studies will primarily support the local adoption of regionally consistent policies and practices related to stormwater management, land use, and floodplain management. The findings from these studies will also be directly applicable to and appropriate for inclusion in local resilience plans. The studies will also support future regional policy and outreach initiatives related to resilience.

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[2] https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan

[3] https://www.hrpdcva.gov/departments/water-resources/research-and-analysis-

5. ***If applicable, how the study may improve Virginia's flood protection and prevention abilities in a statewide context***

In addition to the local and regional benefits, these studies will be directly exportable to other regions in the Commonwealth, particularly Virginia's other coastal planning district commissions. The approaches and methodologies used for the proposed studies will be documented as part of the overall effort with the intention of sharing results and lessons learned with state agencies and other communities throughout the Commonwealth. In addition, findings related to state regulations and policies will be shared directly with the relevant state agencies and officials.

Budget Narrative

The total projected cost for the studies proposed under this effort is $244,874.03. According to the guidance outlines in the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund, proposals in the Study category are eligible for 50% funding from the Fund with a 50% match requirement. Therefore, the HRPDC respectfully requests financial assistance from the Fund in the amount of $115,000.00, which will cover the provision of consultant services for this effort, and the HRPDC commits to fund the remaining $129,874.03 via in-kind contributions from staff time and additional cash support for consultant services.

Estimated total project cost: $244,874.03

Amount of funds requested from the Fund: $115,000.00

Amount of cash funds available: $129,874.03

	Budget Summary Worksheet		
Category	**CFPF Request**	**HRPDC Matching Funds**	**Total**
A. Personnel	$0.00	$49,003.10	$49,003.10
B. Fringe	$0.00	$16,016.54	$16,016.54
C. Travel	$0.00	$0.00	$0.00
D. Equipment	$0.00	$0.00	$0.00
E. Supplies	$0.00	$0.00	$0.00
F. Contractual	$115,000.00	$50,000.00	$165,000.00
G. Construction	$0.00	$0.00	$0.00
H. Other	$0.00	$0.00	$0.00
Total Direct Costs	$115,000.00	$115,019.64	$230,019.64
I. Indirect Costs	$0.00	$14,854.39	$14,854.39
Total	$115,000.00	$129,874.03	$244,874.03

Supporting Documentation

Detailed Map of Hampton Roads

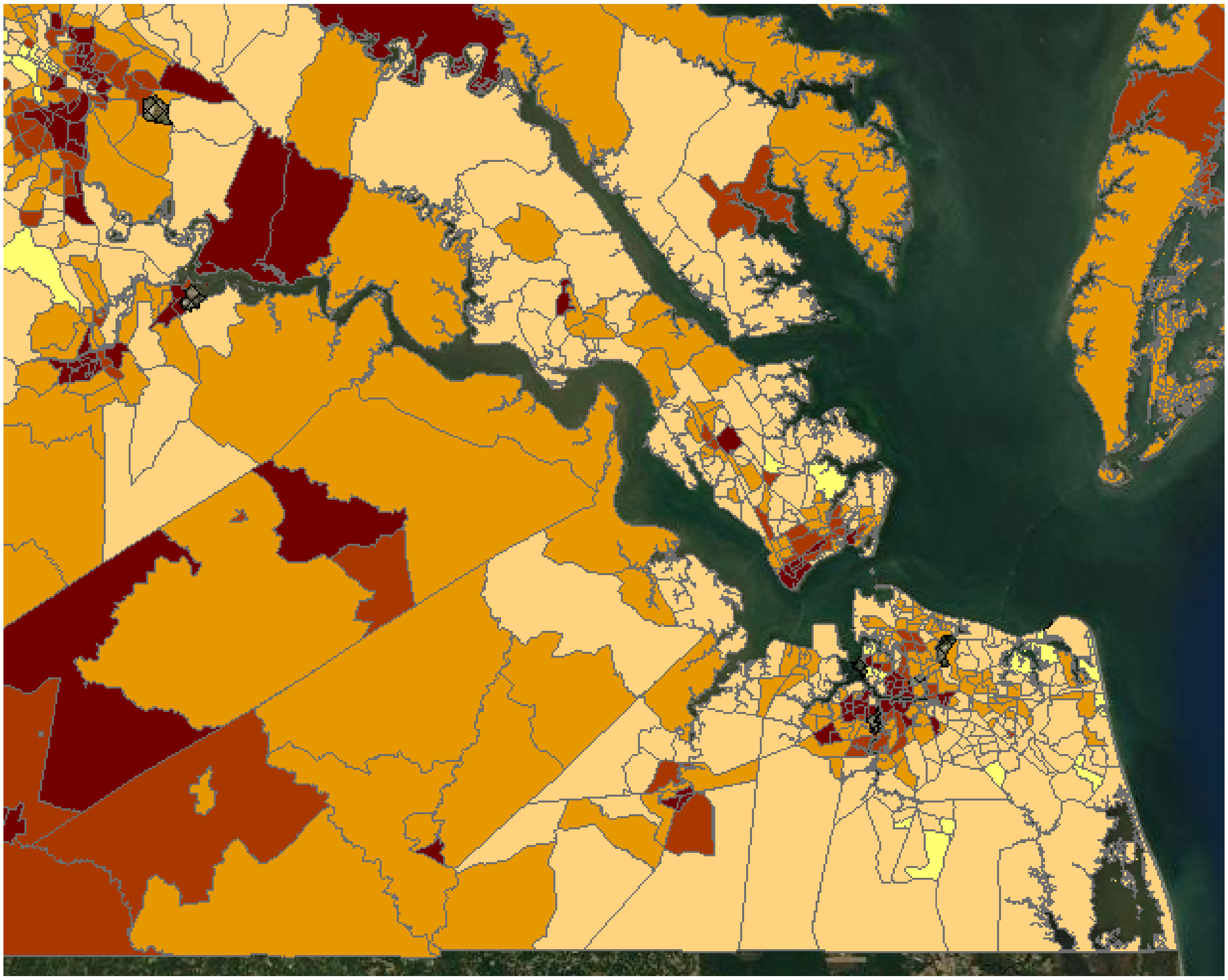
Current Hazard Mitigation Plan

The approved 2017 Hampton Roads Hazard Mitigation Plan is available at https://www.hrpdcva.gov/departments/emergency-management/2017-hampton-roads-hazard-mitigation-plan.

The draft 2022 Hampton Roads Hazard Mitigation Plan is available at https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan.

Map of Social Vulnerability for Hampton Roads

According to AdaptVA, Census tracts in Hampton Roads range from Very High Social Vulnerability to Very Low Social Vulnerability.



2022 CFPF Grant Application HRPDC 1 - Study

1 message

Ben McFarlane <bmcfarlane@hrpdcva.gov> Fri, Apr 8, 2022 at 3:38 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Robert A. Crum, Jr." <rcrum@hrpdcva.gov>, Cynthia Mulkey <cmulkey@hrpdcva.gov>, Whitney Katchmark <wkatchmark@hrpdcva.gov>

Good afternoon,

Please find attached the Hampton Roads Planning District Commission's submittal for the third round of grant funding for the Community Flood Preparedness Fund. The submittal contains the official and authorized application from the HRPDC to DCR to conduct a Flood Prevention and Protection Study for Hampton Roads.

The attached electronic file contains the following information:

- Application Form for Grant Requests for All Categories
- Scoring Criteria for Studies
- Checklist for All Categories
- Scope of Work Narrative
- Budget Narrative
- Supporting Documentation

We appreciate the opportunity to apply for this funding. Please let me know if you have any questions regarding our proposal or if you require additional information.

Sincerely,

Ben McFarlane

Benjamin J. McFarlane, AICP, CFM | Senior Regional Planner | Hampton Roads Planning District Commission

723 Woodlake Dr | Chesapeake, VA 23320 | Office 757-420-8300 | Fax 757-523-4881

Email: bmcfarlane@hrpdcva.gov Web: http://www.hrpdcva.gov

HRPDC_CFPF_1.pdf
1818K

HAMPTON ROADS
PDC
PLANNING DISTRICT COMMISSION

ANDRIA P. McCLELLAN, CHAIR • DAVID JENKINS, VICE-CHAIR • RANDY R. KEATON, TREASURER
ROBERT A. CRUM, JR., EXECUTIVE DIRECTOR/SECRETARY

MEMBER JURISDICTIONS

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NEWPORT NEWS
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PORTSMOUTH
SMITHFIELD
SOUTHAMPTON
SUFFOLK
SURRY
VIRGINIA BEACH
WILLIAMSBURG
YORK

April 8, 2022

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety & Floodplain Management
600 East Main Street, 24th Floor
Richmond, VA 23219

RE: 2022 Virginia Community Flood Preparedness Fund

Dear Sir or Ma'am:

Please accept this written correspondence as signed documentation authorizing the Hampton Roads Planning District Commission's request for funding from the 2022 Virginia Community Flood Preparedness Fund (CFPF).

At its meeting on November 18, 2021, the HRPDC board authorized the staff to develop and submit proposals for the CFPF in consultation with the HRPDC Coastal Resiliency Committee. Funding from the CFPF would enable the HRPDC to expand its capacity to assist its member local governments with participation in the National Flood Insurance Program's Community Rating System (CRS) by helping to identify and develop specific regional products and activities that qualify under CRS elements. The total cost of the proposed Capacity Building activity is $21,149.33. Following the 75% Fund/25% Match requirements for this category, the HRPDC respectfully requests funding from the CFPF in the amount of $15,000.00. Furthermore, the HRPDC will provide the 25% matching contribution in the amount $6,149.33 as in-kind services from its Coastal Resiliency Program.

Thank you for consideration of this grant proposal. If you have any questions about this proposal, please contact Ben McFarlane at bmcfarlane@hrpdcva.gov.

Sincerely,

Robert A. Crum, Jr.
Executive Director
Hampton Roads Planning District Commission

THE REGIONAL BUILDING • 723 WOODLAKE DRIVE • CHESAPEAKE, VIRGINIA 23320 • (757) 420-8300

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:
Hampton Roads Planning District Commission

Category of Grant Being Applied for (check one):

X **Capacity Building/Planning**

_____ **Project**

_____ **Study**

NFIP/DCR Community Identification Number (CID) N/A

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Robert Crum

Signature of Authorized Official:

Mailing Address (1): 723 Woodlake Drive

Mailing Address (2):

City: Chesapeake **State:** VA **Zip:** 23464

Telephone Number: (757) 420-8300 **Cell Phone Number:** (____)

Email Address: rcrum@hrpdcva.gov

Contact Person (If different from authorized official): Benjamin McFarlane

Mailing Address (1): 723 Woodlake Drive

Mailing Address (2): ____________________

City: Chesapeake **State:** VA **Zip:** 23464

Telephone Number: (757) 420-8300 **Cell Phone Number:** (____) ____________

Email Address: bmcfarlane@hrpdcva.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☒ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☒ Resource assessments, planning, strategies and development.
  - ☒ Policy management and/or development.
  - ☒ Stakeholder engagement and strategies.

Location of Project (Include Maps): Hampton Roads Planning District

NFIP Community Identification Number (CID#):(See appendix F N/A

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): N/A

Flood Insurance Rate Map Number(s) (If Applicable): N/A

Total Cost of Project: $21,149.33

Total Amount Requested $15,000.00

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	

Eligibility Information

Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration	☒ **Yes** ☐ **No**
Applicant Name:	

Scoring Information

Criterion	Point Value	Points Awarded
6. Eligible Capacity Building and Planning Activities (Select all that apply)		
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	**55**	
Development of a new resilience plan.	**55**	
Resource assessments, planning, strategies and development.	**45**	45
Policy management and/or development.	**40**	40
Stakeholder engagement and strategies.	**25**	25
Goal planning, implementation and evaluation.	**25**	25
Long term maintenance strategy.	**25**	25
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	**15**	15
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on **ADAPT VA's Social Vulnerability Index Score.)**		
Very High Social Vulnerability (More than 1.5)	**15**	15
High Social Vulnerability (1.0 to 1.5)	**12**	
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	
No	**0**	0
10. Does this project provide "community scale" benefits?		
Yes	**20**	20
No		
Total Points		210

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☐ Yes ☐ No ☒ N/A
Historic flood damage data and/or images (Projects/Studies)	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current floodplain ordinance	☐ Yes ☐ No ☒ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☐ Yes ☐ No ☒ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☐ Yes ☐ No ☒ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☒ Yes ☐ No ☐ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Capacity Building Proposal:

Hampton Roads Regional Community Rating System Support

Scope of Work Narrative

The HRPDC proposes to increase local and regional capacity for floodplain management by conducting an assessment and developing a plan for providing regional products for communities in Hampton Roads that participate in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) program. Communities in Hampton Roads participating in the CRS as of April 2022 include Chesapeake (Class 7, Community Number 510034), Franklin (9, 510060), Gloucester County (6, 510071), Hampton (7, 515527), Newport News (7, 510103), Norfolk (5, 510104), Poquoson (8, 510183), Portsmouth (7, 515529), Virginia Beach (7, 515531), and York County (7, 510182). Full and effective participation in this program can require significant effort on the part of localities to develop and implement new policies and programs. The HRPC has developed several regional products as part of its Coastal Zone Management and coastal resiliency programs, including mapping of flood hazards, developing a database of elevation certificates, promotion of flood insurance and other outreach efforts, and development of higher recommended standards. Some of these programs, such as GetFloodFluent.org, are already used by Hampton Roads localities to receive CRS points for public outreach. The HRPDC is interested in providing these products and other services to Hampton Roads localities participating in the CRS program to help them earn additional points. Specifically, the HRPDC proposes to assess the potential for regional products that would earn points under the following elements:

- Element 310 (Elevation Certificates)
- Element 320 (Map Information Services)
- Element 330 (Outreach Projects)
- Element 350 (Flood Protection Information)
- Element 410 (Floodplain Mapping)
- Element 430 (Higher Regulatory Standards)
- Element 440 (Flood Data Maintenance)
- Element 450 (Stormwater Management)
- Element 510 (Floodplain Management Planning)
- Others as determined in consultation with HRPDC member localities

In addition, the HRPDC proposes to assess the viability of a regional Program for Public Information and to develop an implementation plan for such a program. Tasks to complete this effort will be performed by the HRPDC staff and a contractor to be selected and will include:

a) Assessment of the applicability of existing, planned, and potential regional products or initiatives to the requirements of the identified CRS elements
b) Recommendations for the development of new products or changes to existing HRPDC products to earn localities additional points
c) Assessment of the utility of a regional Program for Public Information (Element 330)
d) Development of a framework and implementation plan/work plan for a regional Program for Public Information

1. *Assessment of Capacity Needs and Assets*

The HRPDC requests assistance from the Community Flood Preparedness Fund to fund consultant services to support the activities described above. The HRPDC's Water Resources Department currently has sufficient staffing to support the HRPDC's overall resiliency program. Funding is currently provided for the Coastal Resiliency Program, which covers matters related to floodplain management and the NFIP, through dedicated annual contributions from HRPDC member localities. Although the department staff possesses knowledge and experience with the NFIP and CRS, including having a Certified Floodplain Manager in the department, the organization does not have the staff capacity to conduct the specific research and programmatic activities envisioned in this proposal. Use of consultant resources will help the HRPDC identify recommended approaches and potential changes to its resiliency program, including the possibility of increasing financial support from localities or state and federal grants to support local and regional CRS-related activities. Establishment of a regional Program for Public Information will necessitate ongoing support from HRPDC member localities, which will be incorporated into the HRPDC Coastal Resiliency Program's annual budget and work program.

2. *Goals and objectives tied to improving flood protection and prevention in a whole community approach to resilience. Identify and describe the goals and objectives of the project.*

The primary goal of this effort is to provide a resource-effective means for regional products to support locality participation in the Community Rating System. Community participation in the CRS provides discounts on NFIP flood insurance policies, which is becoming increasingly important due to changes in FEMA's flood insurance rating methodology as part of Risk Rating 2.0. These discounts accrue to all policy holders in a community, including both property owners and renters. This effort will support local and regional initiatives to encourage Hampton Roads residents to have flood insurance, which will increase community resilience.

3. *Stakeholder identification, outreach and education strategies.*

The primary stakeholders for this effort will be local government staff representatives who work on their localities' floodplain management and CRS programs. This effort will include outreach and engagement with individual localities and as groups through existing processes such as the HRPDC's Coastal Resiliency Committee and the Coastal Virginia CRS User Group. The HRPDC will coordinate these efforts with Wetlands Watch, which coordinates the user group, to identify possible opportunities for collaboration and enhancement and to avoid duplication of efforts.

4. *Implementation plan and timelines for specific elements of completion such as training, certifications, plan development, etc.*

The expected timeline for completion of this capacity building project is approximately one year.

- Months 1-3: Project initiation, meetings with stakeholders

- Months 2-5: review of existing CRS elements for opportunities for regional product development and delivery, assessment of existing HRPDC products, stakeholder discussions on regional CRS PPI
- Months 6-10: development of recommendations and discussion with stakeholders, finalizing of recommendations
- Months 11-12: outreach and education with communities, training on use of regional products

5. Parties responsible for capacity building and/or plan development process.

This effort will be managed by the HRPDC's Water Resources Department. The tasks described in the project narrative will be completed by the selected consultant with assistance from the HRPDC staff. All products and recommendations developed will be reviewed with HRPDC localities through the HRPDC Coastal Resiliency Committee and the Coastal Virginia CRS Users Group.

6. Performance outputs and measures. Describe the expected results and benefits and how success will be measured.

The expected outcomes of this effort will be a report documenting how localities can receive CRS credit for use of regional products, including specific guidance on how to use those regional products. The report will also include recommendations for the development of additional regional products. Another expected output of this project will be a viability assessment and work plan for establishing a regional Program for Public Information. Potential points received by communities through application of these regional products, including participation in the regional Program for Public Information, will also be documented in the report.

7. 7. Plans for maintaining capacity, as necessary, over the long term.

The HRPDC intends to incorporate the recommended actions, including ongoing product maintenance, development of additional products, and management of a regional Program for Public Information into its Coastal Resiliency Program, which receives funding annually through a special assessment from Hampton Roads localities as part of the HRPDC's annual budget process.

Budget Narrative

The total projected cost for capacity and planning under this effort is $21,149.33. According to the guidance outlines in the 2022 Grant Manual for the Virginia Community Flood Preparedness Fund, proposals in the Capacity Building and Planning category are eligible for 75% funding from the Fund with a 25% match requirement. Therefore, the HRPDC respectfully requests financial assistance from the Fund in the amount of $15,000.00, which will cover the provision of consultant services for this effort, and the HRPDC commits to fund the remaining $6,149.33 via in-kind contributions from staff time.

Estimated total project cost: $21,149.33

Amount of funds requested from the Fund: $15,000.00

Amount of cash funds available: $6,149.33

	Budget Summary Worksheet		
Category	**CFPF Request**	**HRPDC Matching Funds**	**Total**
A. Personnel	$0.00	$3,689.79	$3,689.79
B. Fringe	$0.00	$1,315.93	$1,315.93
C. Travel	$0.00	$0.00	$0.00
D. Equipment	$0.00	$0.00	$0.00
E. Supplies	$0.00	$0.00	$0.00
F. Contractual	$15,000.00	$0.00	$15,000.00
G. Construction	$0.00	$0.00	$0.00
H. Other	$0.00	$0.00	$0.00
Total Direct Costs	$15,000.00	$5,005.72	$20,005.72
I. Indirect Costs	$0.00	$1,143.61	$1,143.61
Total	$15,000.00	$6,149.33	$21,149.33

Supporting Documentation

Detailed Map of Hampton Roads

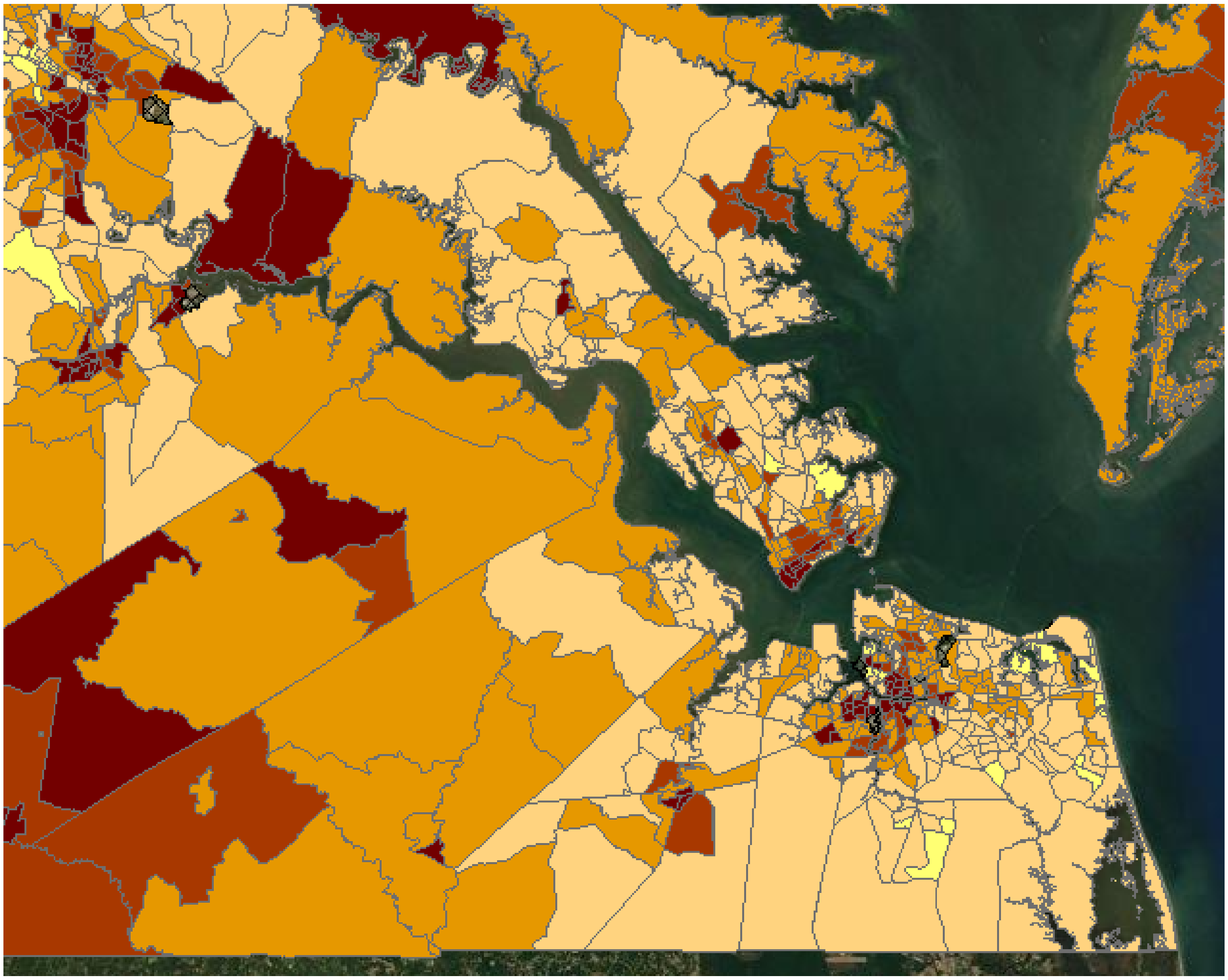
Current Hazard Mitigation Plan

The approved 2017 Hampton Roads Hazard Mitigation Plan is available at https://www.hrpdcva.gov/departments/emergency-management/2017-hampton-roads-hazard-mitigation-plan.

The draft 2022 Hampton Roads Hazard Mitigation Plan is available at https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan.

Map of Social Vulnerability for Hampton Roads

According to AdaptVA, Census tracts in Hampton Roads range from Very High Social Vulnerability to Very Low Social Vulnerability.



Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

2022 CFPF Grant Application HRPDC 2 - Capacity Building

1 message

Ben McFarlane <bmcfarlane@hrpdcva.gov> Fri, Apr 8, 2022 at 3:38 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: "Robert A. Crum, Jr." <rcrum@hrpdcva.gov>, Cynthia Mulkey <cmulkey@hrpdcva.gov>, Whitney Katchmark <wkatchmark@hrpdcva.gov>

Good afternoon,

Please find attached the Hampton Roads Planning District Commission's submittal for the third round of grant funding for the Community Flood Preparedness Fund. The submittal contains the official and authorized application from the HRPDC to DCR to conduct a Capacity Building project for Hampton Roads.

The attached electronic file contains the following information:

- Application Form for Grant Requests for All Categories
- Scoring Criteria for Capacity Building and Planning
- Checklist for All Categories
- Scope of Work Narrative
- Budget Narrative
- Supporting Documentation

We appreciate the opportunity to apply for this funding. Please let me know if you have any questions regarding our proposal or if you require additional information.

Sincerely,

Ben McFarlane

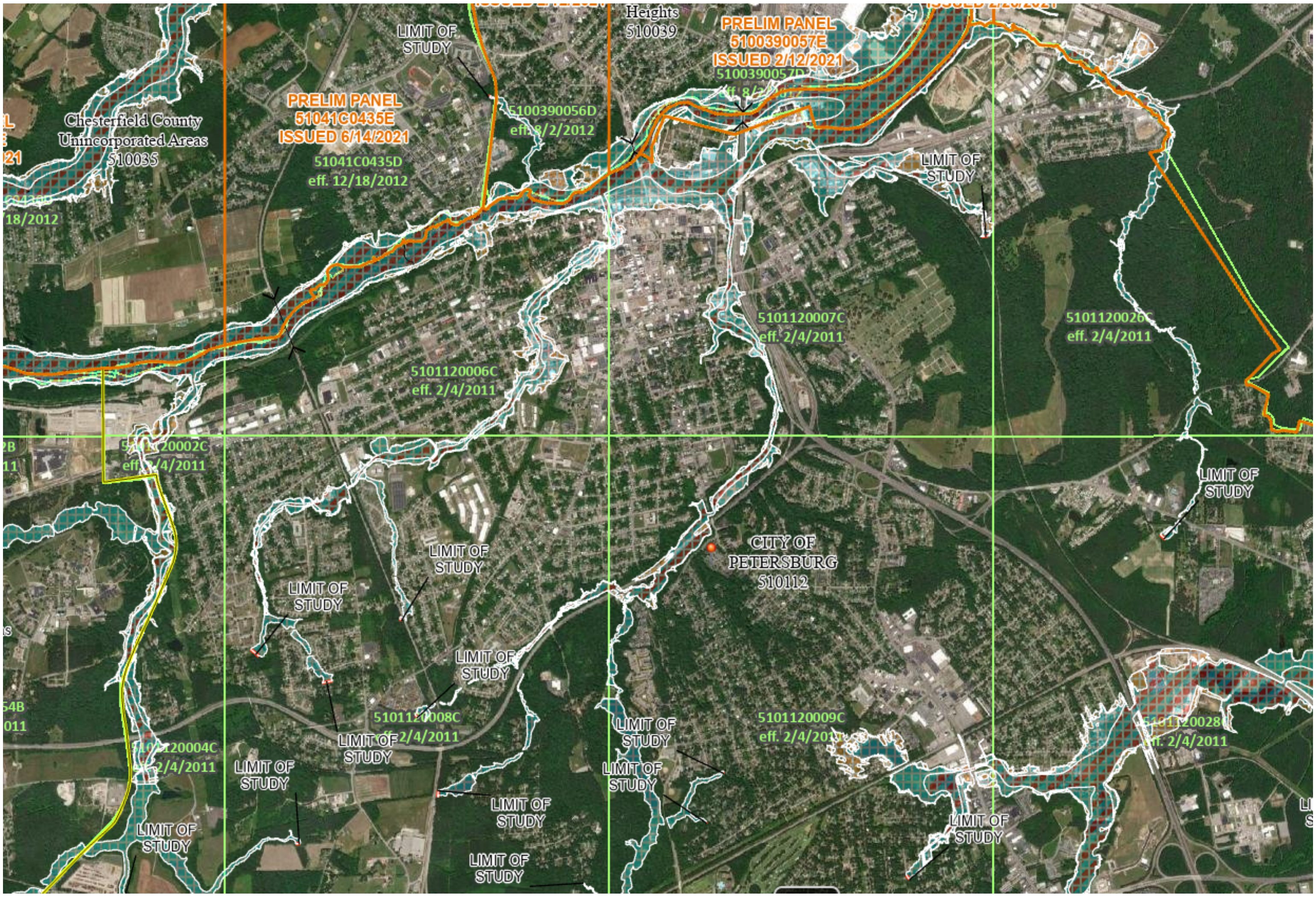
Benjamin J. McFarlane, AICP, CFM | Senior Regional Planner | Hampton Roads Planning District Commission

723 Woodlake Dr | Chesapeake, VA 23320 | Office 757-420-8300 | Fax 757-523-4881

Email: bmcfarlane@hrpdcva.gov Web: http://www.hrpdcva.gov

HRPDC_CFPF_2.pdf
1773K

COMMUNITY FLOOD PREPAREDNESS FUND
PROJECT GRANT APPLICATION



CITY OF PETERSBURG, VA

COMMUNITY ID #510112
SUBMITTED APRIL 8, 2022, REVISED APRIL 11, 2022

City of Petersburg

Office of the City Manager
135 North Union Street
Petersburg, Virginia 23803

(804) 733-2301
Fax 732-9212
TDD 733-8003

April 8, 2022

Ms. Wendy Howard-Cooper
Director of Dam Safety and Floodplain Management
Virginia Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

RE: Authorization of City of Petersburg CFPF Project Application

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

The City of Petersburg has assembled the attached Project grant application to request Community Flood Preparedness Fund assistance to include demolition, and revitalization of the Roper Building site located near the center of Historic Pocahontas Island. This tiny peninsula on the Appomattox River is thought to be Petersburg's earliest predominantly African-American neighborhood – with the first enslaved blacks being brought there in 1732 to work tobacco and becoming its own town 20 years later. The demolition, and revitalization of the Roper Building site will meet many of the Department's criteria for a successful project including a nature-based approach of removal of a commercial structure from the floodplain. The resulting land conversion from impervious area to conserved open space will provide a multitude of floodplain related benefits – as the SFHA boundaries on Pocahontas Island are incrementally creeping inland considering the latest iteration of FEMA Mapping in process of being adopted by the City.

The City has been struggling to address purpose of this property for years, using it primarily as a storage facility while exploring many avenues; however, one of the biggest barriers may be the proximity of the floodway and floodplain of the Appomattox River and Channel. This source of funding perfectly aligns many symbiotic objectives. As the City is a documented low-income geographic area, and the project site is within a designated Qualified Opportunity Zone, with a high social vulnerability index score, the City respectfully requests full funding of this project and a waiver of match funds. Please accept this letter as my authorization of the request for CFPF assistant to enable the City to make significant progress toward Resilience and equitable management of our floodplains.

Sincerely,

Kenneth Miller
Interim City Manager

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

City of Petersburg

Category of Grant Being Applied for (check one):

____**Capacity Building/Planning**

X **Project**

_____**Study**

NFIP/DCR Community Identification Number (CID) 510112

If a state or federally recognized Indian tribe, Name of tribe N/A

Name of Authorized Official: Kenneth Miller

Signature of Authorized Official:

Mailing Address (1): 135 N Union Street

Mailing Address (2): ______

City: Petersburg **State:** Virginia **Zip:** 23803

Telephone Number: (804) 733-2300 **Cell Phone Number:** (____) ______

Email Address: kmiller@petersburg-va.org

Contact Person (If different from authorized official): Darryl Walker

Mailing Address (1): 1340 E. Washington Street

Mailing Address (2): ____

City: 510112 **State:** Virginia **Zip:** 23803

Telephone Number: (804) 733-2357 **Cell Phone Number:** (____) ____

Email Address: dwalker@petersburg-va.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No ____

Categories (select applicable project):

Project Grants (Check All that Apply)

☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.

☐ Wetland restoration.
☒ Floodplain restoration.
☐ Construction of swales and settling ponds.
☐ Living shorelines and vegetated buffers.
☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
☐ Storm water system upgrades.
☐ Medium and large scale Low Impact Development (LID) in urban areas.
☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
☐ Dam restoration or removal.
☐ Stream bank restoration or stabilization.
☒ Restoration of floodplains to natural and beneficial function.
☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.

☐ Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.

☐ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☐ Other relevant flood prevention and protection project or study.

<u>Capacity Building and Planning Grants</u>

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☐ Resource assessments, planning, strategies and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

Location of Project (Include Maps): 130 Pocohontas Street, Petersburg, VA 23803

NFIP Community Identification Number (CID#):(See appendix F 510112

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): AE

Flood Insurance Rate Map Number(s) (If Applicable): 5101120007C eff. 2/4/2011

Total Cost of Project: $526,746.00

Total Amount Requested $526,746.00

Table of Contents

Appendices

A. Detailed Map of the Project Area (Qualified Opportunity Zone Map)
B. FIRMette of the Project Area
C. Historic flood damage data and/or images
D. Non-fund financed maintenance and management plan for project extending a minimum of 5 years from project close
E. Social Vulnerability Index
F. Completed Scoring Criteria Sheet and Checklist
G. Estimate of Work to be Completed by a Third Party

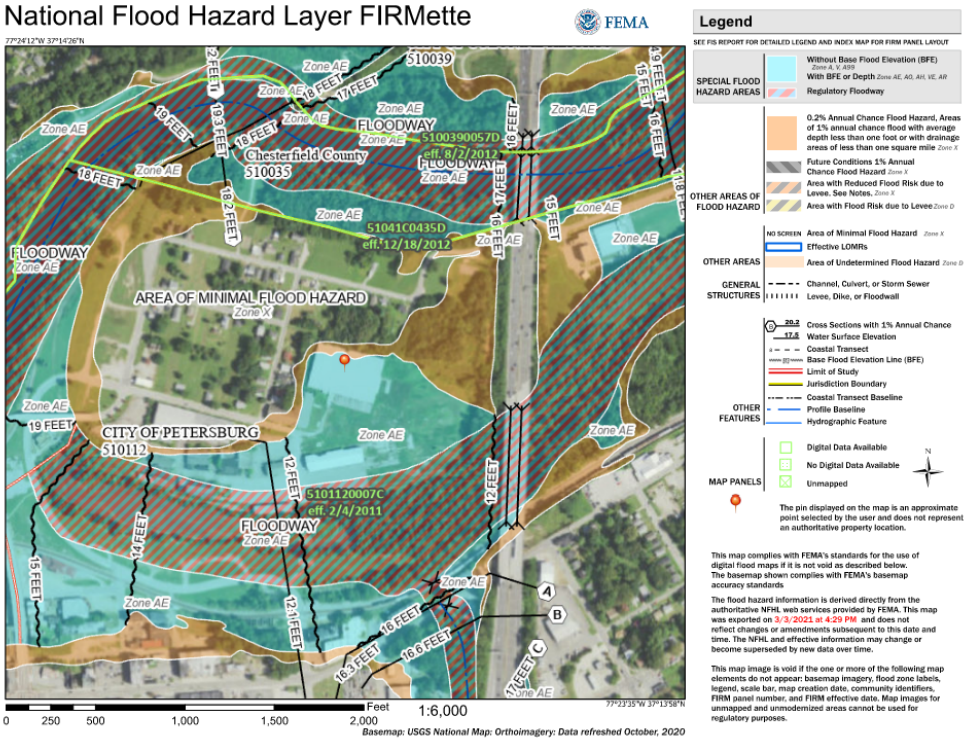
Scope of Work Narrative

1.0. Project Information

The City of Petersburg is applying for Community Flood Preparedness Fund assistance to include demolition of the Roper Building at 130 Pocahontas Street in the City of Petersburg. The City is respectfully seeking assistance with this flood prevention/protection activity to reduce property damage caused by flooding. The project will result in removal of the dilapidated commercial structure from the floodplain, and restoration of the floodplain resulting in preservation and creation of open space along the Appomattox River.

- *Population*. The City of Petersburg has a population of 31,362 as of 2019. The City is a low-income geographic area, as defined in the CFPF Grant Manual, as an area where the median household income ($38,679) is significantly less than 80% of the local median household income ($74,222 in VA), according to the US Census Data in 2019[1].

- *Historic flooding data and hydrologic studies projecting flood frequency*. The building footprint is almost entirely located in the 1% Annual Chance Special Flood Hazard Area and entirely in the 0.2% Annual Chance Flood Hazard, as illustrated below. The effective mapping is presented in Appendix B, as well as the Preliminary Firm, dated 2/12/2021. The updated preliminary mapping is expected to be finalized in 2023; there are no substantial changes to the mapping in the vicinity of the building, though the SFHA boundaries are creeping inland.



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/3/2021 at 4:29 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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[1] https://www.census.gov/quickfacts/fact/table/petersburgcityvirginia,VA,US/PST045219

- *The ability of the local government to provide its share of the cost.* The City has been struggling to address the purpose of this property for years, using it primarily as s storage facility while exploring many avenues; however, one of the biggest barriers may be the proximity of the floodway and floodplain of the Appomattox River and Channel. The City does not presently have the funding required to demolish the building and restore the floodplain.

- *The administration of local floodplain management regulations*. The City has an existing floodplain ordinance but requested and been notified of award of CFPF assistance in the Round 2 cycle to hire a CFM and update the existing ordinance to address the updated FEMA mapping. The existing ordinance can be found at the following web address: https://library.municode.com/va/petersburg/codes/code_of_ordinances?nodeId=PTIICO_CH58FL).

- *Other necessary information to establish project or study priority.*
    - *Repetitive loss and/or severe repetitive loss properties.*
    - *Residential and/or commercial structures*. This funding request is to remove one large commercial structure from the floodplain.
    - *Critical facilities*. There are no critical facilities within the project site.

2.0 Need for Assistance

The City of Petersburg's need for assistance is well documented in terms of financial and staff resources. For this project, the City has exhausted several avenues of funding assistance and recently received a quote from Pryor Hauling, Inc., **Appendix G**. As mentioned previously in Section 1.0, the City is a low-income geographic area. The project site is within a Qualified Opportunity Zone (ID 51730811300), as presented in **Appendix A**. Further, the project site is in an area designated as High Social Vulnerability (Index score: 1.4), as presented in **Appendix E**, which is in census tract 8113.

3.0. Goals and Objectives

The primary goal of the project is to remove the commercial structure from the floodplain and restore the floodplain within the project area, resulting in preservation and creation of open space along the Appomattox River. The goals are consistent with preservation of the historic island, which is discussed in the Wikipedia article presented in **Appendix C**. Further, the City studied this parcel for TMDL credit for land conversion, the Memorandum discussing this approach is also presented in **Appendix C**.

4.0. Approach, Milestones, and Deliverables

The City will use a qualified Contractor procured following Virginia Procurement Law to demolish the Roper Building at 130 Pocahontas Street and restore the floodplain to conserved open space. The proposed work will be accomplished within three years of grant authorization. A general plan of action is outlined in the following table.

Milestone	Deliverable	Timeline
Revise Floodplain Ordinance	Codify Floodplain Overlay authority	In accordance with CFPF Round 2 grant terms
Demolition of Roper Building	The building will be demolished, and all materials removed and disposed of properly.	June 2022 – December 2022
Revitalization of project site and creation of open space	The floodplain will be restored with native vegetation.	Perpetuity. The City will establish a conservation easement in accordance with the Floodplain overlay.

5.0. Relationship to Other Projects

The City requested and was notified of award CFPF assistance in Round 2 to complete updates to the City’s existing Floodplain Ordinance to equitably manage the City’s floodplains. This project represents the City’s commitment to nature-based solutions addressing properties with buildings in the floodplain. Further, this project is consistent with the City’s Chesapeake Bay TMDL requirements for which land conversion from impervious to managed turf or conserved open space will result in credit for nutrients and sediment pollutants.

In addition to the information provided in **Appendix C**, refer to the Petersburg excerpt of the regional Hazard Mitigation Plan identifies in Petersburg-1 the high priority of enforcing zoning and building codes with emphasis on floodplain management and Petersburg-15 which includes acquisition of flood prone property.

6.0. Maintenance Plan

The City will establish a conservation easement along the floodplain limits to prohibit future encroachment into the floodway and floodplain at this site.

7.0. Criteria

This project will meet many of the Department’s criteria for award of CFPF assistance, including restoration of the floodplain, and a nature-based approach consisting of removal of the old commercial building. The project site is in an area of high social vulnerability and a low-income geographic area. Conversion of impervious space to open space is consistent with the Chesapeake Bay TMDL. Finally, the project does provide “community scale” benefits as the existing structure is situated on the historic Pocahontas Island, and the City is committed to supporting efforts to protect and preserve this space. Please refer to the completed scoring criteria sheet presented in **Appendix F**.

8.0. Supporting Documentation

The following is a list of supporting documentation as required by the CFPF grant manual and associated links or location in the Appendix where more data is provided.

- Detailed map of the project area (**Appendix A**)
- FIRMette of the project area (**Appendix B**)

- Historic flood damage data and/or images (**Appendix C**)
- A link to the current floodplain ordinance: https://library.municode.com/va/petersburg/codes/code_of_ordinances?nodeId=PTIICO_CH58FL
- Non-fund financed maintenance and management plan for project extending a minimum of 5 years from project close (**Appendix D**)
- A link to the current hazard mitigation plan: https://www.craterpdc.org/environment/hazard_plan_2017.htm
- A link to the current comprehensive plan: http://www.petersburg-va.org/378/Comprehensive-Plan
- Social vulnerability index score(s) for the project area: 1.4, the project site is located in census tract 8113, which according to the Virginia Vulnerability Viewer is classified has high social vulnerability (Map attached in **Appendix E**).
- Letters of support from affected communities: N/A
- Completed Scoring Criteria Sheets (**Appendix F**)

Budget Narrative

The following is the budget narrative requested per the Grant Manual:

- Estimated total project cost: $526,746 (represents estimate provided by Pryor Hauling, Inc., plus a 10% contingency due to current market volatility and supply chain issues.)

- Amount of funds requested from the Fund: $526,746

- Amount of cash funds available: The City respectfully requests full funding of this project and for a waiver of match funds, per the letter signed by the Interim City Manager.

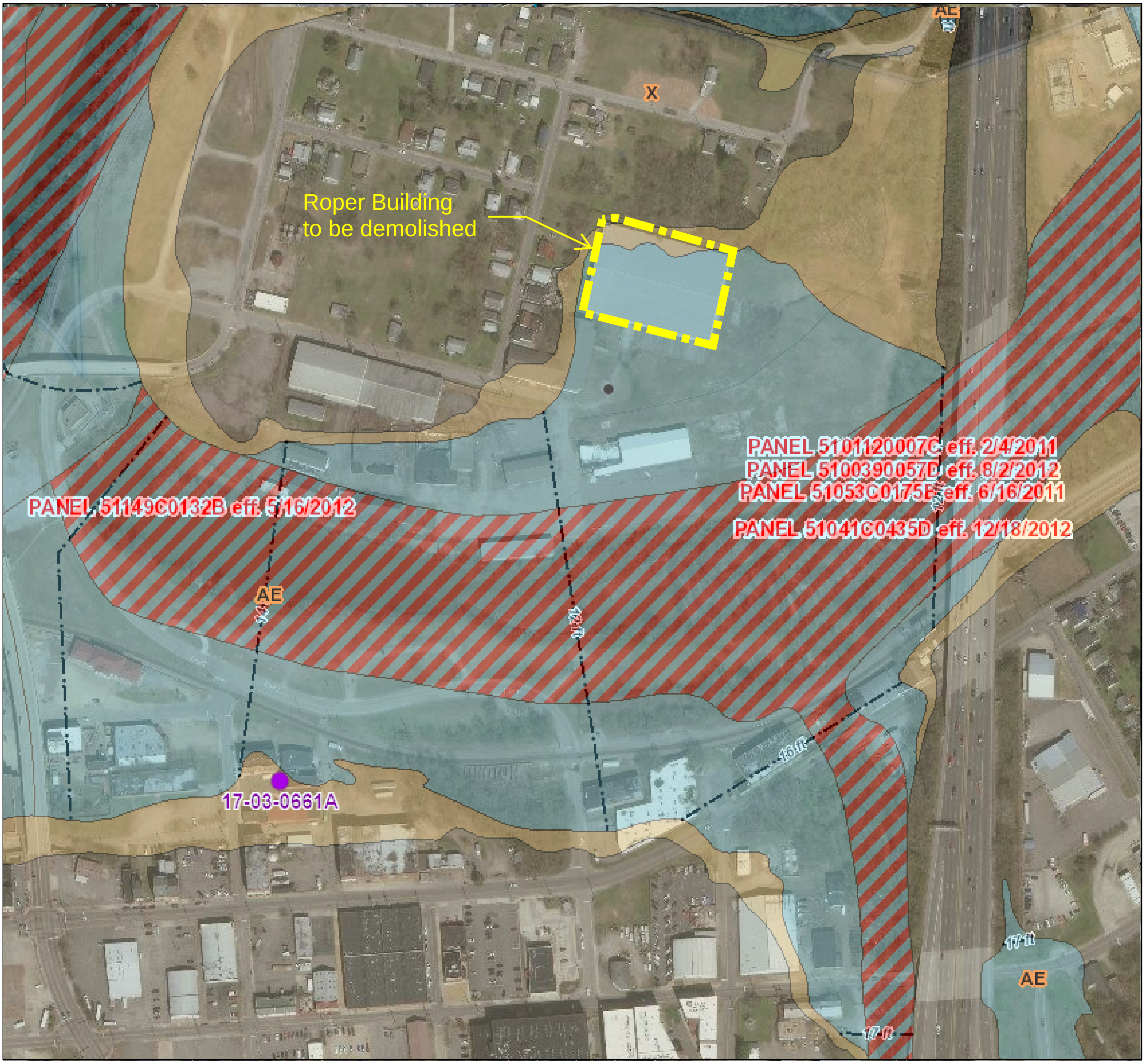
- Please refer to the cover letter for the City’s authorization to request for funding.

Appendix A

DCR **Virginia Flood Risk Information System (VFRIS)**

Roper Building at 130 Pocohontas Street

Date: 3/30/2022



Legend

Flood Hazard Zone Labels

Flood Hazard Zone Labels

Flood Hazard Zones

A and V Zones (1% annual chance flood hazard)

▨ Regulatory Floodway

X-Shaded (0.2% annual chance flood hazard)

▨ X-Shaded(L) (area with reduced risk due to levee)

☐ Zone D

☐ Area of Minimal Flood Hazard

Base Flood Elevation

Base Flood Elevation

Cross-Section

Cross-Section

Flood Insurance Rate Map (FIRM)

🟥 Flood Insurance Rate Map (FIRM)

LOMRs: Effective

☐ LOMRs: Effective

Water Lines

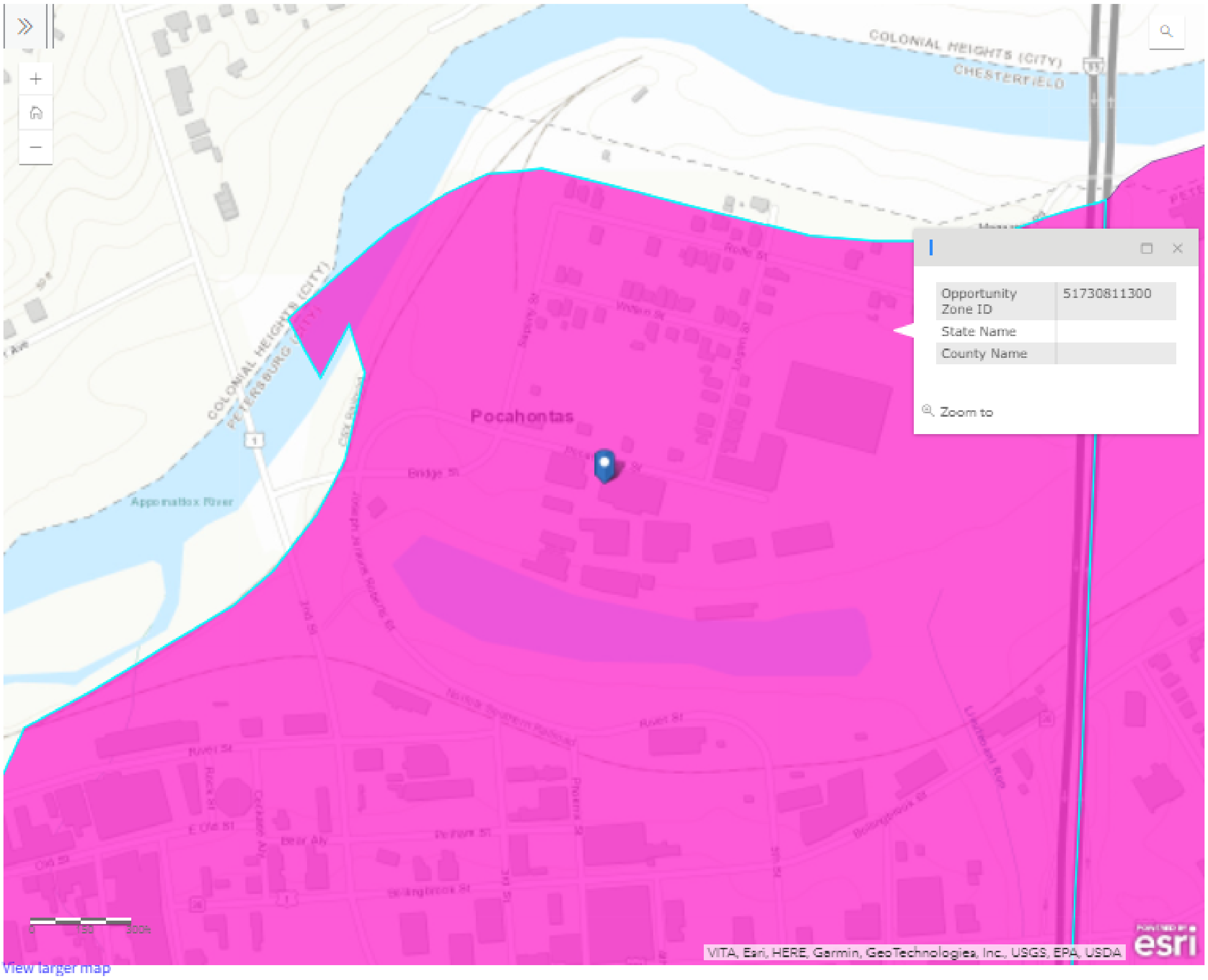
Water Lines

1:2,256.99

0 0.0075 0.015 0.03 mi

Map of Opportunity Zones

* * *



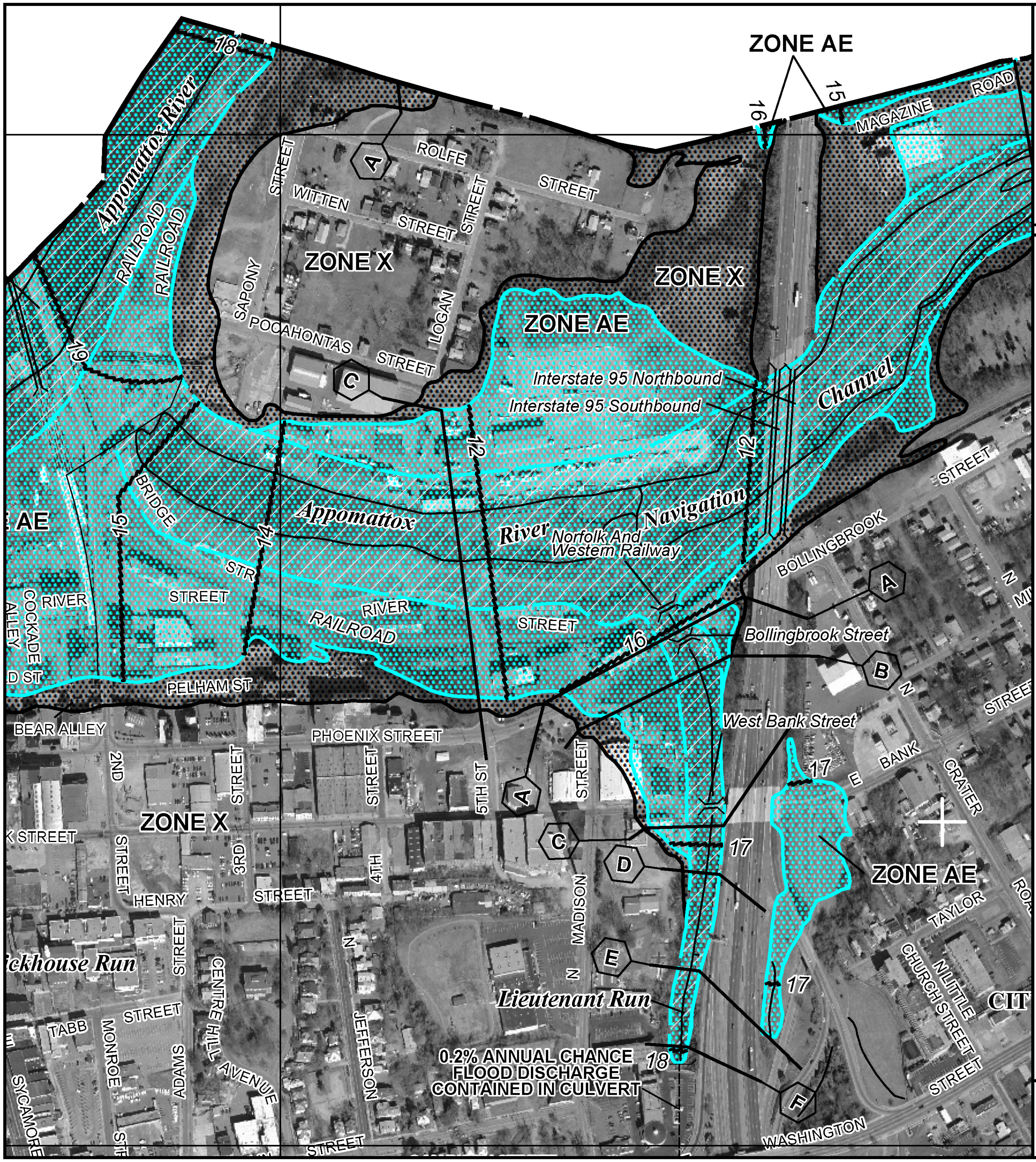
Opportunity Zone ID	51730811300
State Name	
County Name	

View larger map

Image created at: https://opportunityzones.hud.gov/resources/map

130 Pocohontas Street, Petersburg, VA is in opportunity zone ID 51730811300.

Appendix B



MAP SCALE 1" = 500'

250 0 500 1000 FEE

150 0 150 300

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0007C

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
PETERSBURG,
VIRGINIA
INDEPENDENT CITY

PANEL 7 OF 45

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PETERSBURG, CITY OF	510112	0007	C

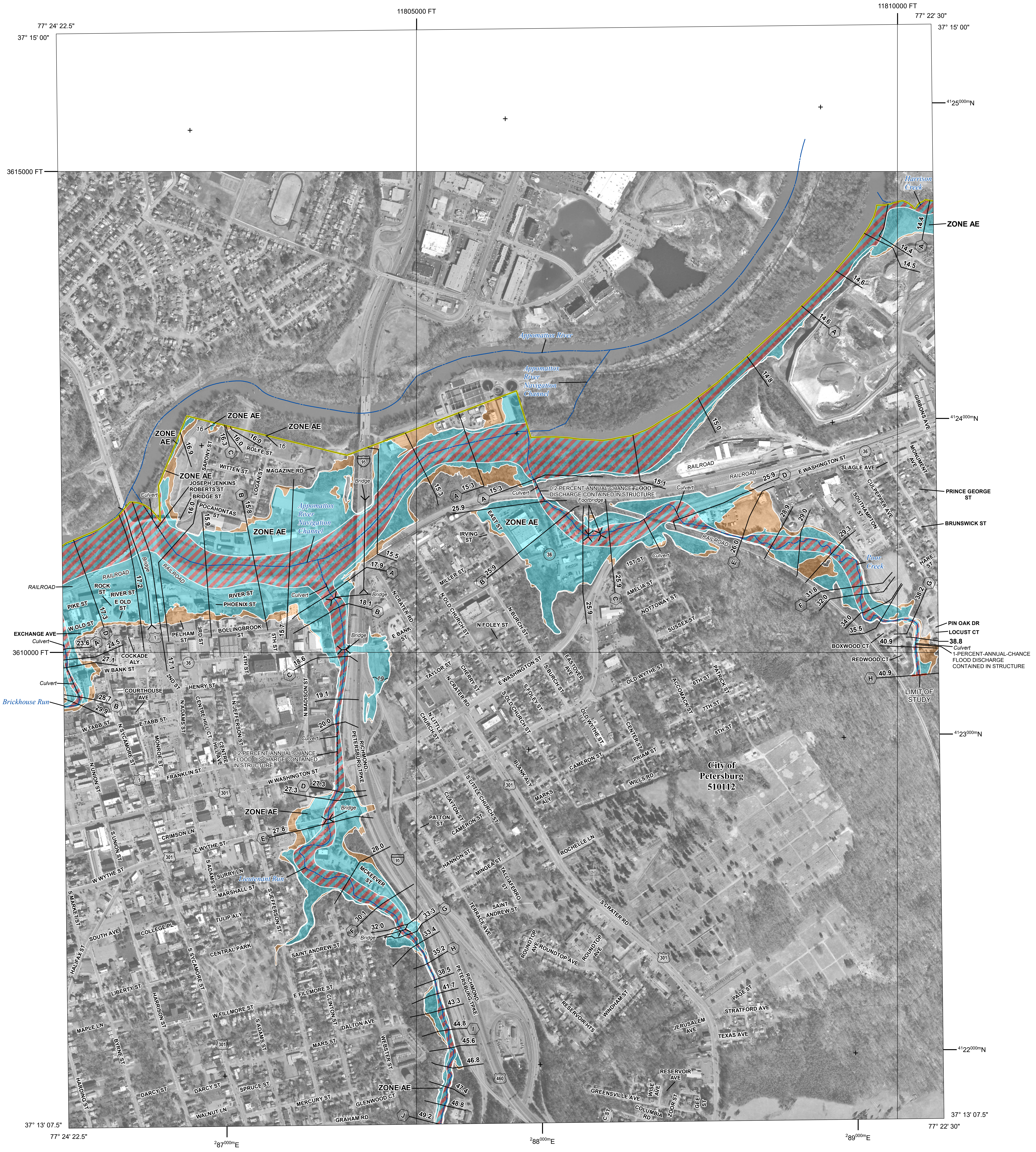
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
5101120007C

EFFECTIVE DATE
FEBRUARY 4, 2011

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A,V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟫	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Areas of Minimal Flood Hazard *Zone X*
	▨	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	- - - - - - -	Channel, Culvert, or Storm Sewer
	ıııııııııııı	Levee, Dike, or Floodwall
OTHER FEATURES	E 18.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8 - - - -	Coastal Transect
	—·—·—	Coastal Transect Baseline
	—·—·—	Profile Baseline
	———	Hydrographic Feature
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	═══	Limit of Study
	———	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2-foot resolution from photography dated 2016.

SCALE

Map Projection:
NAD 1983 StatePlane Virginia South FIPS 4502 Feet;
Western Hemisphere; Vertical Datum: NAVD 88

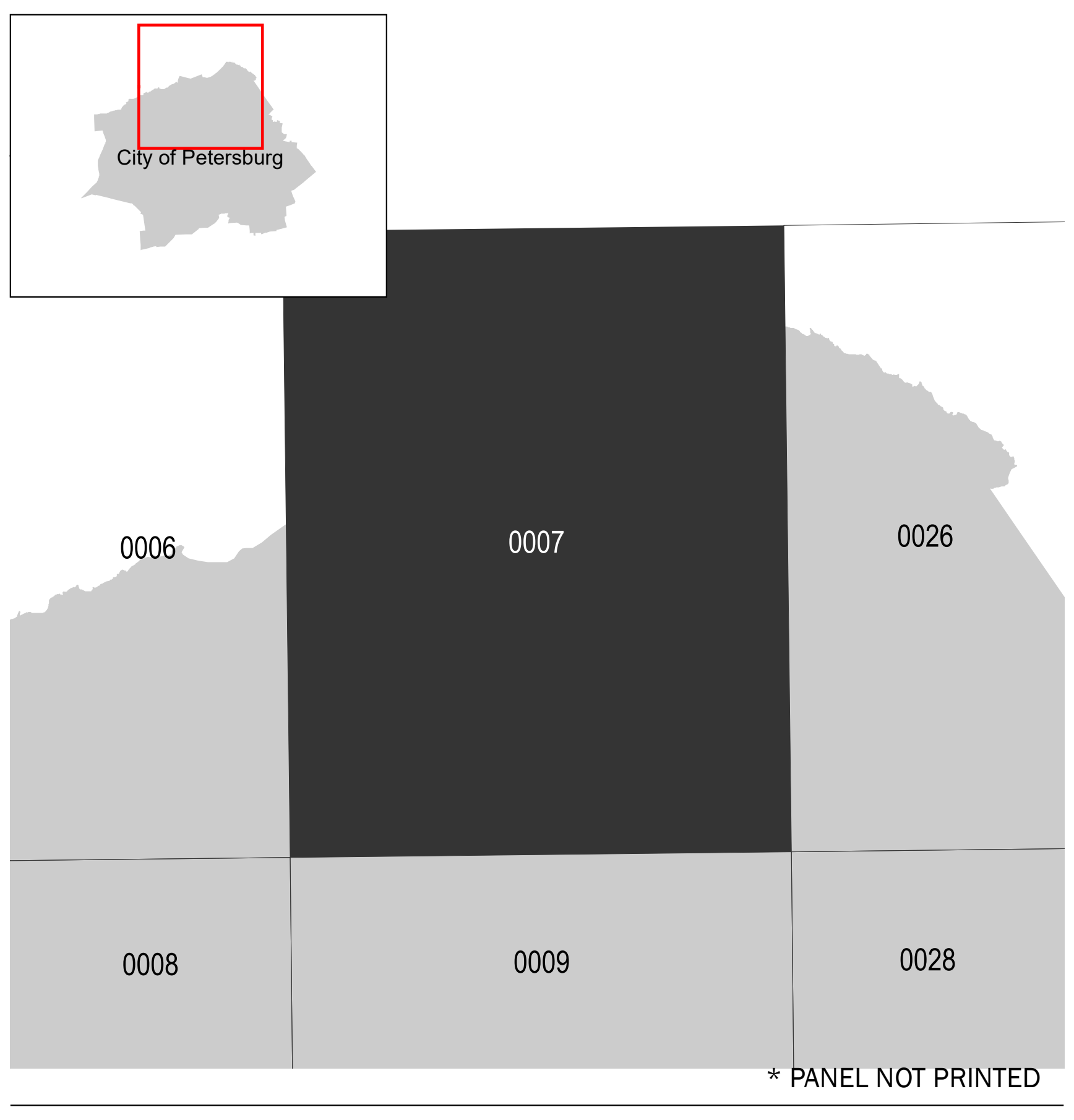
N

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

CITY OF PETERSBURG, VIRGINIA
Independent City

PANEL 7 OF 45

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PETERSBURG, CITY OF	510112	0007	D

PRELIMINARY
2/12/2021

VERSION NUMBER
2.6.4.6

MAP NUMBER
5101120007D

MAP REVISED

Appendix C

WIKIPEDIA

Coordinates: 37°14′19″N 77°23′59″W

Pocahontas Island

Pocahontas Island is a peninsula in Petersburg, Virginia once on the opposite side of the Appomattox River from Petersburg. Since 1915 a new channel for the river separated it from Chesterfield County and the former channel no longer separates it from the city. Once a warehouse and wharf-filled urban landscape initially platted in 1749, the island was devastated by a 1993 tornado before citizen involvement caused creation of the Pocahontas Island Historic District, which in 2006 achieved listing on the National Register of Historic Places (NRHP) as a historic district because of its significance in African-American history and for its prehistoric indigenous archeological assets.

Archeologists found evidence of prehistoric Native American settlement dating from 6500 B.C.[3] The indigenous Appomattoc people inhabited this region and encountered European colonists by the early 18th century, when the first enslaved Africans were brought to work here.

In the 19th century, Pocohontas Island became a notable freedom colony.[4] the first predominately free black settlement in the state and, by mid-19th century, one of the largest in the nation (although enslaved people also lived on the island, and some free blacks owned slaves).[5] In 1860 slightly more than half of Petersburg's population was black, and 3,224 or one-third of those people were free; they constituted the largest free black population of the time. During the 20th century, the island's population declined as people moved north in the Great Migration. In 1975 residents secured renewed residential zoning to protect their neighborhoods from industrial development proposed by the city.[5]

Contents

Pocahontas Island Historic District

U.S. National Register of Historic Places

U.S. Historic district

Virginia Landmarks Register

Pocahontas Island welcome sign

● Show map of Virginia
○ Show map of the United States
○ Show all

Location	Pocahontas, Witten, Rolfe, Logan, and Sapony Sts., Petersburg, Virginia
Coordinates	37°14′19″N 77°23′59″W
Built	1952
Architect	Lee, William Edward, Jr.
Architectural style	Federal, Bungalow/Craftsman
NRHP reference No.	06000977 (https://npgallery.nps.gov/Asse

	tDetail/NRIS/06000977) [1]
VLR No.	123-0114
Significant dates	
Added to NRHP	November 03, 2006
Designated VLR	September 6, 2006[2]

History

Archaeological evidence of a prehistoric Native American community dated to 6500 BC has been found on the island.[3] This is at the beginning of the Middle Archaic Period (6500 BC to 3000 BC) or end of Early Archaic Period (8000 BC to 6500 BC)[6]

When European colonists first arrived in Virginia and established the colonial settlement of Jamestown in 1607, the Appomattoc people who were part of the Powhatan Confederacy inhabited this region. The first colonial settlement on the peninsula was established in the 18th century. A group of enslaved Africans were brought here in 1732 to work in John Bolling's tobacco warehouses. Colonial surveyors platted the land in 1749, and white settlers named the village "Wittontown."[7] When formally organized as a town in 1752, it was renamed Pocahontas after the Native American daughter of Powhatan, who was important in early Virginian colonial history and, together with her husband, John Rolfe, became an ancestor of numerous First Families of Virginia.[5]

In 1757 Petersburg built a bridge to link the peninsula to the city, and for some early years, a board of trustees managed the "island" and its development.[5] Incorporated within the city limits in 1784 after the American Revolutionary War, the Pocahontas Island neighborhood became a center of a free black population. Pocahontas Island's large free black residential community is the oldest in the nation and its commercial center developed into a destination for the state's free blacks. By 1797 free blacks established the Sandy River Baptist Church, and some members in 1818 moved across the then-river channel into the city's center and built the Gillfield Baptist Church. The growth of industrial jobs attracted free blacks to Petersburg. Artisans and craftsmen could make a living, while others worked as boatmen and fishermen on the river. By 1860, Petersburg's population was half black - of those, one-third were free. It was the largest free black population in the nation.[8]

From 1830 until 1860, Pocahontas island's (recently excavated 30x300 foot) railroad depot was the terminus of the Richmond and Petersburg Railroad. It was Petersburg's main freight and passenger station until the American Civil War, when it also transported many Confederate troops and supplies.[3] The island was filled with many wharves and warehouses, in addition to residential streets.[9] No sign of the Confederate fortifications on the island remains, and the short railroad line built in 1863 to simplify transshipment of goods from Norfolk and Danville railroad lines to Richmond via Petersburg was removed immediately after the war; the Union Signal Corps filed many reports of railroad activity on Pocahontas during the war.[10] However, Petersburg City's government, despite building another bridge in 1851, often neglected the neighborhood, usually more concerned with development in white areas.[5] Numerous antebellum houses survive, especially on the island's east end, and archeologists have also unearthed the foundations of the railroad depot and the Petersburg Distilling Company, Inc. (1911-1916).[11] Two surviving houses were linked to the Underground Railroad before the American Civil War: the Jarratt House (808-810 Logan Street, predates 1820 on tax records and is the island's sole surviving brick building), and the double house at 215 Witten Street is informally called the "Underground Railroad House" (predating 1838, it once had a pseudo-brick facade).[3] The island's remaining 19th-century houses were built in the "shotgun style" usually associated with larger southern cities such as New Orleans, Houston, Atlanta and Louisville to make maximum use of narrow urban lots as well as local ventilation patterns.

It took decades for Petersburg to rebuild after the American Civil War, although one railroad line was rebuilt sufficiently by November 1867 for General Robert E. Lee to stop at the city en route to his son's wedding. Pocahontas had mixed industrial, commercial and residential use, including a sawmill by 1877 and a powder magazine on land now occupied by a waste treatment plant.[12] Postwar employment cycles continued to affect less educated blacks severely, especially the Panic of 1893. The original Pocahontas Chapel was built at the war's end by the New York Freedman's Relief Society,[13] and also served as a school for freedmen. Destroyed by the 1993 windstorm, it was rebuilt and remains a community center.[14] Although the original building was locally rumored to have once served as a headquarters for General Grant at nearby City Point (Hopewell, Virginia) and transported to Pocahontas, that building was actually dismantled and taken to Philadelphia for an exhibition, and most of the City Point structures were tents.[15] After the war, Pocahontas-born free black William N. Stevens became a lawyer and the first African American to serve in both houses of the Virginia General Assembly, although his legislative district centered on nearby Sussex County. Stevens maintained a house on the island (which still survives), though he died relatively young of throat cancer in 1889.[16]

Increasing industrialization in Petersburg and nearby Hopewell provided continued opportunities for blacks, even though the white-dominated Virginia legislature imposed racial segregation and disfranchisement in the late 19th century. Ice, coal, oil and lumber companies operated on Pocahontas by the early 20th century, although the island suffered devastating floods in 1910 and 1920, and the river rechannelled midway between. Furthermore, the DuPont company established a munitions factory in nearby Hopewell by 1914, and although that city burned the following year, it then prospered, and many blacks chose to live on Pocahontas. Largely excluded from the political system, blacks created their own opportunities. As the 20th century progressed, the more ambitious and younger people tended to leave the island (and many southern states) for other opportunities. The Great Migration to northern industrial cities, starting about World War I, is the time Islanders refer to as "when they lost the 'cream of the crop', and the majority of the remaining population being elderly retirees who sustain themselves on small fixed incomes."[5] The neighborhood shared economic troubles with Petersbburg, which lost jobs to other areas and increasingly to Richmond, long the state capital and which became the region's and state's financial center.

In 1971 the Petersburg city government rezoned some of the island for light industrial use. This caused the homes of 250 residents to be threatened with condemnation, making it impossible for owners to get financing for renovations. In 1975 residents won a battle to restore residential zoning. Allied groups began to survey and document the many historic properties.[5] The **Pocahontas Island Historic District** was added to the National Register of Historic Places in 2006 because of its abundance of archaeological sites from prehistory through historic times, and of numerous antebellum buildings marking its history as a free black community.[17]

A 1993 tornado severely damaged some houses and the chapel, and in 2015 the neighborhood was still listed among the state's most endangered historic sites.[18] By the late 20th century, the population had declined to fewer than 100 on the island from a high of 1700 earlier.[19]

Recognition

Because of its significant resources, ranging from prehistoric to historic, the Pocahontas Island Historic District is listed on both the Virginia Landmarks Register and the National Register of Historic Places (NRHP). It is also the location of the Pocahontas Island Black History Museum.

References

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4. "One man's quest to preserve the haunting black history of Pocahontas Island" (https://www.washingtonpost.com/local/virginia-politics/one-mans-quest-to-preserve-the-haunting-black-history-of-pocahontas-island/2016/09/26/b79f9b2c-7abf-11e6-beac-57a4a412e93a_story.html). *Washington Post*. Retrieved 2018-07-17.
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6. "Prehistoric Time Chart" (http://www.nps.gov/rap/exhibit/rocr/text/WH-PTC.htm), *Rock Creek Park*, National Park Service, accessed 30 Dec 2008
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9. Pocahontas Island NRIS 2006 section 7
10. NRIS Section 8 pp. 29-31
11. NRIS Section 7
12. NRIS pp. 31-32
13. NRIS Section 8 p. 31
14. "Archived copy" (https://web.archive.org/web/20180717041608/http://www.aahistoricsitesva.org/items/show/344?tour=14&index=21). Archived from the original (http://www.aahistoricsitesva.org/items/show/344?tour=14&index=21) on 2018-07-17. Retrieved 2018-07-17.
15. NRIS
16. Schneider, Gregory S. (September 26, 2016). "One man's quest to preserve the haunting black history of Pocahontas Island" (https://www.washingtonpost.com/local/virginia-politics/one-mans-quest-to-preserve-the-haunting-black-history-of-pocahontas-island/2016/09/26/b79f9b2c-7abf-11e6-beac-57a4a412e93a_story.html) – via www.washingtonpost.com.
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18. Writer, Leah SmallStaff. "Historic structure on Pocahontas Island to receive needed care" (https://www.progress-index.com/article/20150505/NEWS/150509874). *The Progress-Index*.
19. Richard Holtzclaw, "History from a different angle" (http://www.dailypress.com/travel/destinations/local/dp-dt_petersburgjan12,0,6842690.story), *Daily Press,* 17 Jan 2007, accessed 29 Dec 2008

External links

- - Pocahontas Island Black History Museum (http://www.pocahontasislandmuseum.com)

Retrieved from "https://en.wikipedia.org/w/index.php?title=Pocahontas_Island&oldid=1072857428"

This page was last edited on 19 February 2022, at 20:37 (UTC).

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

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MEMORANDUM

TO: City of Petersburg

FROM: Timmons Group

DATE: September 17, 2021

RE: Petersburg Surplus Property Evaluation for Chesapeake Bay TMDL Action Plan

Introduction and Purpose:

The purpose of this memo is to provide accompanying information presented in the meeting between the City of Petersburg and Timmons Group on September 17, 2021, whereby Timmons Group presented the results of a surplus property evaluation as related to the City's Chesapeake Bay TMDL Action. For this memo, discussion will be centered on strategies recommended for the City to achieve the entire anticipated regulatory Chesapeake Bay TMDL pollutant of concern (POC) load reduction requirement. The present regulatory requirement (due June 30, 2023) is a net 40% reduction in overall calculated progress toward achieving the L2 scoping runs, as specified in the Commonwealth's Watershed Implementation Plan (WIP). The third permit cycle (ending June 30, 2028), where the final 100% reduction will be required has not yet been written, and therefore, is anticipated. Timmons Group believes it is prudent for the City to be planning for implementation strategies to achieve the entire anticipated POC load reduction requirement, though the TMDL Action Plan may be specifically geared toward achieving the current regulatory requirement of 40% progress.

As an overall project update, and for reference, the status of the TMDL Action Plan update is that Timmons Group has been tasked with revisions to the City's plan using the following four strategies:

- *Reduce the City's load reduction requirement by excluding forested lands from the Chesapeake Bay Urban Regulated Area,*
- *Examine the updated TMDL Guidance regarding street sweeping and storm drain clean out and make recommendations to the City,*
- *Analyze sites that have potential for stream restoration and/or outfall restoration identified through an updated site selection process*, and
- *To exhaust all potential cost-effective solutions, Timmons Group proposed an evaluation of the City's surplus properties to determine the potential for land use change.*

Detailed in the following sections is a brief progress update on the first three tasks outlined above, and an extensive presentation of the analysis of the potential of exploring land conversion as a best management practice for surplus properties through out the City.

Brief Progress Update:

Exclusion of Forested Lands from the City's Regulated Area.

Timmons Group has completed an exercise to define the City's forested lands and remove the load from the anticipated total required reduction in pollutants of concern (POC).

Table 1. Reduction in POC Loads Attributed to Removing Forested Lands from the City's Regulated Area.

Pollutant of Concern (POC)	**Sub source**	**Regulated Area, 2015 (acres)**	**Regulated Area, 2020 (acres)**	**Loads (lb/yr) 2015**	**Loads (lb/yr) 2020**	**Anticipated Target POC Load Reduction, 2015 (lb/yr)**	**Anticipated Target POC Load Reduction, 2020 (lb/yr)**	**Reduction in Target POC Load (lb/yr)**
Nitrogen	Impervious	1,597.88	1,597.88	15,004.09	15,004.09	3,242.03	2,758.58	483.45
	Pervious	4,510.40	3,357.69	31,529.69	23,470.25			
Phosphorus	Impervious	1,597.88	1,597.88	2,812.27	2,812.27	613.46	571.68	41.78
	Pervious	4,510.40	3,357.69	2,255.20	1,678.85			
Sediment	Impervious	1,597.88	1,597.88	1,081,668.89	1,081,668.89	256,226.00	246,030.87	10,195.13
	Pervious	4,510.40	3,357.69	455,911.15	339,395.31			

*Forested lands must meet the definition set forth in DEQ's Chesapeake Bay TMDL Guidance.

The exercise resulted in a significant POC load reduction of 483 lb/yr of nitrogen, nearly 42 lb/yr of phosphorus, and more than 10,000 lb/yr of sediment.

Update City's Progress toward Implementation of Best Management Practices with DEQ's Revised Guidance.

Timmons Group reviewed the revised Guidance Memo[1] issued by DEQ in February 2021 and associated revisions to the Street Sweeping BMP. The revisions resulted in a dramatically reduced credit given to street sweeping activities for which the City of Petersburg had previously relied upon to achieve a significant portion of Chesapeake Bay TMDL compliance. Timmons Group updated the credits which can be applied to the City of Petersburg's practices per Appendix V.G.1 of the Guidance Memo, as presented in Table 2, below. Note, the City is required to document the street sweeping activities as follows:

1. "Actual sweeper routes (and type of road)
2. Total curb miles swept on each route
3. Average parking conditions and controls along the route (optional) Expert Panel Report on Street Sweeping and Storm Drain Cleaning
4. Sweeper technology used (AST or MBT)
5. Number of sweeping passes per year on each qualifying route. In addition, the locality should maintain records of the actual miles swept, by date, for entire the MS4 sweeper fleet, over the reporting year."

In addition to the updated street sweeping credits, a summary of progress toward Chesapeake Bay TMDL implementation projects is presented in Table 2. Progress achieved to-date results in a deficit of 786 lb/yr TN, 91 lb/yr TP, and nearly 50,000 lb/yr of TSS by June 30, 2023, and an overall target of 2,441 lb/yr TN, 434 lb/yr TP, and nearly 200,000 lb/yr TSS for which the City needs to plan additional implementation measures and/or projects.

The revised Guidance Memo also offers credit methodology for Storm Drain Cleaning, which requires documentation and record keeping. Timmons Group strongly recommends that the City consider implementation of a proactive storm drain cleaning maintenance program to track the quantity of dry sediment and associated nutrient removed prior to proper disposal. Such a program could feasibly be implemented in conjunction or upon completion of the upcoming inventory effort on which the City intends to embark and could be managed geospatially using an asset management program such as Cityworks® or other similar program.

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[1] Guidance Memo No. 20-2003 – Chesapeake Bay TMDL Special Condition Guidance, February 6, 2021.

Table 2. Summary of Progress of Planned and/or Implemented Best Management Practices To-Date.

Best Management Practice	Pollutant of Concern Removal (lbs)		
	TN	TP	TSS
Street Sweeping (Lane Miles Method)	6.04	0.38	871.54
Culpeper Avenue	14.43	1.15	604.00
Fleets Branch, Phase 2	296.04	136.34	47,003.31
Canal Street	1.29	0.16	45.20
Credits Achieved To-date	**317.80**	**138.03**	**48,524.05**
Total Reduction Required (2 permit cycles)	1,103.43	228.67	98,412.35
Total Reduction Required (3 permit cycles)	2,758.58	571.68	246,030.87
Phase 2 Deficit (2023)	785.63	90.64	49,888.30
Anticipated Phase 3 Deficit (2028)	***2,440.78***	***433.65***	***197,506.82***

Use Updated Site Selection Process to Identify Candidates for Stream Restoration and/or Outfall Retrofit.

While previous efforts at identifying potential sites for stream restoration had been focused solely on publicly owned properties, as presented in the 2013 Water Quality Master Plan, the current effort expanded upon the recent outfall inventory scope, in which many candidate projects were sited on private properties.

The current analysis resulted in the identification of a total of ten (10) sites that varied in length from 290 LF to 3,170 LF and were ranked with consideration for overall cost, $/lb of TP removed, access/perceived constructability, and restoration priority potential. Completion of all ten identified projects could result in the following estimated POC reduction potential:

- TN - 3,918.10 lb/yr,
- TP - 918.6 lb/yr
- TSS - 287,984 lb/yr

If all ten identified projects were completed, the City of Petersburg would likely exceed the anticipated (Phase 3) Chesapeake Bay TMDL requirement for all three pollutants of concern (POC) given the previously presented calculations. When taking into consideration progress to-date, as presented in Table 2, it was determined the City would need to complete a total of seven (7) projects before reaching the anticipated total POC reduction requirement for a total estimated cost of $5,436,000. However, several of the projects identified utilized baseline reductions to estimate potential pollutant removal; thus, enhanced pollutant removal could be realized during engineering design and project implementation.

Surplus Property Evaluation for Land Cover Conversion Credit.

The following sections provide, in detail, the methodology, results and recommendations stemming from the Surplus Property Evaluation. As detailed below, the analysis considered conversion from existing land use (pervious, impervious, or both) to either Forested or Mixed Open Space.

Methodology:

Timmons Group analyzed the data provided by the City which included 42 discrete properties (referred to as Surplus Properties). Of these 42 properties, 38 properties are at least partially located within the Chesapeake Bay Urban Regulated Area and were studied for potential TMDL credit for Land Use Change per the revised Guidance Memo. The original dataset provided by the City included properties at 1600 Shirley Avenue and 300 St John Street that were erroneously geolocated; however, upon aerial inspection both lots are presently under forest land cover and thus were excluded from further analysis. The Shirley Avenue property was identified for potential stream restoration as Project J, which will be discussed further in the Recommendations section. 36 properties were further considered for potential Land Use Change POC removal credits.

The Surplus Property GIS data layer was intersected with the City's updated Chesapeake Bay Urban Regulated Area layer that included pervious and impervious land cover. Forested areas were excluded from the Chesapeake Bay Urban Regulated Area as briefly described above and are not eligible for land use change credits. Therefore, any surplus properties that currently have significant forest cover were excluded from this analysis.

Source data for existing land use comes from a geodatabase provided by Timmons Group. The data was developed when Petersburg instituted a stormwater utility fee program based on 2011 land cover, which has been historically adopted as the regulated 2009 land cover since it is the best available data.

Two discrete sets of analyses were performed for the surplus properties: 1) existing land cover to Forested and 2) existing land cover to Mixed Open. The purpose of this was to provide the City a level of flexibility, as some parcels may not be suitable for conversion to a forested land use change, as defined in the Guidance document, but may still afford the City significant potential if converted to mixed open space. Reduction efficiencies in the James River Basin for the various proposed land cover types are presented in Table 3 below.

Table 3. Excerpt from Table V.H.1 – Land Use Change Conversion Efficiency Table from the Chesapeake Bay TMDL Special Condition Guidance.

Land Use from	Conversion to	TN (lbs/ac/yr)	TP (lbs/ac/yr)	TSS (lbs/ac/yr)
Impervious	Forest	11.84	0.78	1,327
Pervious (Turf)	Forest	6.37	1.39	465
Impervious	Mixed Open	11.36	0.5	389
Pervious (Turf)	Mixed Open	5.89	1.12	0.00

In addition to strictly looking at potential for pounds removed of total phosphorus, consideration was given to cost, *i.e.*, cost per conversion of land was developed and then applied to each case. Factors used to develop planning level cost data for conversion of impervious to Mixed Open or Forested cover included demo of the pavement and/or buildings, hauling/disposal, grading, and topsoil addition, plus a mobilization factor which was considered in the unit costs. If the existing parcel included buildings, an additional planning level cost to demolish the building and cap existing utility service lines was included in the cost analysis and was estimated based on building footprint. No differentiation was given to height of the existing building, as that data is not readily available; so, caution should be used when considering this planning level cost data. The intent of the cost estimate is to provide proof-of-concept data for decision making moving forward. If a site was to be converted to Forested Lands, this cost analysis included the costs for seedlings, stakes and mattings around the plantings, and manual labor costs to perform the plantings.

Conversion to Forested Lands included the following cost assumptions:

1. 400 seedlings required per acre to meet the density requirement listed in Table V.H.2 of the Guidance Memo.

2. Seedling costs of $35 per acre planted based on a previous case study.

3. Staking, tree matting, and bird netting costs estimated at $5 per tree.
4. A labor estimate of $9,650 per acre was applied to the cost determination based on a previous case study.

Estimates for the demolition of pavement was based on a study of recent VDOT District Averages and Statewide Average data, amounting to an assumed value of $34 per square yard of pavement demolished ($3.78 per square foot). Estimates for the topsoil addition assumed that all acreage currently designated as impervious would require 6” (0.5’) of topsoil amendment for impervious demolition or 2” (0.167’) of topsoil amendment for existing pervious development. The square footage of impervious was multiplied by 0.5’ or 0.167’ to yield a volume estimate of fill. Fill placement and associated earthwork costs (hauling, labor, E&S etc.) was estimated at $50 per cubic yard for existing impervious areas or $20 per cubic yard for existing pervious areas, based on 2021 VDOT District and Statewide Average Data for similar line items.

Results:

For each of the Surplus Properties, the potential POC reductions were tabulated as existing land cover conversion to Forested or Mixed Open. Presented in Tables 4 and 5 below are the summary results for the properties analyzed. The summary includes a listing of the area of each property considered available for land conversion (i.e., any areas already considered forested or removed from the regulated area were excluded), the potential POC credit for land conversion, and the relative cost in $/lb of TP. While the cost effectiveness for nitrogen and sediment were analyzed, only phosphorus was presented due to its prevalence as the indicator pollutant in Virginia. Please note that if all available surplus properties were converted to forested land cover, the City could potentially realize a maximum of 71.58 lb/yr of TP removal, which is considerably short of the required 40% progress required by June 30, 2023. Further, the planning level cost effectiveness averages $12,000/lb of TP, which is generally less cost effective than most identified stream/outfall restoration projects.

As presented in Table 4, any properties which would be ineligible to meet the forested land cover requirements (30-meter x 30-meter area and specified tree density per acre, as defined in the Guidance Memo) were greyed out and further excluded from additional consideration. Further, any properties that would achieve >1lb/yr removal of TP were highlighted green, which included the additional two properties at 343 Rolfe Street and 800 Magazine Road, due to their relative proximity to other Pocahontas Island properties. Proximity to this defined “planning area” would increase the effectiveness and efficiency of the land conversion. As a result, seven (7) discrete sites and/or properties were further considered for conversion to forested land cover.

Table 4. Land Use Change to Forested POC Removal Potential and Relative Cost per Surplus Property

	Planning Area	Address	PIN	Area	Existing Cover to Forest Land POC Removal			Relative Cost – Forest Conversion
#				Acres	TN, lb/yr	TP, lb/yr	TSS, lb/yr	TP $/lb
1	Pocahontas Island	130 Pocahontas St	007-070009	21.81	202.87	23.18	20,220.17	$168,794.51
2	Hospital Site	801 S Adams St	031-300002	21.42	196.05	23.13	19,352.79	$128,783.82
3	Pocahontas Island	150 Sapony St	007-080001	4.69	29.93	6.52	2,187.82	$12,511.04
4	Patton Park	627 REAR N South St	009-010005	2.42	15.39	3.36	1,124.16	$12,329.23
5	Pocahontas Island	119 Pocahontas St	007-080003	2.02	13.82	2.71	1,087.16	$25,191.64
6		2120 Dock St	027-010012	1.55	9.89	2.16	722.29	$12,282.37
7		39 REAR River St	011-010801	1.29	8.20	1.79	598.28	$12,284.10
8		522 Hinton St	023-110001	0.81	5.19	1.13	378.93	$12,283.30
9		527 E Bank St	012-020004	0.74	4.69	1.02	342.59	$12,277.03

10		931 Clarke St	046-080007	0.49	3.14	0.68	228.89	$12,291.02
11	Pocahontas Island	343 Rolfe St	007-020006	0.41	2.67	0.57	197.18	$14,057.00
12	Pocahontas Island	800 Magazine Rd	006-010001	0.40	2.58	0.56	188.10	$12,284.83
13		1611 Hare St	004-190015	0.40	3.43	0.45	326.14	$87,742.86
14		1210 Byrd St	024-010001	0.35	2.21	0.48	161.20	$12,286.60
15		803 Augusta Ave	029-190005	0.30	1.91	0.42	139.65	$12,281.57
16		980 S Sycamore St	031-310011	0.27	1.71	0.37	125.01	$12,289.34
17		1553 Brandon Ave	043-100017	0.26	1.63	0.36	118.83	$277,659.08
18		600 Reservoir Ave	033-060001	0.23	1.48	0.32	108.30	$12,280.63
19		2761 Boydton Plank Rd	072-030002	0.21	1.37	0.30	99.65	$12,287.86
20		341 Graham Rd	032-040011	0.18	1.18	0.24	90.91	$25,007.61
21		516 Hinton St	023-110002	0.18	1.13	0.25	82.19	$12,289.16
22		1116 Stainback St	029-170010	0.15	0.99	0.22	71.99	$12,284.89
23		246 St Luke St	044-210001	0.15	0.93	0.20	68.21	$12,291.02
24		527 Hinton St	023-040003	0.13	0.81	0.17	60.94	$16,038.02
25		523 Hinton St	023-040002	0.12	0.77	0.17	57.25	$14,437.47
26		412 St Andrew St	021-070012	0.11	0.72	0.16	52.53	$12,277.03
27		1011 Mckenzie St	024-050002	0.09	0.55	0.12	40.07	$12,263.58
28		421 N Market St	011-130002	0.08	1.00	0.07	111.72	$277,689.11
29		522 Hinton St	023-110001	0.08	0.50	0.11	36.53	$12,263.83
30		105 North Carolina Ave	044-100035	0.08	0.48	0.11	35.20	$12,269.72
31		873 Bollingbrook St	006-020006	0.07	0.45	0.10	32.82	$12,271.48
32		409 N Old Church St	006-020004	0.05	0.32	0.07	23.50	$12,267.52
33		519 REAR W Washington St	023-110028	0.03	0.22	0.05	15.96	$12,311.84
34		138 W Bank St	011-230001	0.02	0.28	0.02	31.35	$277,542.33
35		2056 Overbrook Rd	068-120008	0.02	0.11	0.02	7.72	$12,361.40
36		448 Forest Ln	032-100001	0.01	0.04	0.01	2.62	$12,119.39
			SUM		**518.63**	**71.58**	**48,528.63**	

Like the forest conversion analysis, a summary is presented in Table 5, of the analysis for conversion from existing land cover to mixed open space. ‘Mixed Open’ is defined in the Guidance Memo as “herbaceous cover that is minimally disturbed (periodically bush hogged, meadows, etc.)” and has no nutrient application. Therefore, conversion to mixed open space from existing land cover will be considerably more cost effective, primarily due to the extensive labor required to plant and establish a successful forest at the density prescribed. However, using the >1lb/yr TP threshold to consider a site worthwhile for further consideration, the number of discrete sites/properties dwindles to five (5).

Table 5. Land Use Change to Mixed Open POC Removal Potential and Relative Cost per Surplus Property

	Planning Area	**Address**	**PIN**	**Area**	**Existing Cover to Mixed Open POC Removal**			**Relative Cost – Mixed Open**
#				**Acres**	**TN, lb/yr**	**TP, lb/yr**	**TSS, lb/yr**	**TP $/lb**
1	Pocahontas Island	130 Pocahontas St	007-070009	21.81	192.41	17.17	4,548.85	$159,557.36
2	Hospital Site	801 S Adams St	031-300002	21.42	185.77	17.23	4,238.59	$118,280.54

3	Pocahontas Island	150 Sapony St	007-080001	4.69	27.67	5.25	2.79	$4,098.67
4	Patton Park	627 REAR N South St	009-010005	2.42	14.24	2.71	0.30	$3,922.27
5	Pocahontas Island	119 Pocahontas St	007-080003	2.02	12.85	2.16	65.76	$16,465.07
6		2120 Dock St	027-010012	1.55	9.15	1.74	-	$3,876.64
7		39 REAR River St	011-010801	1.29	7.58	1.44	-	$3,876.64
8		522 Hinton St	023-110001	0.81	4.80	0.91	-	$3,876.64
9		527 E Bank St	012-020004	0.74	4.34	0.83	-	$3,876.64
10		931 Clarke St	046-080007	0.49	2.90	0.55	0.01	$3,876.64
11	Pocahontas Island	343 Rolfe St	007-020006	0.41	2.47	0.46	1.91	$5,606.32
12	Pocahontas Island	800 Magazine Rd	006-010001	0.40	2.38	0.45	-	$3,876.64
13		1611 Hare St	004-190015	0.40	3.24	0.34	63.95	$77,463.16
14		1210 Byrd St	024-010001	0.35	2.04	0.39	-	$3,876.64
15		803 Augusta Ave	029-190005	0.30	1.77	0.34	-	$3,876.64
16		980 S Sycamore St	031-310011	0.27	1.58	0.30	-	$3,876.64
17		1553 Brandon Ave	043-100017	0.26	1.51	0.29	-	$262,683.76
18		600 Reservoir Ave	033-060001	0.23	1.37	0.26	-	$3,876.64
19		2761 Boydton Plank Rd	072-030002	0.21	1.26	0.24	-	$3,876.64
20		341 Graham Rd	032-040011	0.18	1.10	0.19	3.76	$11,963.20
21		516 Hinton St	023-110002	0.18	1.04	0.20	-	$3,876.64
22		1116 Stainback St	029-170010	0.15	0.91	0.17	-	$3,876.64
23		246 St Luke St	044-210001	0.15	0.86	0.16	-	$3,876.64
24		527 Hinton St	023-040003	0.13	0.75	0.14	1.22	$7,541.38
25		523 Hinton St	023-040002	0.12	0.72	0.13	0.67	$5,976.62
26		412 St Andrew St	021-070012	0.11	0.67	0.13	-	$3,876.64
27		1011 Mckenzie St	024-050002	0.09	0.51	0.10	-	$3,876.64
28		421 N Market St	011-130002	0.08	0.50	0.09	-	$262,683.76
29		522 Hinton St	023-110001	0.08	0.46	0.09	-	$3,876.64
30		105 North Carolina Ave	044-100035	0.08	0.45	0.08	-	$3,876.64
31		873 Bollingbrook St	006-020006	0.07	0.42	0.08	-	$3,876.64
32		409 N Old Church St	006-020004	0.05	0.30	0.06	-	$3,876.64
33		519 REAR W Washington St	023-110028	0.03	0.20	0.04	-	$3,876.64
34		138 W Bank St	011-230001	0.02	0.14	0.03	-	$262,683.76
35		2056 Overbrook Rd	068-120008	0.02	0.10	0.02	-	$3,876.64
36		448 Forest Ln	032-100001	0.01	0.03	0.01	-	$3,876.64
			SUM		**488.47**	**54.78**	**8,927.81**	

Of the 36 surplus properties analyzed, most are not cost effective or feasible for land cover conversion in an appreciable manner. Once the top properties highlighted in green presented in Table 4 are removed from the analysis, the sum of the remaining potential phosphorus removal is only around 5 lbs. The administrative effort to develop and establish conservation easements around isolated properties throughout the City is not worth the small net return for Chesapeake Bay TMDL compliance.

Thus, the final sites/properties remaining in consideration for land conversion, include:

- Pocahontas Island,
- 801 S Adams Street (former Southside Regional Medical Center),
- 627 REAR N South Street (Patton Park),
- 2120 Dock Street,
- 39 REAR River Street,
- 522 Hinton Street, and
- 527 E Bank Street

Recommendations:

A desktop investigation of each of these sites was performed to make recommendations to the City regarding the viability of land conversion as a Chesapeake Bay TMDL best management practice and the next steps with regards to the City's TMDL Action Plan.

1. Pocahontas Island on the Appomattox River is a historic landmark location and hosts the site of the Oldest Black Community in the United States, as well as the Pocahontas Island Black History Museum. The largest parcel on the site is 130 Pocahontas Street, which if fully conserved as forest or open space, could potentially realize a total phosphorus reduction of 23.18 lb/yr or 17.17 lb/yr, respectively. The demolition of the existing warehouse buildings is an important cost consideration. Although the dollar per pound figure for the 130 Pocahontas Street property is high (>100,000 $/lb TP removal), there may be intrinsic aesthetic value in the demolition of the pavement and existing buildings in addition to POC removal. However, as illustrated in Figure 1 below, there may be considerable potential to redevelop multiple properties, while also providing land conversion. The total potential phosphorus removal for conversion of all publicly owned land on Pocahontas Island is nearly 34 lb/yr; however, the City may wish to consider sub-dividing multiple parcels along the outer boundary of the island and set them aside in forest conversion easements while using the inner portions of properties for re-development efforts. Timmons Group recommends the City consider the future of Pocahontas Island as a planning area, rather than discrete parcels, and when considering redevelopment and economic development, consider land conversion of contiguous lands with intrinsic environmental value, as well.

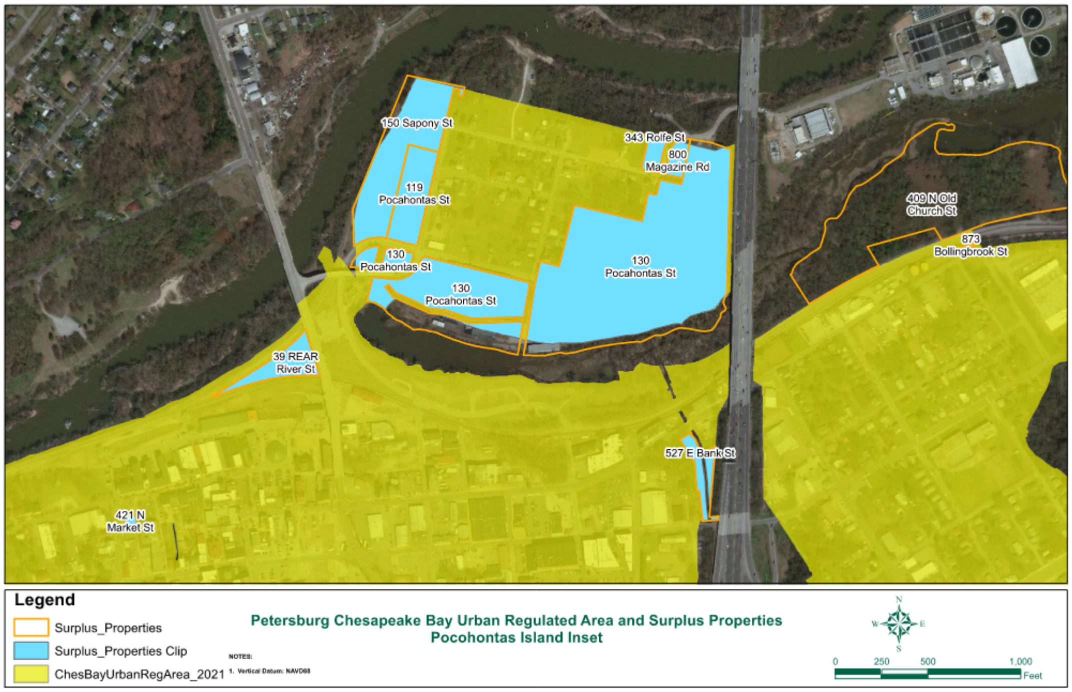

Figure 1. Pocahontas Island Planning Area.

2. 801 South Adams St (Former Southside Regional Medical Center), presented below in Figure 2 initially appears to be a good candidate for land conversion based on its high percentage of existing impervious area (~50%). However, Timmons Group realizes this site is a candidate for economic development grants. Further, enhanced potential for stormwater management was briefly explored, such as a constructed wetland in addition to land conversion and it was determined that the drainage patterns in the watershed are not a good match. Additionally, the City's notes in the surplus property database indicate the site has "extensive underground utility infrastructure and water transmission mains from the old hospital." Should economic development plans for this site fall through, the large parcel lends itself to potential land conversion and conservation. Should re-development proceed, the City could benefit from additional potential POC reduction credit through the redevelopment process.

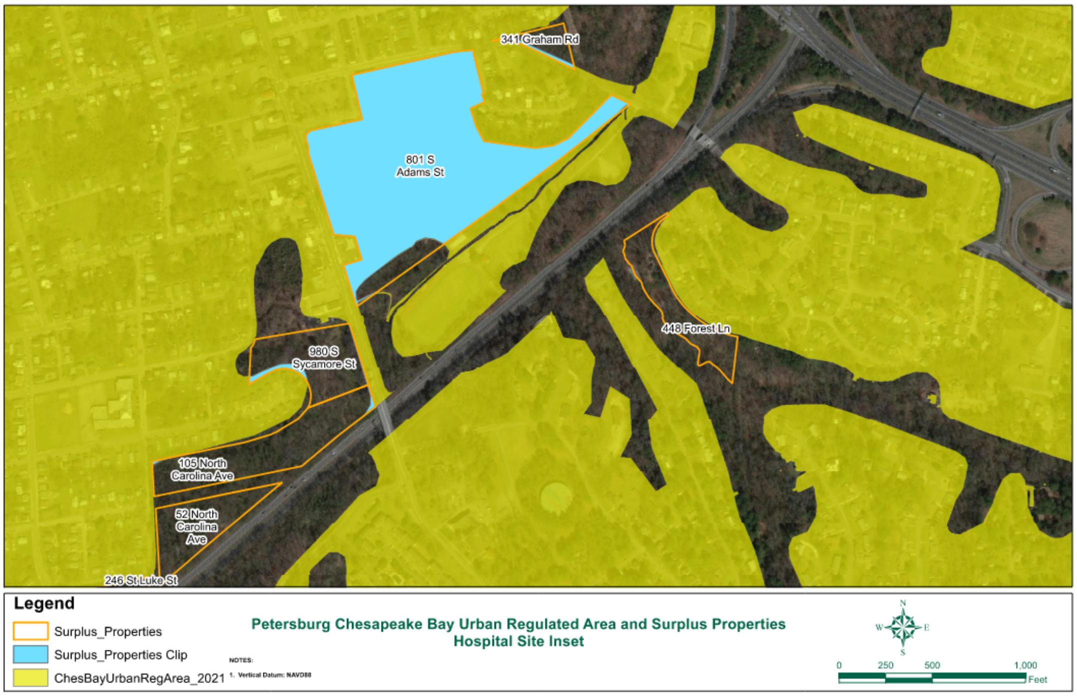

Figure 2. 801 S Adams Street.

3. 627 REAR N South Street (Patton Park) is a publicly owned site included in the data for surplus property evaluation. During the summary analysis, the property initially appeared to have potential for land conversion from a pollutant removal and efficiency perspective; however, upon closer inspection, this site is the existing parking lot of Patton Park, and does not have as much potential for land conversion as initially appeared. It should be noted that a large portion of this parcel is already excluded from consideration as it is outside of the regulated area. This site is excluded from further land cover conversion consideration based on its active land use, consisting of parking, trails, and river access along the Appomattox.

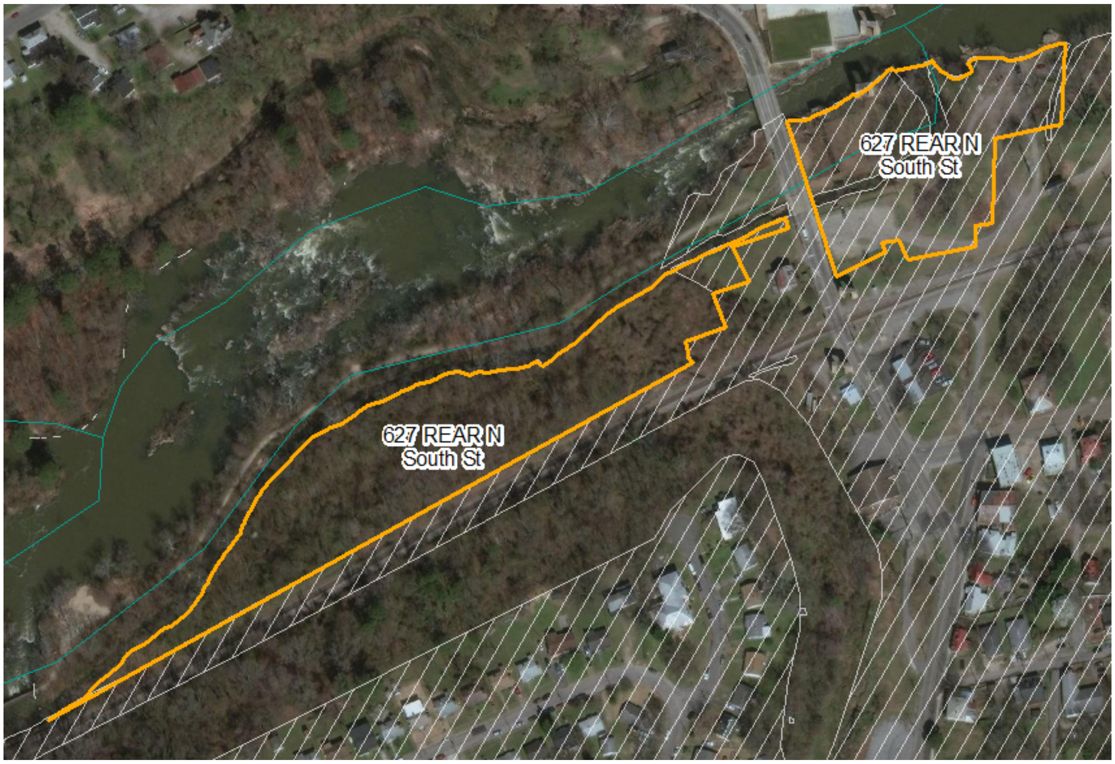

Figure 3. Patton Park.

4. 2120 Dock Street initially appeared to have potential for POC removal for land conversion at a relatively efficient cost ratio; however, upon inspection of current land use, the property appears to be a sliver of existing forest with an access road behind an active maintenance yard that is privately owned. The site is also noted to consist of a water transmission line and sewer trunkline; thus, perpetual access along these major utilities is required. Most of the site is outside of the regulated area (regulated area is depicted with cross hatches in the image). Conversion of the access road to conserved forest or open space is not likely, nor does the prospect yield a significant POC reduction; therefore, no further action is recommended for this parcel.

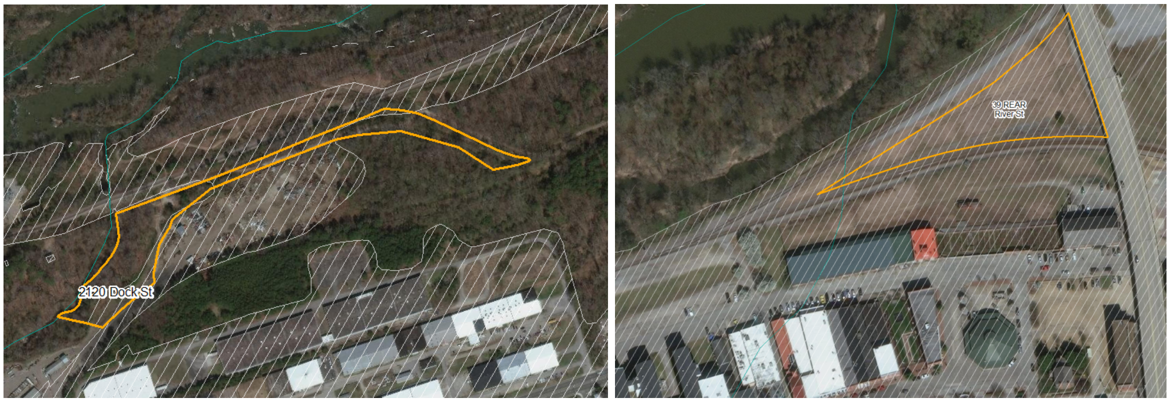

Figure 4. 2120 Dock Street (left) and 39 REAR River Street (right).

5. 39 REAR River Street is a triangle of land between two railroad spurs and US Hwy 1. This parcel of land is presently mowed or bush-hogged, but not maintained otherwise. Timmons Group did calculate a potential land conversion credit from pervious to open space and/or forest; however, claiming credit for this conversion will not make an appreciable difference toward the City’s overall goals and may not be worth the administrative headache. This action could also prompt

additional scrutiny into the validity of land conversion as a best management practice, as the site is arguably already considered open space.

6. 522 Hinton is the site of the attempted Brickhouse Run stream restoration. Though a small site (0.81 acre), based on the issues encountered during the stream restoration project, this may be a good candidate site for conserved open space, which if documented, could get nearly 1 lb of total phosphorus removal to add to the City's TMDL progress. There are several adjacent parcels, which when considered together could have potential as an urban park and conservation area, should the City wish to explore further. The total potential phosphorus removal for conversion could range from 1.41 – 1.76 lb/yr or more if the parcel at 100 Lafayette Street could be obtained.

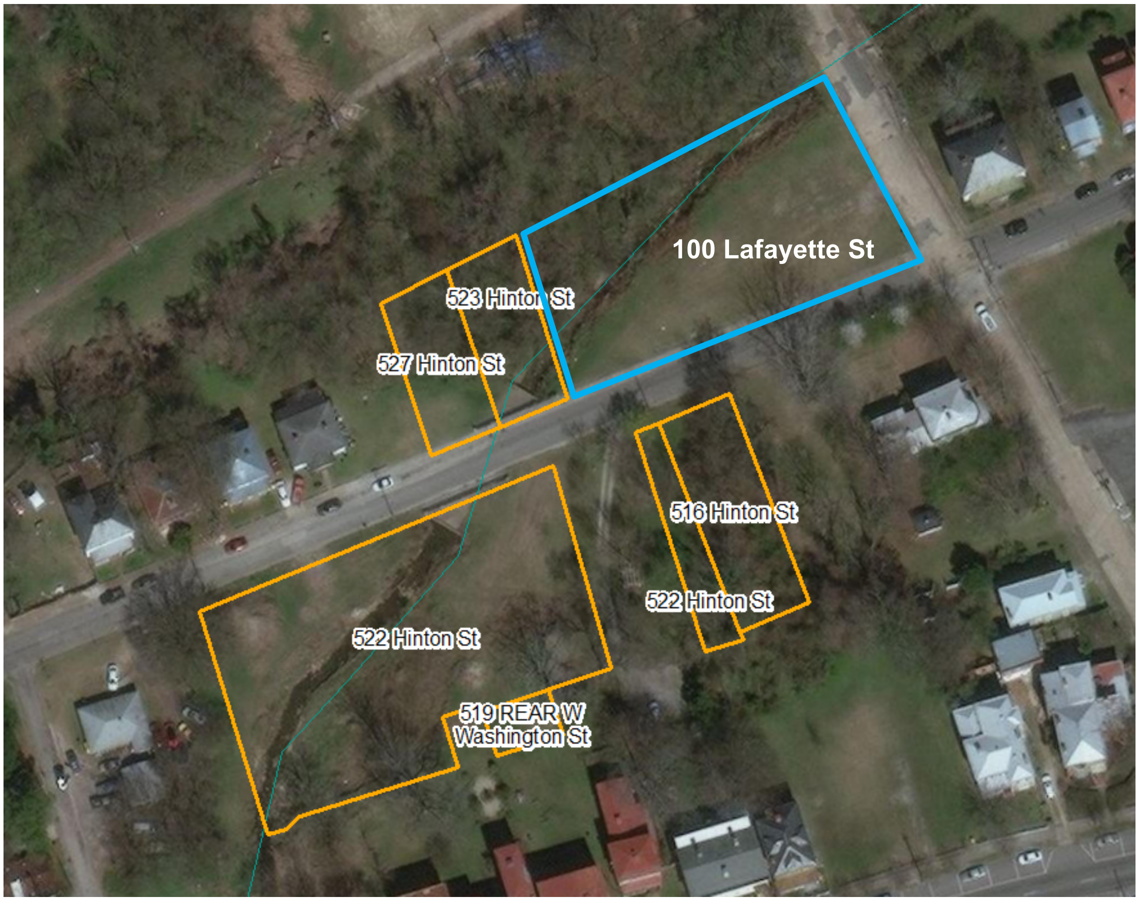

Figure 5. 522 Hinton Street.

7. 527 E Bank Street is bisected by Lieutenant Run, adjacent to I-95. As this site is already forested and undevelopable, this site is not a candidate for land conversion.

Figure 6. 527 E Bank Street.

Summary:

Based on an extensive review of surplus properties owned by the City, Timmons Group has concluded the following observations:

- While some potential exists for land conversion throughout the City, there is already a significant portion of land owned by the City in a forested state of land cover that is excluded from consideration for land conversion and has been accounted for through other means.
- There are few parcels that consist of a significant amount of impervious land that would be cost effective to convert to conserved forest or open space.
    - A planning area identified in the surplus property evaluation includes several adjoining or adjacent parcels on Pocahontas Island. The Island represents significant potential for land cover change; however, it was noted that the land cover conversion could be accomplished in concert with economic and/or re-development.
    - The former southside regional hospital site may have potential for land cover change should economic development projects fall though; or enhanced pollutant removal could be achieved through redevelopment.
    - The parcel at 522 Hinton Street, as well as surrounding parcels, may have potential for land cover change.

In consideration of the City's current progress toward achieving Chesapeake Bay TMDL compliance and the upcoming 40% target in June 2023, Timmons Group recommends further exploring Project J, identified during the stream restoration/outfall identification task. Coincidentally, the parcel on which this project site is mostly situated was also included in the surplus property evaluation: 1600 Shirley Avenue. Attached to this memo is the project one sheet created for Project J for the City's consideration. Project J at 1600 Shirley Avenue has an estimated TP load reduction on the order of 153.7 lbs/yr, which, with the other projects the City is implementing, would meet the City's 2023 target load reduction.

Appendix D

Maintenance and Management Plan

June 2022 – June 2027

The City of Petersburg will demolish and revitalize the site of the Roper Building located at 130 Pocohontas Street, Petersburg, VA 23830. Once the initial project is complete, the City will commence the following Maintenance and Management Plan. Over the next five years, the City will establish a floodplain easement incorporating the boundary of the restored floodplain to overlay the conserved open space created at the site of the demolished building. The overlay will be permitted and authorized by the City's updated floodplain ordinance, expected to be completed during the same timeframe.

Appendix E

Social Vulnerability

April 11, 2022

Social Vulnerability Index Score

- ■ Very Low Social Vulnerability
- ■ Low Social Vulnerability
- ■ Moderate Social Vulnerability
- ■ High Social Vulnerability
- ■ Very High Social Vulnerability
- ⊠ Not inlcuded in the analysis

1:4,514

0 0.0225 0.045 0.09 mi

0 0.035 0.07 0.14 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created from the Virginia Vulnerability Viewer

Center for Coastal Resources Management
Virginia Institute of Marine Science

ADAPTVA

Appendix F

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	City of Petersburg, VA	
Eligibility Information		
Criterion	**Description**	**Check One**
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	N/A
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration	☒ **Yes** ☐ **No**
Applicant Name:	City of Petersburg, VA

Scoring Information

Criterion	**Point Value**	**Points Awarded**
6. Eligible Projects (Select all that apply)		
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.		
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.	**50**	
☐ Wetland restoration, floodplain restoration ☐ Living shorelines and vegetated buffers. ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool ☐ Dam removal ☐ Stream bank restoration or stabilization. ☒ Restoration of floodplains to natural and beneficial function. ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	**45**	45
1.b. any other nature-based approach	**40**	40
All hybrid approaches whose end result is a nature-based solution	**35**	
All other projects	**25**	
7. Is the project area socially vulnerable? (Based on [ADAPT VA's Social Vulnerability Index Score.)](#)		
Very High Social Vulnerability (More than 1.5)	**15**	
High Social Vulnerability (1.0 to 1.5)	**12**	12
Moderate Social Vulnerability (0.0 to 1.0)	**8**	
Low Social Vulnerability (-1.0 to 0.0)	**0**	
Very Low Social Vulnerability (Less than -1.0)	**0**	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?		

Yes	**10**	
No	**0**	0
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	**10**	10
No	**0**	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	**5**	5
No	**0**	
11. Does this project provide “community scale” benefits?		
Yes	**20**	20
No	**0**	
Total Points		132

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
FIRMette of the project area(s) (Projects/Studies)	☒ Yes ☐ No ☐ N/A
Historic flood damage data and/or images (Projects/Studies)	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current floodplain ordinance	☒ Yes ☐ No ☐ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current hazard mitigation plan	☒ Yes ☐ No ☐ N/A
A link to or a copy of the current comprehensive plan	☒ Yes ☐ No ☐ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	☒ Yes ☐ No ☐ N/A
If applicant is not a town, city, or county, letters of support from affected communities	☐ Yes ☐ No ☒ N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	☒ Yes ☐ No ☐ N/A

Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	☒ Yes ☐ No ☐ N/A
Signed pledge agreement from each contributing organization	☐ Yes ☐ No ☒ N/A

Appendix G

Pryor Hauling, Inc.

2220 Formex Street
Richmond, VA 23224

804.360.2120 - Office
804.360.2681 - Fax

Class A License # 2705-027980A

April 8, 2022

City of Petersburg
Bradley Shupp
Property Maintenance Official
106 W. Tabb St
Petersburg, VA 23803

Reference: 709 Logan St. – Budget Pricing

SCOPE OF WORK

Pryor Hauling, Inc. appreciates this opportunity to provide you the following quote to render you demolition services. Scope of work will include:

- Demolition of warehouse
- Demolition of ramp
- Demolition of loading dock
- Demolition of parking lot
- Demolition of concrete at loading dock
- Removal of dirt under slab and haul away
- Dispose of all debris in an approved landfill
- Grade, seed and straw lot
- Miss Utility notification
- DOL notification

Note: Any changes made to this proposal will make it void.

COST OF WORK

Pryor Hauling, Inc. will provide all equipment and materials to perform the above scope of work for the lump sum price of **FOUR HUNDRED SEVENTY EIGHT THOUSAND EIGHT HUNDRED SIXTY DOLLARS AND ZERO CENTS ($478,860.00). THIS QUOTE IS GOOD FOR 30 DAYS.**

EXCLUSIONS

Pryor Hauling, Inc., has not included within the lump sum price given, any cost for the removal of any hazardous material; the removal of any underground storage tanks, all erosion control except for seed and straw, no import of fill unless otherwise stated, footing not to exceed 2ft in depth, concrete of footing not to exceed 1ft thick, no basements, well abandonment, testing, utility disconnects, permits, bonds, and/or related fees, nor any unforeseen issues, no dewatering.

Upon award of the contract, or upon commencement of the work to be performed, all materials located on site, designated to be removed from the site, will become the property of Pryor Hauling, Inc.

PAYMENT TERMS

Payment is due upon the completion of work. Five days after payment due date interest and late fees will apply to unpaid balances. Upon signing this contract the client acknowledges that he/she will be responsible for any fees imposed for unpaid balances, including interest, late fees, collection and/or attorney fees.

Certificates of Insurance and copies of licenses must be requested when signing this agreement. Requests made after completion of the scope of work cannot be a prerequisite for payment.

INSURANCE

General Liability and Workers Compensation insurance certificates will be provided upon request, after award of the contract. Current certificates have proven to be adequate in prior projects of this nature and should be well within the limits required to perform the above referenced scope of work.

I hope that the information provided herein suits your current needs. If you should have any questions, or if you require any additional information, please do not hesitate to contact me at (804) 360-2120.

ACCEPTED BY

____

____

DATE

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CID510112_CityofPetersburg_CFPF Round 3 Applications

4 messages

Aislinn Creel <Aislinn.Creel@timmons.com> Fri, Apr 8, 2022 at 3:40 PM
To: "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Darryl Walker <dwalker@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Joanne Williams <jwilliams@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Armesha Moody <amoody@petersburg-va.org>

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

On behalf of the City of Petersburg, please find attached two completed grant applications for the current cycle of Community Flood Preparedness Funds.

Due to file size limitations, please download the entire application packages, including scope and budget narratives and appendices, here: City of Petersburg CFPF Round 3 Applications

Should you have any questions on the application, please direct them to the City's Stormwater Program Manager, Darryl Walker (copied), or me. Thank you for your consideration.

Sincerely,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
Your Vision Achieved Through Ours

To send me files greater than 20MB click here.

Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg's two (2) applications for Round 3 of CFPF funding:

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
Your Vision Achieved Through Ours

To send me files greater than 20MB click here.

---

2 attachments

CID510112_CityofPetersburg_CFPF-1 application only.pdf
3483K

CID510112_CityofPetersburg_CFPF-2 application only.pdf
3785K

Darryl Walker <dwalker@petersburg-va.org> Fri, Apr 8, 2022 at 3:59 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>, "cfpf@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Joanne Williams <jwilliams@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Armesha Moody <amoody@petersburg-va.org>

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

We were not quite able to full complete the application for demolition of the Roper Building…we just got the attached demo estimate from staff this morning (per the attached email). Nonetheless, I wanted to send you **everything we have right now** – including a cover letter signed by our Interim City Manager – in hopes that we will be able to proceed as demolition of the Roper Building has been deemed **very important** to DCR.

Please review the attached…and if feasible let me know if/how we can proceed. Thank you!!

Respectfully submitted,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

From: Aislinn Creel <Aislinn.Creel@timmons.com>
Sent: Friday, April 8, 2022 3:40 PM
To: cfpf@dcr.virginia.gov
Cc: Darryl Walker <dwalker@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Joanne Williams <jwilliams@petersburg-va.org>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Armesha Moody <amoody@petersburg-va.org>
Subject: CID510112_CityofPetersburg_CFPF Round 3 Applications

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

On behalf of the City of Petersburg, please find attached two completed grant applications for the current cycle of Community Flood Preparedness Funds.

Due to file size limitations, please download the entire application packages, including scope and budget narratives and appendices, here: City of Petersburg CFPF Round 3 Applications

Should you have any questions on the application, please direct them to the City's Stormwater Program Manager, Darryl Walker (copied), or me. Thank you for your consideration.

Sincerely,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016

Mobile: 804.647.7388 | aislinn.creel@timmons.com
Your Vision Achieved Through Ours

To send me files greater than 20MB click here.

Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg's two (2) applications for Round 3 of CFPF funding:

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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---------- Forwarded message ----------
From: Bradley Shupp <bshupp@petersburg-va.org>
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: John Hines <jhines@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, Joanne Williams <jwilliams@petersburg-va.org>, Aislinn Creel <Aislinn.Creel@timmons.com>
Bcc:
Date: Fri, 8 Apr 2022 14:05:06 +0000
Subject: Re: CID 510112 - Resilience Plan

Good morning,

I have attached the demolition estimate for the Roper Brother building. During our walk through of the property and building it was found that the structure is currently being used by the police department. If you have any questions about this, please let me know.

Thank you,

Bradley Shupp
Property Maintenance Official
1340 East Washington Street
Petersburg, Virginia 23803
(c) 804-720-6255
(o) 804-733 -2409 ext. 4157
bshupp@petersburg-va.org

ᓚᘏᗢ

From: Bradley Shupp <bshupp@petersburg-va.org>
Sent: Thursday, April 7, 2022 9:47 AM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: John Hines <jhines@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

Darryl,

Can you give me a call when you can to discuss the Roper buildings?

Thank you,

Bradley Shupp
Property Maintenance Official
1340 East Washington Street
Petersburg, Virginia 23803
(c) 804-720-6255
(o) 804-733 -2409 ext. 4157
bshupp@petersburg-va.org

From: John Hines <jhines@petersburg-va.org>
Sent: Thursday, April 7, 2022 9:18 AM
To: Bradley Shupp <bshupp@petersburg-va.org>
Subject: FW: CID 510112 - Resilience Plan

Fyi

From: Darryl Walker
Sent: Wednesday, April 06, 2022 4:15 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Oh, one other note…I've also been working to get a demo cost for the Roper Building. Mr. Hines (Building Official, copied on this email) is working to connect with the Property Maintenance Official to try to provide this information; hopefully that will be coming very soon. 😊

From: Darryl Walker
Sent: Wednesday, April 6, 2022 4:00 PM
To: Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Hey Aislinn,

I took a look at the "Lakemont" application documents, and the only comment I have at this point is that the "Appendix C" PDF seems to be the one for the Old Ramada Inn instead of the Lakemont Projects. If this was just an oversight and you have the Lakemont Historic Flood Data/Images file done and ready to review, please provide.

Thanks again for your help,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

I AM
PETERSBURG
VIRGINIA

From: Darryl Walker
Sent: Wednesday, April 6, 2022 3:47 PM
To: Armesha Moody <amoody@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Excellent!! Thanks so much, Ms. Moody…there will probably be one or two additional letters coming your way soon for other CFPF Grant funding requests.

From: Armesha Moody <amoody@petersburg-va.org>
Sent: Wednesday, April 6, 2022 3:43 PM
To: Darryl Walker <dwalker@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

Good afternoon Mr. Walker,

Please see the attachment.

Regards,

Armesha Moody

Executive Assistant to the City Manager

135 North Union Street

Petersburg, Virginia 23803

Office: 804-733-2301

Email: amoody@petersburg-va.org

From: Darryl Walker <dwalker@petersburg-va.org>
Sent: Wednesday, April 6, 2022 2:03 PM
To: Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>; Armesha Moody <amoody@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

My apologies…disregard the previous attachment and use the attached file – thanks!

From: Darryl Walker
Sent: Wednesday, April 6, 2022 1:56 PM
To: Joanne Williams <jwilliams@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>; Armesha Moody <amoody@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Good Afternoon Everyone,

Attached is a revised cover letter for the Old Ramada Inn Project…changed the signature section at the bottom (Joanne, did not see an amount in this letter, so nothing to change there).

I have copied Armesha Moody so that we may work to get this letter put on letterhead and signed by the Interim City Manager…hopefully by COB. If additional assistance is needed, please let me know.

Thanks much,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

I AM
PETERSBURG
VIRGINIA

From: Joanne Williams <jwilliams@petersburg-va.org>
Sent: Wednesday, April 6, 2022 1:50 PM
To: Darryl Walker <dwalker@petersburg-va.org>; Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

I reviewed the Lakemont grant application and I just wanted to check that all elements of that project are included. Aislinn: I recall on a Zoom meeting that you mentioned additional pipes needed that extended beyond the core project. Is that work included in the grant application?

Thanks,

Joanne

From: Darryl Walker <dwalker@petersburg-va.org>
Date: Wednesday, April 6, 2022 at 1:40 PM
To: Joanne Williams <jwilliams@petersburg-va.org>, Aislinn Creel <Aislinn.Creel@timmons.com>
Cc: "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Aislinn…also note the attached response to your question regarding the Old Ramada Inn demo project viability in light of current ownership. Thanks!

From: Joanne Williams <jwilliams@petersburg-va.org>
Sent: Wednesday, April 6, 2022 11:51 AM
To: Aislinn Creel <Aislinn.Creel@timmons.com>; Darryl Walker <dwalker@petersburg-va.org>
Cc: Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Anthony Williams <awilliams@petersburg-va.org>
Subject: Re: CID 510112 - Resilience Plan

I reviewed the application for the Ramada Inn and all is good except the price. I spoke with Petersburg's City Attorney and the cost to purchase and demo has increased to $3.2M. Can the requested project cost of $2.6M be changed to $3.2M?

Thanks,

Joanne

From: Aislinn Creel <Aislinn.Creel@timmons.com>
Date: Friday, April 1, 2022 at 7:13 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>
Subject: RE: CID 510112 - Resilience Plan

Darryl/Joanne,

I am aware of some comments to the cover letter and that I need to update the signatory for the application for CFPF-1 Old Ramada Inn, so I've attached those two documents for your review.

Here is the link for the CFPF-2 Lakemont package: CFPF-2

Could you please kindly review and provide comment for both by COB Wednesday, April 6, so that I can make the revisions and consolidate the package for submittal before Friday? This should include obtaining Mr. Miller's signature on the Cover Letter and the application.

Thanks,

Aislinn

From: Aislinn Creel
Sent: Thursday, March 31, 2022 1:43 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Anthony Williams <awilliams@petersburg-va.org>; jhines@petersburg-va.org
Subject: RE: CID 510112 - Resilience Plan

Darryl,

Please follow this link to download CFPF Round 3 draft application components for the Old Ramada Inn site (380 E. Washington Street et al.): CFPF-1 Old Ramada Inn

The package includes as complete an application as I am able to assemble, given the information I have been provided to-date. Please note, the word document of the application which includes the cover and the scope and budget narratives has a few comments and one complete highlighted portion where input from the City would be beneficial.

Other items to note:

1. The application and the cover letter need to be signed by Mr. Turille
2. Please provide comments for the word document
3. Please review the Maintenance and Management Plan. We could consider using N/A in place of this document, but I will leave that up to the City's discretion and can revise accordingly.

Please provide comment/additional information as soon as possible.

Thanks,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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From: Aislinn Creel
Sent: Monday, March 28, 2022 5:35 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Cc: Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>
Subject: FW: CID 510112 - Resilience Plan

Darryl,

I sent the initial Resilience Plan to Ms. Howard-Cooper since it will take her about a week to review, but if you have any comments or revisions please let me know, and I will make them at once! She wrote this, via email, in response to my question about whether it needed to go before Council: *"The plan can be a compilation of already adopted plans provided per instructions in Attachment G of the grant manual. If you are creating a new plan, it will need to be adopted by the community."* I will leave that decision up to the City.

Tomorrow, I will begin in earnest on the applications. Please provide any and all information in addition to what Joanne sent last week, specifically in regards to cost, about the old Ramada Inn building and the Roper Building. I also plan to reiterate the information from the BRIC grant for Lakemont, so if you can forward me any information you have from December that I might not have already, please do. Any information will help me to strengthen the City's applications.

Thanks,

Aislinn

From: Aislinn Creel
Sent: Monday, March 28, 2022 5:27 PM
To: cfpf@dcr.virginia.gov
Cc: Darryl Walker <dwalker@petersburg-va.org>; Joanne Williams <jwilliams@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>
Subject: CID 510112 - Resilience Plan

Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg’s initial Resilience Plan and associated appendices for your review: City of Petersburg's Initial Resilience Plan.

On behalf of the City, we are looking forward to your comment.

Best regards,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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5 attachments

Cover Letter - Roper Building_Signed by ICM.pdf
104K

FEMA FIRMETTE_130 POCAHONTAS STREET_03-03-21.pdf
840K

Roper Brother Demo Quote.doc
50K

Roper Brother Demo Quote.doc
46K

Re: CID 510112 - Resilience Plan.eml
894K

CFPF, rr <cfpf@dcr.virginia.gov> Fri, Apr 8, 2022 at 4:13 PM
To: Darryl Walker <dwalker@petersburg-va.org>

Received

On Fri, Apr 8, 2022 at 3:59 PM Darryl Walker <dwalker@petersburg-va.org> wrote:

> Dear Ms. Howard-Cooper and Members of the CFPF Review Team:
>
> We were not quite able to full complete the application for demolition of the Roper Building…we just got the attached demo estimate from staff this morning (per the attached email). Nonetheless, I wanted to send you **everything we have right now** – including a cover letter signed by our Interim City Manager – in hopes that we will be able to proceed as demolition of the Roper Building has been deemed **very important** to DCR.
>
> Please review the attached…and if feasible let me know if/how we can proceed. Thank you!!
>
> Respectfully submitted,
>
> Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

I AM
PETERSBURG
VIRGINIA

From: Aislinn Creel <Aislinn.Creel@timmons.com>
Sent: Friday, April 8, 2022 3:40 PM
To: cfpf@dcr.virginia.gov
Cc: Darryl Walker <dwalker@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Joanne Williams <jwilliams@petersburg-va.org>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Armesha Moody <amoody@petersburg-va.org>
Subject: CID510112_CityofPetersburg_CFPF Round 3 Applications

Dear Ms. Howard-Cooper and Members of the CFPF Review Team:

On behalf of the City of Petersburg, please find attached two completed grant applications for the current cycle of Community Flood Preparedness Funds.

Due to file size limitations, please download the entire application packages, including scope and budget narratives and appendices, here: City of Petersburg CFPF Round 3 Applications

Should you have any questions on the application, please direct them to the City's Stormwater Program Manager, Darryl Walker (copied), or me. Thank you for your consideration.

Sincerely,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

TIMMONS GROUP | www.timmons.com
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Office: 804.200.6432 | Fax: 804.560.1016
Mobile: 804.647.7388 | aislinn.creel@timmons.com
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Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg's two (2) applications for Round 3 of CFPF funding:

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

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1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
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Darryl Walker <dwalker@petersburg-va.org> Mon, Apr 11, 2022 at 2:35 PM
To: "CFPF, rr" <cfpf@dcr.virginia.gov>, Aislinn Creel <aislinn.creel@timmons.com>
Cc: Mike Claud <Mike.Claud@timmons.com>, Sheila Reeves <Sheila.Reeves@timmons.com>, Joanne Williams <jwilliams@petersburg-va.org>, Anthony Williams <awilliams@petersburg-va.org>, John Hines <jhines@petersburg-va.org>, Tangela Innis <tinnis@petersburg-va.org>, "Andrew J. Barnes" <abarnes@petersburg-va.org>

Good Afternoon Ms. Howard-Cooper and Members of the CFPF Review Team:

As a follow-up to my email below sent Friday afternoon (3:59PM), just wanted to pass along the updated version of the documents submitted with that email:

CID510112_CityofPetersburg_CFPF-3.pdf

(This is what would have been submitted if we had received the needed info specified a little earlier.)

Thanks again for your assistance and support,

Darryl E. Walker

Stormwater Program Manager

Office of Development and Operations

1340 East Washington Street

Petersburg, VA 23803

804.733.2357 dd

804.733.2353 ofc

804.732.2030 fax

www.petersburg-va.org

I AM PETERSBURG VIRGINIA

From: wendy.howard-cooper@dcr.virginia.gov <wendy.howard-cooper@dcr.virginia.gov> **On Behalf Of** CFPF, rr
Sent: Friday, April 8, 2022 4:14 PM
To: Darryl Walker <dwalker@petersburg-va.org>
Subject: Re: CID510112_CityofPetersburg_CFPF Round 3 Applications

Received

On Fri, Apr 8, 2022 at 3:59 PM Darryl Walker <dwalker@petersburg-va.org> wrote:

> Dear Ms. Howard-Cooper and Members of the CFPF Review Team:
>
> We were not quite able to full complete the application for demolition of the Roper Building…we just got the attached demo estimate from staff this morning (per the attached email). Nonetheless, I wanted to send you **everything we have right now** – including a cover letter signed by our Interim City Manager – in hopes that we will be able to proceed as demolition of the Roper Building has been deemed **very important** to DCR.
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> Please review the attached…and if feasible let me know if/how we can proceed. Thank you!!
>
> Respectfully submitted,
>
> Darryl E. Walker
>
> Stormwater Program Manager
>
> Office of Development and Operations
>
> 1340 East Washington Street
>
> Petersburg, VA 23803
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>
> **From:** Aislinn Creel <Aislinn.Creel@timmons.com>
> **Sent:** Friday, April 8, 2022 3:40 PM
> **To:** cfpf@dcr.virginia.gov
> **Cc:** Darryl Walker <dwalker@petersburg-va.org>; Mike Claud <Mike.Claud@timmons.com>; Sheila Reeves <Sheila.Reeves@timmons.com>; Joanne Williams <jwilliams@petersburg-va.org>; Anthony Williams <awilliams@petersburg-va.org>; John Hines <jhines@petersburg-va.org>; Tangela Innis <tinnis@petersburg-va.org>; Andrew J. Barnes <abarnes@petersburg-va.org>; Armesha Moody <amoody@petersburg-va.org>
> **Subject:** CID510112_CityofPetersburg_CFPF Round 3 Applications

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Should you have any questions on the application, please direct them to the City's Stormwater Program Manager, Darryl Walker (copied), or me. Thank you for your consideration.

Sincerely,

Aislinn

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

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Ms. Howard-Cooper,

Please follow this link to download the City of Petersburg's two (2) applications for Round 3 of CFPF funding:

Aislinn Creel, PE
Sr. Project Manager: Stormwater Services

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